CORROSION RESISTANCE TABLES

Metals, Nonmetals, Coatings, Mortars, Plastics, Elastomers and Linings, and Fabrics

Fifth Edition, Revised and Expanded

Philip A. Schweitzer, P.E.

PART D, POT-ZIN

CORROSION RESISTANCE TABLES

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CORROSION TECHNOLOGY

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Preface

The field of corrosion resistance is one of constant change. Research and development is continuously underway, both involving new materials and expanding the uses of known materials. These advances are particularly important for such areas as chemical processing and pollution control. Increased knowledge of corrosion resistance and the mechanisms of corrosion is a vital factor in this work.

This fifth edition of the corrosion resistance tables has been prepared in an attempt to provide the most current information available. Data on the corrosion resistance for the materials and corrodents covered in the previous editions have been greatly expanded, and data for 83 additional corrodents have been incorporated in this edition.

Philip A. Schweitzer, P.E.

Introduction

For years the chemical engineer has been faced with the problem of selecting the proper material to be used for the construction of processing vessels, storage tanks, valves, piping systems, and whatever else comes into contact with potentially corrosive chemicals. During the early days of the chemical engineering profession, the list of materials from which to choose was relatively small, consisting primarily of various metals and their alloys.

As technology made advances, new alloys were developed as well as synthetic materials such as plastics. Simultaneously, new chemicals came into being, many of which required the newly developed materials of construction for safe handling.

However, the problem of material selection is not limited to the chemical engineer. Many industries that use chemicals in their everyday operations cannot be classified as members of the chemical processing industry, yet they have the same problems of selecting the proper materials of construction to handle these products. This is particularly true in the area of pollution control. Many processes for the elimination of air and/or water pollution involve chemical changes in the pollutants that result in problems of corrosion that were not present before.

The dictionary defines corrosion as "eating or wearing away by slow degrees," a definition that is rather broad and does not restrict the application of the word to the destruction of metals. This is as it should be because of the availability of so many nonmetallic materials of construction.

Most reference sources for the selection of proper materials of construction are devoted to either a specific group of metals or alloys, plastics, rubbers (synthetic and natural), gasketing materials, or packing materials. An individual with the problem of selecting materials of construction must usually make a selection in more than one of the preceding categories, which necessitates going to several sources for the information. It is the purpose of this book to provide one source from which all the components of a system may be selected, including processing vessels, tanks, pumps, piping, valves, gaskets, packing, etc.

These corrosion tables have been prepared with the intention of assisting not only the practicing engineer, but whoever may be charged with the responsibility of selecting the proper materials of construction for a specific application. Any table of this type should be used only as a guide since it is extremely difficult, and at times impossible, to duplicate actual operating conditions. To fully guarantee the suitability of a particular material of construction, corrosion tests should be conducted under actual operating conditions.

In the tables, all the chemicals are assumed to be in the pure state or in concentrated or saturated aqueous solutions, unless otherwise indicated. Concentration percentages used are by weight.

Two types of notation have been employed to indicate the suitability of a specific material of construction—one for metallic materials and one for nonmetallic materials. This is necessary because their mechanisms of corrosion differ.

CORROSION OF METALLICS

The four most common forms of corrosion of metals are

1. General corrosion
2. Galvanic corrosion
3. Stress corrosion cracking
4. Intergranular corrosion

General Corrosion

Metals resist corrosion by the formation of a passive film on the surface, which in a sense is also corrosion but once formed prevents further degradation of the base metal. Most metals form this film after a period of time of exposure to the air. *Passivation* is the name applied to the chemical treatment procedure that helps to form the film more rapidly. For example, exposure of austenitic stainless steels to nitric acid will produce this protective film.

As long as these films remain intact, they protect the base metal from further attack. Certain chemicals attack various films at varying rates. When this occurs, the metal is said to corrode. Such interaction between a chemical and a metal can be determined from the corrosion tables. This type of corrosion is known as general corrosion.

Galvanic Corrosion

Galvanic corrosion occurs when two or more dissimilar metals are in contact, or when metals having the same analysis have different surface conditions and an electrolyte is present.

Under these conditions an electrolytic cell is formed. All metals and alloys have certain "built-in" properties that cause them to react as an anode or a cathode when in contact with dissimilar metals or alloys. Whether a particular material will react as a cathode or an anode can be determined from the relative positions of the materials in the galvanic series. The farther apart two materials are from each other in the galvanic series, with all other factors being equal, the greater the rate of corrosion. The material closest to the anodic end will be the one to corrode. For example, if tin and zinc were in contact, the zinc would corrode, whereas if tin and copper were in contact, the tin would corrode.

The rate of attack is also affected by the relative size of the materials and the specific electrolyte present. A small anode area in contact with a large cathode area will result in a rapid severe attack. Conversely, a large anode area in contact with a small cathode area will lessen the rate of galvanic attack since the same total electromagnetic driving force of corrosion will be spread out over a larger area. The higher the degree of ionization of the electrolyte, the greater the rate of attack.

Galvanic corrosion can be prevented by judicious use of dissimilar metals.

Galvanic series

Anodic (corroded) end	Hastelloy C (active)
Magnesium	Brasses
Magnesium alloys	Copper
Zinc	Bronzes
Aluminum 5052	Cupro-nickel alloys
Aluminum 6061	Monel
Cadmium	Silver solder
Aluminum AA 2017	Nickel (passive)
Iron and carbon steel	Inconel (passive)
Copper steel	Ferritic stainless (passive)
4-6% Chromium steel	Austenitic stainless (passive)

Galvanic series	
Ferritic stainless (active) 400 series	Titanium
Austenitic stainless (active) 18-8 series	Hastelloy C (passive)
Lead-tin solder	Silver
Lead	Graphite
Tin	Gold
Nickel (active)	Platinum
Inconel (active)	*Cathodic (protected) end*

Stress Corrosion Cracking

All metals are subject to stress corrosion cracking, which results from residual or applied stress in the metal. Residual stresses can occur as a result of cold forming or quenching after heat treating. Annealing after fabrication will minimize these stresses. Applied stresses can result from faulty design, vibrations, flexing, and excessive expansion and contraction due to thermal changes.

The particular corrodent will determine the degree of effect. Halogen salts are among the materials that will attack metals most vigorously when stresses are present.

Intergranular Corrosion

Corrosive attack involving intergranular corrosion occurs only at the grain boundaries of austenitic stainless steels. All austenitic stainless steels contain carbon in small amounts. When this material is heated to the sensitizing range (850 to 1650°F), such as in welding, carbon is precipitated out at the grain boundaries in the form of chromium carbide. The chromium has been taken from the grain boundaries, changing the composition and making this area even more susceptible to corrosive attack.

This effect can be minimized by annealing the stainless steel after it has been sensitized. This is done by heating the alloy to 1800°F or higher, depending on the specific alloy, and then quickly cooling it through the sensitizing range to prevent the carbon from precipitating out. Another way to reduce this effect is to limit the carbon content to less than 0.03%. This extra-low-carbon (ELC) stainless steel can be welded without the danger of carbide precipitation.

CORROSION OF NONMETALLICS

Plastic materials are attacked by solvation and chemical reactions. Solvation is the penetration of the plastic by corrosive elements that cause softening, swelling, and ultimate failure. Plastics, in contrast to metals, do not exhibit a useful corrosion rate; they usually either completely resist attack or deteriorate rapidly. Because of this difference in corrosion mechanism, the two types of notation used in the tables were established.

Plastic and elastomeric materials are compounded by the manufacturer. Properties of the materials produced can vary from manufacturer to manufacturer. By compounding, it is possible to improve specific mechanical/physical properties, but usually at the expense of another property. Consequently, materials that have been produced to improve a mechanical property may have had their ability to resist corrosion reduced. Since all plastic or elastomeric materials produced may not have the corrosion resistance indicated in the charts, the manufacturer of the material to be used should be consulted. The same reasoning applies to the physical/mechanical properties required for the application.

A word of caution should also be given regarding temperatures. The table shows only the resistivity to corrosive attack at various temperatures. Although the material may be corrosion-resistant at a specific temperature, this does not mean that the physical/mechanical properties would be satisfactory at these temperatures. These must be investigated at the operating temperature to ensure that the material has the proper mechanical strength for the application.

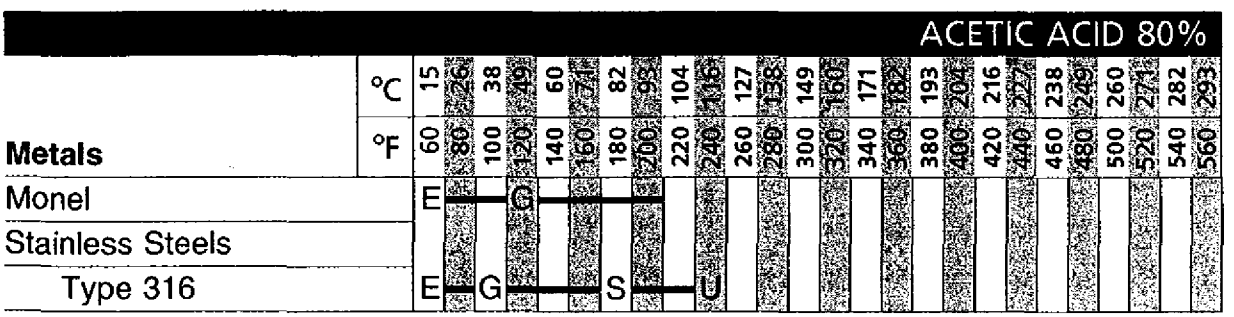
Using the Tables

The tables are arranged alphabetically according to corrodent. Unless otherwise noted, the corrodent is considered pure in the case of liquids, or a saturated aqueous solution in the case of solids. All percentages shown are by weight.

There are four pages for each corrodent: one for the resistance to metals; one for the resistance to nometallic materials, coatings, and mortars; one for the resistance to plastics; and one for the resistance to elastomers, linings, and fabrics.

TABLE NOTATION

Since corrosion is a function of temperature, the tables indicate the suitability of each material at varying temperatures. Symbols used to designate specific corrosion rates are shown on the bottom of the metals pages. The use of the temperature scale is explained by the following example:



From the sample table, it is seen that in the presence of an 80% solution of acetic acid, monel has a corrosion rate varying with temperature rated as follows:

- From 60 to 120°F, excellent (E): <2 mils penetration/year.
- From 120 to 210°F, good (G): <20 mils penetration/year.
- There are no data for temperatures beyond 210°F.

Type 316 stainless steel has a corrosion rate for the same corrodent varying with temperature rated as follows:

- From 60 to 100°F, excellent (E): <2 mils penetration/year.
- From 100 to 180°F, good (G): <20 mils penetration/year.
- From 180 to 240°F, satisfactory (S): <50 mils penetration/year.
- Above 240°F, unsatisfactory (U): >50 mils penetration/year.

Nonmetallics are only rated as resistant (R) or unsatisfactory (U), because they do not exhibit a useful corrosion rate, as explained previously.

Other Notation

Further information regarding the corrosion of specific materials by certain corrodents is provided by the following symbols. In the tables, the symbols follow the applicable material or corrodent name.

Symbol	Meaning
1	Material is subject to pitting.
2	Material is subject to stress cracking.
3	Material is subject to crevice attack.
4	Not for use with carbonated beverages.
5	Material should be passivated.
6	Alkaline.
7	Acid free.
8	Acid free and passivated.
9	Material is subject to intergranular corrosion.
10	Synthetic veil or surfacing mat should be used.
11	Material will cause stress cracking in many polyethylenes. A stress crack-resistant, high molecular weight polyethylene must be used.
12	Material is subject to stress cracking when wet.
13	Corrodent will be absorbed.
14	Corrodent will permeate.
ALL	Data applies to all concentrations.
ELC	Material is low-carbon grade.
SAT	Solution is saturated.

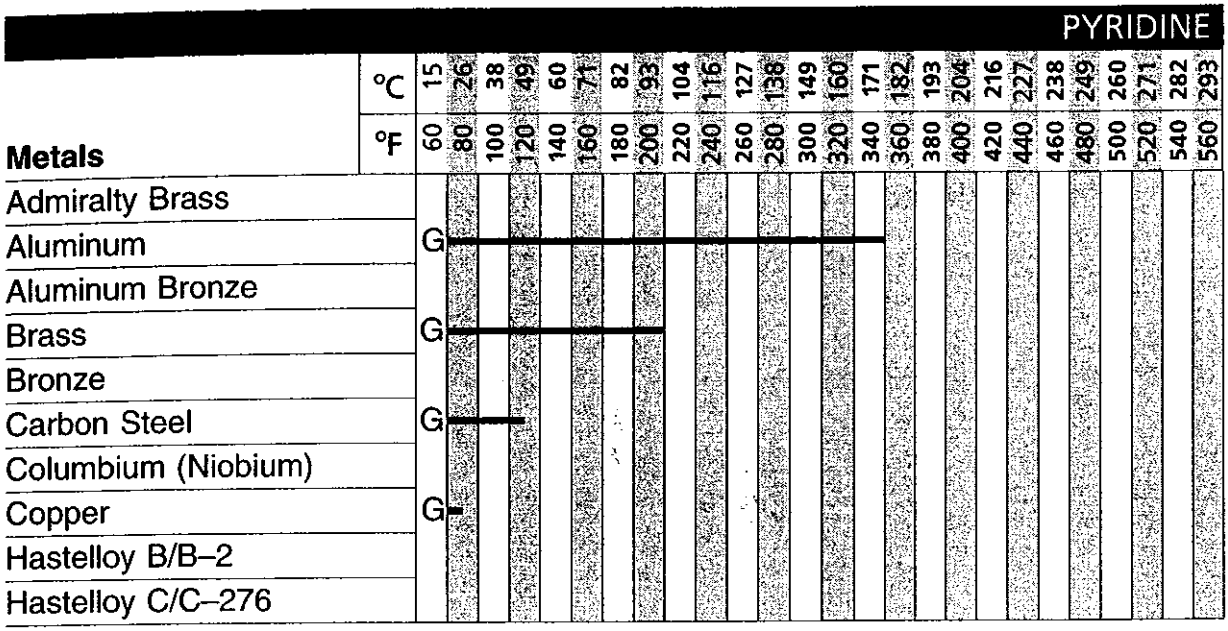
General Notes

- Incolloy category is applicable to grades 800 and 825 only, unless otherwise specified.
- Inconel category is applicable to grade 600, unless otherwise specified.
- The mortars specified are for use fully immersed or subject to constant flow.
- The coatings specified are for use fully immersed or for wet spills or wet fumes.
- There are many epoxy formulations. Where epoxy is shown as being a satisfactory material of construction, it indicates that there is a suitable formulation. Manufacturers should be consulted for the suitability of their specific formulation.
- See Appendix 3 for plating solution compositions.

READING THE TEMPERATURE SCALE

When using the tables, note that the vertical lines refer to temperatures midway between the temperatures cited (see the sample table below). Thus, aluminum is corroded by pyridine at a rate less than 20 mils/year between 60 and 350°F. Brass, carbon steel, and copper have the same corrosion rate between the temperatures of 60 and 210°F, 120°F, and 80°F, respectively.

When a material is indicated to be unsatisfactory at a specific temperature, it is also unsatisfactory at all temperatures above the one shown. A blank in the chart indicates that no data are available.


PYRIDINE
°C
°F
Metals
15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293
60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560
Admiralty Brass
Aluminum
Aluminum Bronze
Brass
Bronze
Carbon Steel
Columbium (Niobium)
Copper
Hastelloy B/B–2
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G
G
G
G

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Hydrofluoric Acid 30% 1621

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Hydrofluoric Acid 70% 1633
Hydrofluoric Acid 100% 1637
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Magnesium Hydroxide 1909
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Malic Acid 1933
Manganese Carbonate 1937
Manganese Chloride 1941
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Mercurous Nitrate 1961
Mercury 1965
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Methane Sulfonic Acid 50% 1973
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Methyl Acrylate 1985
Methyl Alcohol 1989
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Methyl Bromide 1997
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Methyl Formate 2017
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Nickel Nitrate 2133
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Potassium Hydroxide 27% 2597
Potassium Hydroxide 50% 2601
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Part D, POT–ZIN

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Potassium Permanganate 10% 2645
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Sulfuric Acid 10% 3137
Sulfuric Acid 30% 3141
Sulfuric Acid 50% 3145
Sulfuric Acid 60% 3149
Sulfuric Acid 70% 3153
Sulfuric Acid 80% 3157
Sulfuric Acid 90% 3161
Sulfuric Acid 95% 3165
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Sulfuric Acid 100% 3173
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Sulfuric Acid Fuming 3181
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Tar 3213
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Tributyl Phosphate 3301
Trichloroacetic Acid 3305
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Tricresylphosphate 3325
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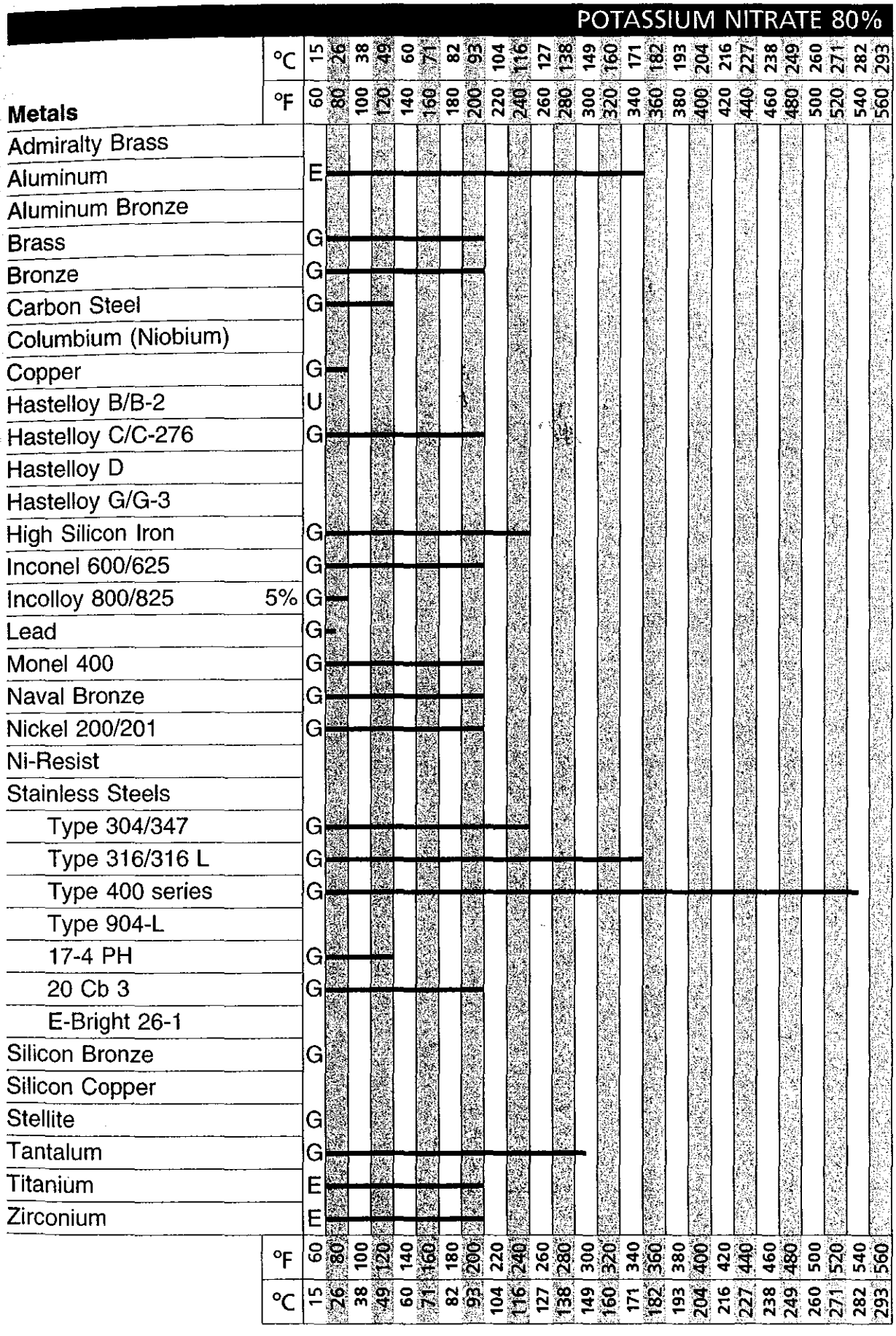
Appendix 1: Chemical Synonyms *A-1-1*
Appendix 2: Cross-Reference of Trade Names to Generic Names *A-2-1*
Appendix 3: Plating Solution Composition *A-3-1*



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

Schweitzer/*Corrosion Resistance Tables: Fifth Edition, Revised and Expanded* DOI: 10.1081/5672-X-120028966

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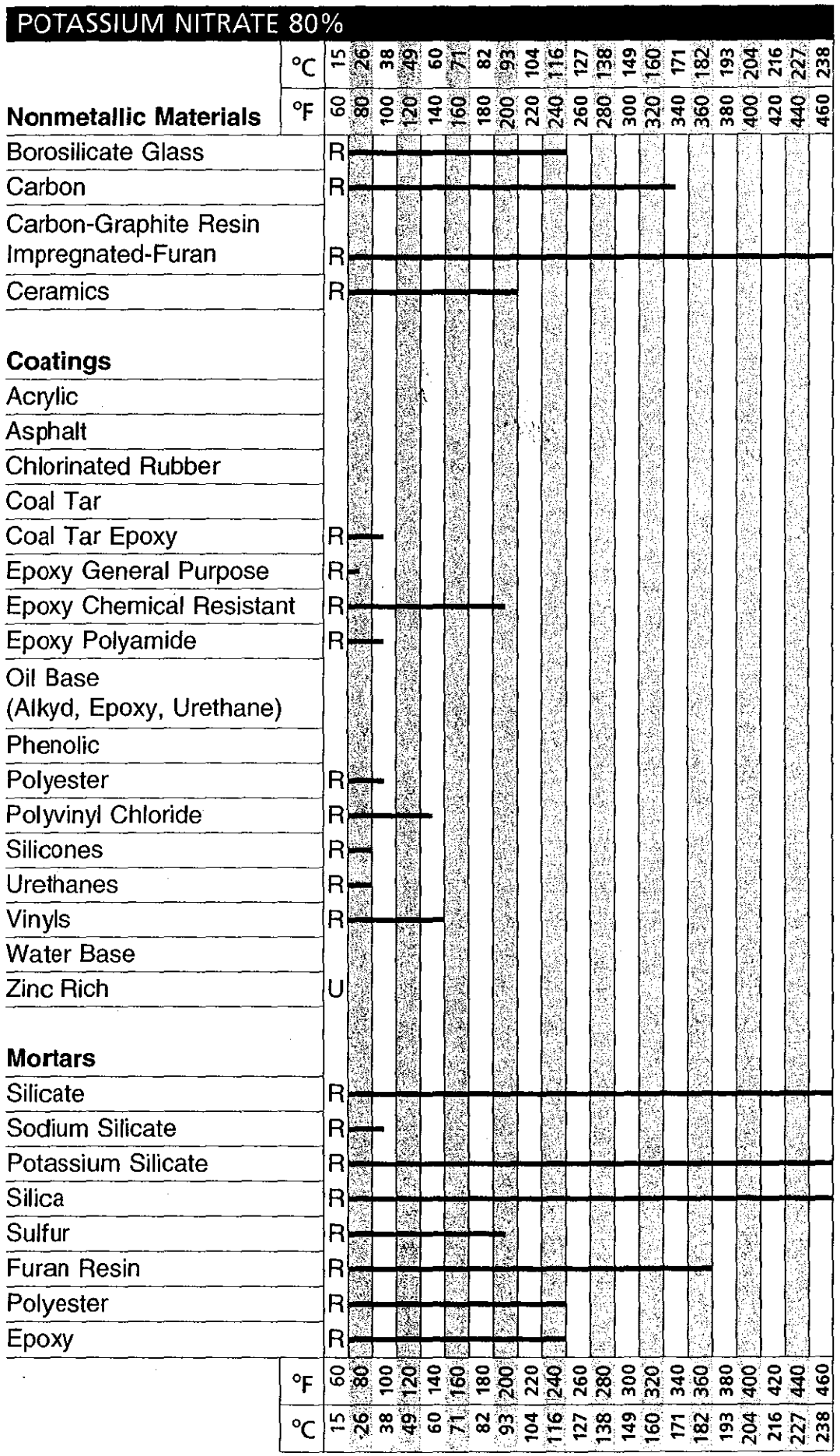
POTASSIUM NITRATE 80%



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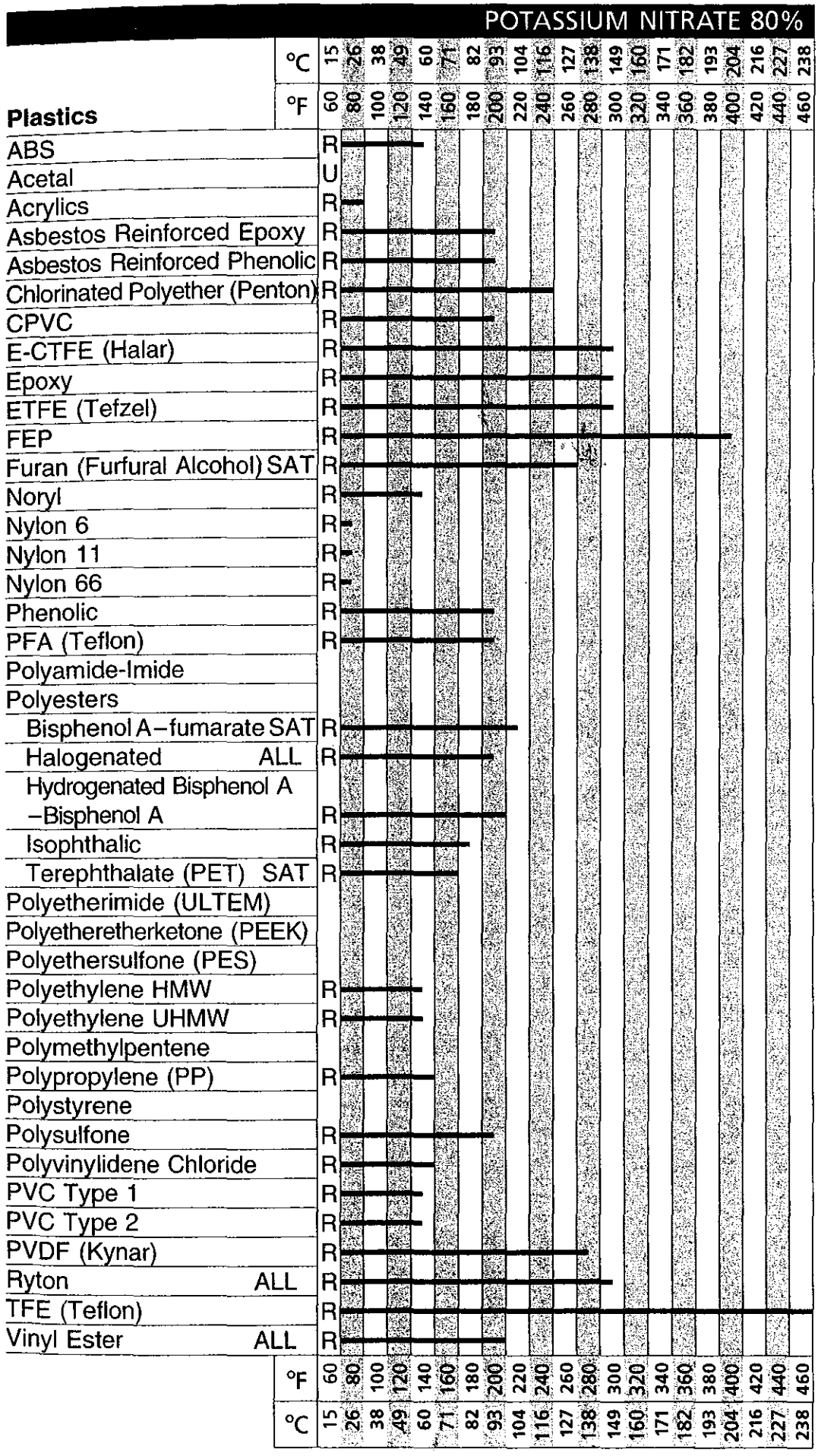

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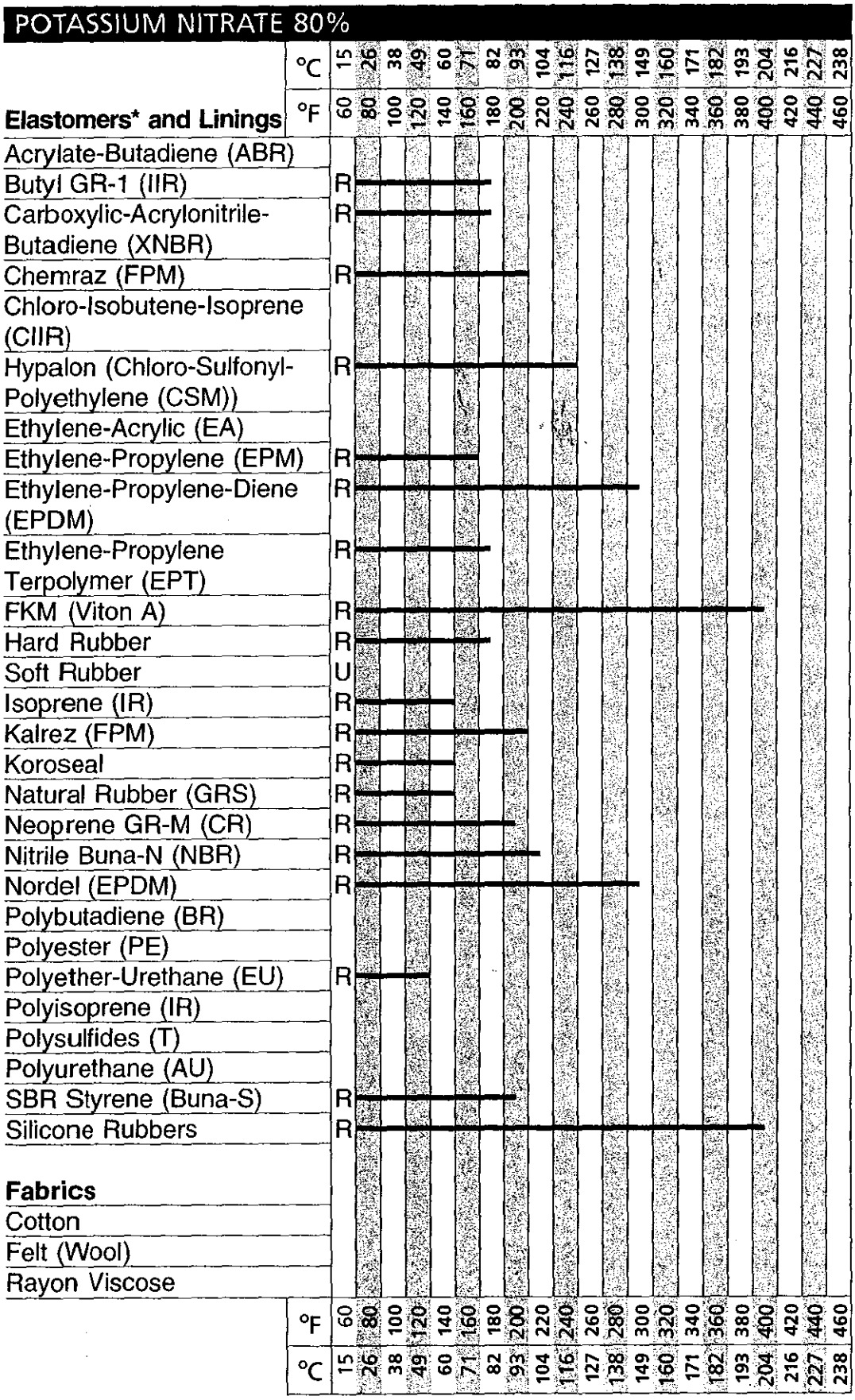
POTASSIUM NITRATE 80%



*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2	U																										
Hastelloy C/C-276	G																										
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400	G																										
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347	G																										
Type 316/316 L	G																										
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3	G																										
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium	G																										
Zirconium	G																										
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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POTASSIUM NITRITE

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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POTASSIUM NITRITE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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POTASSIUM NITRITE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)																					
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)																					
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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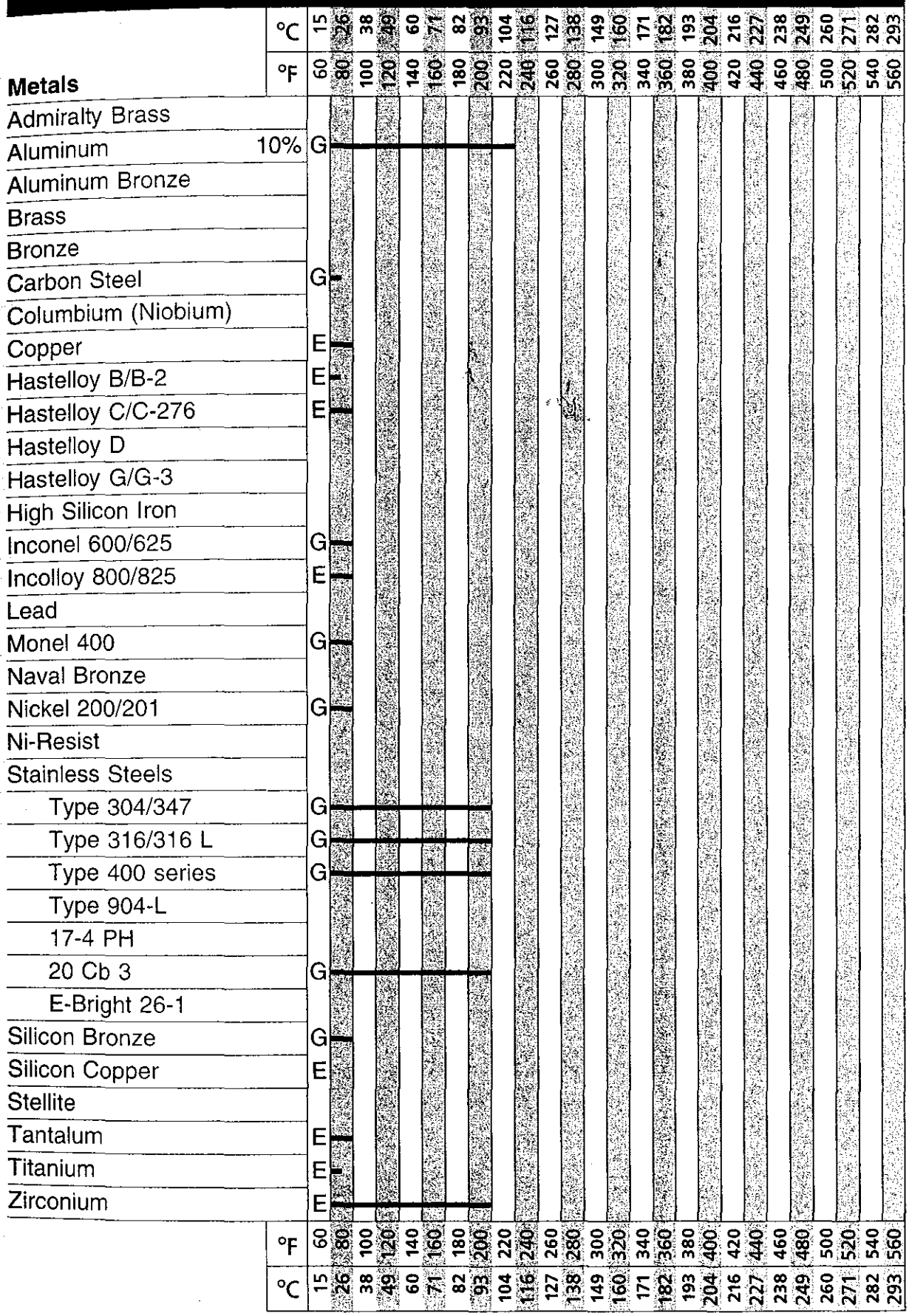
POTASSIUM OXALATE 20%



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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POTASSIUM OXALATE 20%

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Sodium Silicate																						
Potassium Silicate		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Silica		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Sulfur		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Furan Resin		R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R	R
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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POTASSIUM OXALATE 20%

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy	R																					
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)	R																					
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)	R																					
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester	ALL R																					
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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POTASSIUM OXALATE 20%

Elastomers* and Linings	°C / °F	15 / 60	26 / 80	38 / 100	49 / 120	60 / 140	71 / 160	82 / 180	93 / 200	104 / 220	116 / 240	127 / 260	138 / 280	149 / 300	160 / 320	171 / 340	182 / 360	193 / 380	204 / 400	216 / 420	227 / 440	238 / 460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)		R	R	R	R	R	R	R	R													
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)		R	R	R	R	R	R	R	R													
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F / °C	60 / 15	80 / 26	100 / 38	120 / 49	140 / 60	160 / 71	180 / 82	200 / 93	220 / 104	240 / 116	260 / 127	280 / 138	300 / 149	320 / 160	340 / 171	360 / 182	380 / 193	400 / 204	420 / 216	440 / 227	460 / 238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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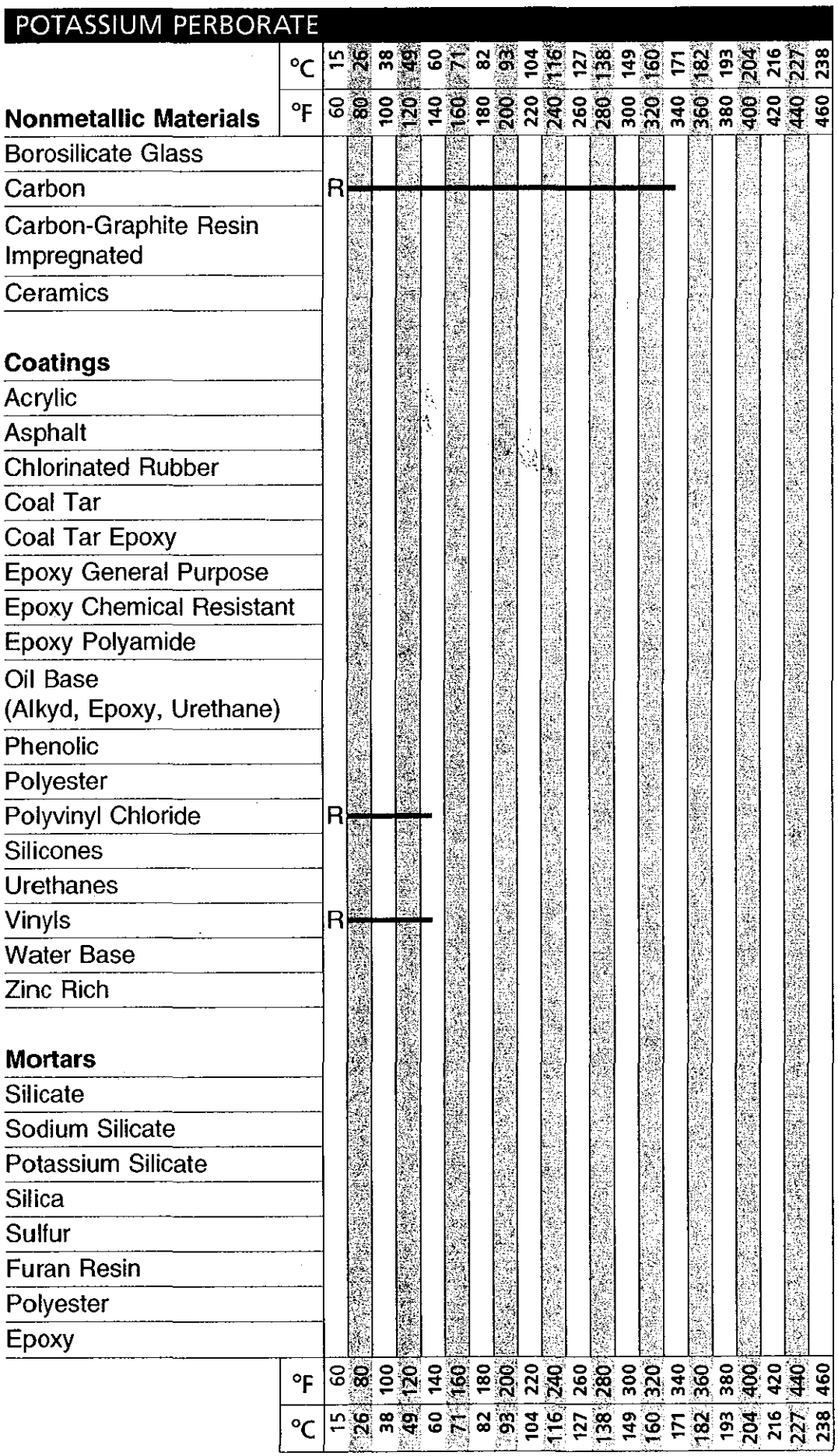
POTASSIUM PERBORATE



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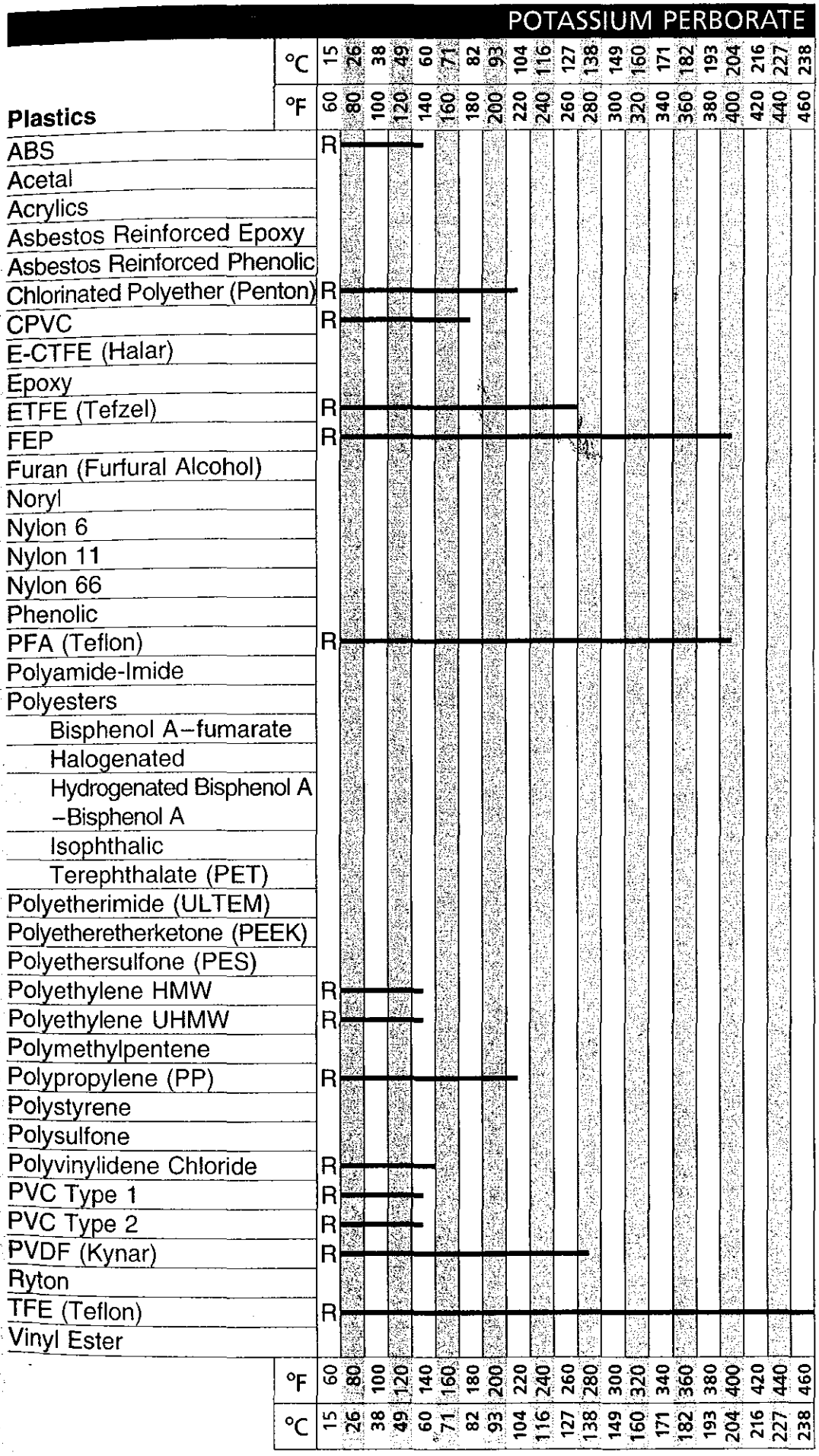
POTASSIUM PERBORATE



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POTASSIUM PERBORATE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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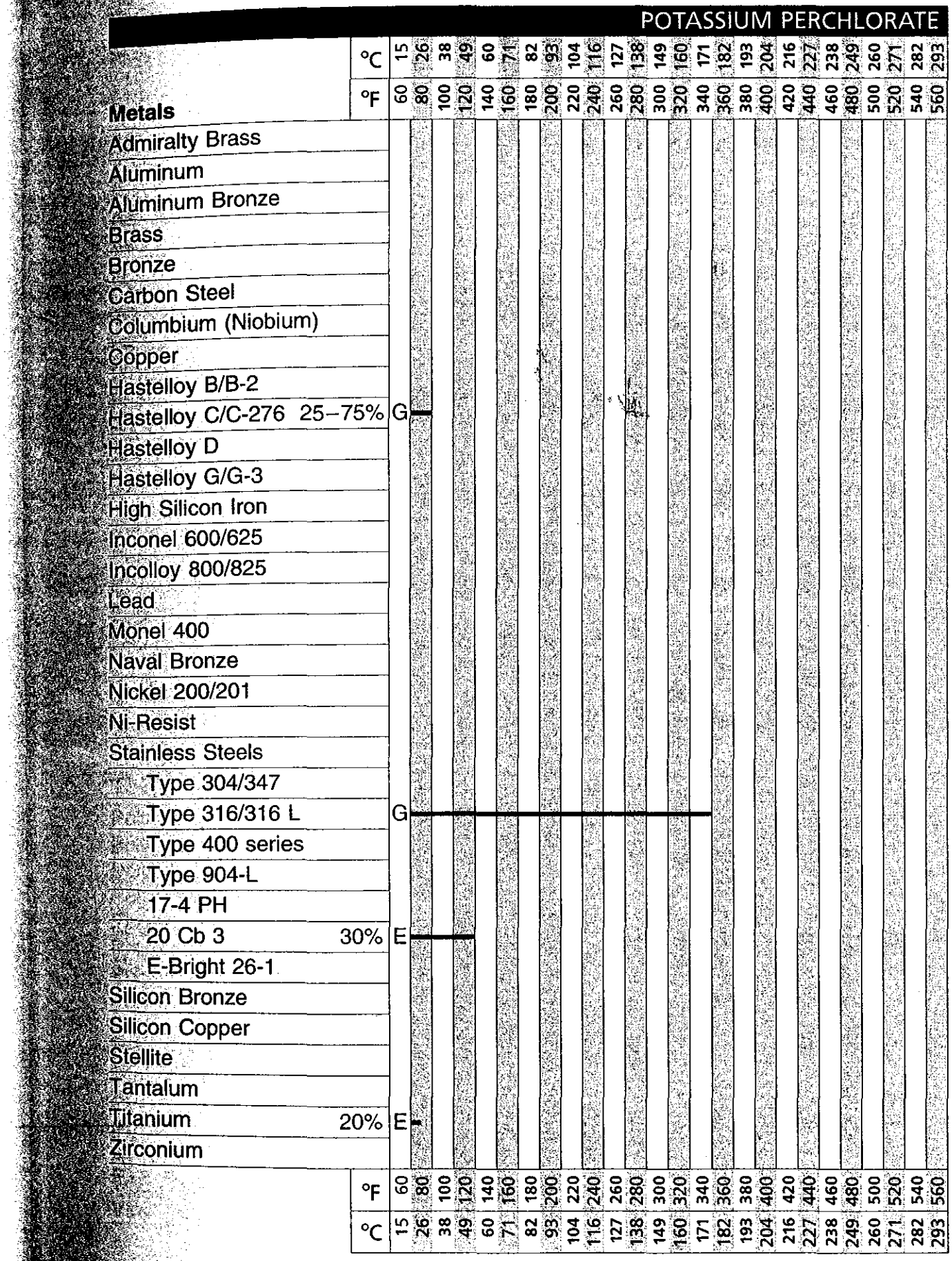

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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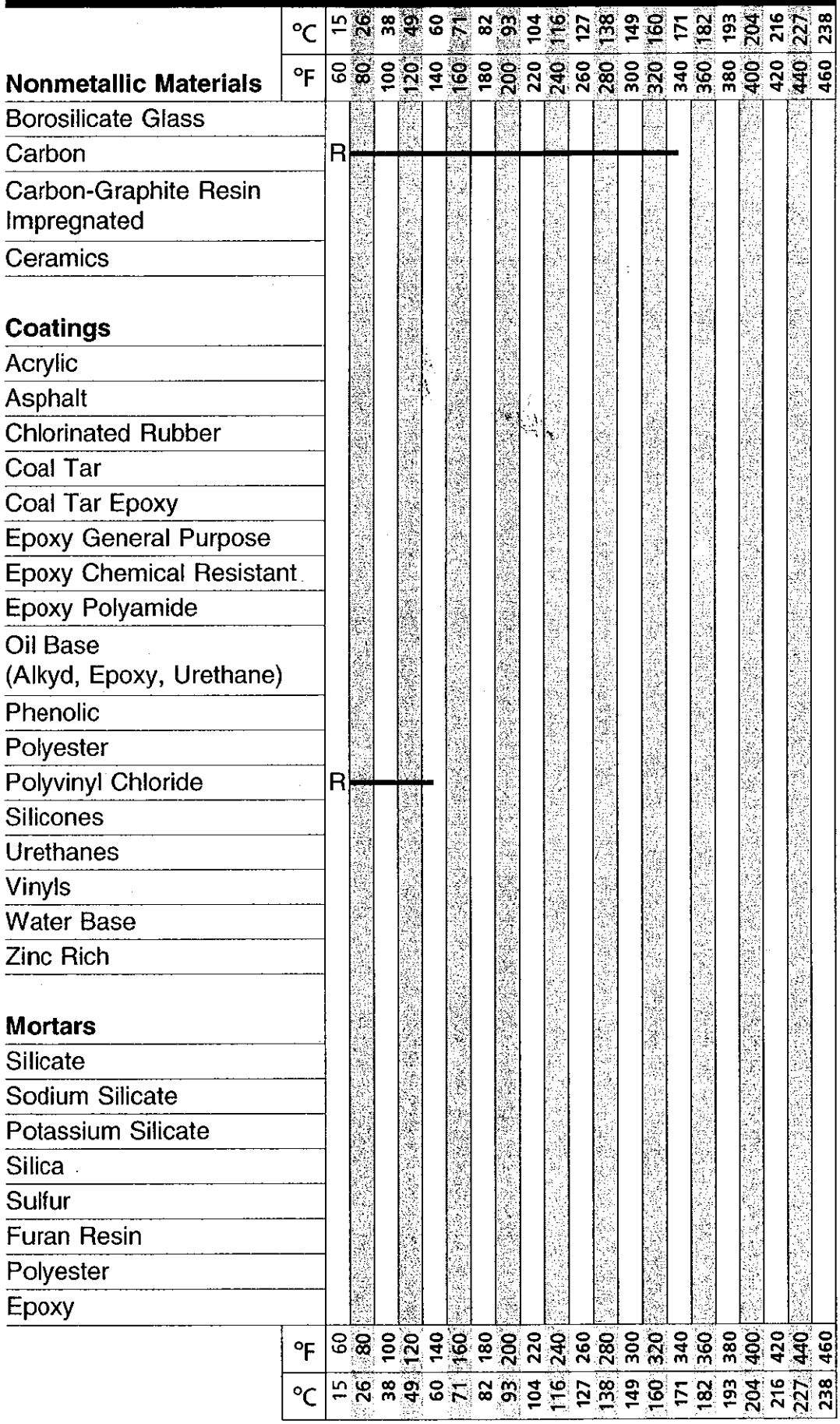
POTASSIUM PERCHLORATE



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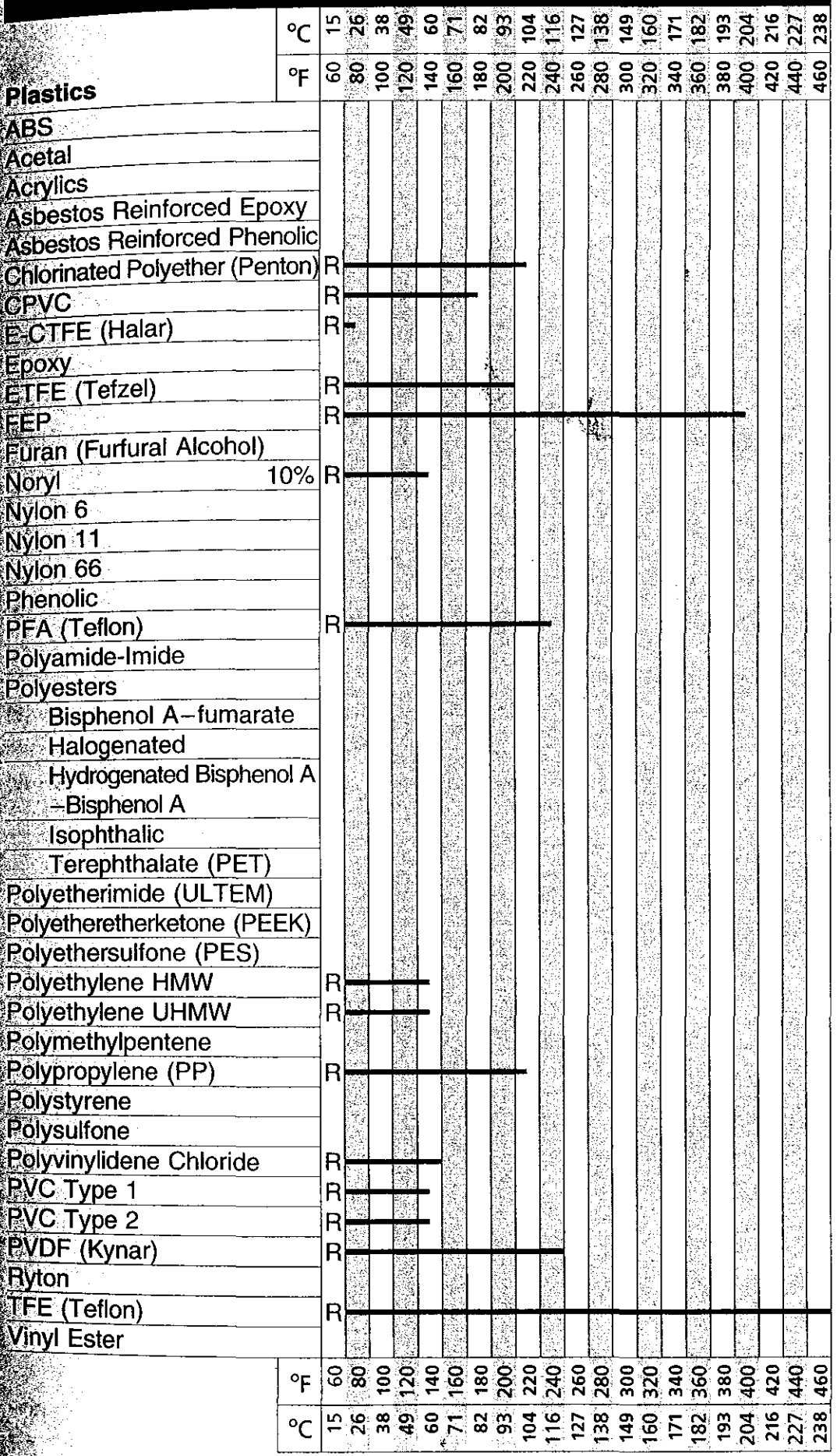
POTASSIUM PERCHLORATE



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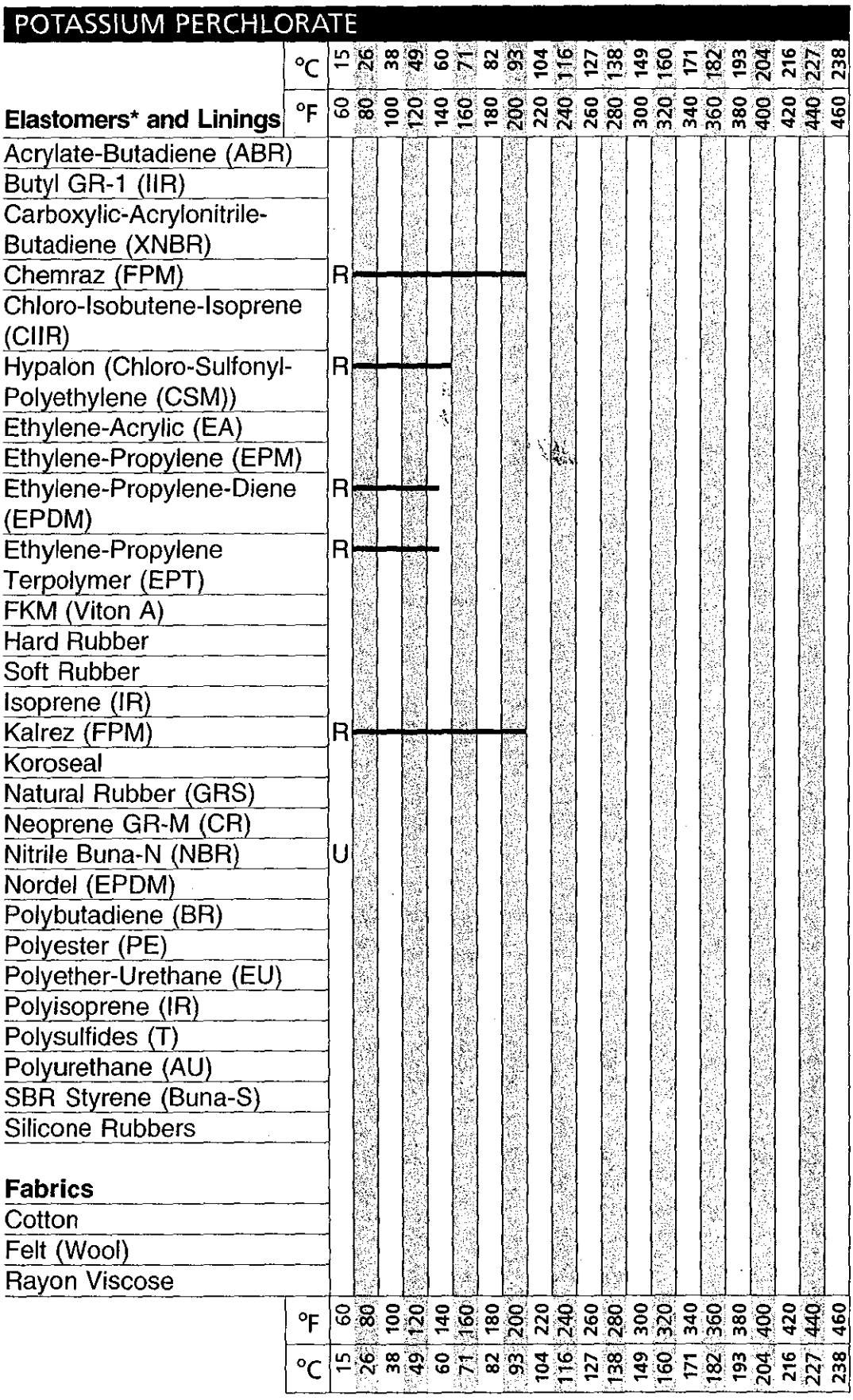
POTASSIUM PERCHLORATE



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POTASSIUM PERMANGANATE 10%

Metals		°C 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293
		°F 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560
Admiralty Brass		
Aluminum		E
Aluminum Bronze		
Brass		G
Bronze		G
Carbon Steel		G
Columbium (Niobium)		
Copper		G
Hastelloy B/B-2		U
Hastelloy C/C-276		E G
Hastelloy D		U
Hastelloy G/G-3		
High Silicon Iron		G
Inconel 600/625		G
Incolloy 800/825		
Lead		U
Monel 400		G
Naval Bronze		G
Nickel 200/201		G
Ni-Resist	5%	G
Stainless Steels		
Type 304/347		G
Type 316/316 L		G
Type 400 series		G
Type 904-L		
17-4 PH		G
20 Cb 3		G
E-Bright 26-1		
Silicon Bronze		
Silicon Copper		
Stellite		G
Tantalum		G
Titanium		G
Zirconium		
		°F 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560
		°C 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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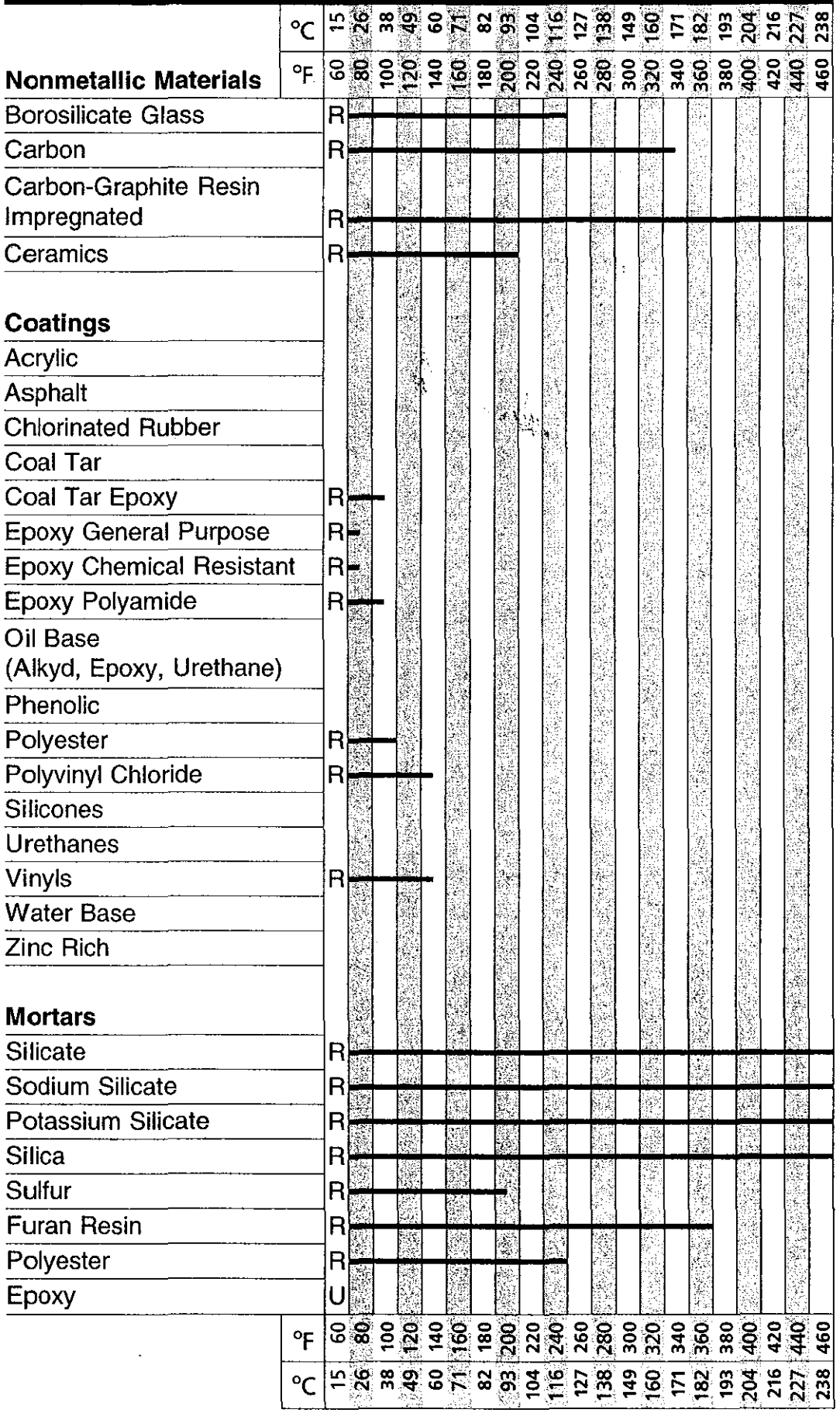
POTASSIUM PERMANGANATE 10%



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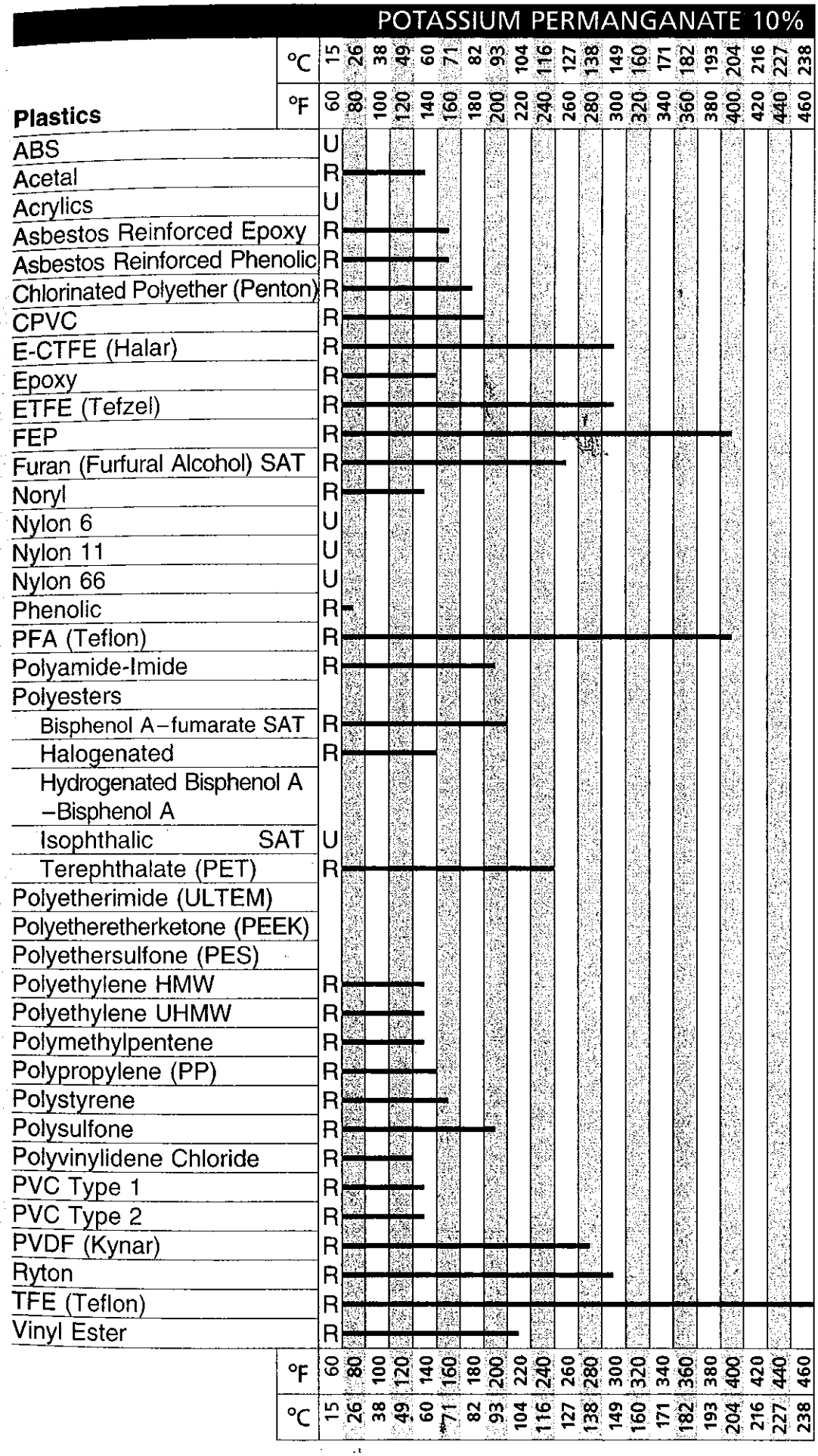

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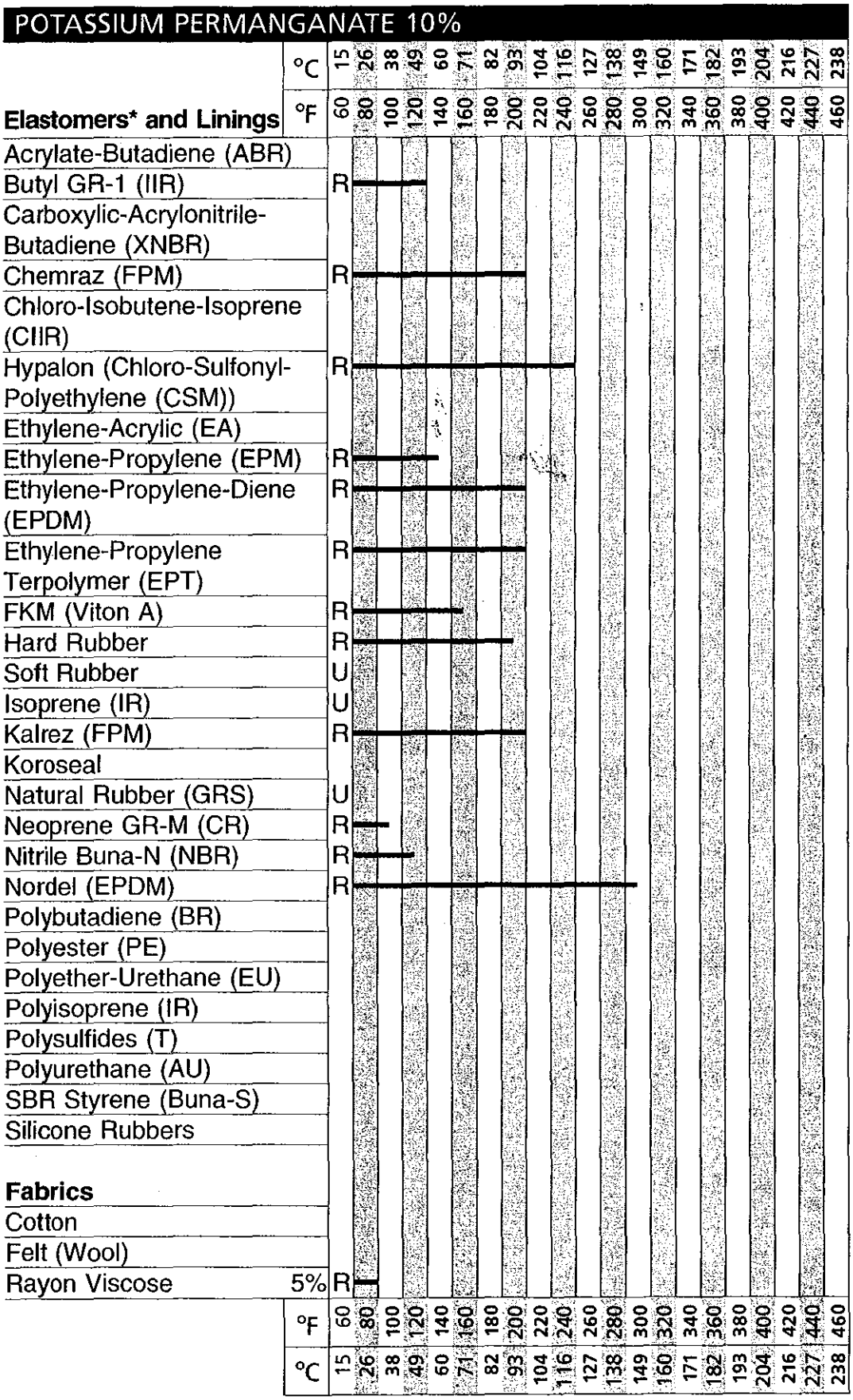
POTASSIUM PERMANGANATE 10%



*See also Nylon 11 under PLASTICS

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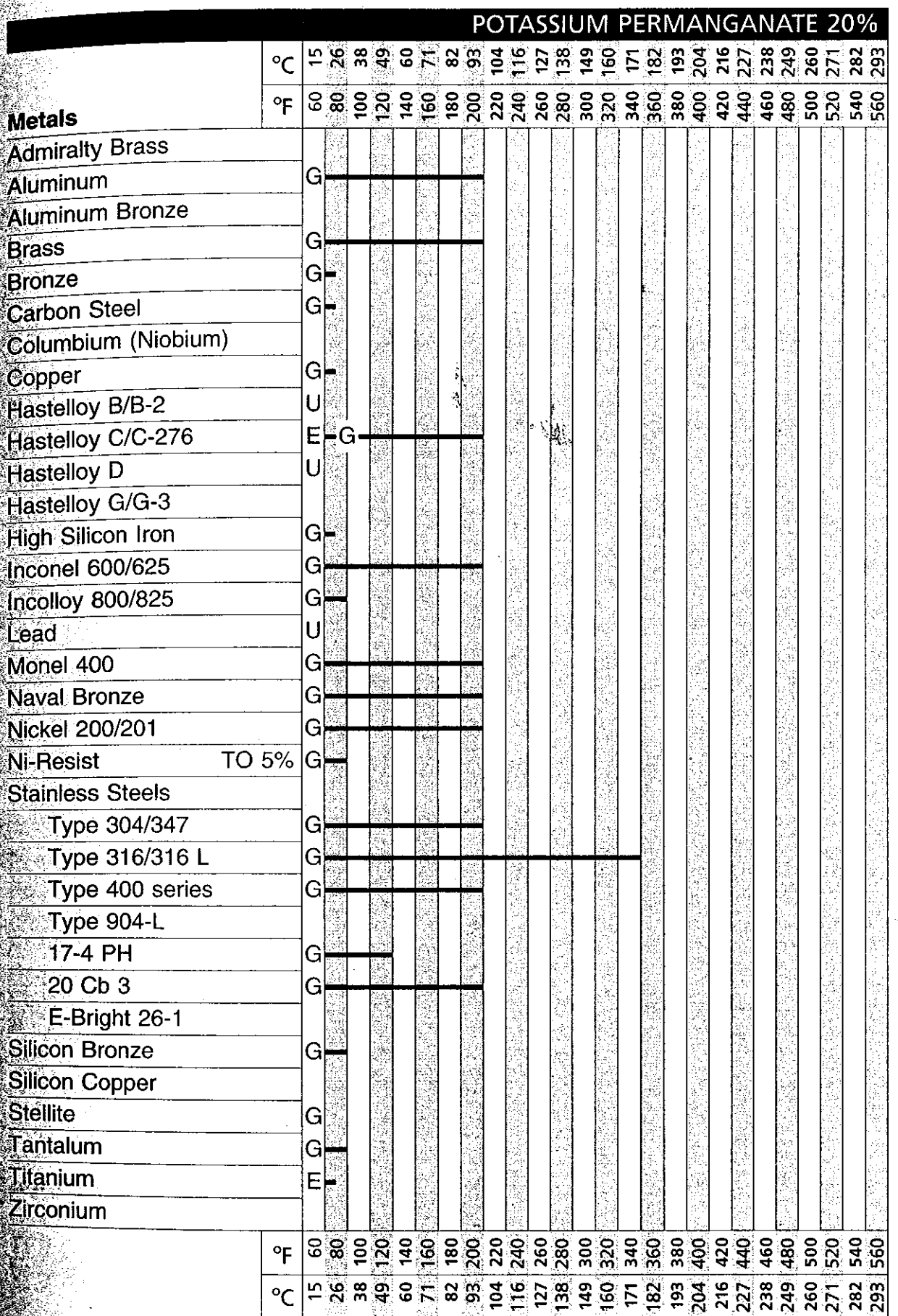
POTASSIUM PERMANGANATE 20%



FOR METALS
E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year
S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS
R = Resistant
U = Unsatisfactory

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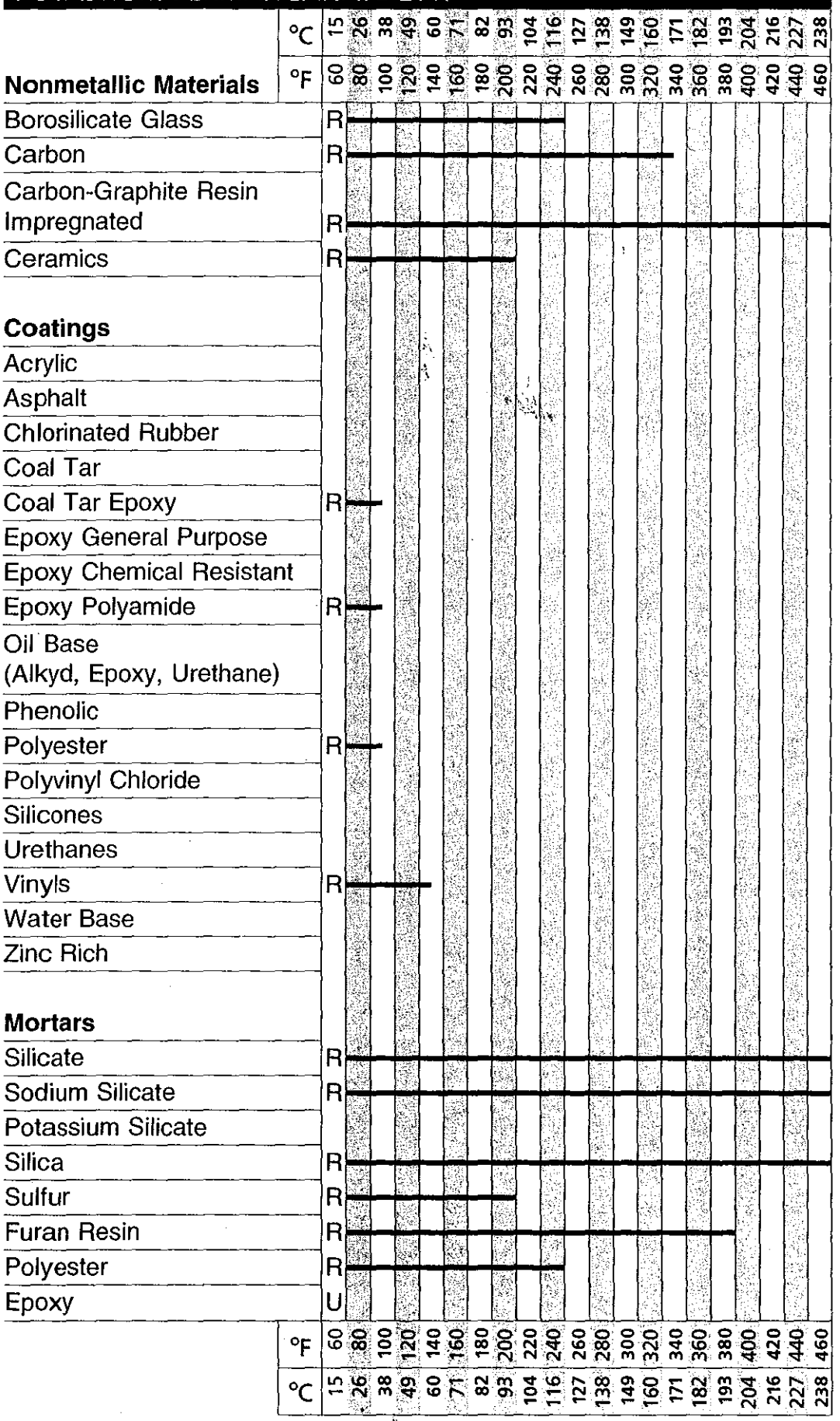
POTASSIUM PERMANGANATE 20%



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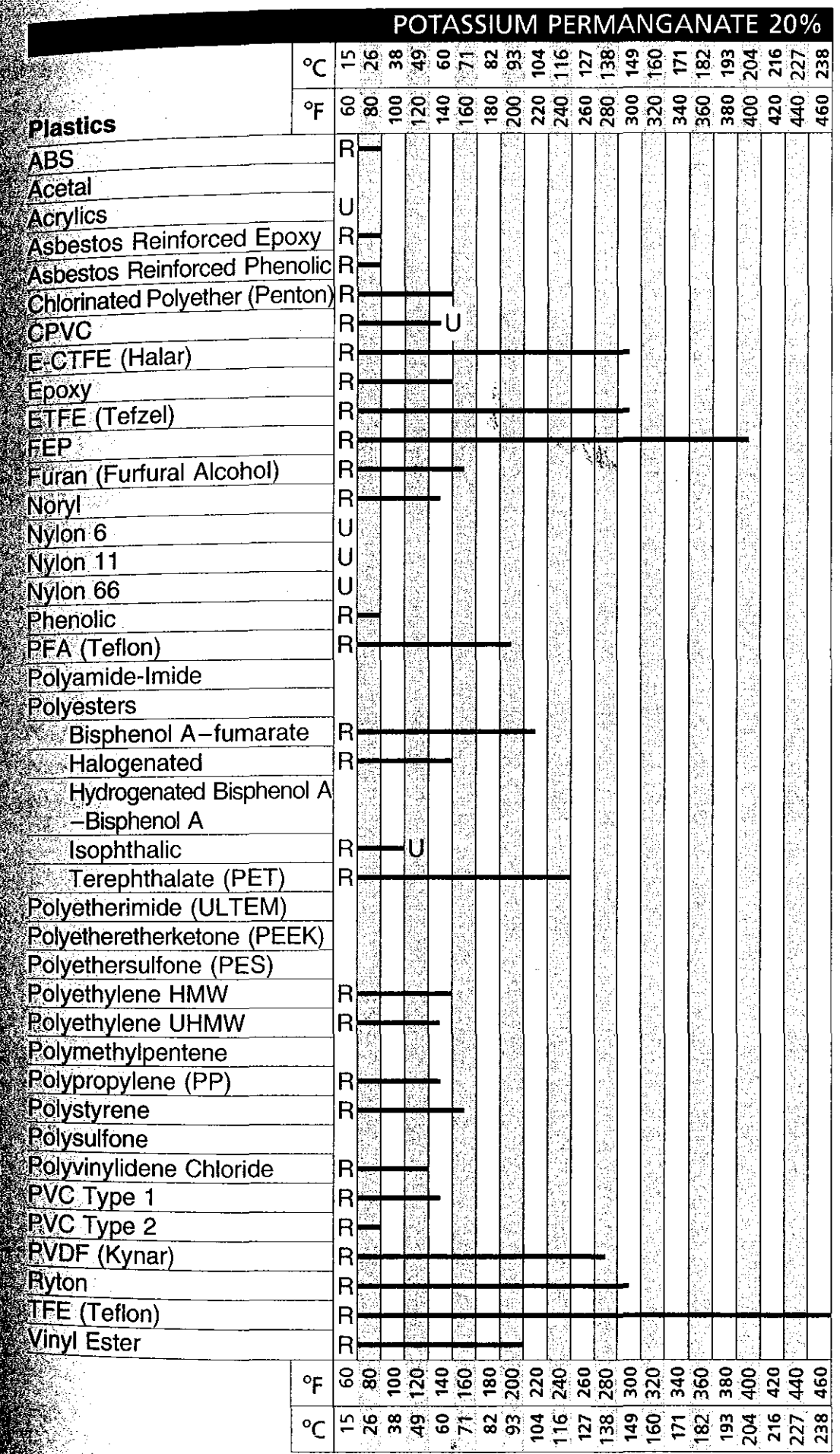
POTASSIUM PERMANGANATE 20%



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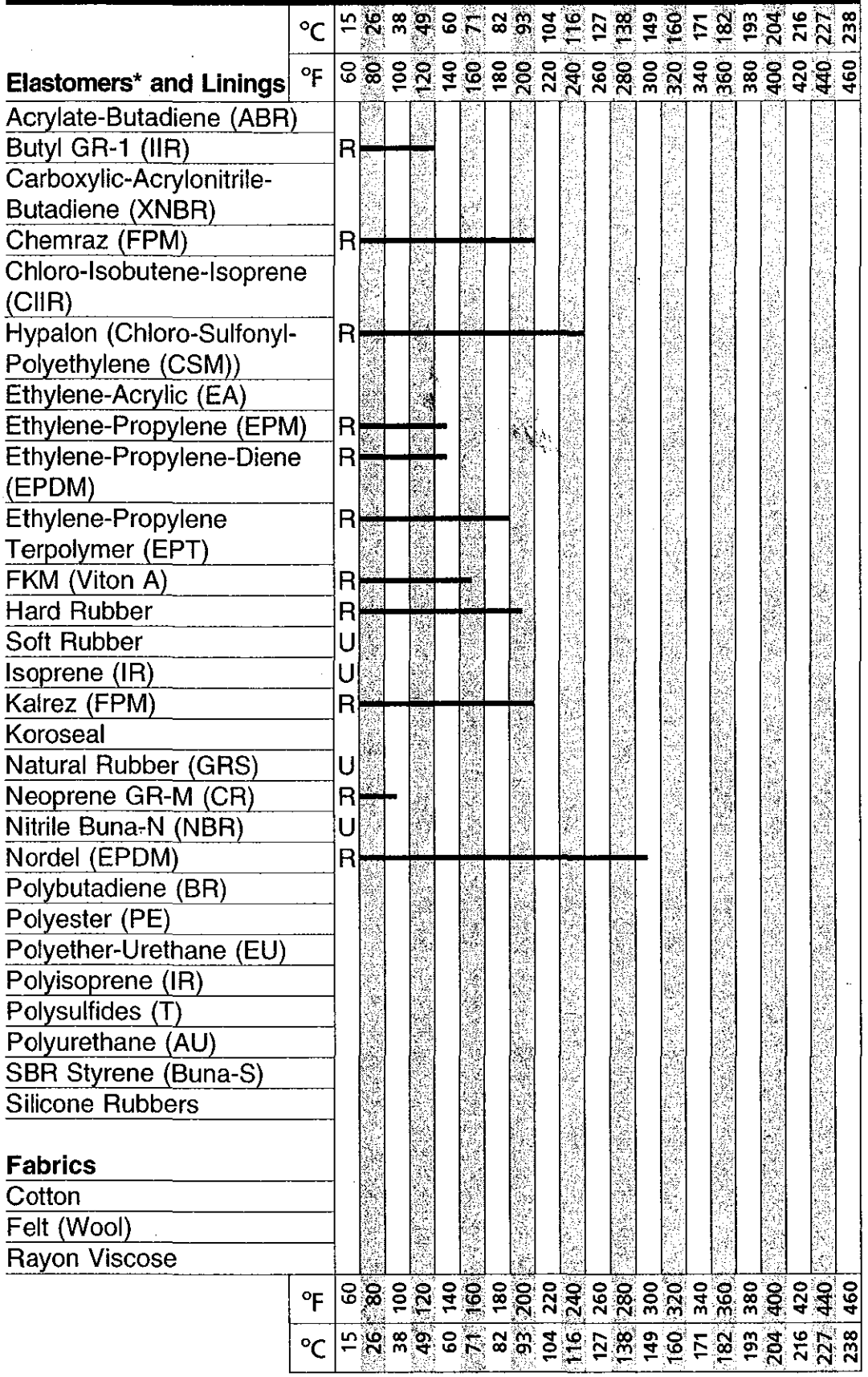
POTASSIUM PERMANGANATE 20%



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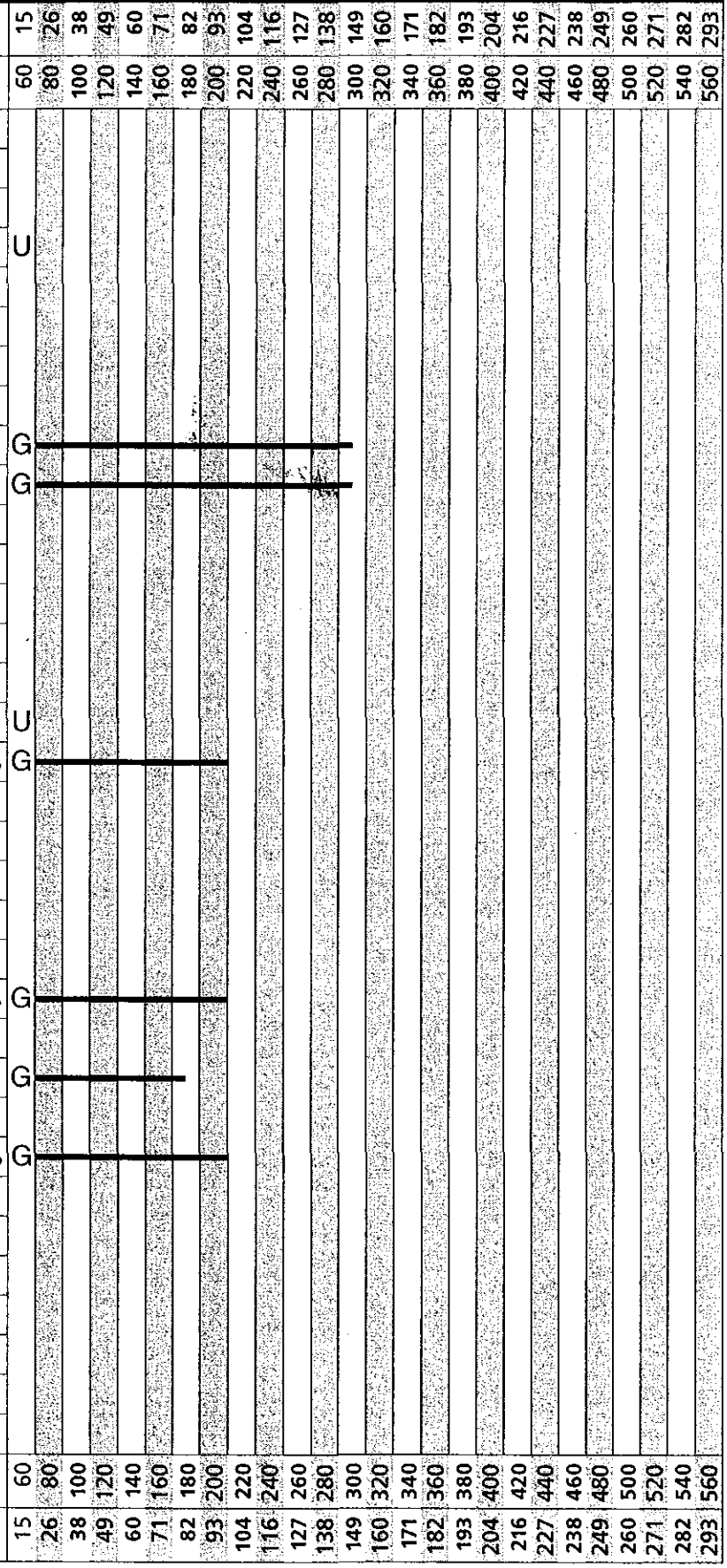

FOR METALS

= < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

= < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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m.

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POTASSIUM PEROXIDE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate	U																					
Silica	U																					
Sulfur	U																					
Furan Resin	U																					
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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POTASSIUM PEROXIDE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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POTASSIUM PEROXIDE

Elastomers* and Linings	°F	°C
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)	R	
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)		
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)		
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)	R	
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)		
Nitrile Buna-N (NBR)		
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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POTASSIUM PERSULFATE

Metals	°C	°F
Admiralty Brass		
Aluminum		
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel		
Columbium (Niobium)		
Copper		
Hastelloy B/B-2		
Hastelloy C/C-276 4%	E	
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625		
Incolloy 800/825		
Galv. Stl.	U	
Monel 400		
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347		
Type 316/316 L	G	
Type 400 series		
Type 904-L		
17-4 PH		
20 Cb 3		
E-Bright 26-1		
Silicon Bronze		
Silicon Copper		
Stellite		
Tantalum		
Titanium		
Zirconium		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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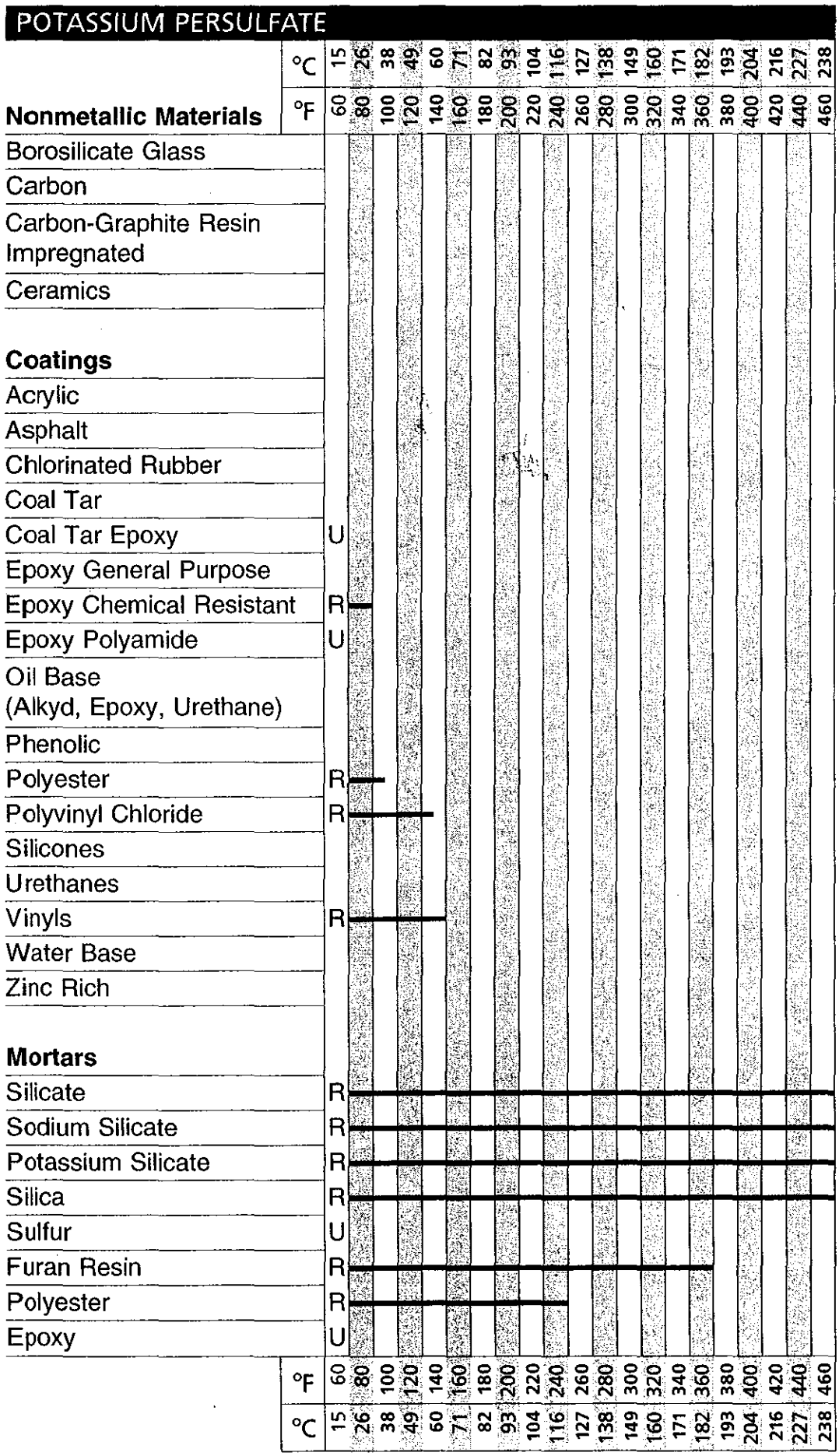
POTASSIUM PERSULFATE



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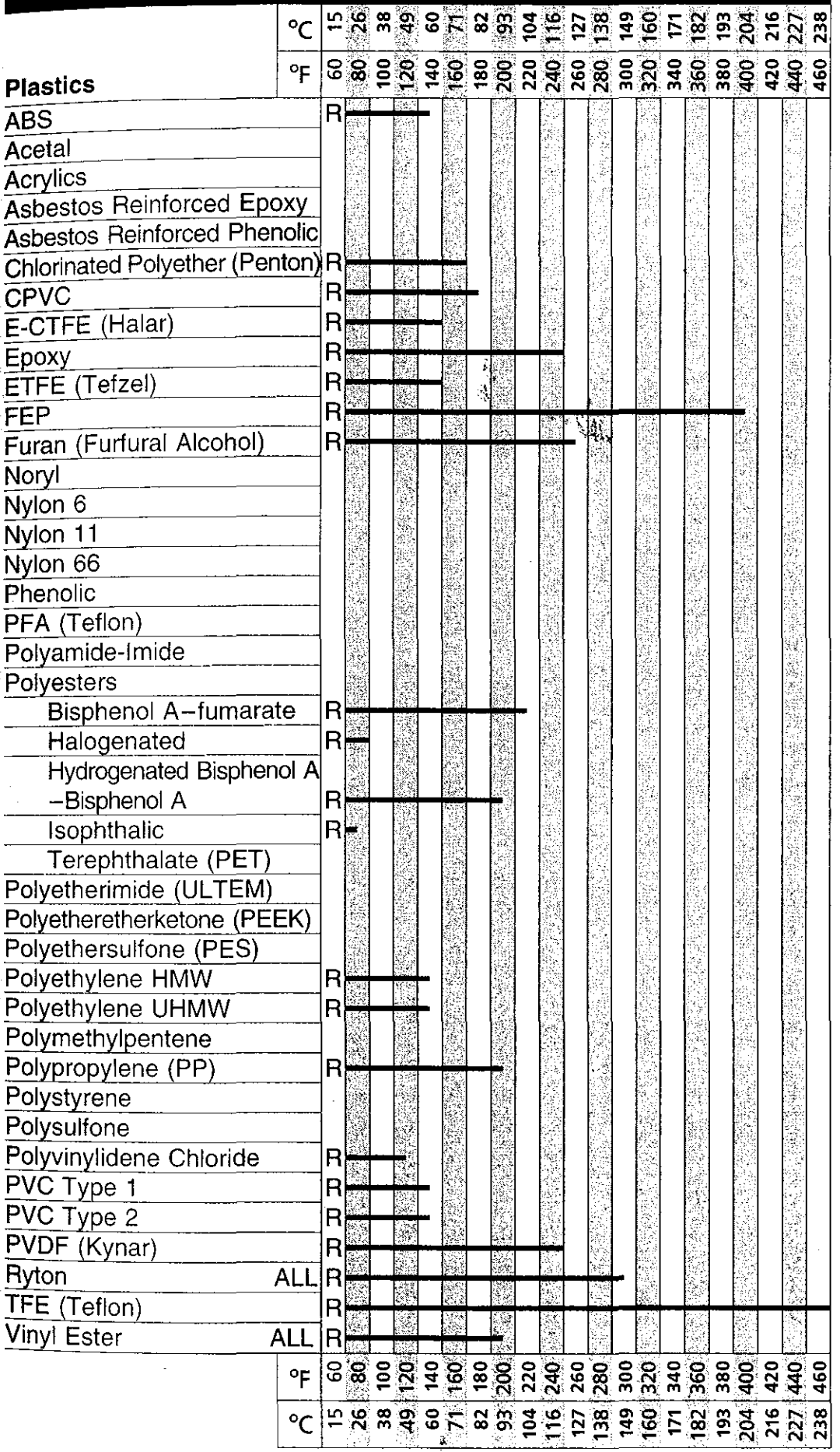

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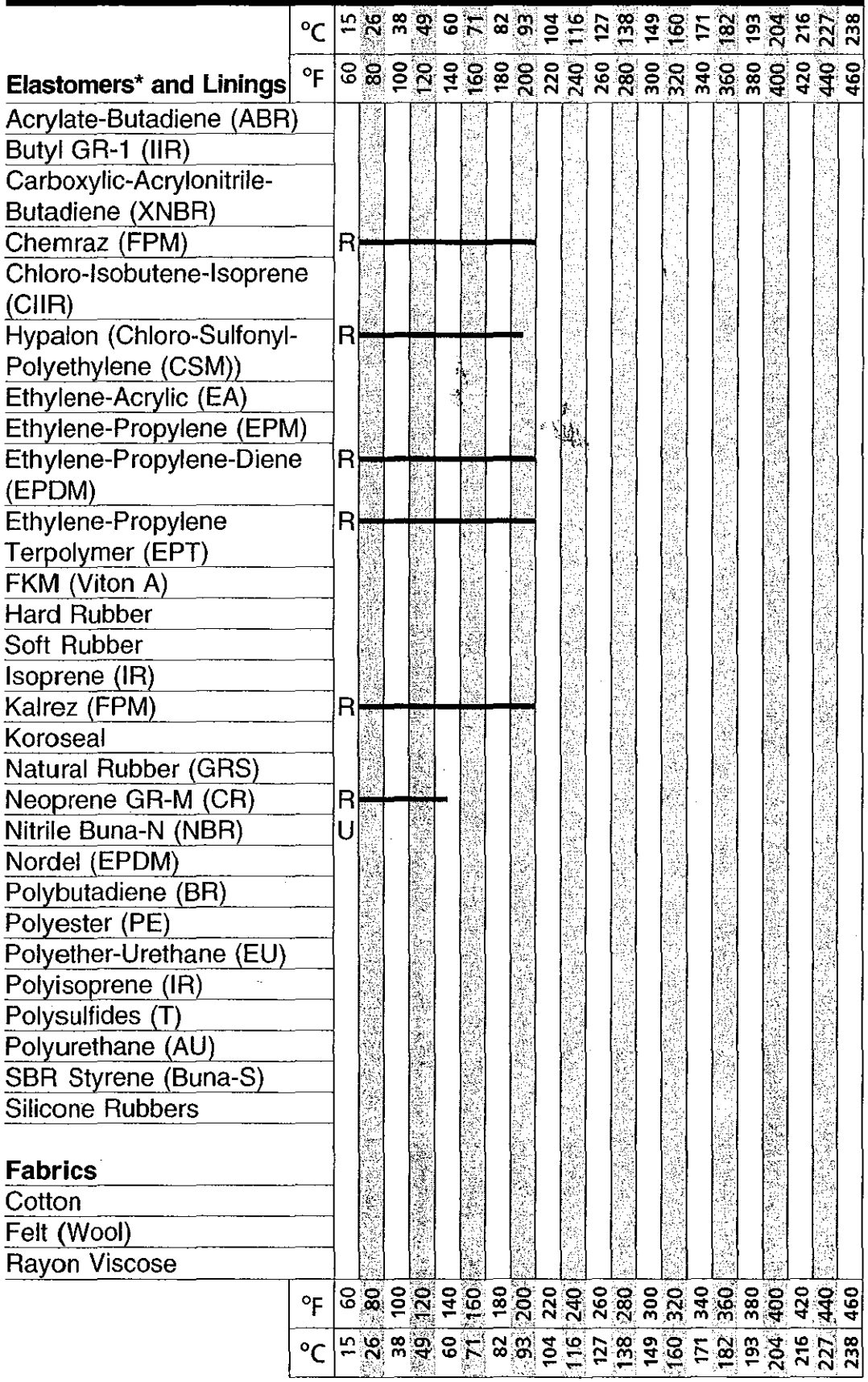
POTASSIUM PERSULFATE



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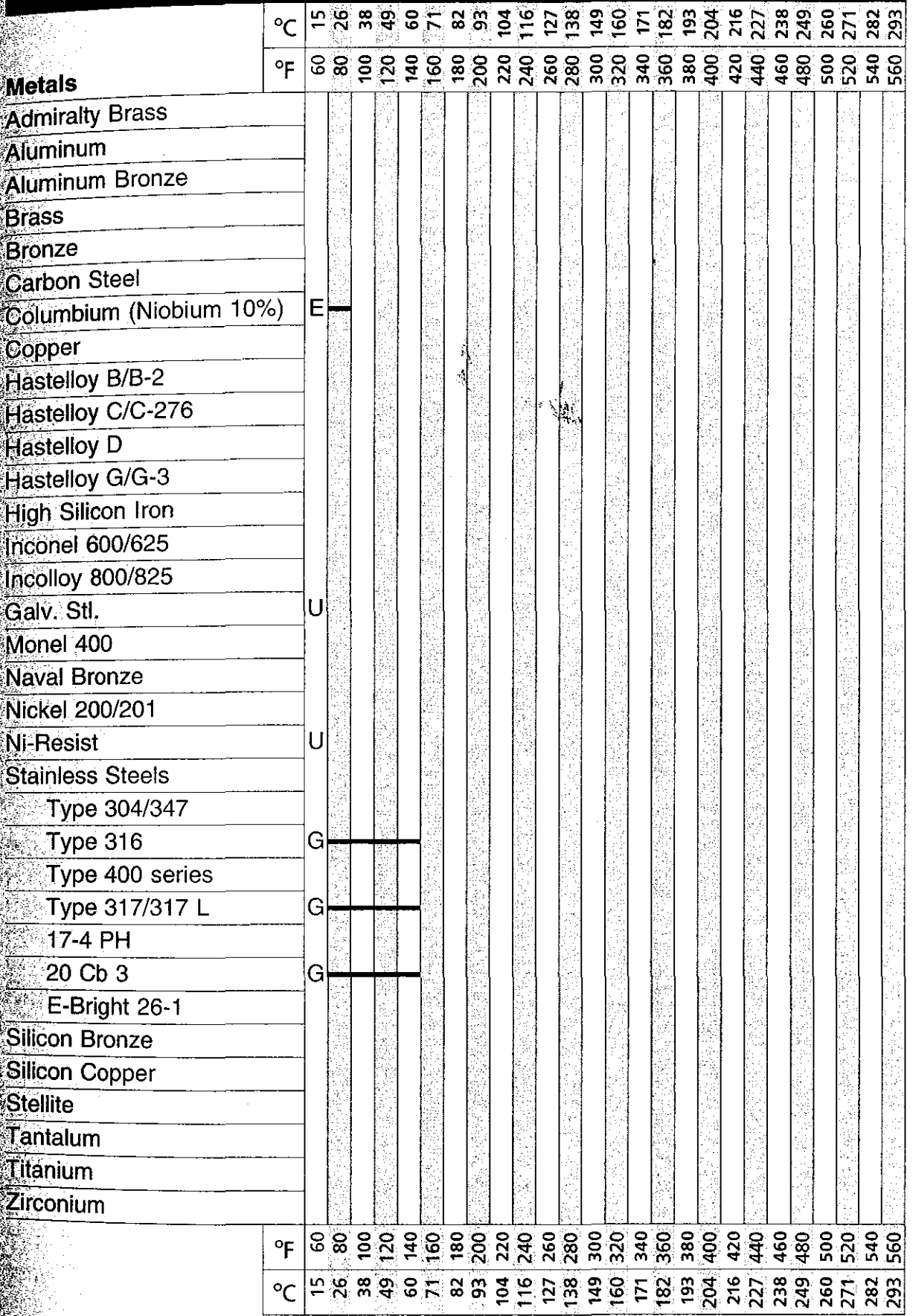
POTASSIUM PHOSPHATE



FOR METALS
E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year
S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS
R = Resistant
U = Unsatisfactory

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POTASSIUM PHOSPHATE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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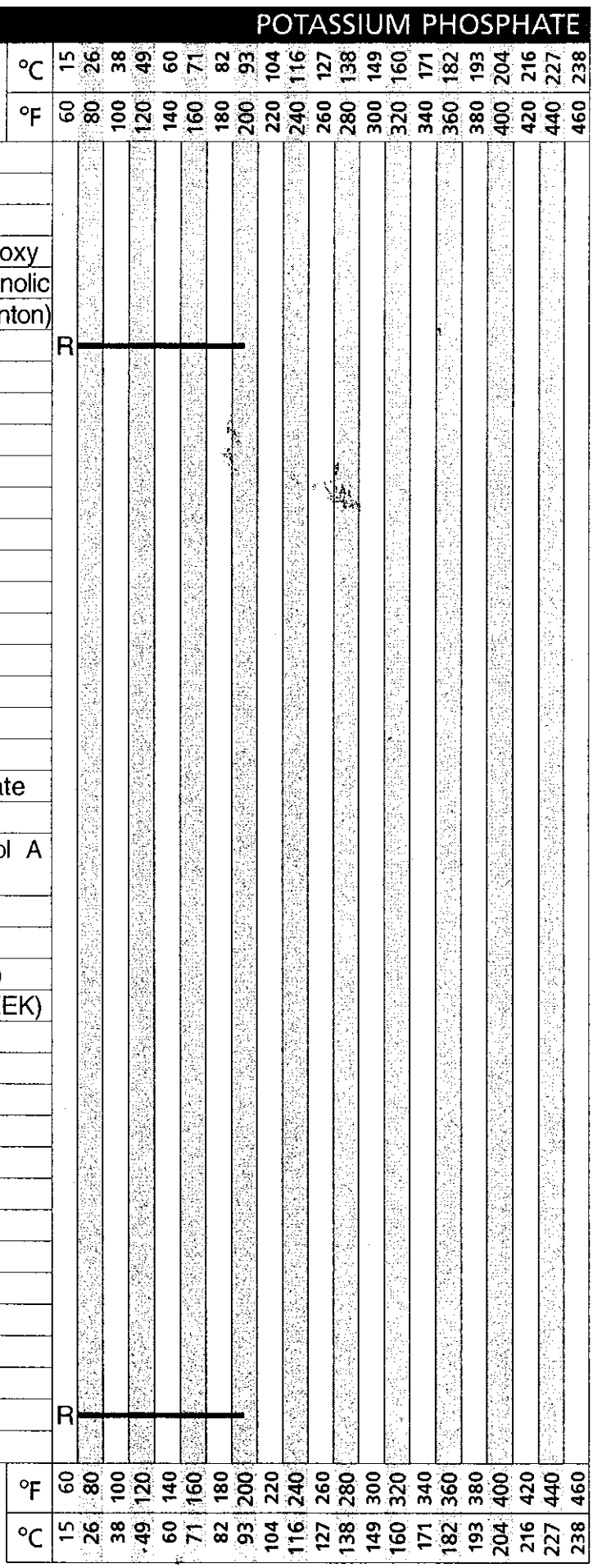
POTASSIUM PHOSPHATE



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POTASSIUM PHOSPHATE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)		R																				
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		R																				
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)		U																				
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)		U																				
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)		R																				
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)	Acid	R																				
Nitrile Buna-N (NBR)		U																				
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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POTASSIUM SULFATE 10%

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass			E																									
Aluminum			E																									
Aluminum Bronze			E																									
Brass			G																									
Bronze			G																									
Carbon Steel			G																									
Columbium (Niobium)			E																									
Copper	1–5%		G																									
Hastelloy B/B-2			E																									
Hastelloy C/C-276			E																									
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron			E																									
Inconel 600/625			E	G																								
Incolloy 800/825	1–5%		G																									
Lead			G																									
Monel 400			E																									
Naval Bronze			G																									
Nickel 200/201			E																									
Ni-Resist			G																									
Stainless Steels																												
Type 304/347			E																									
Type 316/316 L			E																									
Type 400 series			G																									
Type 904-L																												
17-4 PH			G																									
20 Cb 3			E																									
E-Bright 26-1																												
Silicon Bronze	1–5%		G																									
Silicon Copper			E																									
Stellite			G																									
Tantalum			E																									
Titanium			E																									
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS
E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year
S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS
R = Resistant
U = Unsatisfactory

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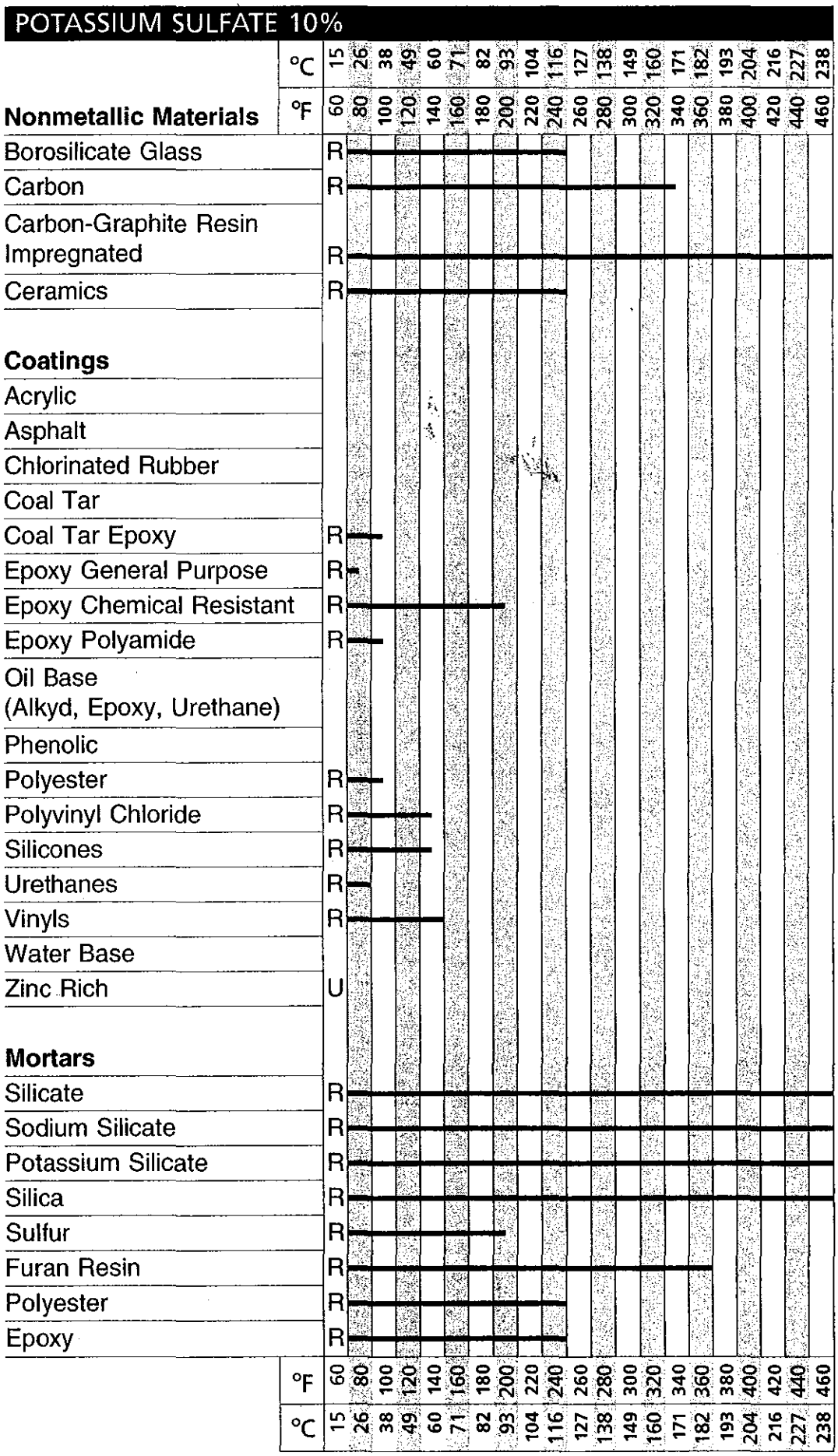
POTASSIUM SULFATE 10%



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POTASSIUM SULFATE 10%

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS		R																				
Acetal																						
Acrylics		R																				
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)		R																				
CPVC		R																				
E-CTFE (Halar)		R																				
Epoxy		R																				
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)		R																				
Noryl		R																				
Nylon 6		R																				
Nylon 11		R																				
Nylon 66		R																				
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate		R																				
Halogenated		R																				
Hydrogenated Bisphenol A –Bisphenol A		R																				
Isophthalic		R																				
Terephthalate (PET)		R																				
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)		R																				
Polyethersulfone (PES)																						
Polyethylene HMW		R																				
Polyethylene UHMW		R																				
Polymethylpentene																						
Polypropylene (PP)		R																				
Polystyrene		R																				
Polysulfone		R																				
Polyvinylidene Chloride		R																				
PVC Type 1		R																				
PVC Type 2		R																				
PVDF (Kynar)		R																				
Ryton	ALL	R																				
TFE (Teflon)		R																				
Vinyl Ester	ALL	R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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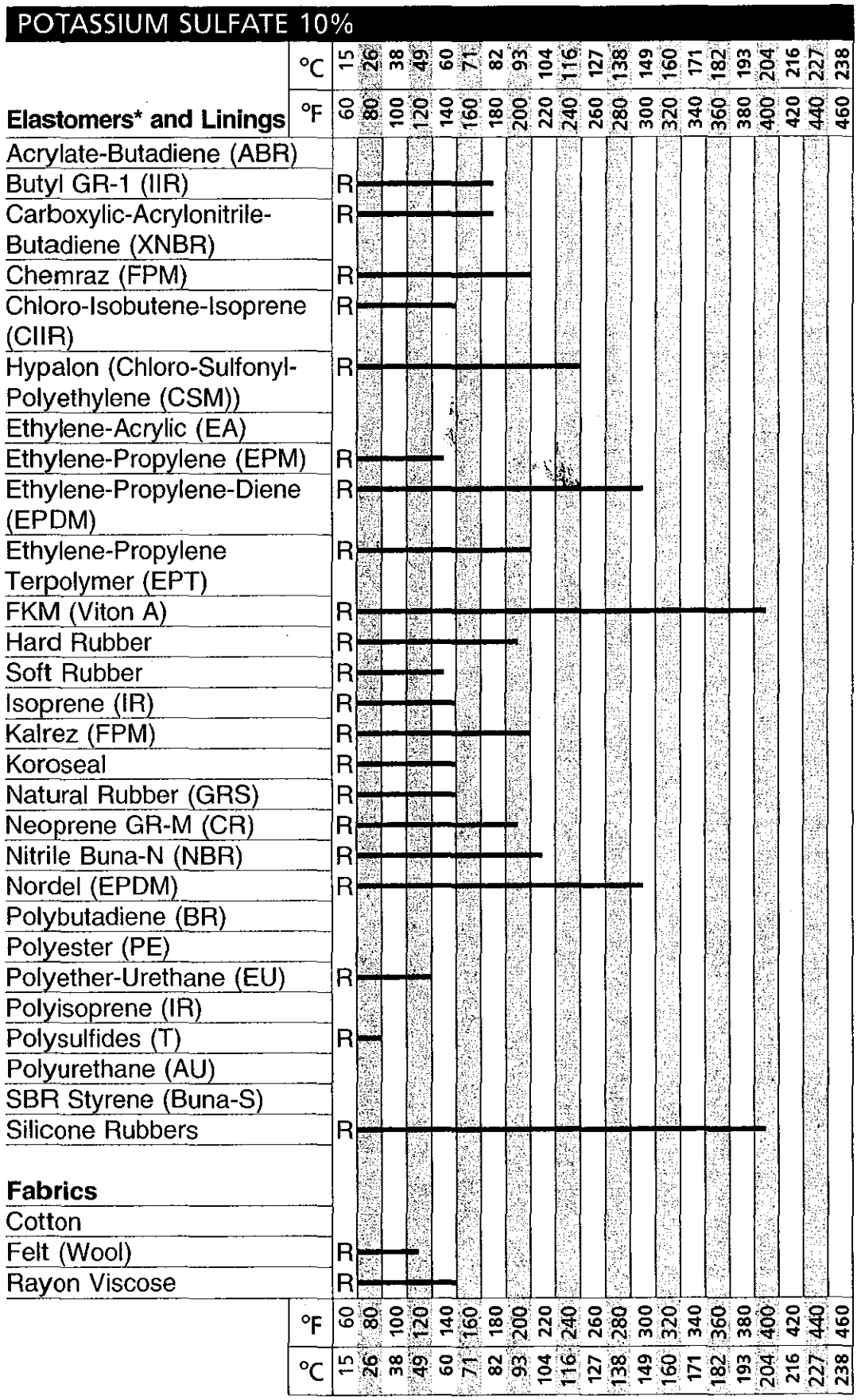
POTASSIUM SULFATE 10%



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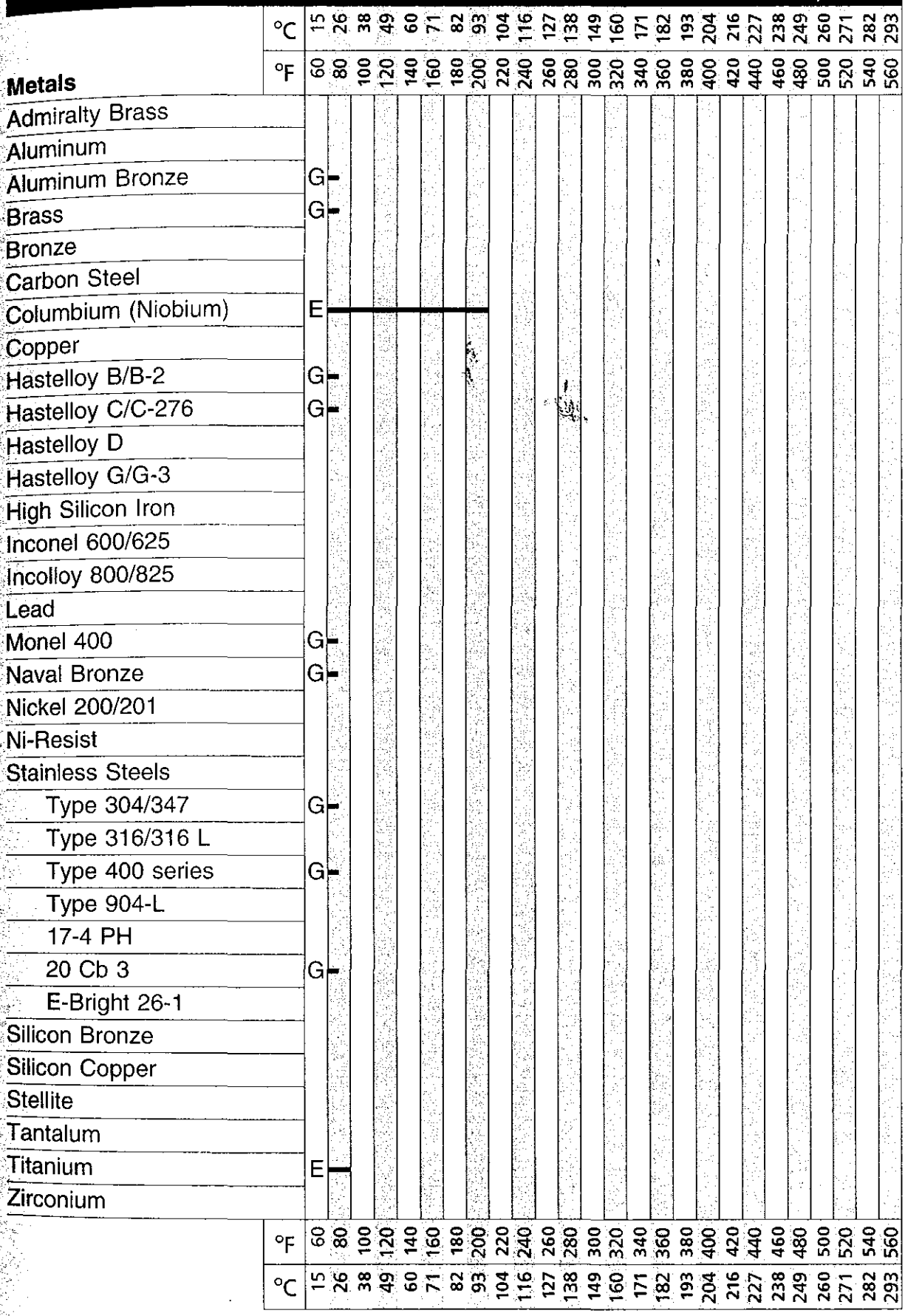
POTASSIUM SULFATE, PURE



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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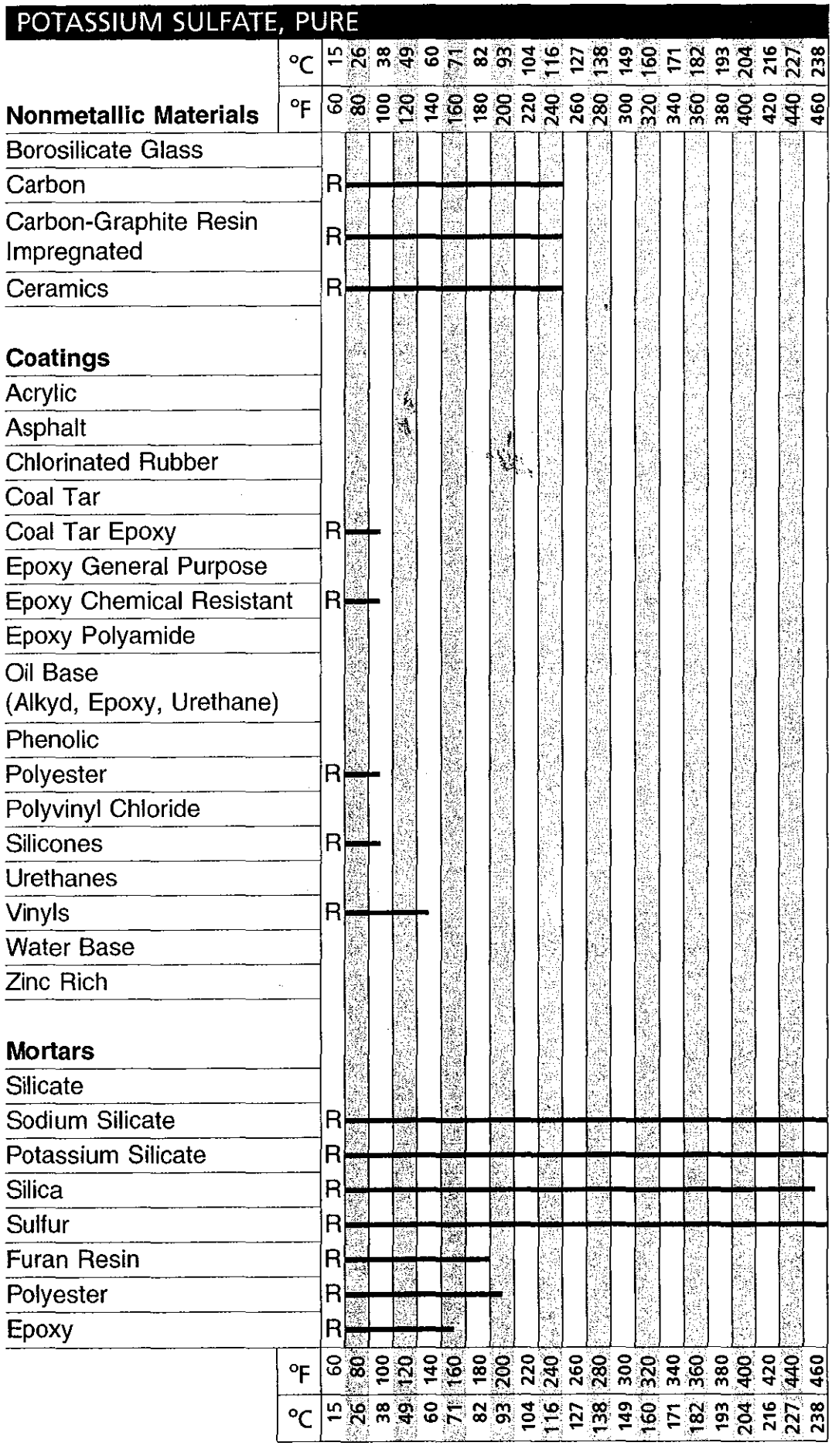

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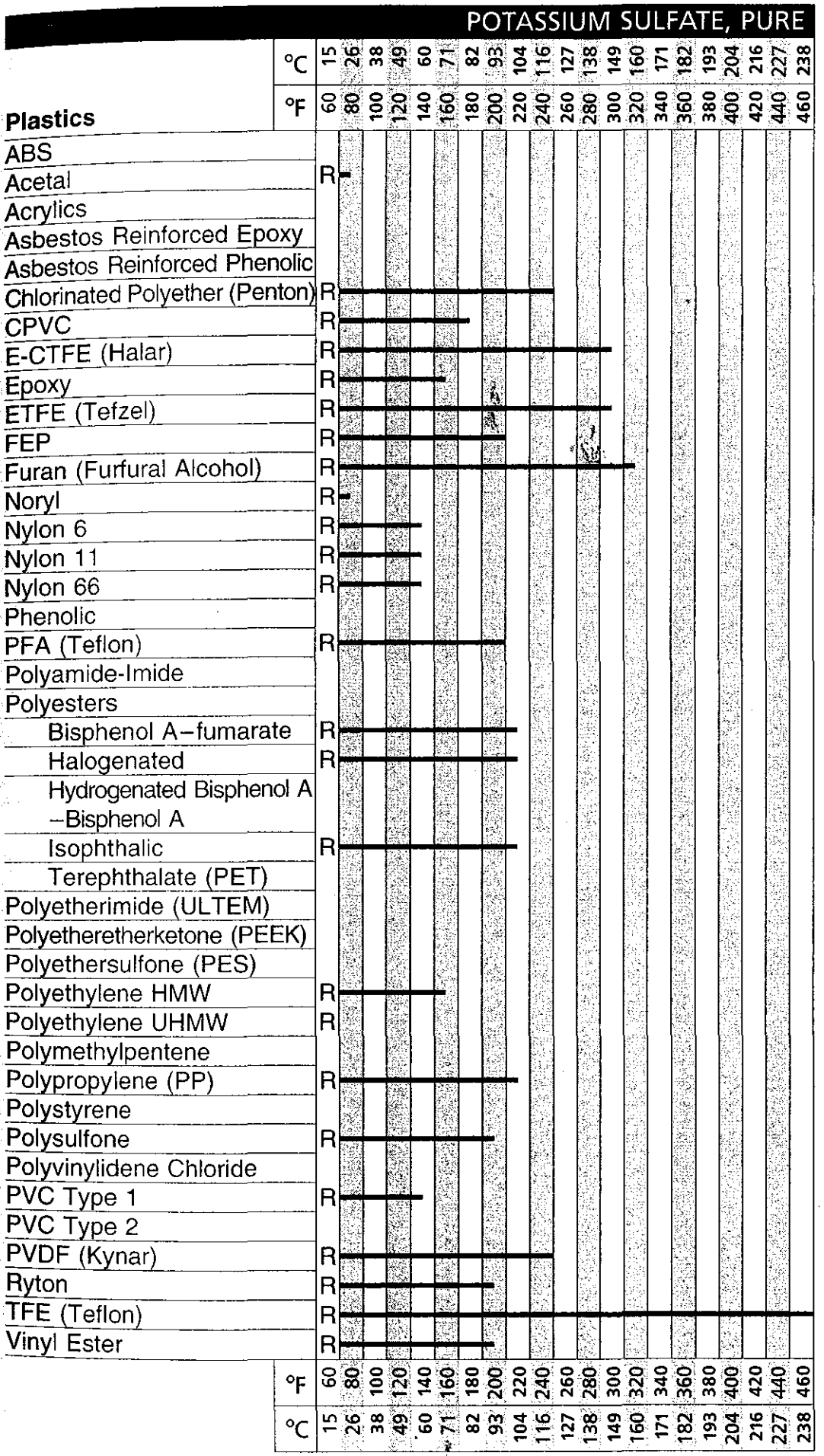
POTASSIUM SULFATE, PURE



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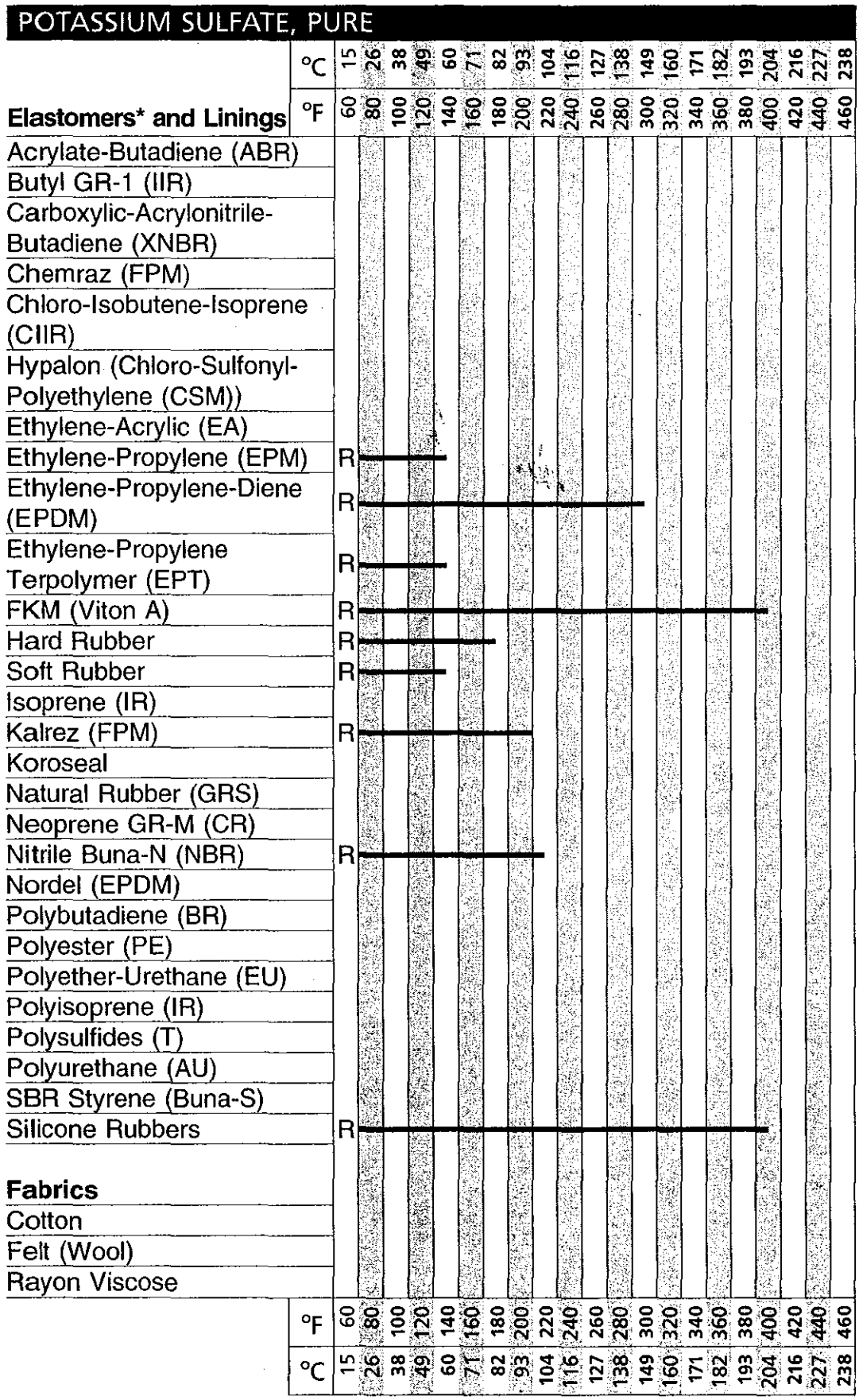
POTASSIUM SULFATE, PURE



*See also Nylon 11 under PLASTICS

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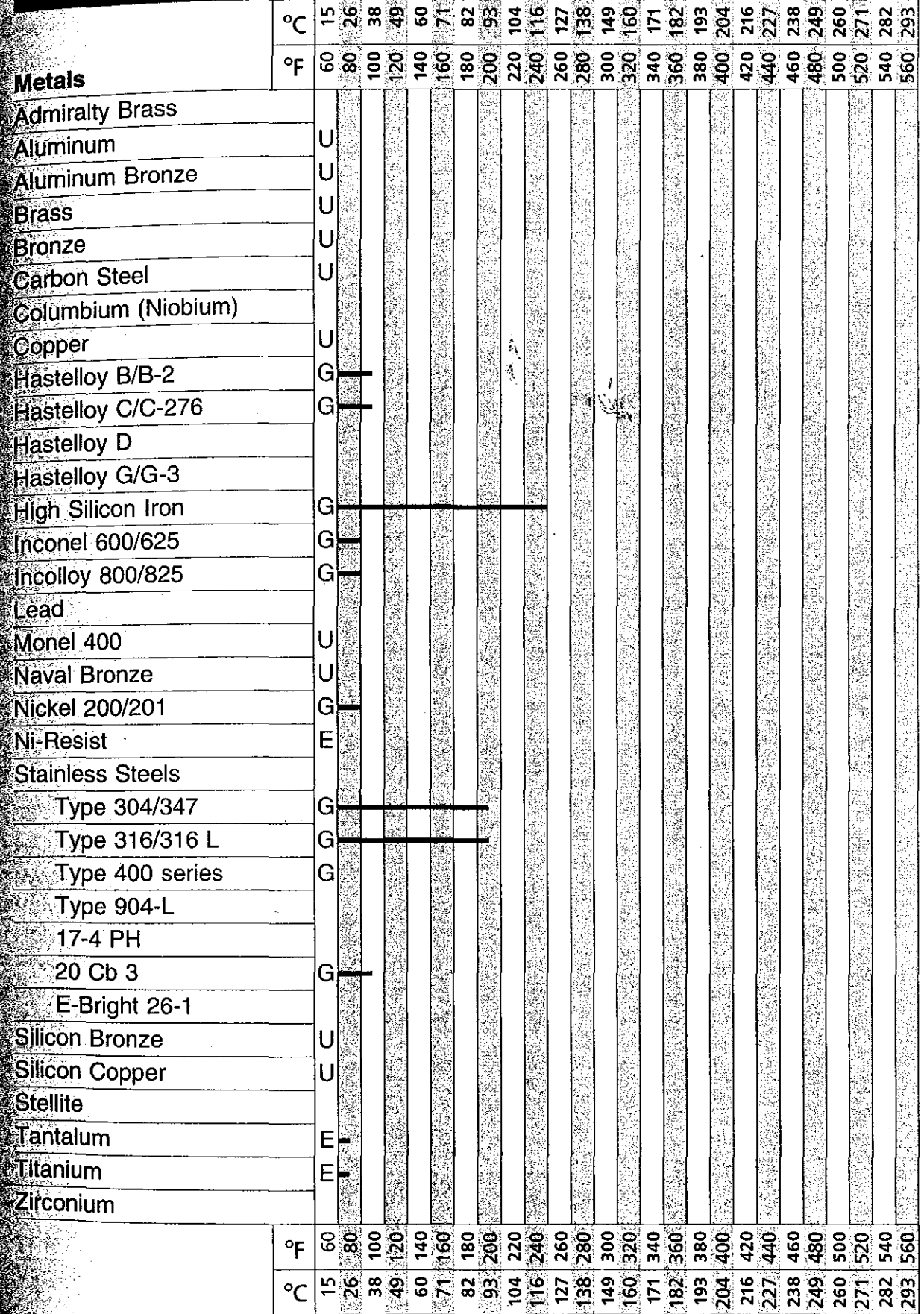

FOR METALS

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S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

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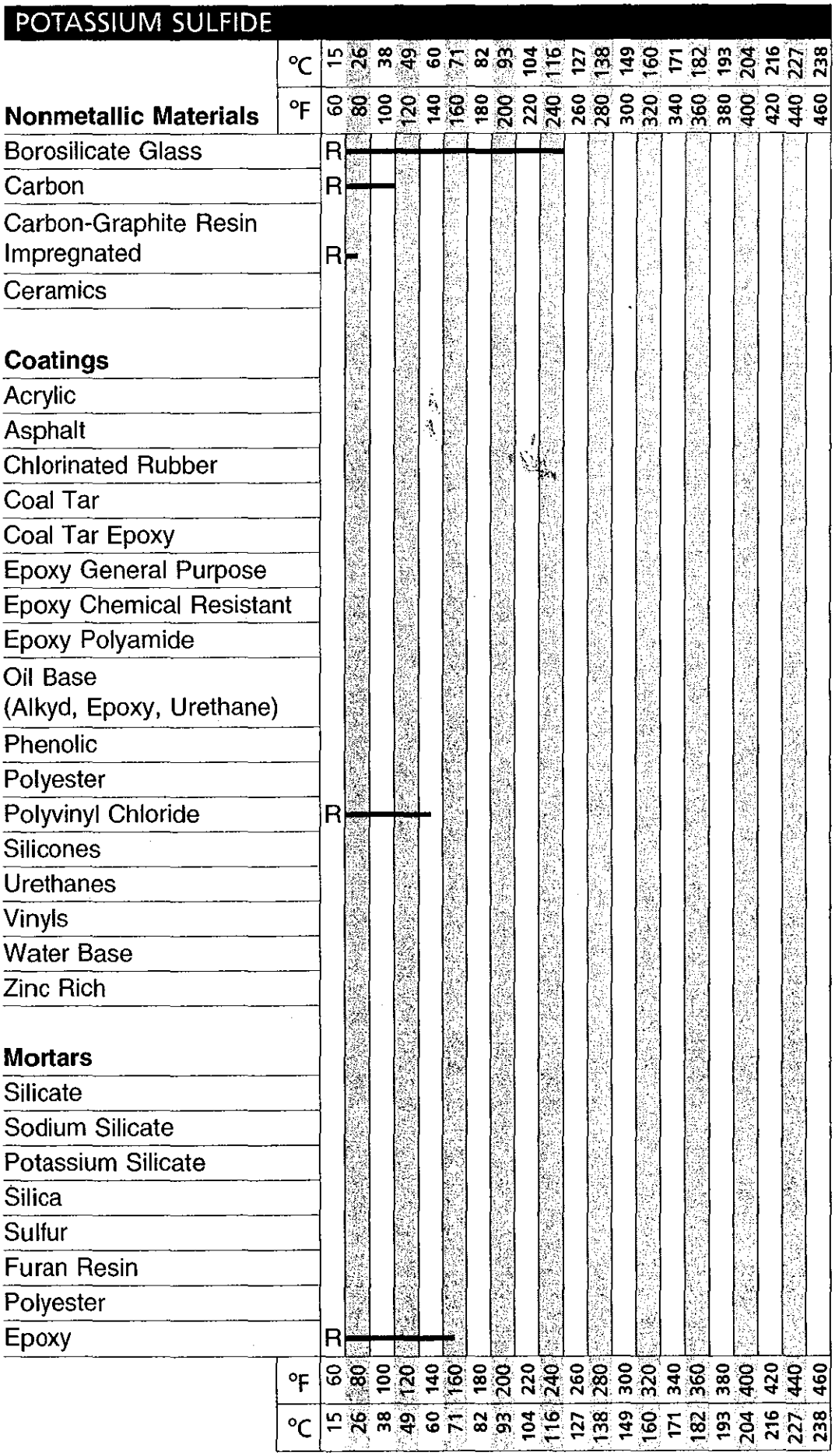
POTASSIUM SULFIDE



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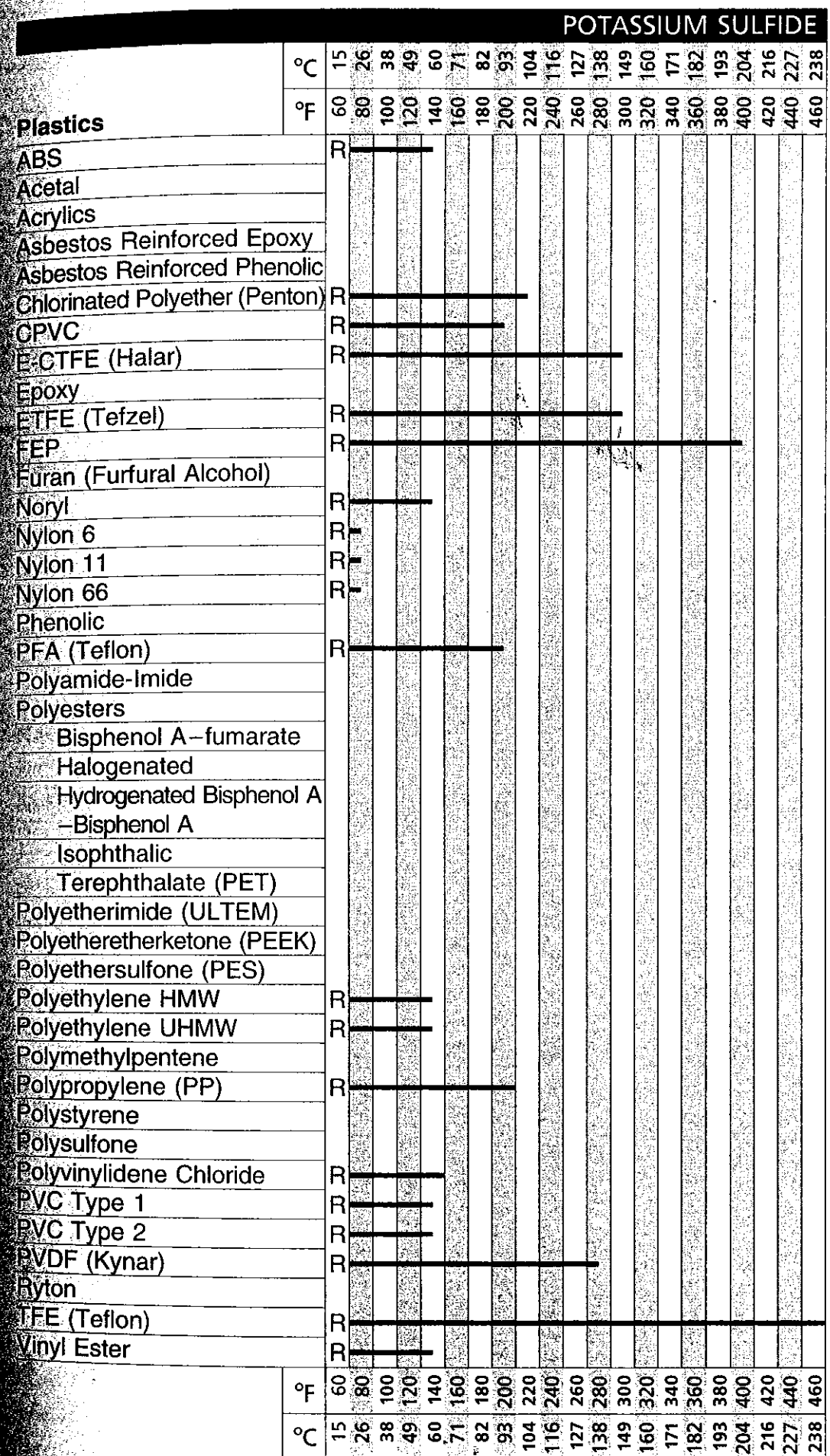

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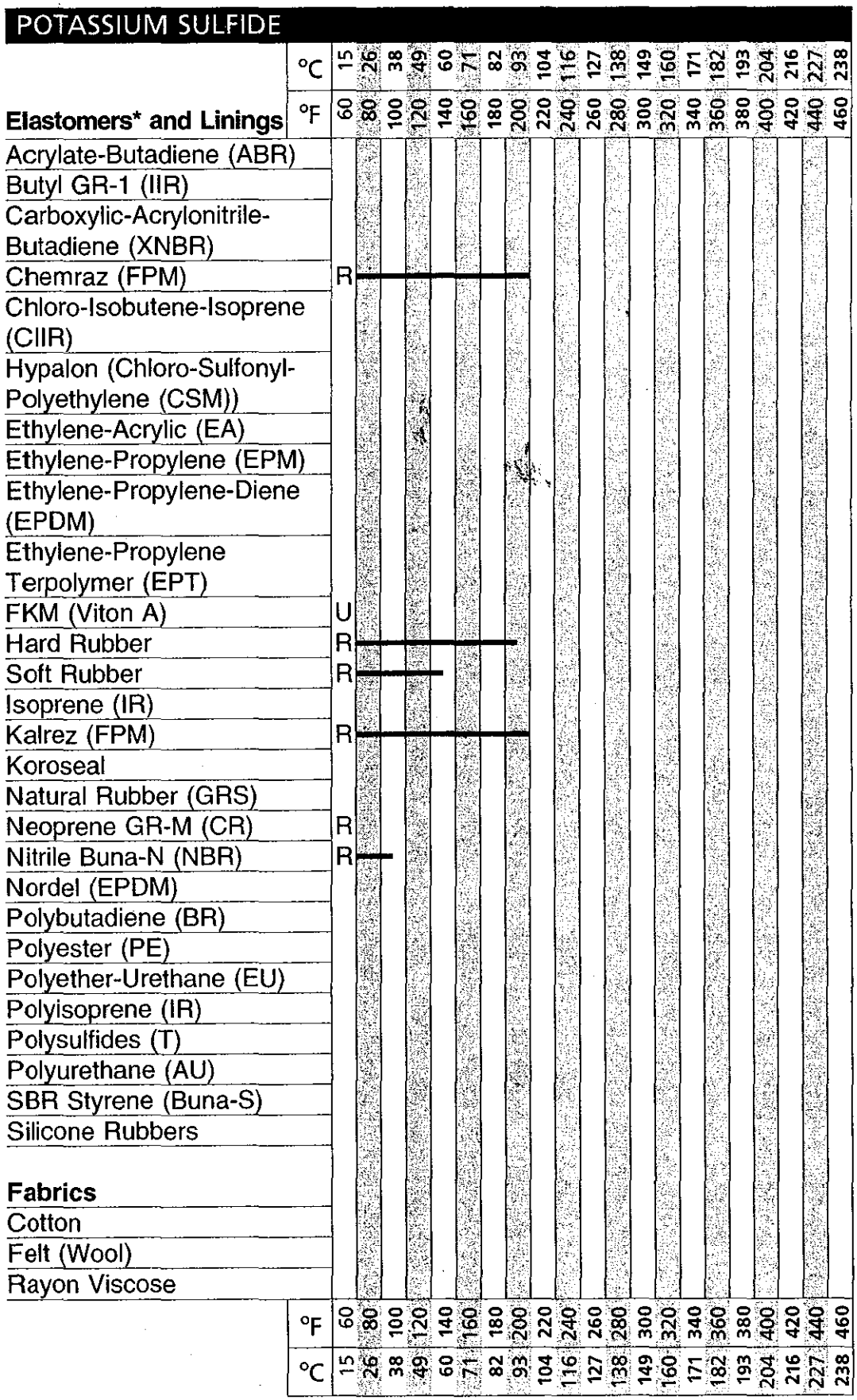
POTASSIUM SULFIDE



*See also Nylon 11 under PLASTICS

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POTASSIUM SULFITE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel		U																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276		E																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Galv. Stl.		U																									
Monel 400		G																									
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		G																									
Type 316/316 L		G																									
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3		G																									
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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POTASSIUM SULFITE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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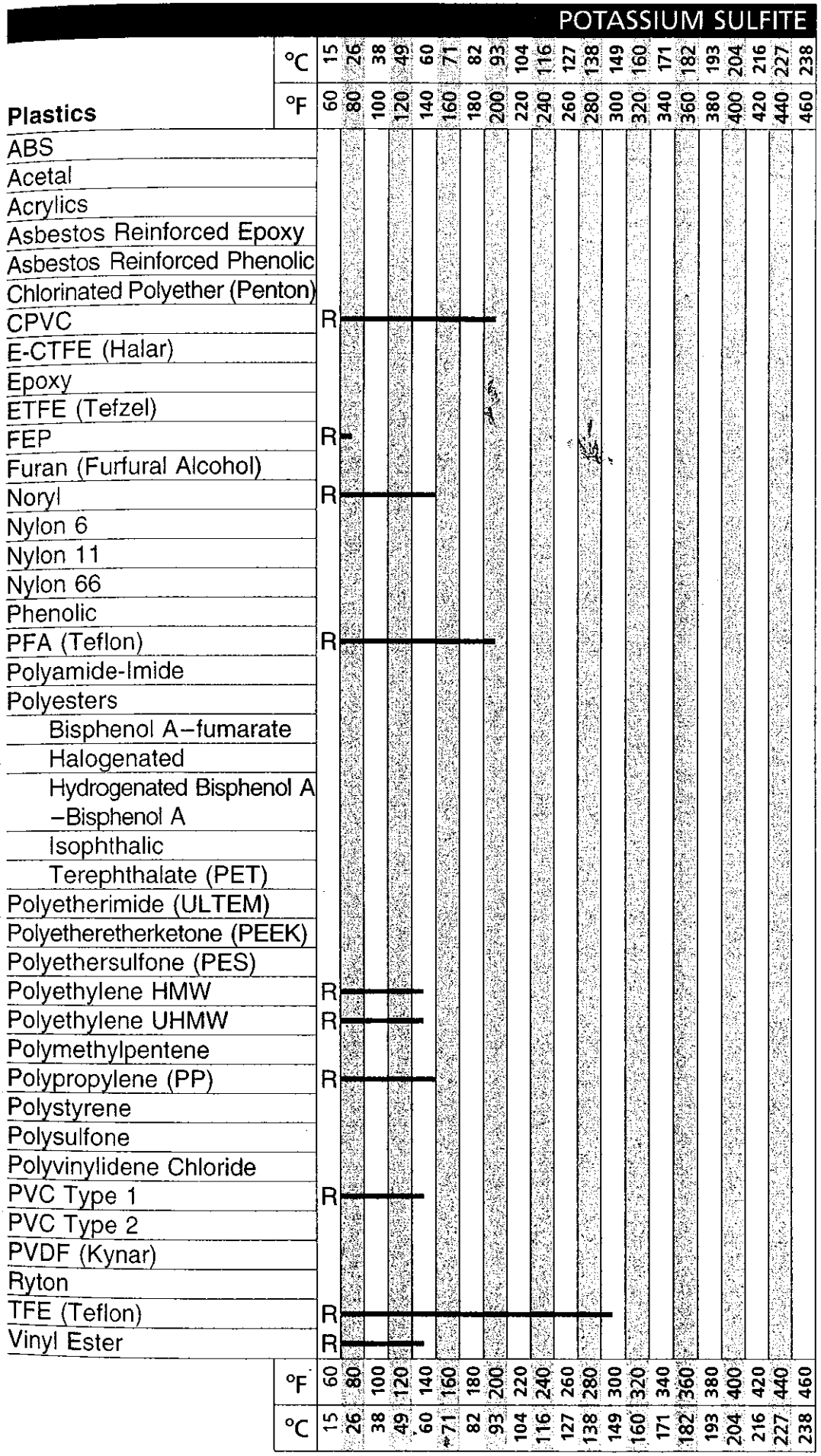

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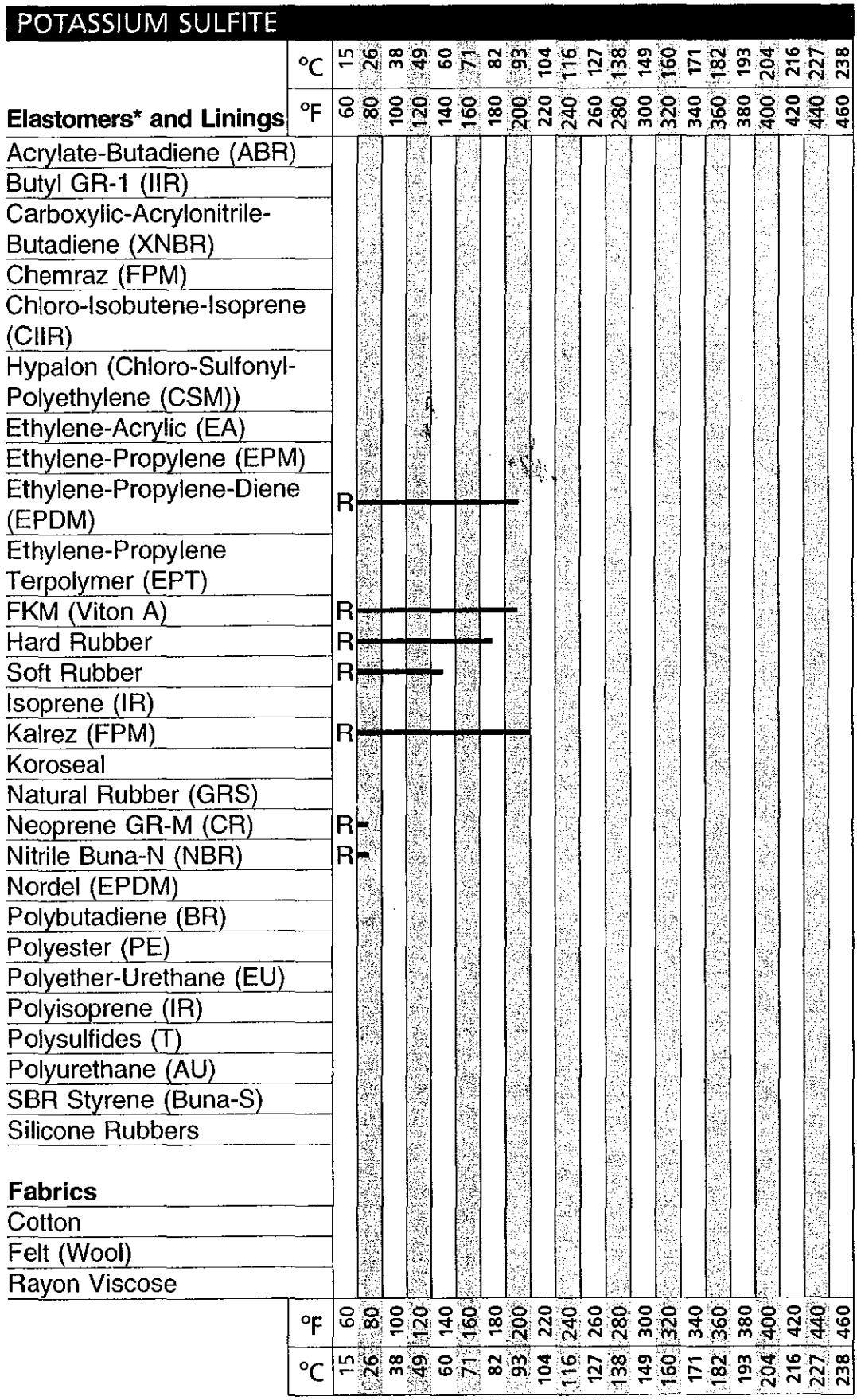
POTASSIUM SULFITE



*See also Nylon 11 under PLASTICS

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POTASSIUM TRIPHOSPHATE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		U																									
Aluminum Bronze		G																									
Brass																											
Bronze																											
Carbon Steel		G																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L		G																									
Type 400 series		E																									
Type 904-L																											
17-4 PH																											
20 Cb 3		G																									
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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POTASSIUM TRIPHOSPHATE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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POTASSIUM TRIPHOSPHATE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC	R	—	—	—	—	—	—	—														
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP																						
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R	—	—	—	—	—	—	—	—	—	—	—	—	—								
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	*71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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POTASSIUM TRIPHOSPHATE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)	R																					
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)	R																					
Nitrile Buna-N (NBR)	R																					
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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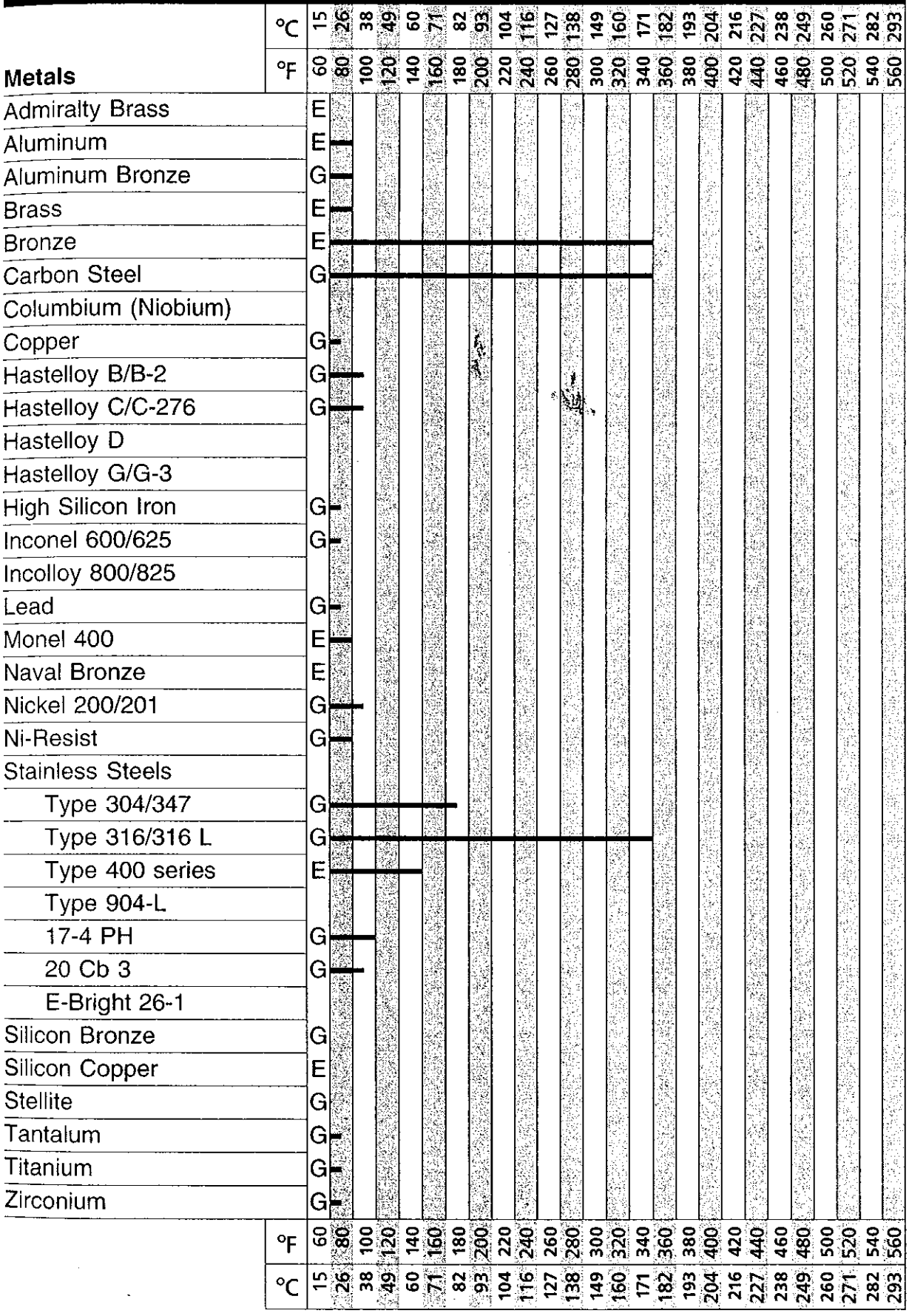

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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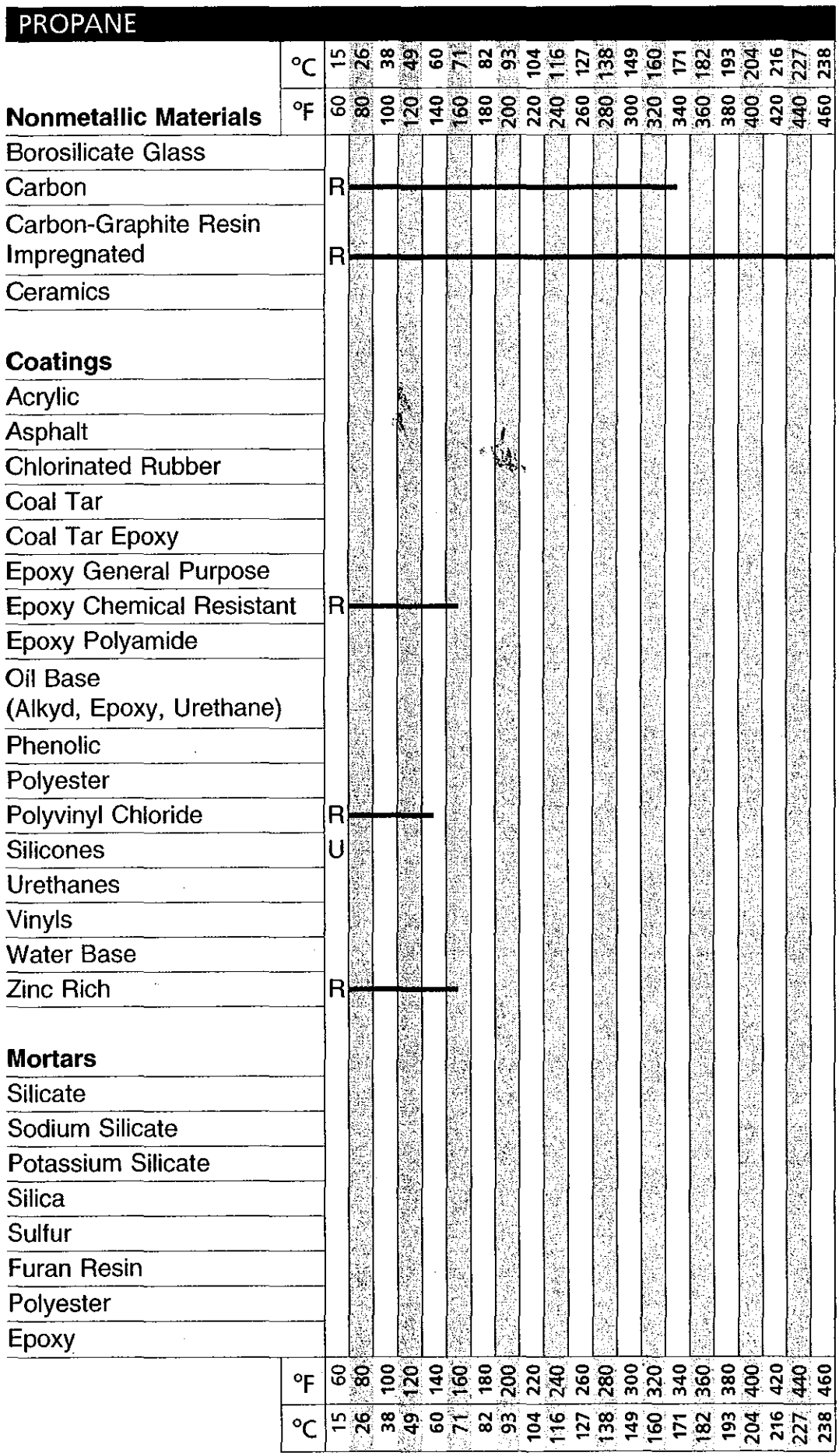
PROPANE



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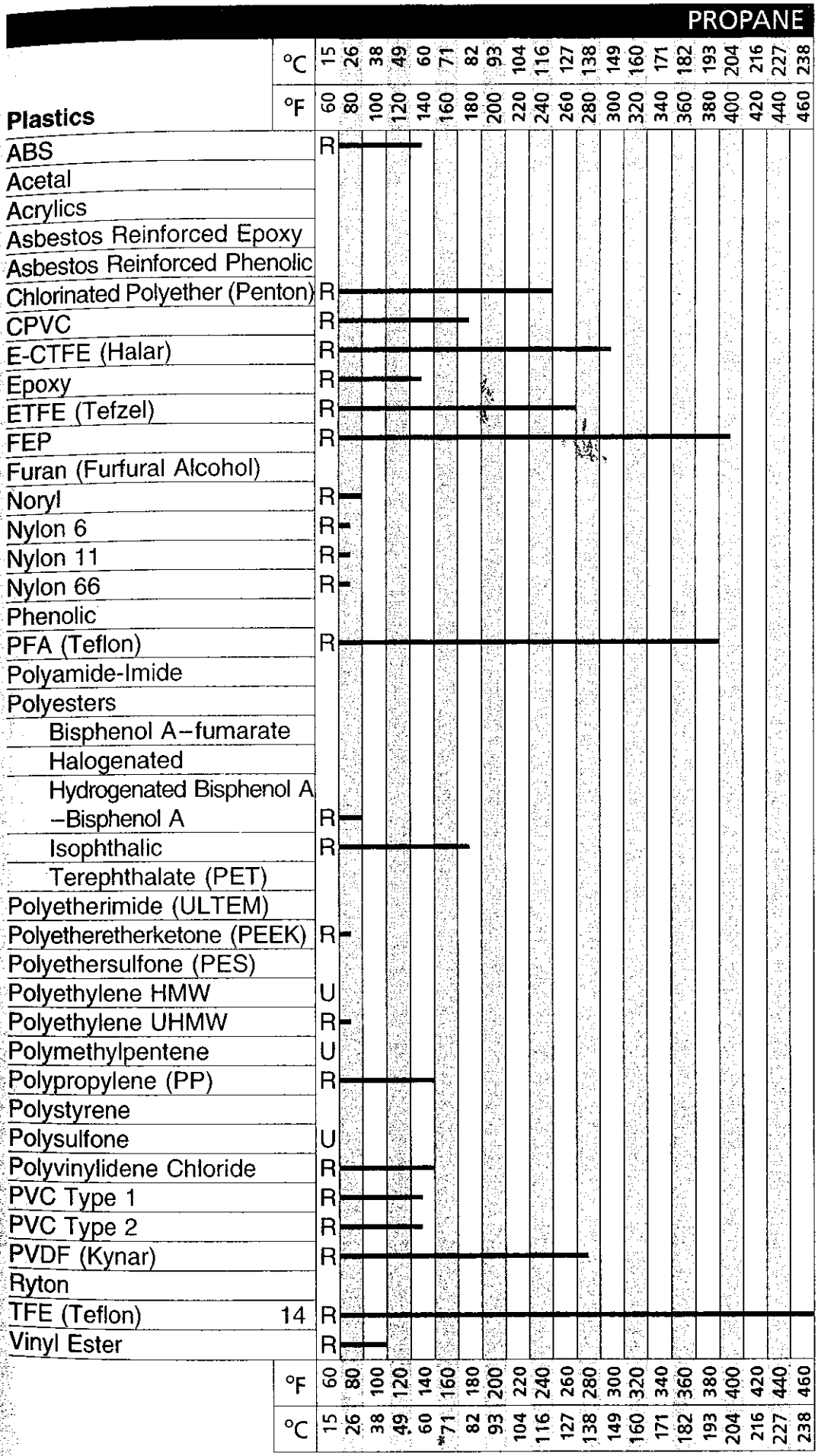

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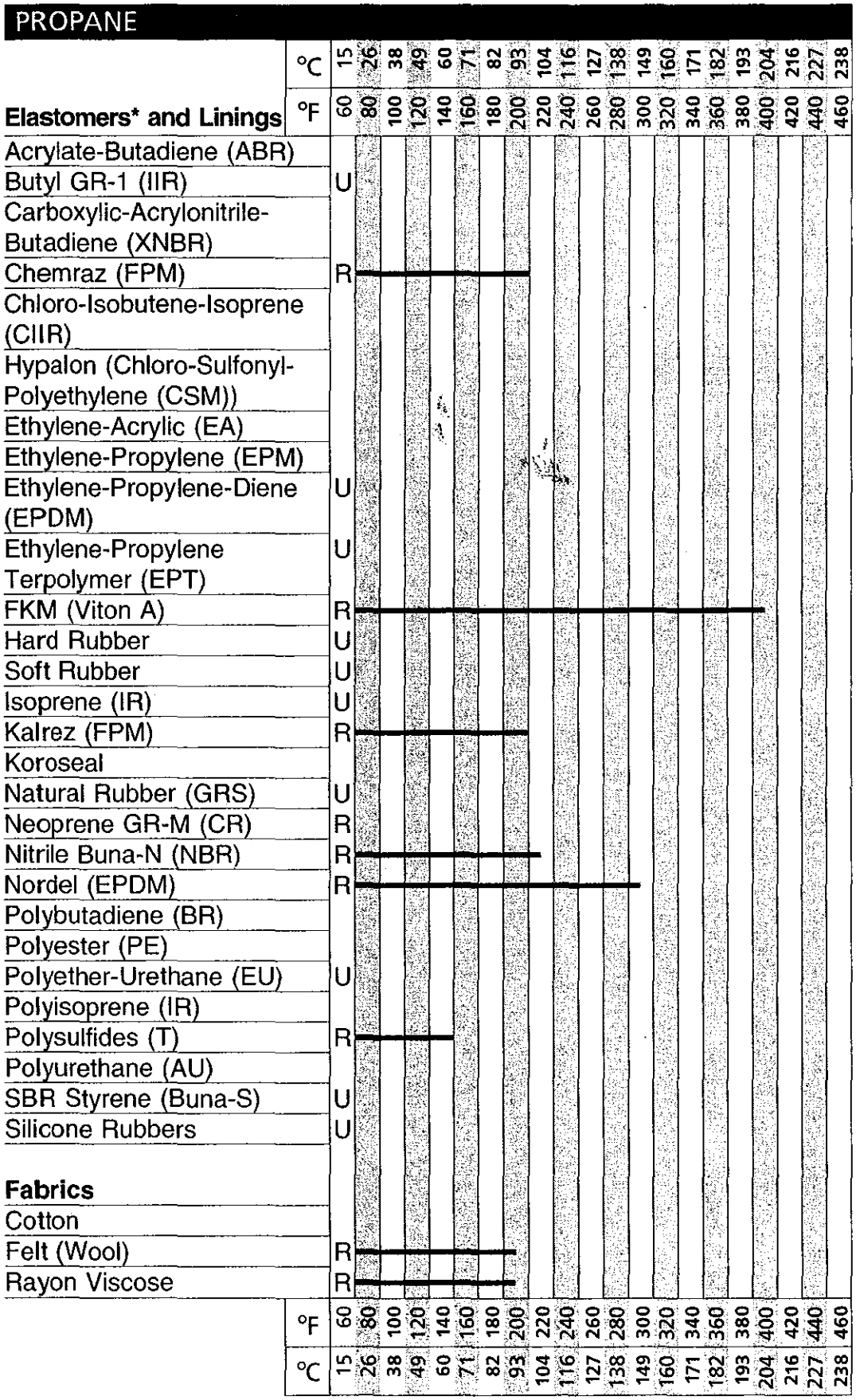
PROPANE



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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G																									
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum		G																									
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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PROPARGYL ALCOHOL

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride		R																				
Silicones																						
Urethanes																						
Vinyls		R																				
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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PROPARGYL ALCOHOL

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS		U																				
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC		R																				
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		R																				
Polyethylene UHMW		R																				
Polymethylpentene																						
Polypropylene (PP)		U																				
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1		R																				
PVC Type 2		R																				
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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PROPARGYL ALCOHOL

Elastomers* and Linings	°F	°C
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)		
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	R	
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)		
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)	R	
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)		
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)	U	
Nitrile Buna-N (NBR)		
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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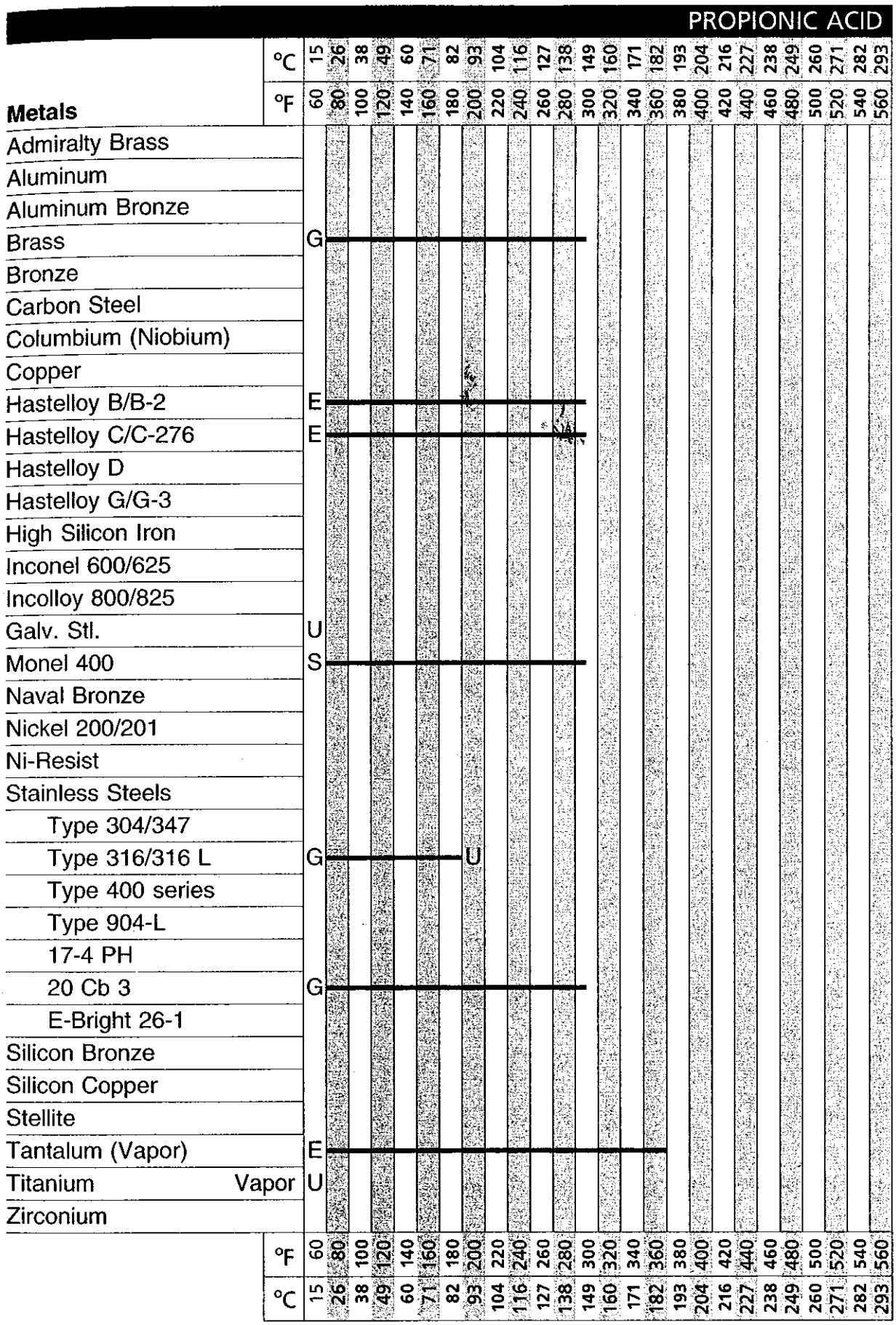

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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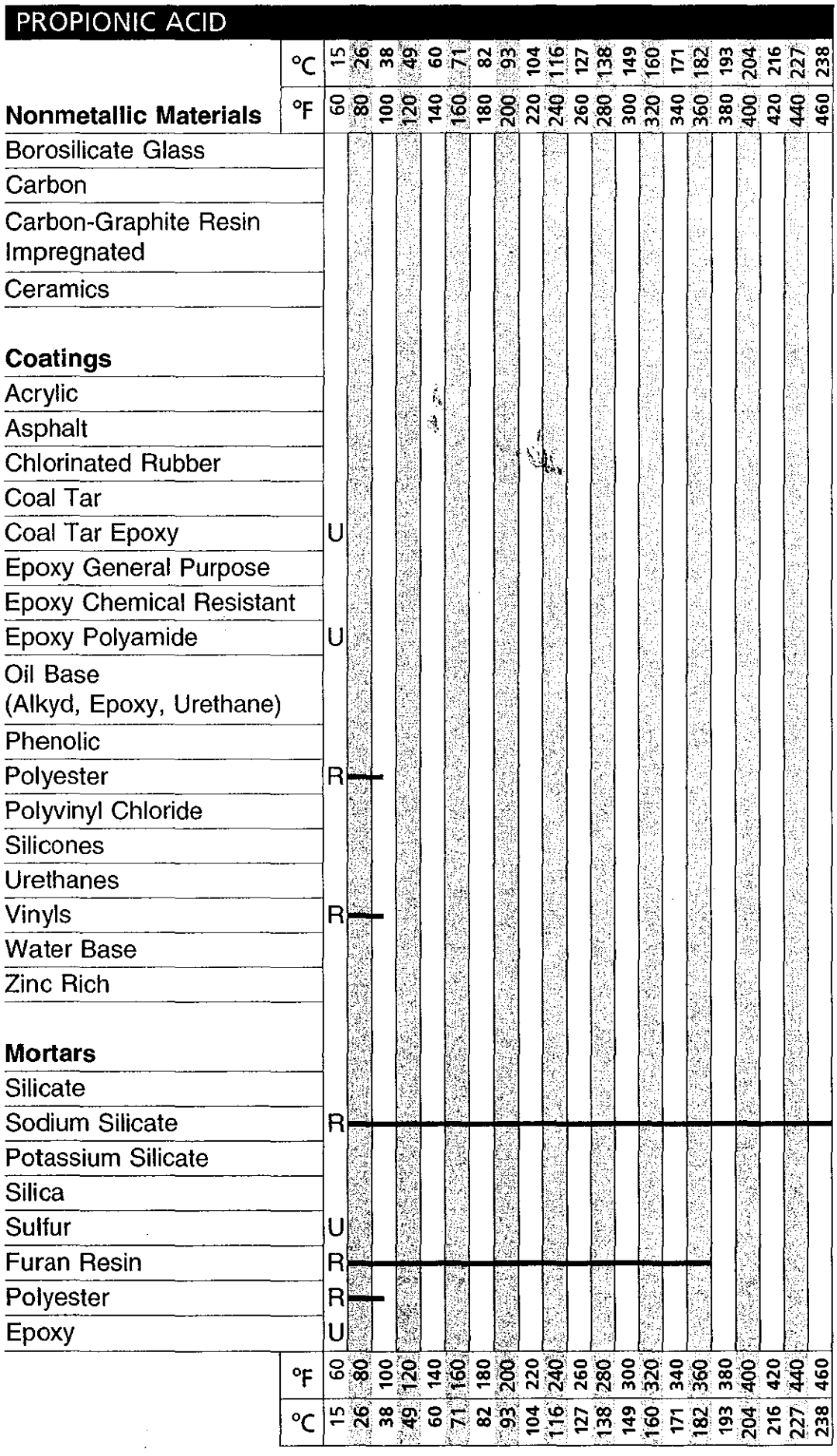
PROPIONIC ACID



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Plastics		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS			U																				
Acetal																							
Acrylics																							
Asbestos Reinforced Epoxy																							
Asbestos Reinforced Phenolic																							
Chlorinated Polyether (Penton)																							
CPVC			R																				
E-CTFE (Halar)																							
Epoxy																							
ETFE (Tefzel)			R																				
FEP			R																				
Furan (Furfural Alcohol)			R																				
Noryl																							
Nylon 6			R																				
Nylon 11																							
Nylon 66			R																				
Phenolic			R																				
PFA (Teflon)																							
Polyamide-Imide																							
Polyesters																							
Bisphenol A–fumarate	1%		R																				
Halogenated	1%		R																				
Hydrogenated Bisphenol A –Bisphenol A																							
Isophthalic	1%		R																				
Terephthalate (PET)			R																				
Polyetherimide (ULTEM)																							
Polyetheretherketone (PEEK)																							
Polyethersulfone (PES)																							
Polyethylene HMW																							
Polyethylene UHMW	50%		R																				
Polymethylpentene																							
Polypropylene (PP)			R																				
Polystyrene																							
Polysulfone																							
Polyvinylidene Chloride																							
PVC Type 1			R																				
PVC Type 2			R																				
PVDF (Kynar)			R																				
Ryton																							
TFE (Teflon)			R																				
Vinyl Ester	50%		R																				
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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PROPIONIC ACID

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)		R																				
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)		R																				
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber TO 50%		R																				
Soft Rubber		U																				
Isoprene (IR)																						
Kalrez (FPM)		R																				
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)		U																				
Nitrile Buna-N (NBR)		R																				
Nordel (EPDM)		R																				
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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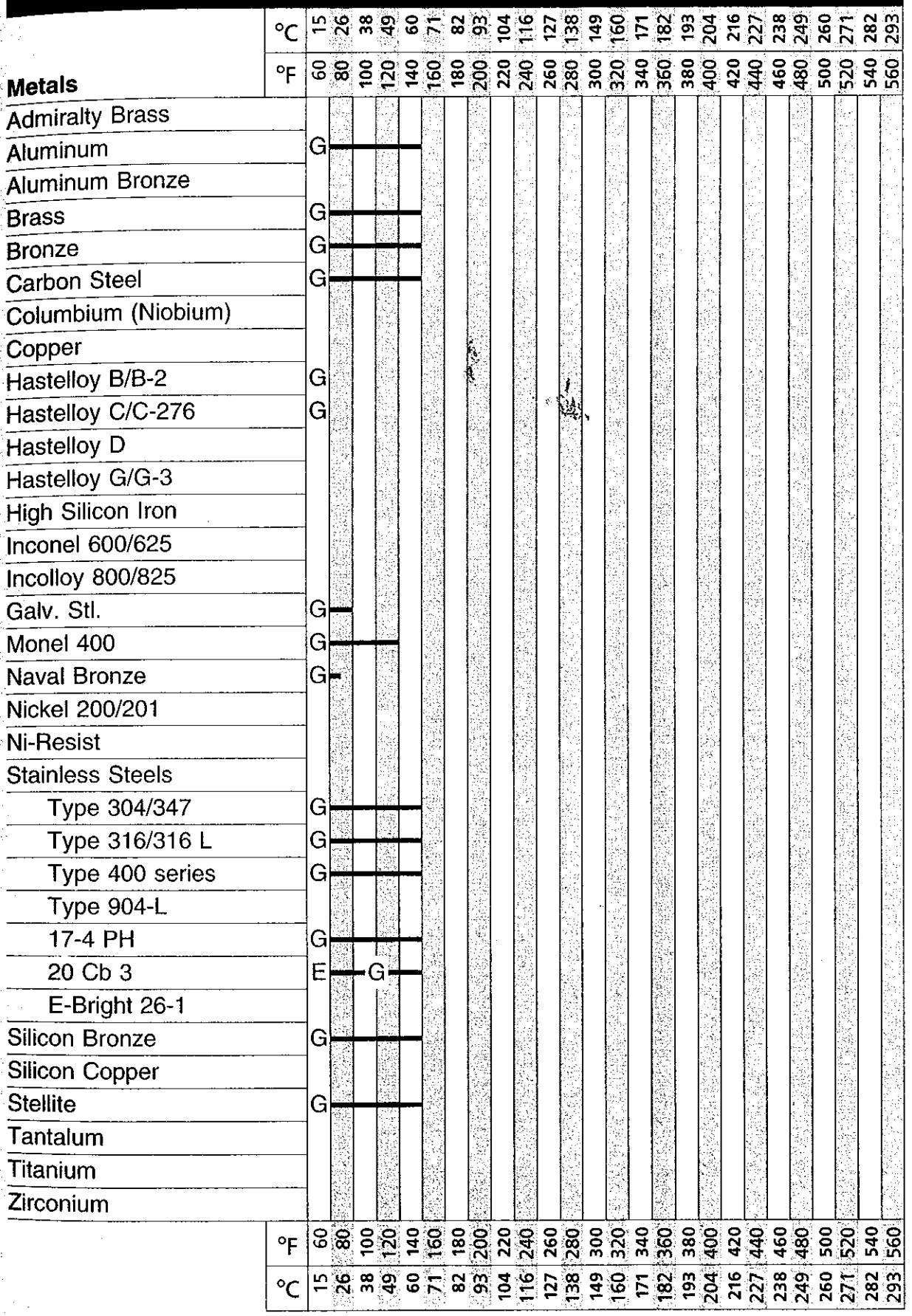

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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PROPYL ACETATE

Nonmetallic Materials	
Borosilicate Glass	R
Carbon	R
Carbon-Graphite Resin Impregnated	R
Ceramics	
Coatings	
Acrylic	
Asphalt	
Chlorinated Rubber	
Coal Tar	
Coal Tar Epoxy	U
Epoxy General Purpose	
Epoxy Chemical Resistant	
Epoxy Polyamide	U
Oil Base (Alkyd, Epoxy, Urethane)	
Phenolic	
Polyester	U
Polyvinyl Chloride	U
Silicones	
Urethanes	
Vinyls	U
Water Base	
Zinc Rich	
Mortars	
Silicate	
Sodium Silicate	R
Potassium Silicate	
Silica	
Sulfur	U
Furan Resin	R
Polyester	U
Epoxy	U

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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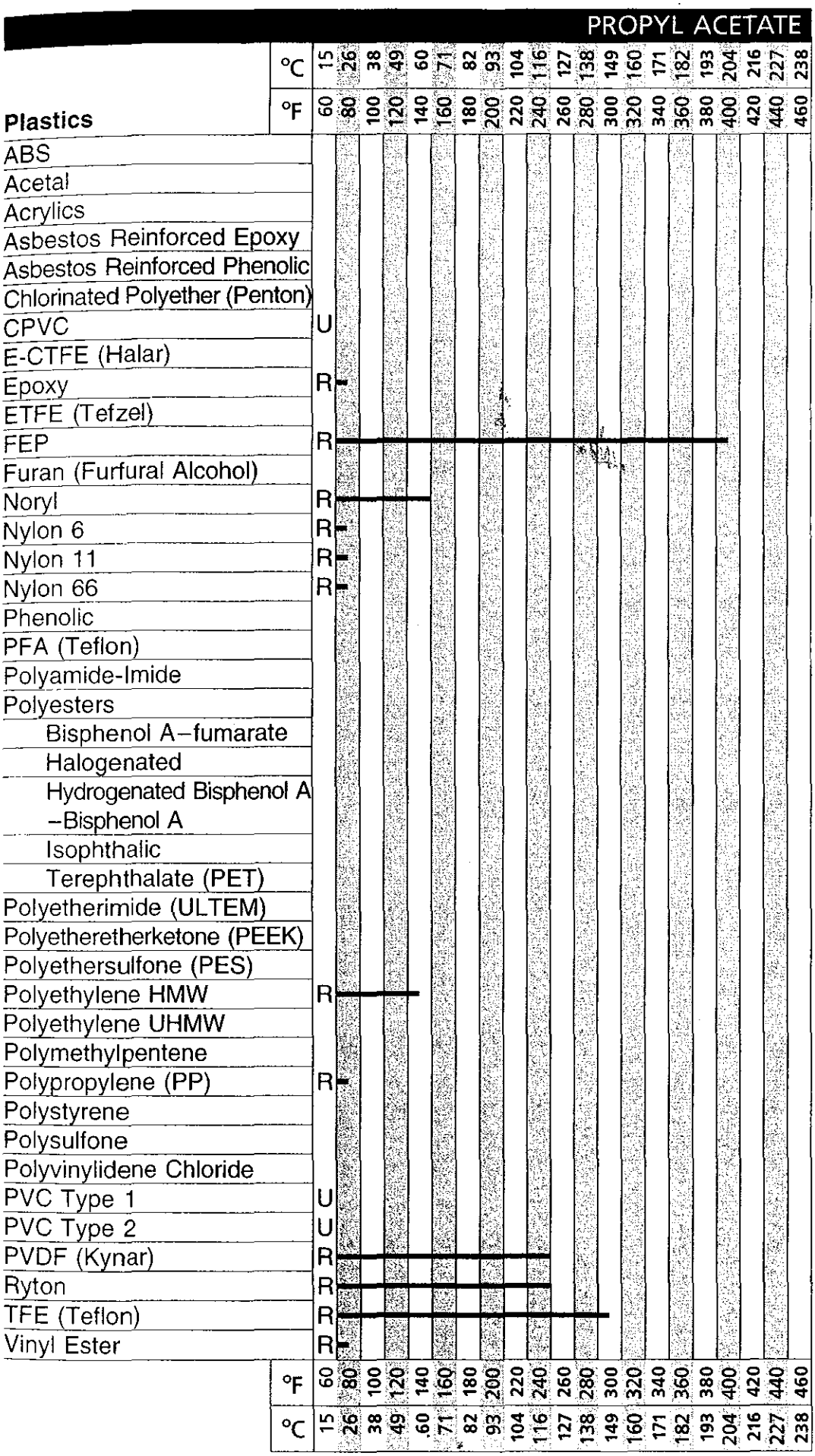
PROPYL ACETATE



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PROPYL ACETATE

Elastomers* and Linings	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	R																				
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	U																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)	U																				
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers	U																				
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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PROPYL ALCOHOL

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G																									
Aluminum Bronze		G																									
Brass		G																									
Bronze		G																									
Carbon Steel		G																									
Galv. Stl.		G																									
Copper		G																									
Hastelloy B/B-2		E																									
Hastelloy C/C-276		E																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625		E																									
Incolloy 800/825		E																									
Lead		G																									
Monel 400		G																									
Naval Bronze		E																									
Nickel 200/201		E																									
Ni-Resist		E																									
Stainless Steels																											
Type 304/347		E																									
Type 316/316 L		E																									
Type 400 series		E																									
Type 904-L																											
17-4 PH		G																									
20 Cb 3		E																									
E-Bright 26-1																											
Silicon Bronze		G																									
Silicon Copper		E																									
Stellite		G																									
Tantalum		G																									
Titanium		E																									
Zirconium		E																									
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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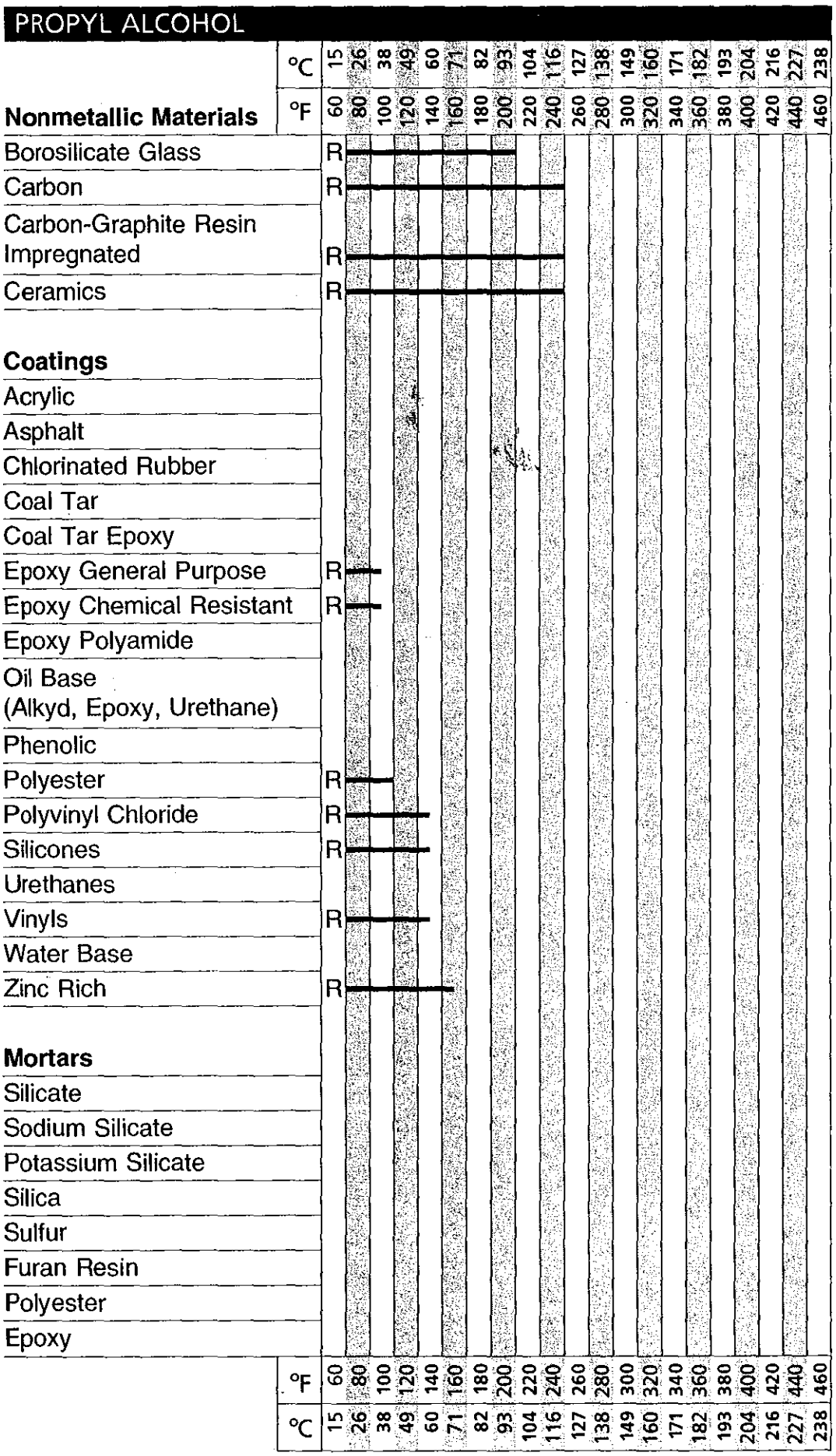
PROPYL ALCOHOL



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PROPYL ALCOHOL

Plastics	
ABS	U
Acetal	
Acrylics	
Asbestos Reinforced Epoxy	
Asbestos Reinforced Phenolic	
Chlorinated Polyether (Penton)	R
CPVC	U
E-CTFE (Halar)	R
Epoxy	R
ETFE (Tefzel)	R
FEP	R
Furan (Furfural Alcohol)	
Noryl	R
Nylon 6	U
Nylon 11	U
Nylon 66	U
Phenolic	
PFA (Teflon)	R
Polyamide-Imide	
Polyesters	
Bisphenol A–fumarate	
Halogenated	
Hydrogenated Bisphenol A –Bisphenol A	
Isophthalic	
Terephthalate (PET)	R
Polyetherimide (ULTEM)	
Polyetheretherketone (PEEK)	R
Polyethersulfone (PES)	
Polyethylene HMW	R
Polyethylene UHMW	R
Polymethylpentene	
Polypropylene (PP)	R
Polystyrene	
Polysulfone	R
Polyvinylidene Chloride	R
PVC Type 1	R
PVC Type 2	R
PVDF (Kynar)	R
Ryton	
TFE (Teflon)	R
Vinyl Ester	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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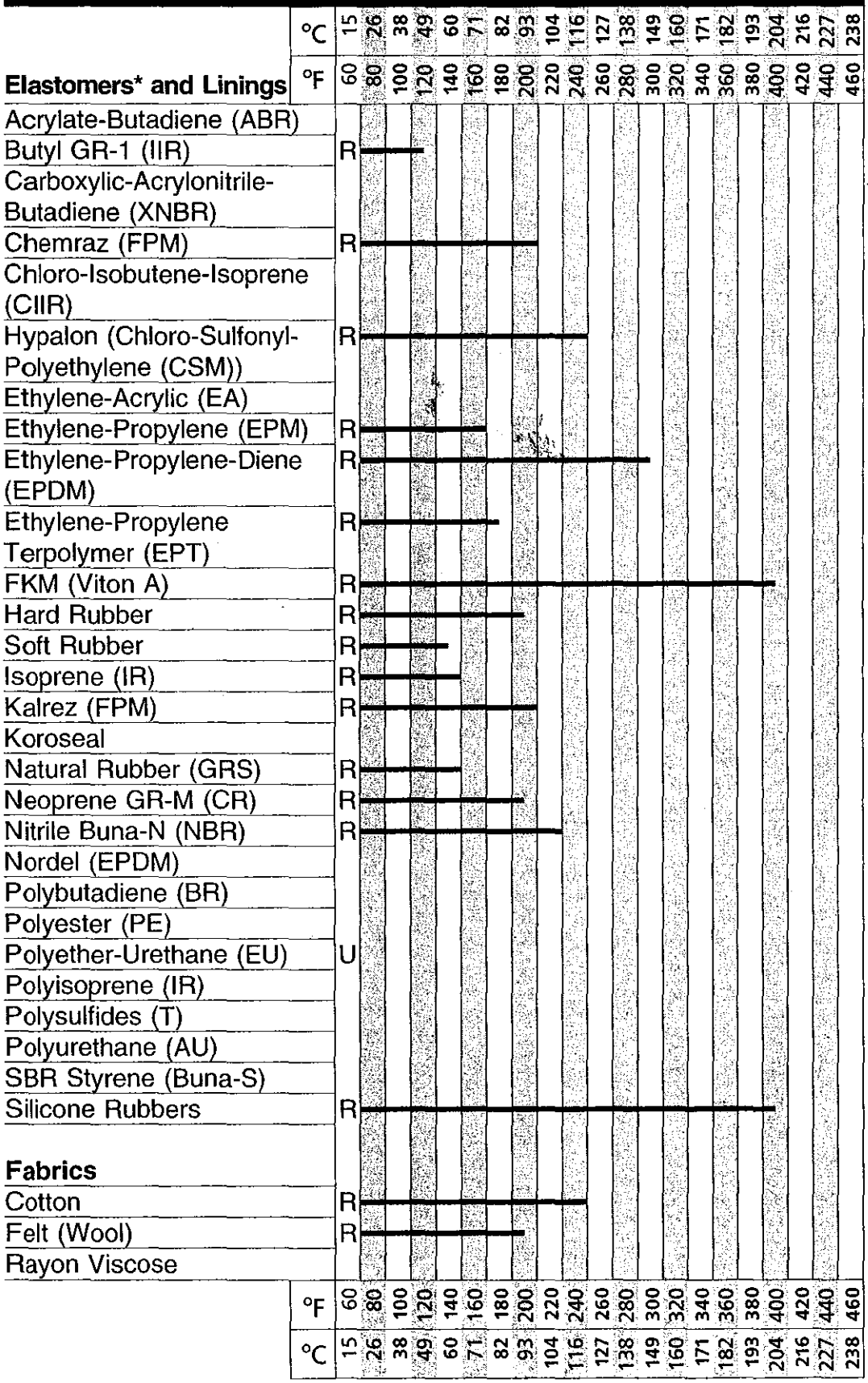
PROPYL ALCOHOL



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Metals	°C	°F
Admiralty Brass		
Aluminum		
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel		
Columbium (Niobium)		
Copper		
Hastelloy B/B-2		
Hastelloy C/C-276		
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625		
Incolloy 800/825		
Lead		
Monel 400		
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347		
Type 316/316 L	G	
Type 400 series		
Type 904-L		
17-4 PH		
20 Cb 3	G	
E-Bright 26-1		
Silicon Bronze		
Silicon Copper		
Stellite		
Tantalum		
Titanium		
Zirconium		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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PROPYL NITRATE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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PROPYL NITRATE

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP		
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1		
PVC Type 2		
PVDF (Kynar)		
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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PROPYL NITRATE

Elastomers* and Linings	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	R																				
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)	U																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers	U																				
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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PROPYLENE DICHLORIDE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel		G																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400		G																									
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		G																									
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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PROPYLENE DICHLORIDE

Nonmetallic Materials	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Borosilicate Glass	R																				
Carbon																					
Carbon-Graphite Resin Impregnated																					
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride	U																				
Silicones																					
Urethanes																					
Vinyls	U																				
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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PROPYLENE DICHLORIDE

Plastics	°C	°F
ABS	U	
Acetal		
Acrylics	U	
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)	R	
CPVC	U	
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	U	
Polyethylene UHMW	U	
Polymethylpentene		
Polypropylene (PP)	U	
Polystyrene		
Polysulfone		
Polyvinylidene Chloride	R	
PVC Type 1	U	
PVC Type 2	U	
PVDF (Kynar)	R	
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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PROPYLENE DICHLORIDE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	U																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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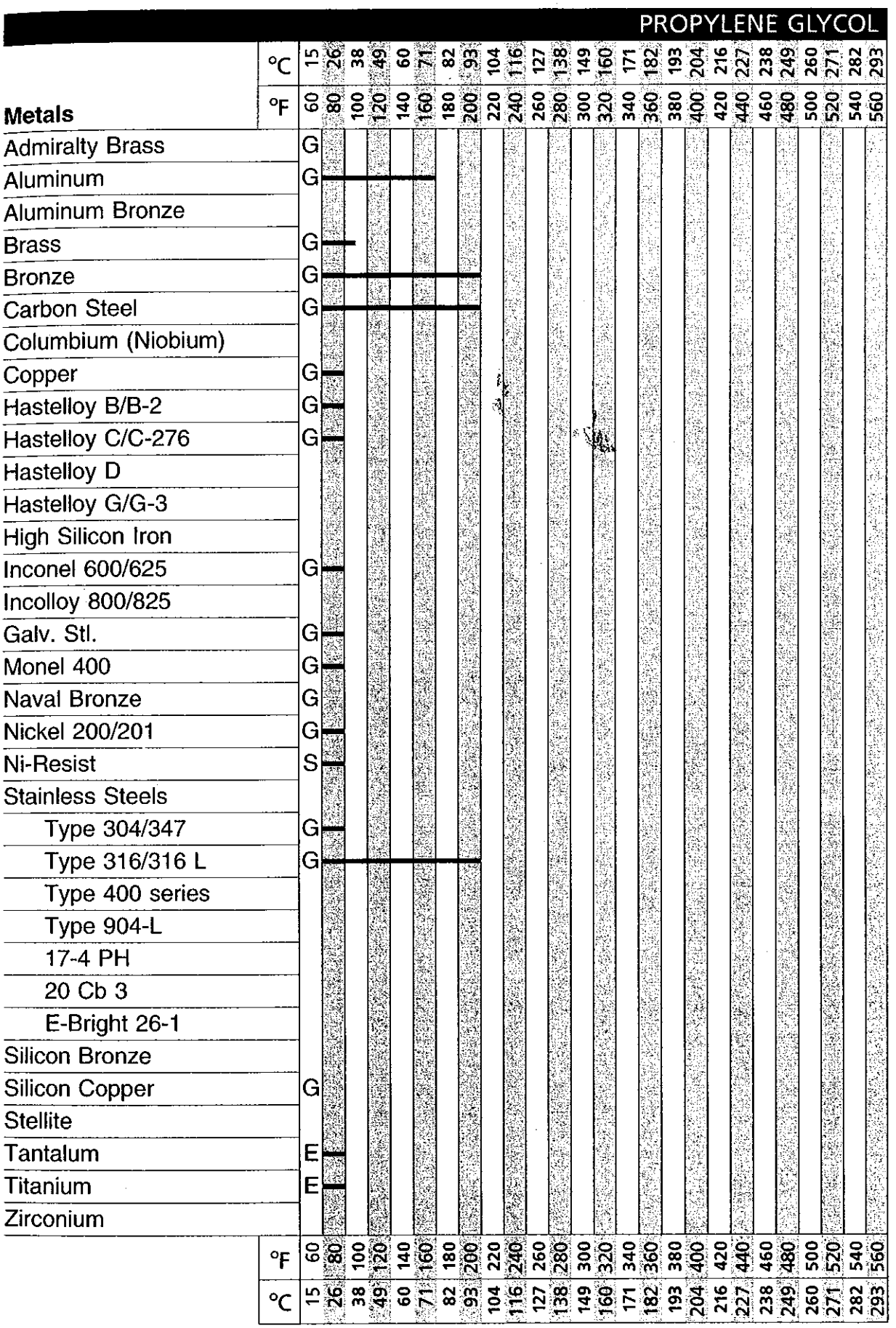

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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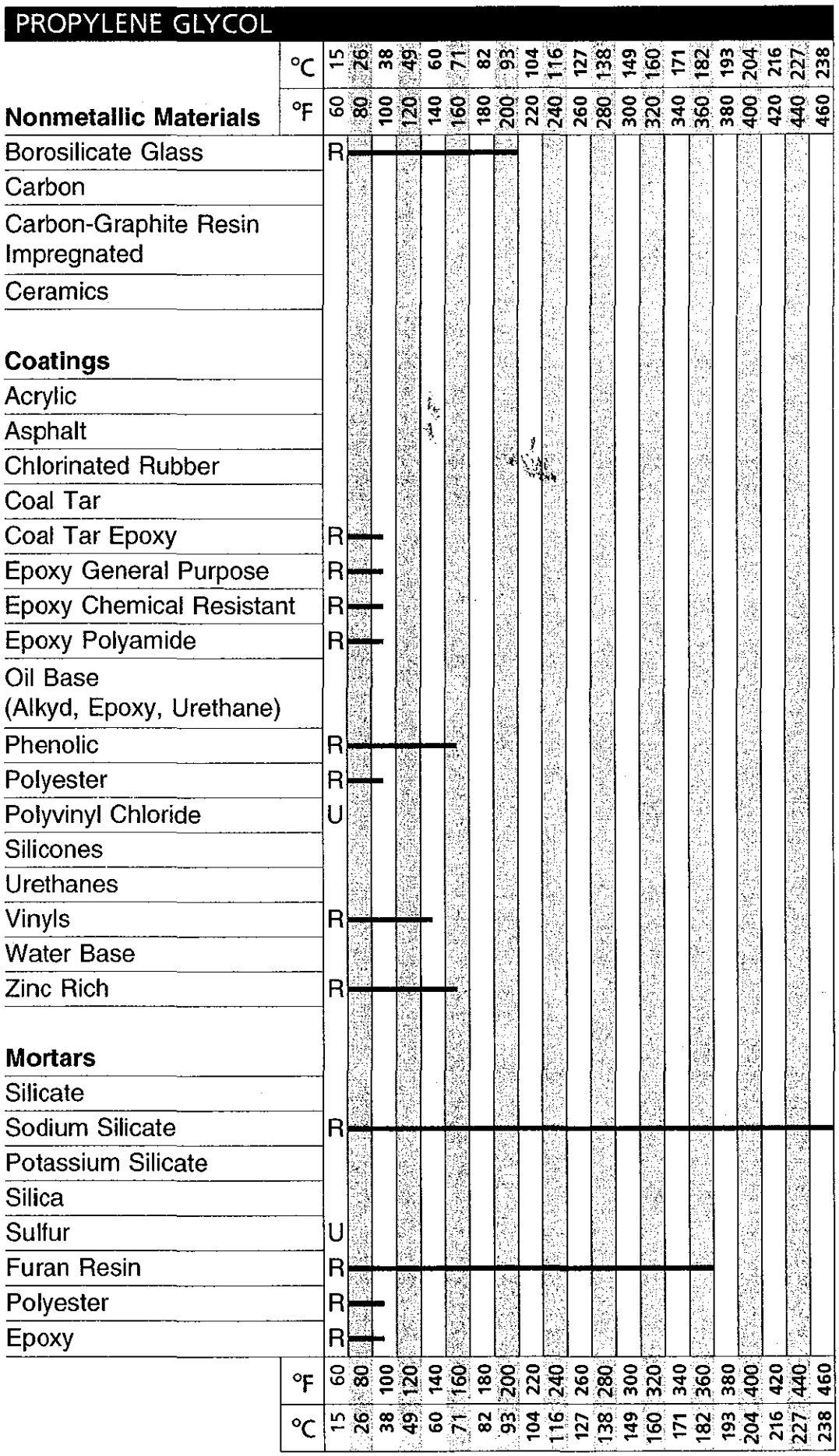
PROPYLENE GLYCOL



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PROPYLENE GLYCOL

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS		R																				
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC		U																				
E-CTFE (Halar)																						
Epoxy		R								U												
ETFE (Tefzel)																						
FEP		R																				
Furan (Furfural Alcohol)		R																				
Noryl																						
Nylon 6		R																				
Nylon 11																						
Nylon 66		R																				
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate		R																				
Halogenated		R																				
Hydrogenated Bisphenol A –Bisphenol A		R																				
Isophthalic		R																				
Terephthalate (PET)		R																				
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		R																				
Polyethylene UHMW		R																				
Polymethylpentene		R																				
Polypropylene (PP)		R																				
Polystyrene																						
Polysulfone		R																				
Polyvinylidene Chloride																						
PVC Type 1		U																				
PVC Type 2		U																				
PVDF (Kynar)		R																				
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester		R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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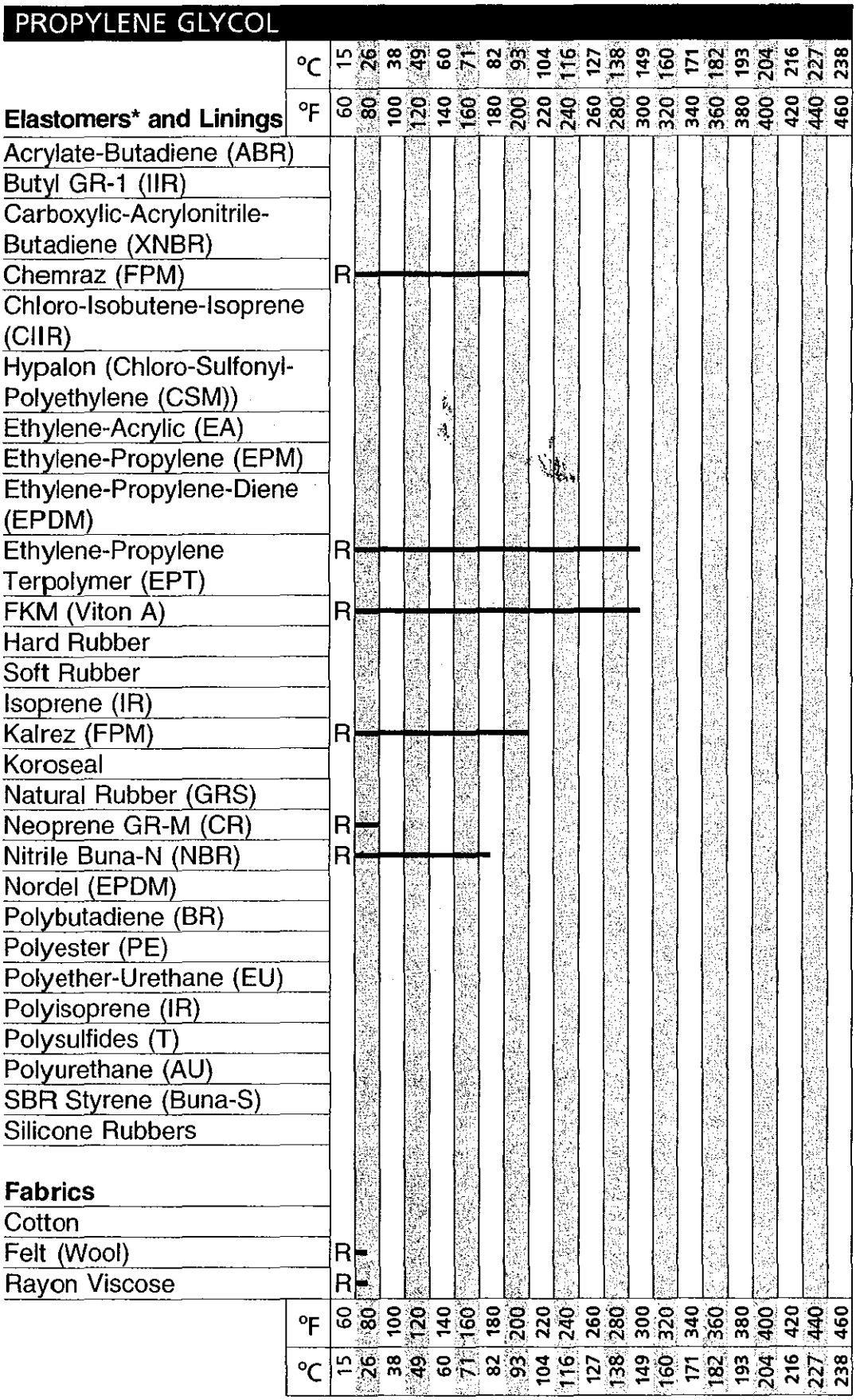
PROPYLENE GLYCOL



*See also Nylon 11 under PLASTICS

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PROPYLENE OXIDE

Metals	°C	°F
Admiralty Brass		
Aluminum		
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel	G	
Columbium (Niobium)		
Copper		
Hastelloy B/B-2		
Hastelloy C/C-276		
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625		
Incolloy 800/825		
Lead		
Monel 400		
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347 90%	E	
Type 316/316 L 90%	E	
Type 400 series		
Type 904-L		
17-4 PH		
20 Cb 3	G	
E-Bright 26-1		
Silicon Bronze		
Silicon Copper		
Stellite		
Tantalum	G	
Titanium		
Zirconium		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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PROPYLENE OXIDE

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																					
Carbon																					
Carbon-Graphite Resin Impregnated																					
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride	U																				
Silicones	U																				
Urethanes																					
Vinyls																					
Water Base																					
Zinc Rich	R																				
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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PROPYLENE OXIDE

Plastics		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																							
Acetal																							
Acrylics																							
Asbestos Reinforced Epoxy																							
Asbestos Reinforced Phenolic																							
Chlorinated Polyether (Penton)																							
CPVC			U																				
E-CTFE (Halar)			U																				
Epoxy																							
ETFE (Tefzel)			R																				
FEP	14		R																				
Furan (Furfural Alcohol)																							
Noryl																							
Nylon 6																							
Nylon 11																							
Nylon 66																							
Phenolic																							
PFA (Teflon)			R																				
Polyamide-Imide																							
Polyesters																							
Bisphenol A–fumarate																							
Halogenated																							
Hydrogenated Bisphenol A –Bisphenol A																							
Isophthalic																							
Terephthalate (PET)																							
Polyetherimide (ULTEM)																							
Polyetheretherketone (PEEK)																							
Polyethersulfone (PES)																							
Polyethylene HMW			R																				
Polyethylene UHMW																							
Polymethylpentene			R																				
Polypropylene (PP)			R																				
Polystyrene																							
Polysulfone			R																				
Polyvinylidene Chloride			R																				
PVC Type 1			U																				
PVC Type 2			U																				
PVDF (Kynar)			U																				
Ryton																							
TFE (Teflon)	14		R																				
Vinyl Ester			U																				
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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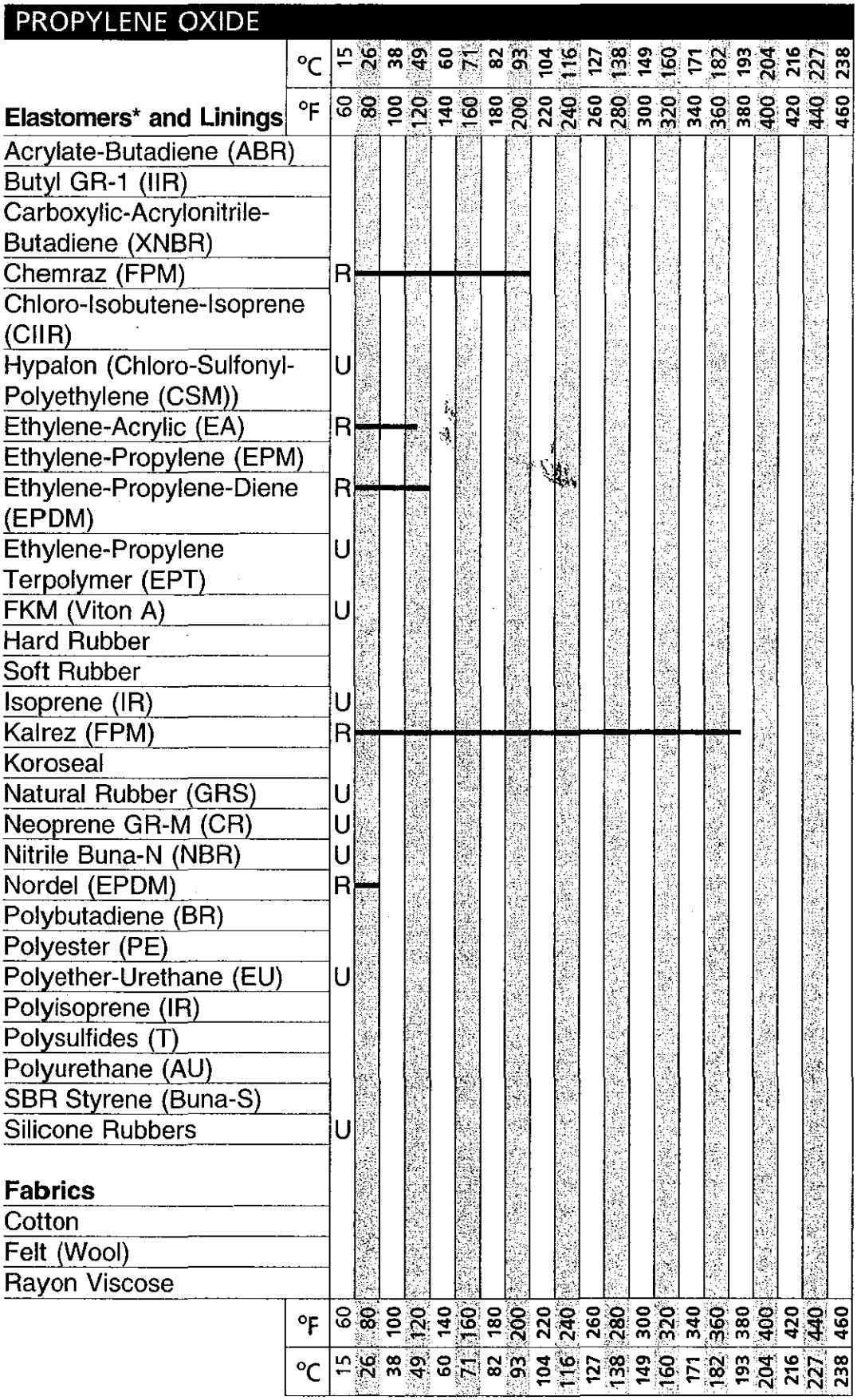
PROPYLENE OXIDE



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PYRIDINE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum			G																									
Aluminum Bronze																												
Brass			G																									
Bronze			G																									
Carbon Steel			G																									
Columbium (Niobium)			E																									
Copper			G																									
Hastelloy B/B-2			G																									
Hastelloy C/C-276	50%		E																									
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625	1		G																									
Incolloy 800/825																												
Lead			G																									
Monel 400			G																									
Naval Bronze																												
Nickel 200/201			G																									
Ni-Resist																												
Stainless Steels																												
Type 304/347			G																									
Type 316/316 L			G																									
Type 400 series																												
Type 904-L																												
17-4 PH																												
20 Cb 3			G																									
E-Bright 26-1																												
Silicon Bronze																												
Silicon Copper																												
Stellite																												
Tantalum			G																									
Titanium			G																									
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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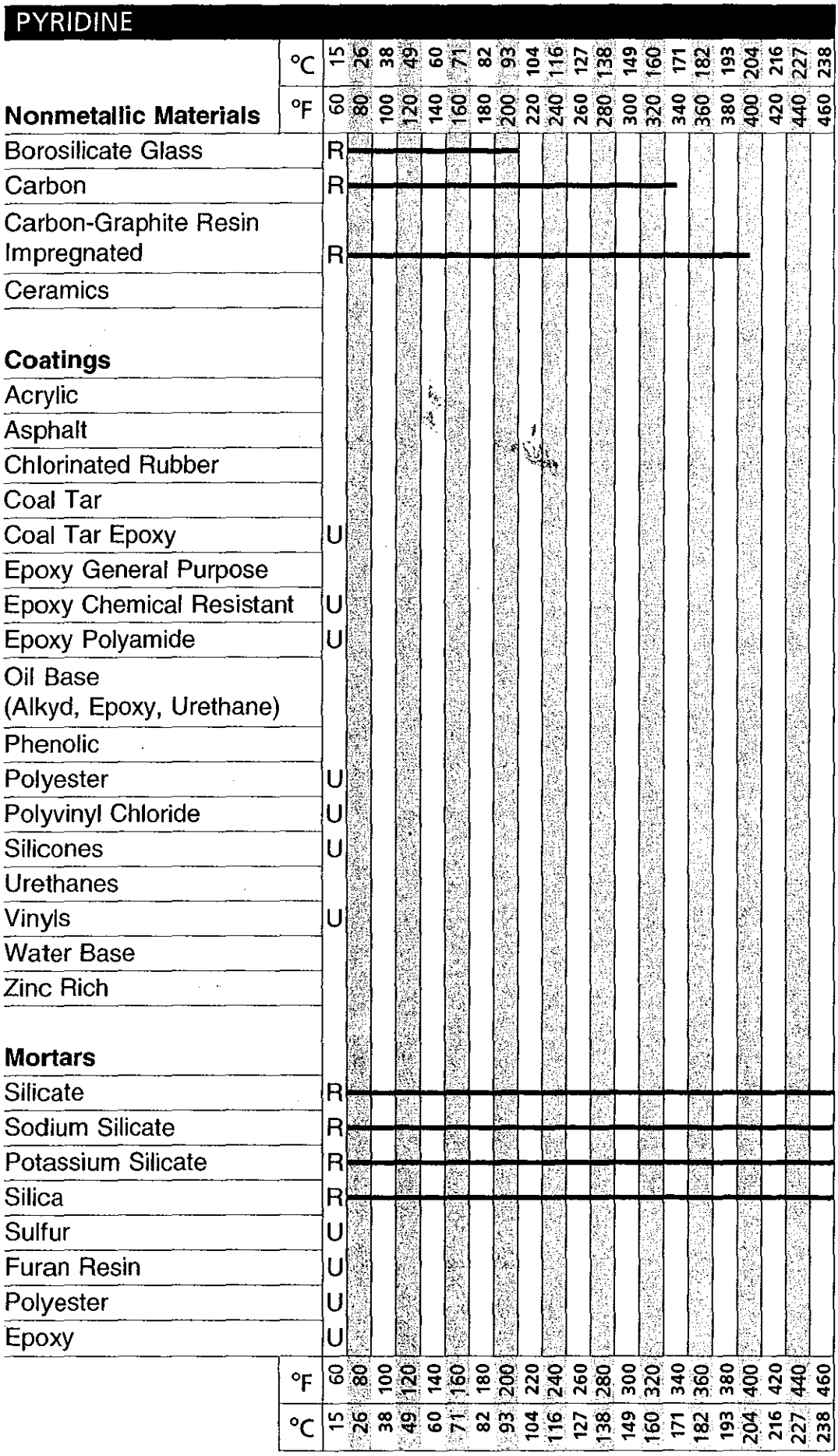
PYRIDINE



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Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)	R	
CPVC	U	
E-CTFE (Halar)	U	
Epoxy	U	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)	U	
Noryl	R	U
Nylon 6	R	U
Nylon 11	R	U
Nylon 66	R	U
Phenolic	U	
PFA (Teflon)	R	
Polyamide-Imide	U	
Polyesters		
Bisphenol A–fumarate	U	
Halogenated	U	
Hydrogenated Bisphenol A –Bisphenol A	U	
Isophthalic	U	
Terephthalate (PET)	R	
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	R	
Polyethylene UHMW	R	
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone	U	
Polyvinylidene Chloride		
PVC Type 1	U	
PVC Type 2	U	
PVDF (Kynar)	U	
Ryton	R	
TFE (Teflon)	R	
Vinyl Ester	U	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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PYRIDINE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)	R																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	U																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal	U																				
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)	U																				
Polybutadiene (BR)																					
Polyester (PE)	U																				
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)	U																				
Silicone Rubbers	U																				
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	°F
Admiralty Brass		
Aluminum	G	
Aluminum Bronze		
Brass	G	
Bronze	G	
Carbon Steel	G	
Columbium (Niobium)		
Copper	E	
Hastelloy B/B-2	G	
Hastelloy C/C-276	G	
Hastelloy D	G	
Hastelloy G/G-3		
High Silicon Iron	G	
Inconel 600/625	G	
Incolloy 800/825	E	
Lead		
Monel 400	G	
Naval Bronze	G	
Nickel 200/201	G	
Ni-Resist	U	
Stainless Steels		
Type 304/347	G	
Type 316/316 L	G	
Type 400 series	G	
Type 904-L		
17-4 PH	G	
20 Cb 3 60%	G	
E-Bright 26-1		
Silicon Bronze	G	
Silicon Copper	E	
Stellite	G	
Tantalum	G	
Titanium	E	
Zirconium		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

Schweitzer/Corrosion Resistance Tables: Fifth Edition, Revised and Expanded DOI: 10.1081/5672-X-120028991

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PYROGALLIC ACID

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon		R																				
Carbon-Graphite Resin Impregnated		R																				
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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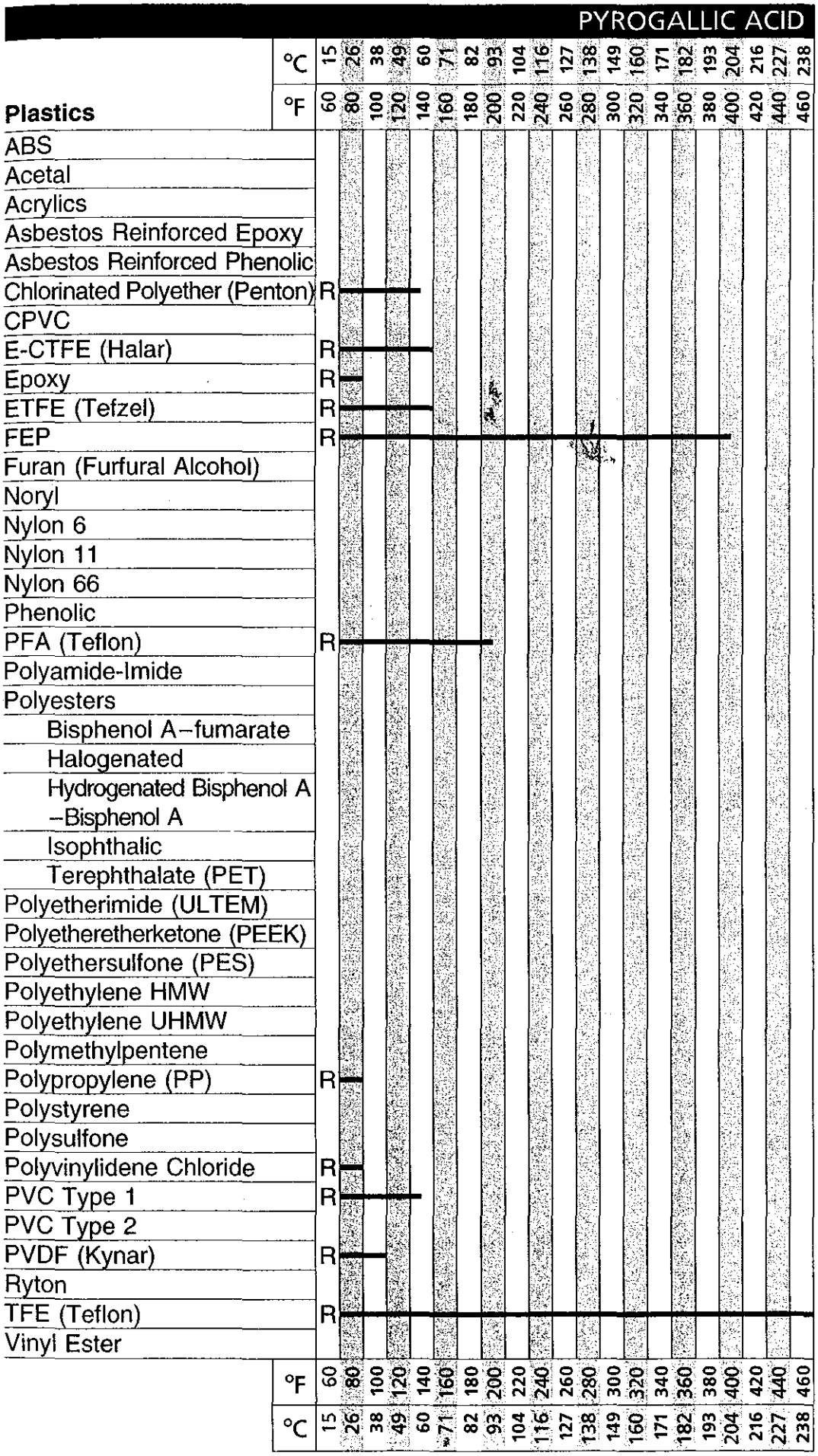
PYROGALLIC ACID



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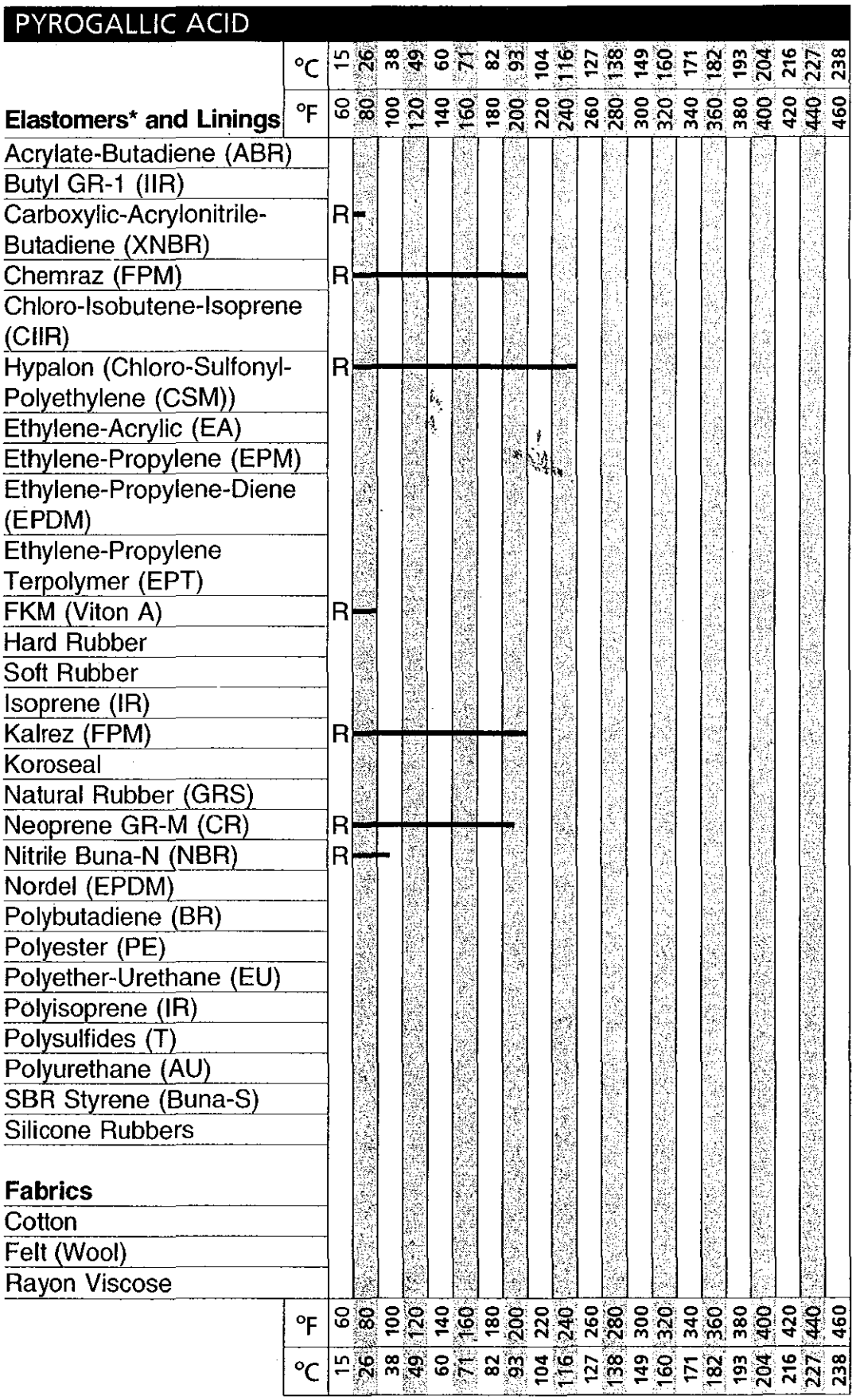
PYROGALLIC ACID



*See also Nylon 11 under PLASTICS

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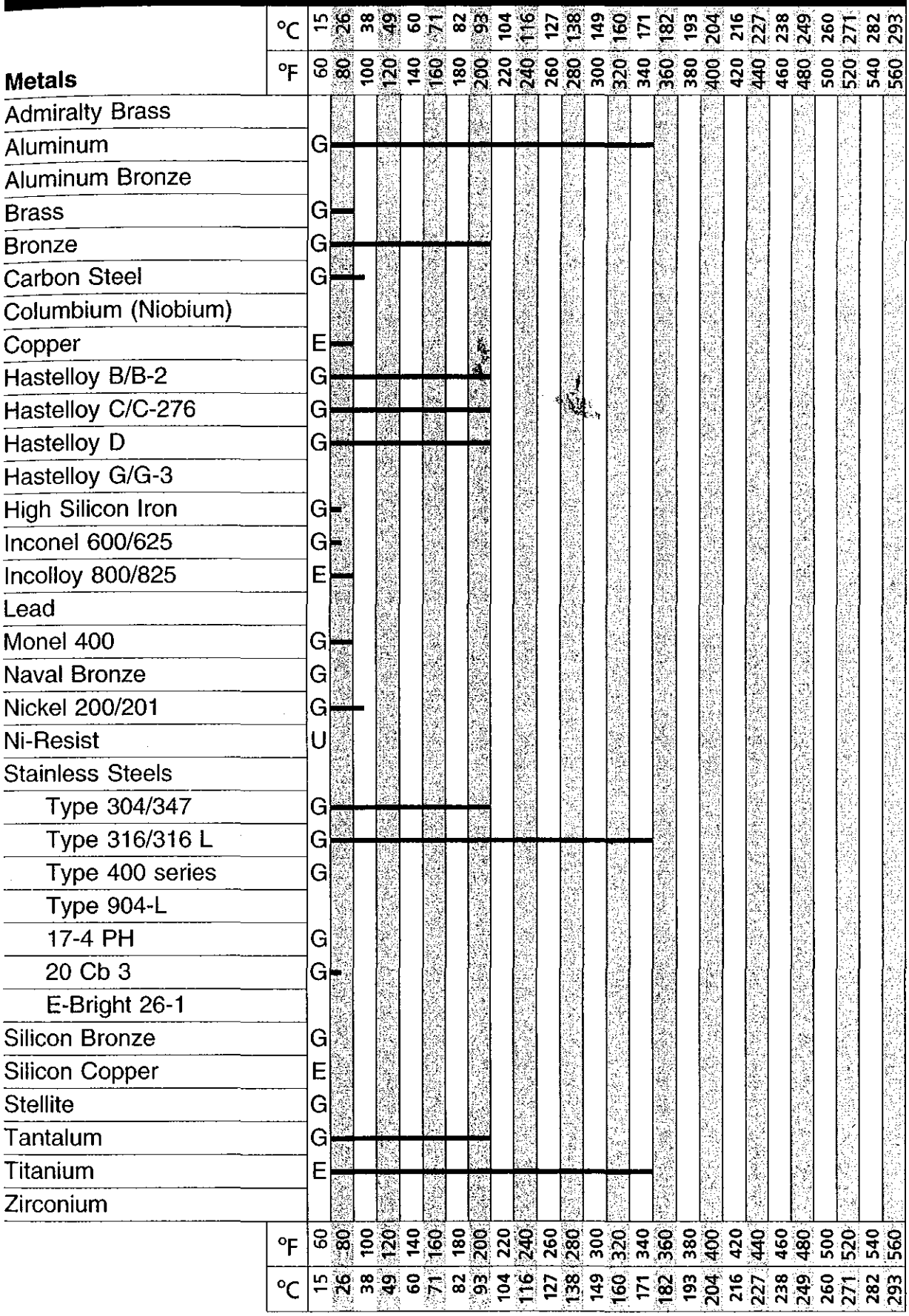

FOR METALS

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S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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PYROGALLOL

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon		R																				
Carbon-Graphite Resin Impregnated		R																				
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)	R	
CPVC		
E-CTFE (Halar)	R	
Epoxy	R	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone		
Polyvinylidene Chloride	R	
PVC Type 1	R	
PVC Type 2		
PVDF (Kynar)	R	
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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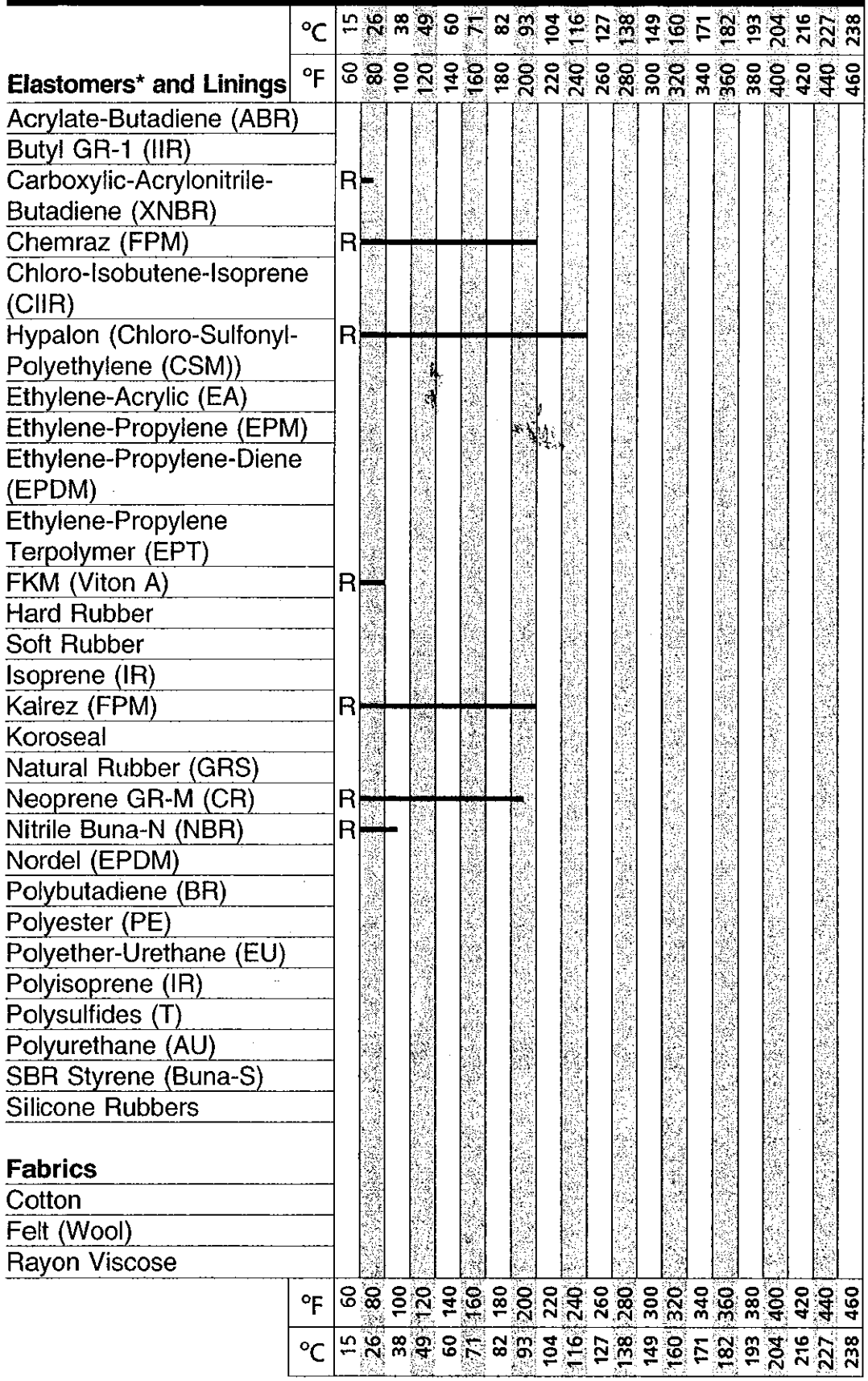
PYROGALLOL



*See also Nylon 11 under PLASTICS

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Metals			°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
			°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																													
Aluminum		G																											
Aluminum Bronze																													
Brass																													
Bronze																													
Carbon Steel		U																											
Columbium (Niobium)																													
Copper																													
Hastelloy B/B-2		E																											
Hastelloy C/C-276																													
Hastelloy D																													
Hastelloy G/G-3																													
High Silicon Iron																													
Inconel 600/625																													
Incolloy 800/825																													
Lead																													
Monel 400	10–40%	G																											
Naval Bronze																													
Nickel 200/201																													
Ni-Resist																													
Stainless Steels																													
Type 304/347	10%	E																											
Type 316/316 L	10%	E																											
Type 400 series		E	G																										
Type 904-L																													
17-4 PH																													
20 Cb 3	20%	G																											
E-Bright 26-1																													
Silicon Bronze																													
Silicon Copper																													
Stellite																													
Tantalum																													
Titanium																													
Zirconium																													
			°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
			°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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PYROLIGNEOUS ACID

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated		R																				
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
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Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
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Water Base																						
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Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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PYROLIGNEOUS ACID

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)	R																					
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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PYROLIGNEOUS ACID

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)	R																					
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																					
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)	U																					
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)	U																					
Hard Rubber	U																					
Soft Rubber																						
Isoprene (IR)	U																					
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)	U																					
Neoprene GR-M (CR)	U																					
Nitrile Buna-N (NBR)	U																					
Nordel (EPDM)	U																					
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)	U																					
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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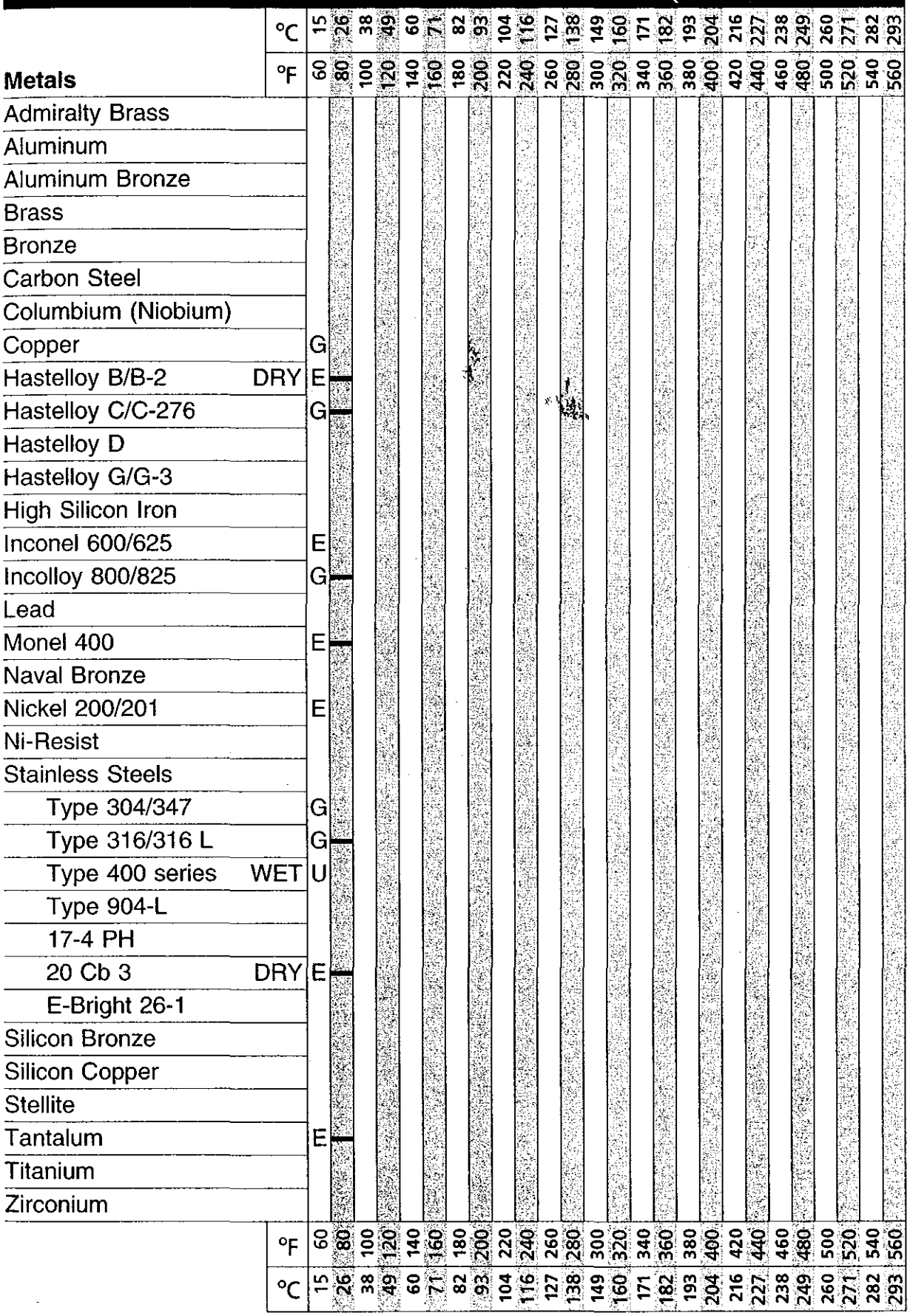

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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QUINONE BISULFATE

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)	R																					
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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QUINONE BISULFATE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)																					
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)																					
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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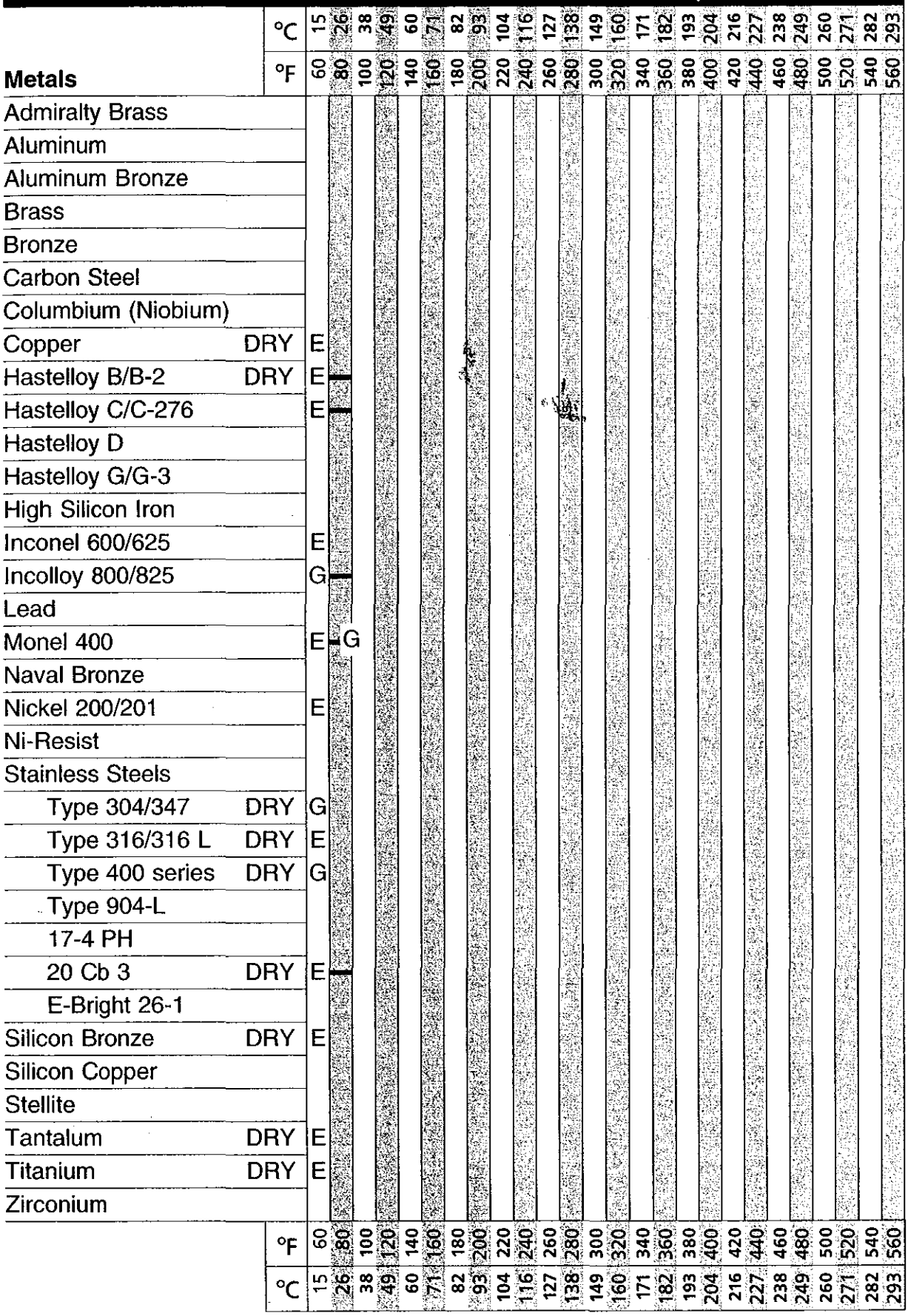

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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QUININE SULFÁTE

Nonmetallic Materials
Borosilicate Glass
Carbon
Carbon-Graphite Resin Impregnated
Ceramics
Coatings
Acrylic
Asphalt
Chlorinated Rubber
Coal Tar
Coal Tar Epoxy
Epoxy General Purpose
Epoxy Chemical Resistant
Epoxy Polyamide
Oil Base (Alkyd, Epoxy, Urethane)
Phenolic
Polyester
Polyvinyl Chloride
Silicones
Urethanes
Vinyls
Water Base
Zinc Rich
Mortars
Silicate
Sodium Silicate
Potassium Silicate
Silica
Sulfur
Furan Resin
Polyester
Epoxy

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy	R																					
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
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PFA (Teflon)	R																					
Polyamide-Imide																						
Polyesters																						
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Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
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	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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QUININE SULFATE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)	R																					
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
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Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
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Polyisoprene (IR)																						
Polysulfides (T)																						
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SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L	G																										
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3	G																										
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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QUINONE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP																						
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)																						
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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QUINONE

Elastomers* and Linings	°C	°F
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)		
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U	
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)	R	
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)	U	
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)	R	
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)		
Nitrile Buna-N (NBR)		
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

*See also Nylon 11 under PLASTICS

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RAYON COAGULATING BATH

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum																												
Aluminum Bronze																												
Brass																												
Bronze																												
Carbon Steel																												
Columbium (Niobium)																												
Copper																												
Hastelloy B/B-2			G																									
Hastelloy C/C-276			G																									
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625																												
Incolloy 800/825																												
Lead																												
Monel 400																												
Naval Bronze																												
Nickel 200/201																												
Ni-Resist																												
Stainless Steels																												
Type 304/347			U																									
Type 316/316 L	1		G																									
Type 400 series																												
Type 904-L																												
17-4 PH																												
20 Cb 3																												
E-Bright 26-1																												
Silicon Bronze																												
Silicon Copper																												
Stellite																												
Tantalum																												
Titanium																												
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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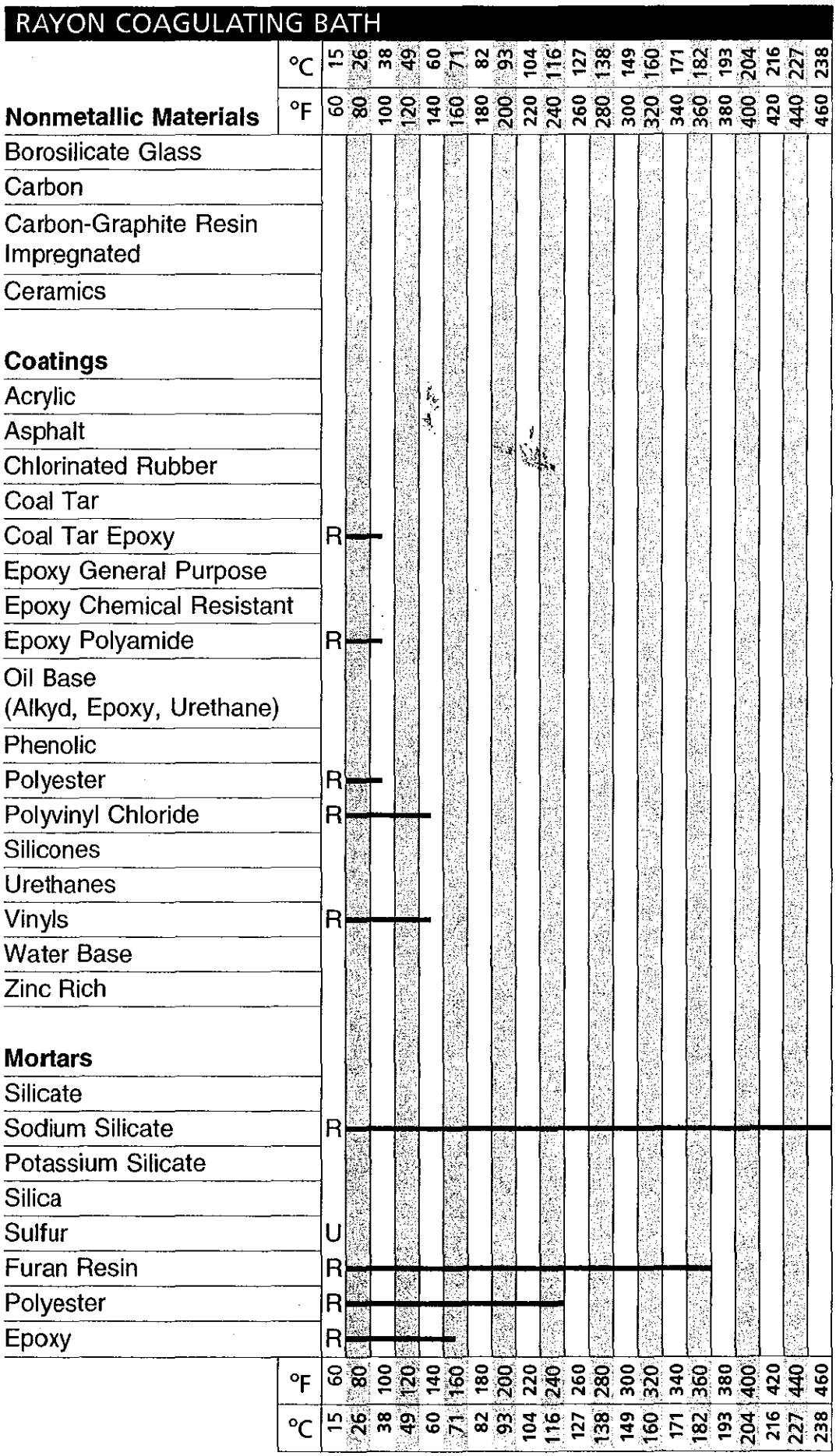
RAYON COAGULATING BATH



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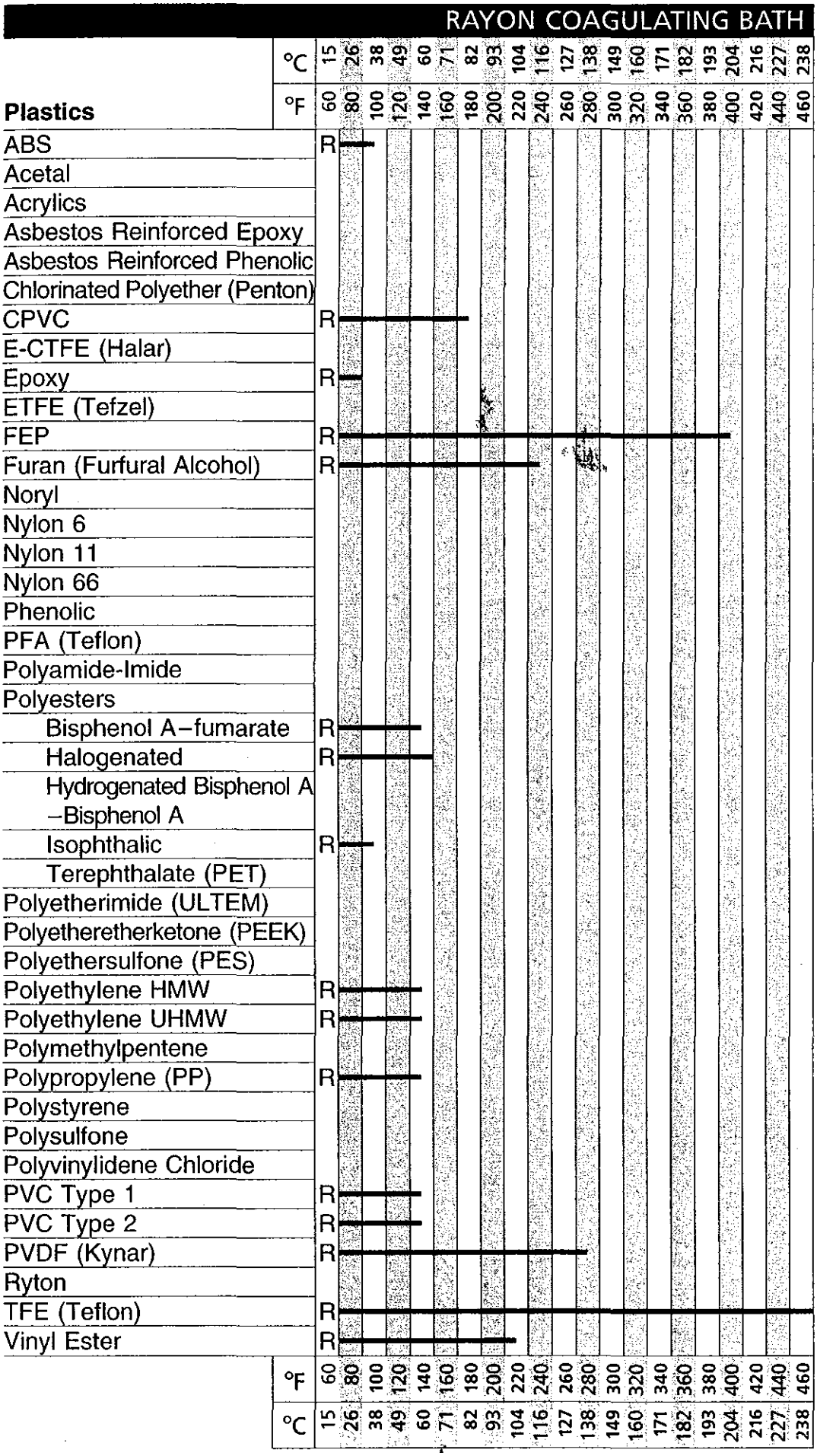

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RAYON COAGULATING BATH

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)	R																					
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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RESORCINOL

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass		R																				
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C	°F
Polycarbonate (PC)	R	U
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)	R	
Noryl		
Nylon 6	R	
Nylon 11	U	
Nylon 66	R	
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)	R	
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	R	
Polyethylene UHMW	R	
Polymethylpentene	R	
Polypropylene (PP)	R	
Polystyrene		
Polysulfone	U	
Polyvinylidene Chloride		
PVC Type 1	R	
PVC Type 2		
PVDF (Kynar)		
Ryton	R	
TFE (Teflon)	R	
Vinyl Ester	R	

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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RESORCINOL

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)	R																					
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel	G	G	G	G	G																						
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist	G	G	G	G	G																						
Stainless Steels																											
Type 304/347	G	G	G	G	G																						
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

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ROAD OIL

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP																						
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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ROAD OIL

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)		R																				
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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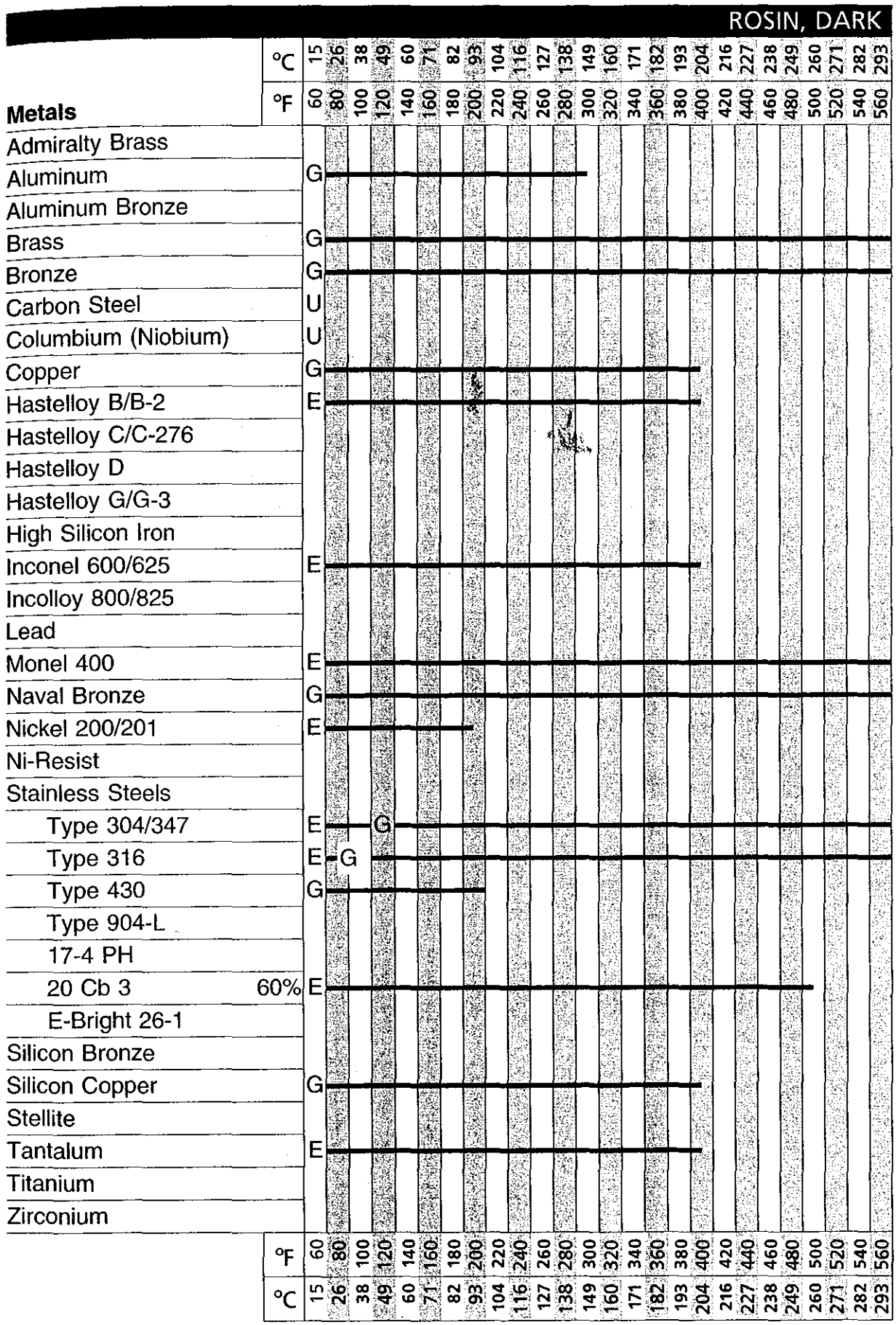

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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ROSIN, DARK

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon		R																				
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP		
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW	R	
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1	U	
PVC Type 2	U	
PVDF (Kynar)		
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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ROSIN, DARK

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)																					
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)																					
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)																					
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	°F	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
			60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum			G																									
Aluminum Bronze																												
Brass			U																									
Bronze			U																									
Carbon Steel			U																									
Columbium (Niobium)			U																									
Copper			U																									
Hastelloy B/B-2			E																									
Hastelloy C/C-276																												
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625			E																									
Incolloy 800/825																												
Lead																												
Monel 400			G																									
Naval Bronze			U																									
Nickel 200/201			E																									
Ni-Resist																												
Stainless Steels																												
Type 304/347			E			G																						
Type 316			E	G																								
Type 430			G																									
Type 904-L																												
17-4 PH																												
20 Cb 3	60%		E																									
E-Bright 26-1																												
Silicon Bronze																												
Silicon Copper			U																									
Stellite			E																									
Tantalum			E																									
Titanium																												
Zirconium																												
	°F		60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C		15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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ROSIN, LIGHT

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon		R																				
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Polycarbonate		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP		
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW	R	
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1	U	
PVC Type 2	U	
PVDF (Kynar)		
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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ROSIN, LIGHT

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)																					
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)																					
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)																					
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass	G																										
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2	E																										
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625	E																										
Incolloy 800/825																											
Lead																											
Monel 400	G																										
Naval Bronze																											
Nickel 200/201	E																										
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316	G																										
Type 400 series																											
Type 317/317 L	G																										
17-4 PH																											
20 Cb 3	G																										
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum	E																										
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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ROSIN, MOLTEN

Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated		R																				
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
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Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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ROSIN, MOLTEN

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
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ETFE (Tefzel)																						
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Polypropylene (PP)																						
Polystyrene																						
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Polyvinylidene Chloride																						
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PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester																						
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	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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ROSIN, MOLTEN

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
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Ethylene-Propylene-Diene (EPDM)																						
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Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)		R																				
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Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276	G																										
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
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Monel 400	G																										
Naval Bronze																											
Nickel 200/201																											
Ni-Resist	U																										
Stainless Steels																											
Type 304/347	G																										
Type 316	G																										
Type 400 series																											
Type 317/317 L	G																										
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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ROSIN OIL

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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ROSIN OIL

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP																						
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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ROSIN OIL

Elastomers* and Linings	°F	°C
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)		
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)		
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)		
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)		
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)		
Nitrile Buna-N (NBR)	R	
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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SALENIC ACID AQUEOUS

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SALENIC ACID AQUEOUS

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride		R																				
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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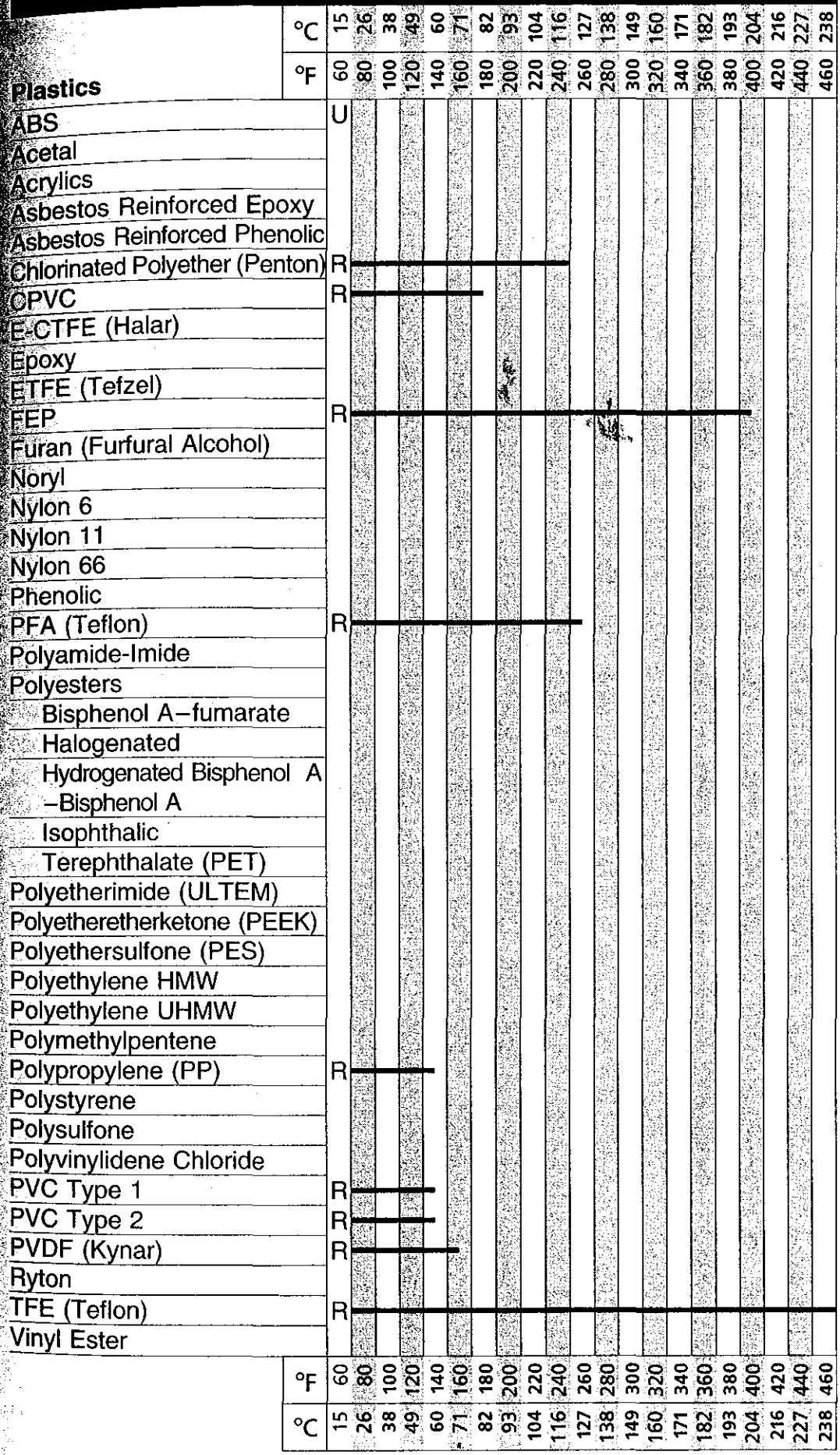
SALENIC ACID AQUEOUS



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SALENIC ACID AQUEOUS

Elastomers* and Linings	°F	°C
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)	R	
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)		
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)		
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)	R	
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)		
Nitrile Buna-N (NBR)		
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel		U																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		G																									
Type 316/316 L		G																									
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SALICIC ACID

Nonmetallic Materials	°C	°F
Borosilicate Glass	R	R
Carbon		
Carbon-Graphite Resin Impregnated		
Ceramics		
Coatings		
Acrylic		
Asphalt		
Chlorinated Rubber		
Coal Tar		
Coal Tar Epoxy		
Epoxy General Purpose		
Epoxy Chemical Resistant		
Epoxy Polyamide		
Oil Base (Alkyd, Epoxy, Urethane)		
Phenolic		
Polyester		
Polyvinyl Chloride	R	R
Silicones		
Urethanes		
Vinyls		
Water Base		
Zinc Rich		
Mortars		
Silicate		
Sodium Silicate		
Potassium Silicate		
Silica		
Sulfur		
Furan Resin		
Polyester		
Epoxy		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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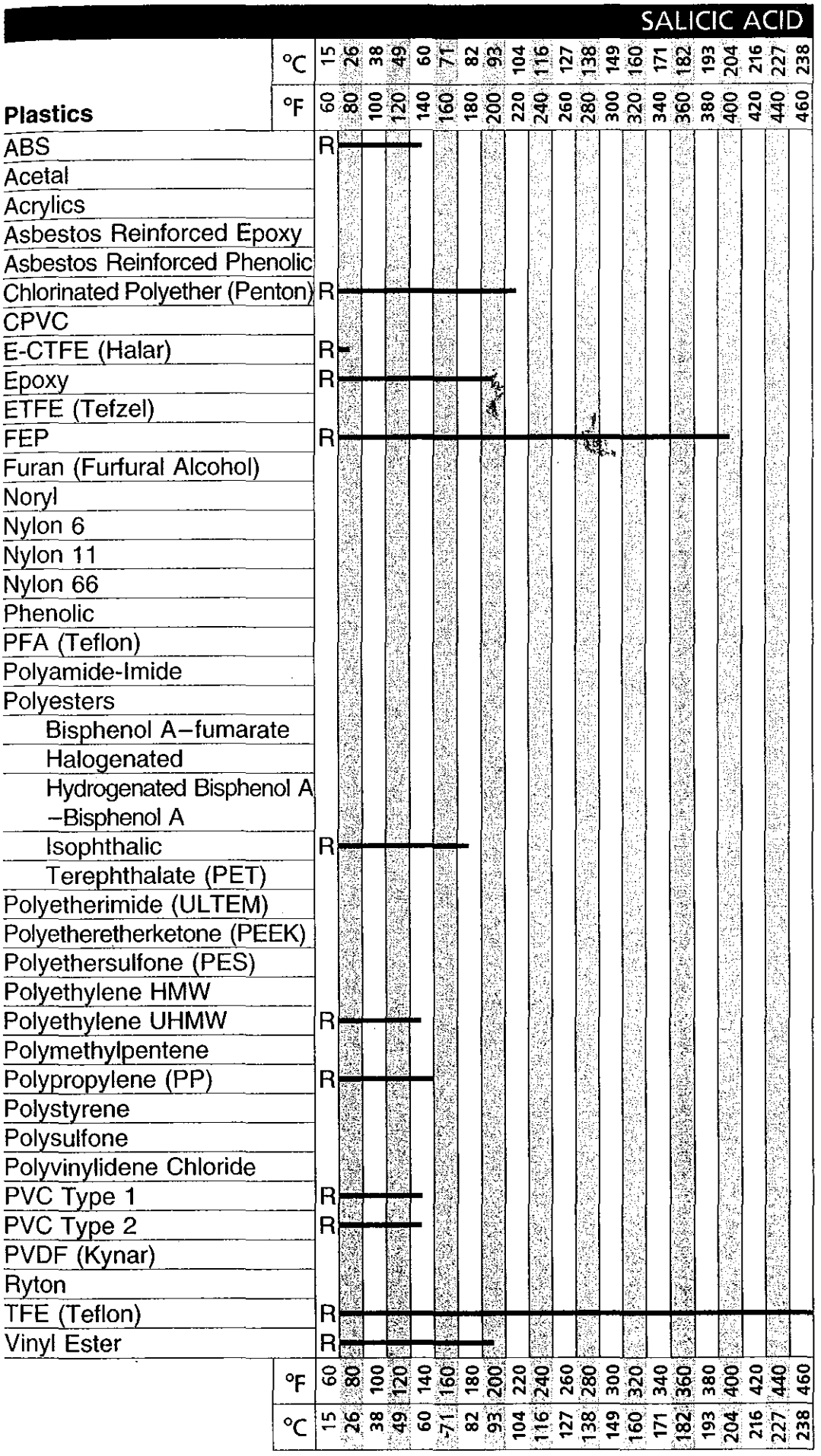
SALICIC ACID



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SALICIC ACID

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)																					
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)	R																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	°F
Admiralty Brass		
Aluminum		
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel		
Columbium (Niobium)		
Copper		
Hastelloy B/B-2		
Hastelloy C/C-276		
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625		
Incolloy 800/825		
Lead		
Monel 400		
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347		
Type 316/316 L		
Type 400 series		
Type 904-L		
17-4 PH		
20 Cb 3		
E-Bright 26-1		
Silicon Bronze		
Silicon Copper		
Stellite		
Tantalum		
Titanium		
Zirconium		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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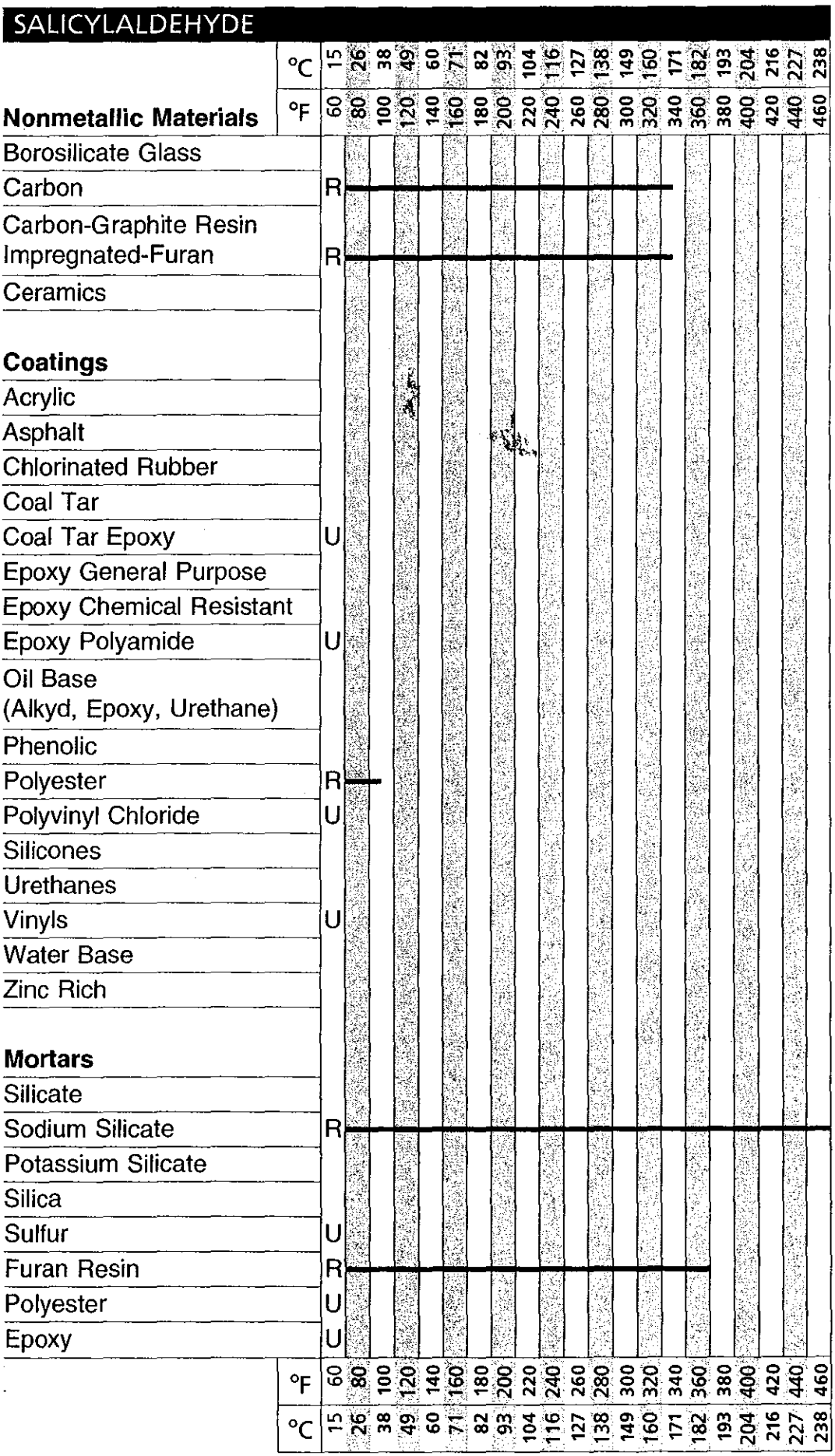
SALICYLALDEHYDE



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SALICYLALDEHYDE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS		U																				
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)		R																				
CPVC		U																				
E-CTFE (Halar)		R	U																			
Epoxy		R																				
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)		R																				
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate		R																				
Halogenated		R																				
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		R																				
Polyethylene UHMW																						
Polymethylpentene		R																				
Polypropylene (PP)		R																				
Polystyrene																						
Polysulfone		U																				
Polyvinylidene Chloride		U																				
PVC Type 1		U																				
PVC Type 2		U																				
PVDF (Kynar)		R					U															
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester		R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SALICYLALDEHYDE

Elastomers* and Linings	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)	R																					
Ethylene-Propylene Terpolymer (EPT)	R																					
FKM (Viton A)	R																					
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)	R																					
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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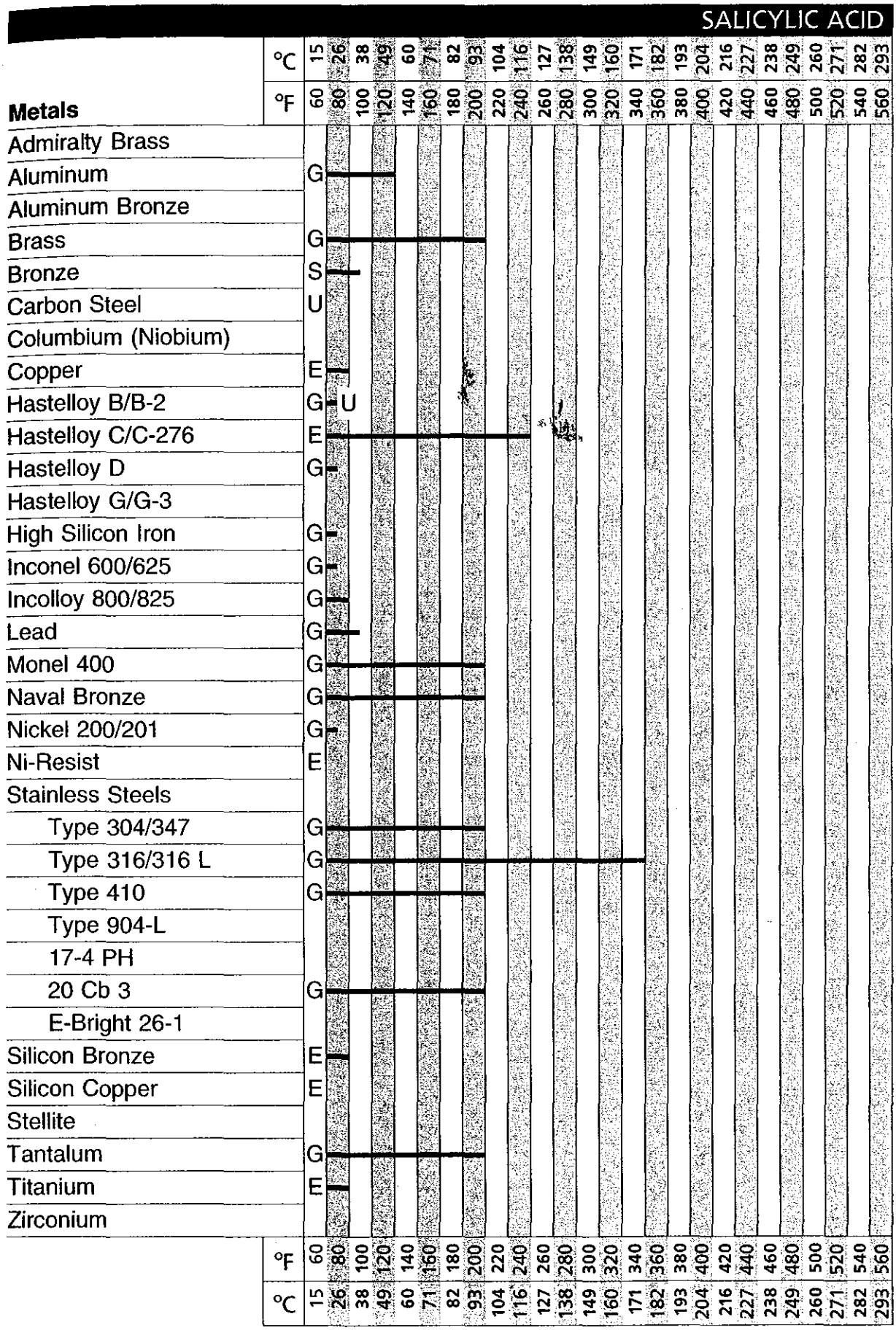

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

Schweitzer/Corrosion Resistance Tables: Fifth Edition, Revised and Expanded DOI: 10.1081/5672-X-120029007

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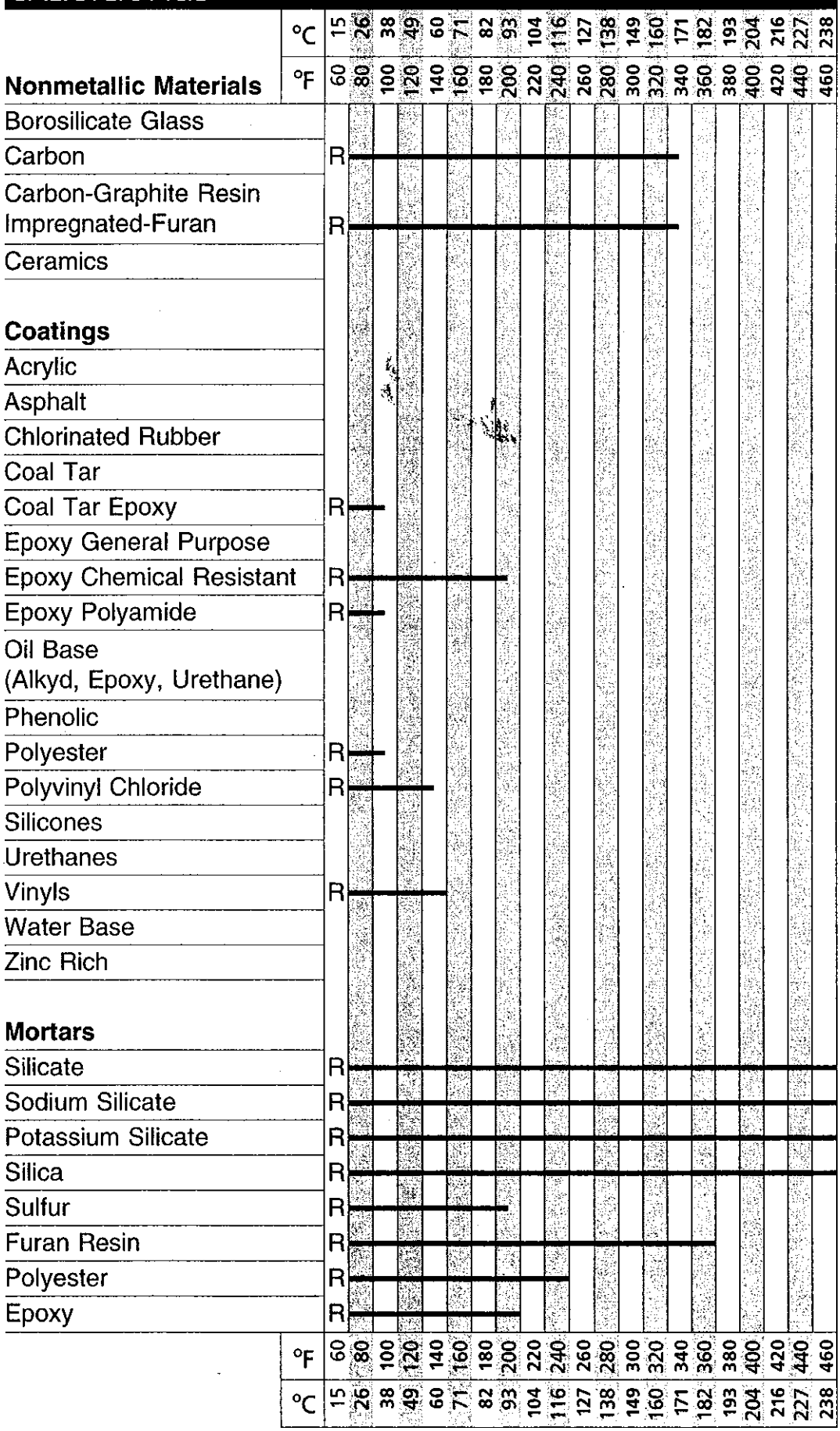
SALICYLIC ACID



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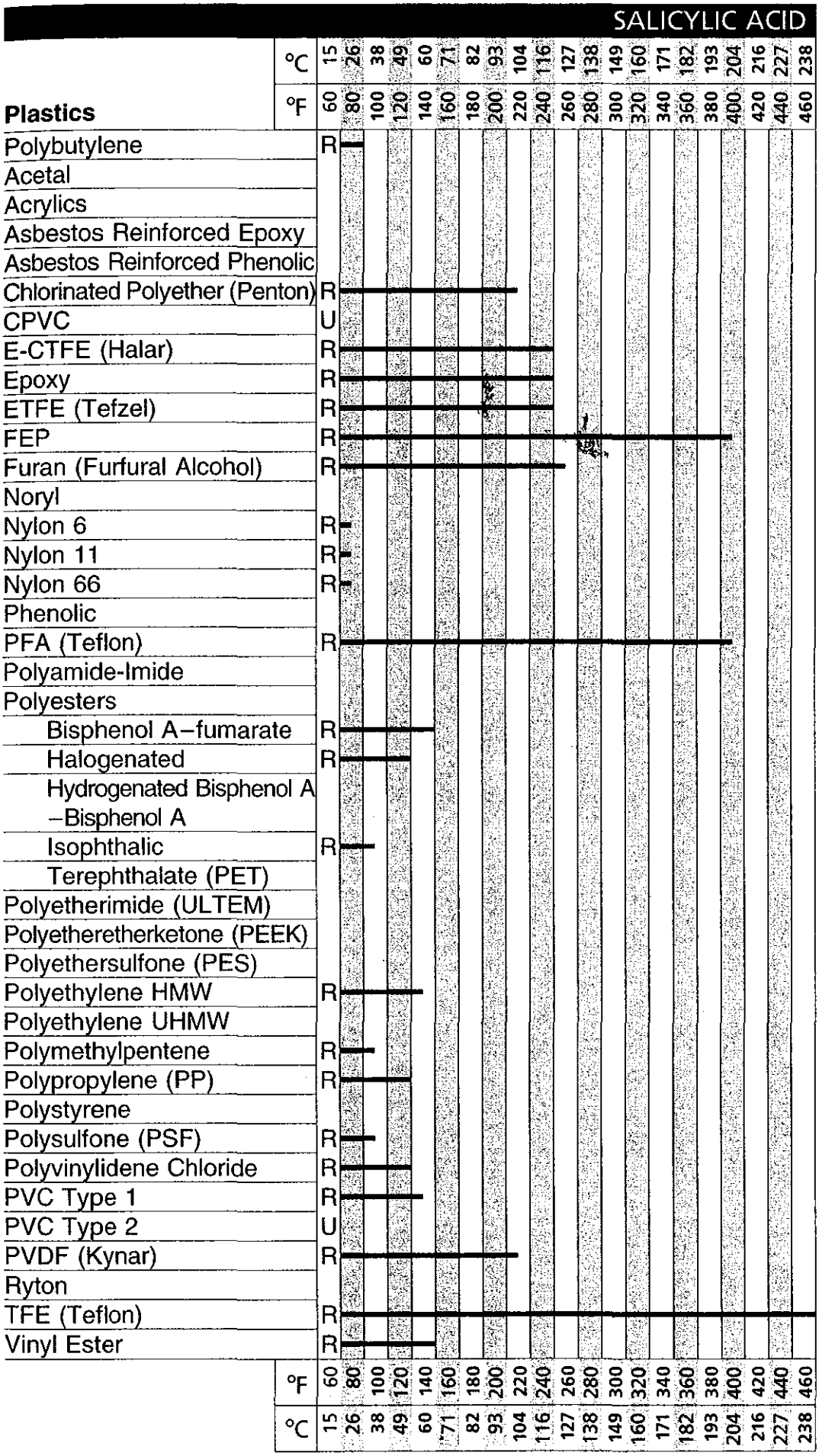
SALICYLIC ACID



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SALICYLIC ACID

Elastomers* and Linings	°F	°C
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)	R	
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)	R	
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	R	
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)	R	
Ethylene-Propylene Terpolymer (EPT)	R	
FKM (Viton A)	R	
Hard Rubber		
Soft Rubber		
Isoprene (IR)	R	
Kalrez (FPM)	R	
Koroseal	R	
Natural Rubber (GRS)	R	
Neoprene GR-M (CR)	R	
Nitrile Buna-N (NBR)	R	U
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton	U	
Felt (Wool)	U	
Rayon Viscose	U	

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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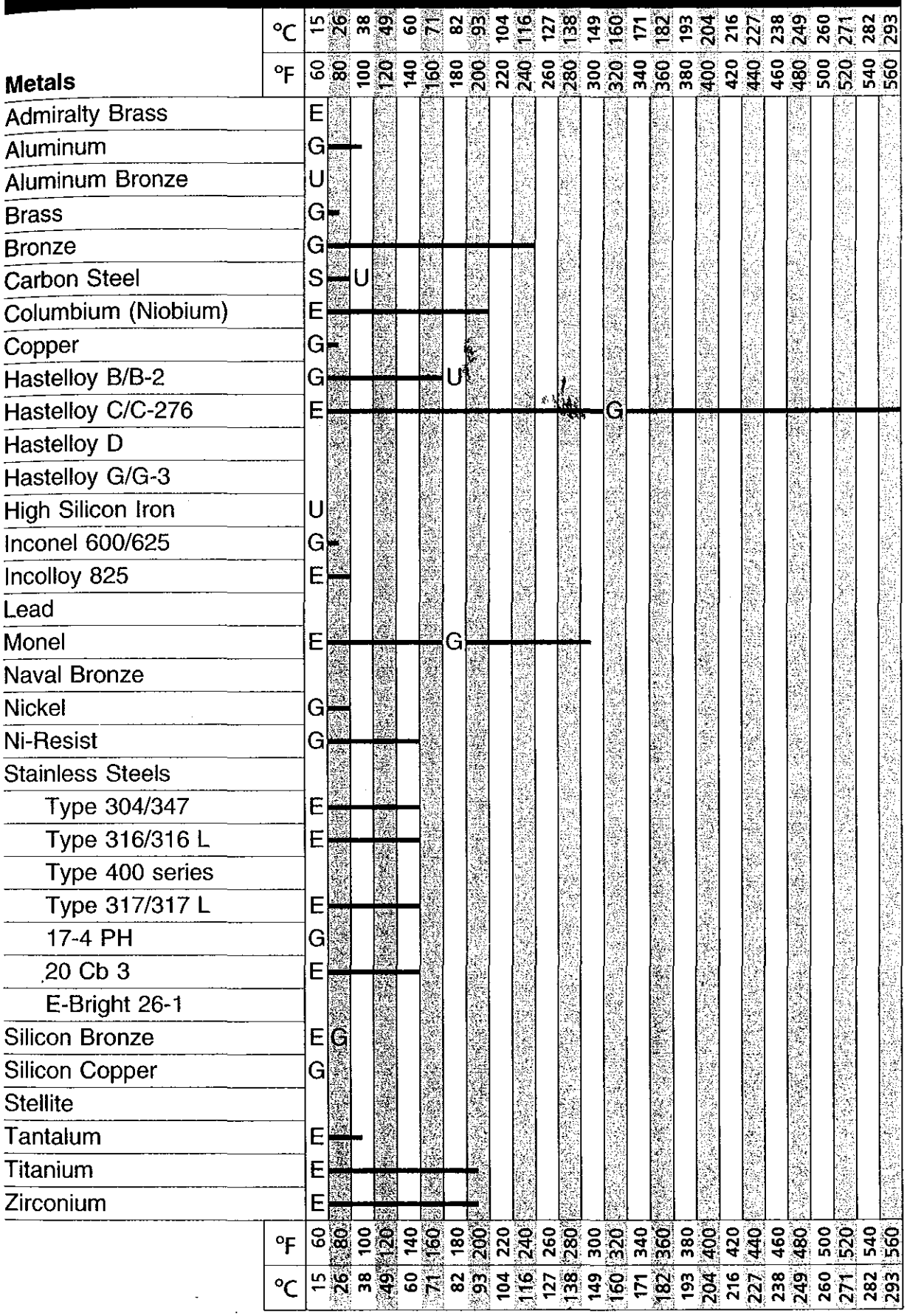
SEA WATER



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

Schweitzer/*Corrosion Resistance Tables: Fifth Edition, Revised and Expanded* DOI: 10.1081/5672-X-120029008

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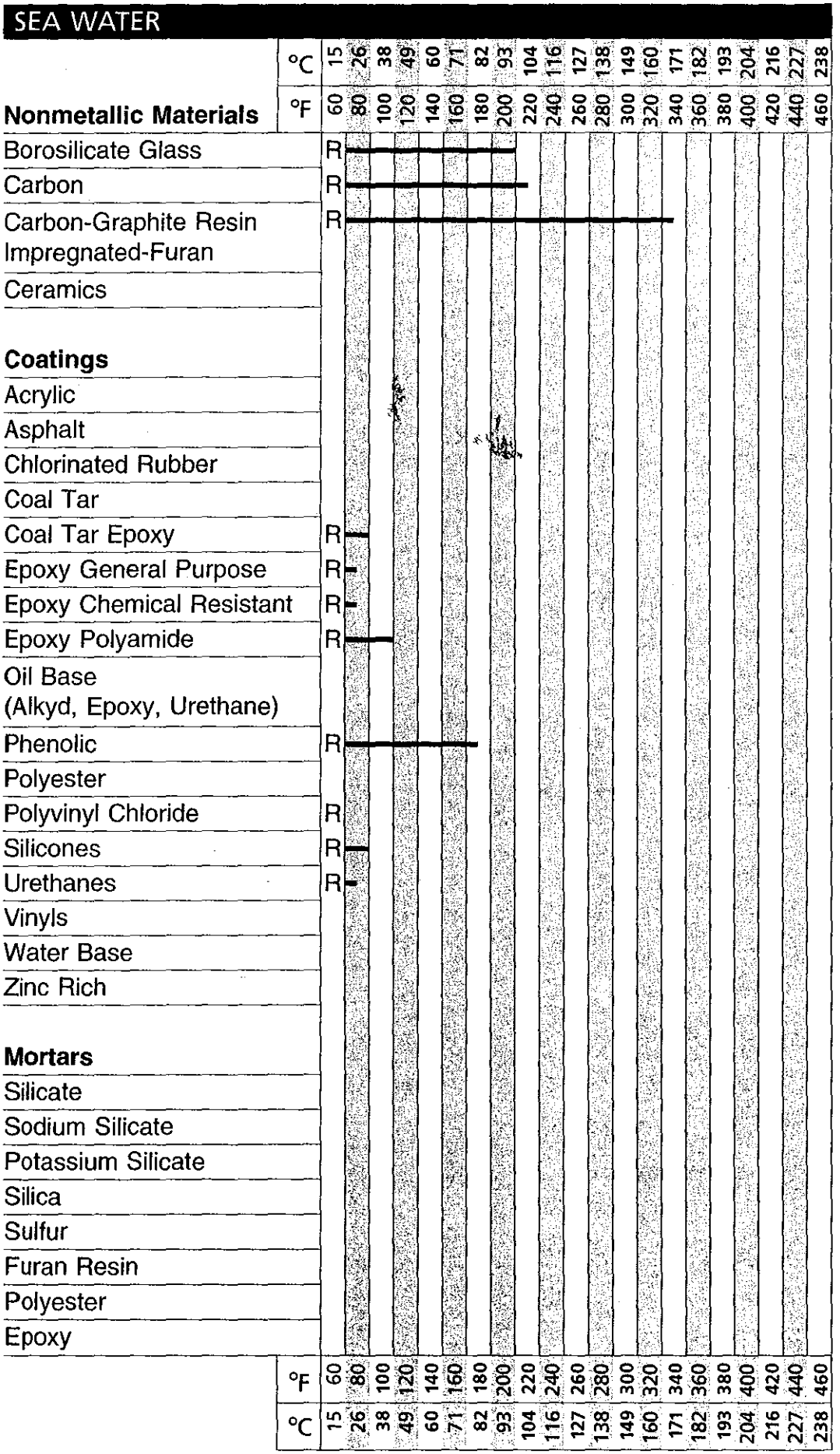
SEA WATER



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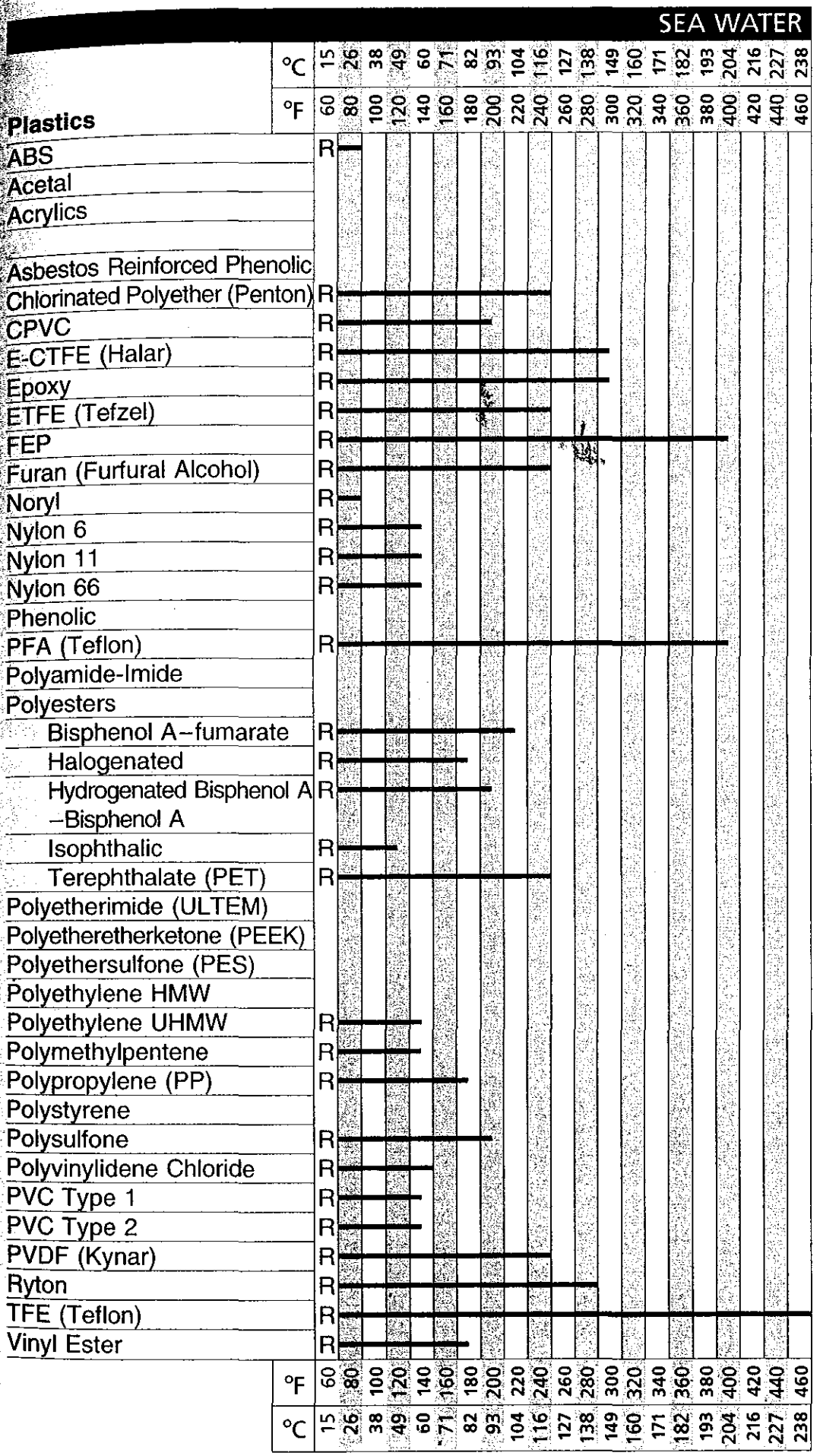

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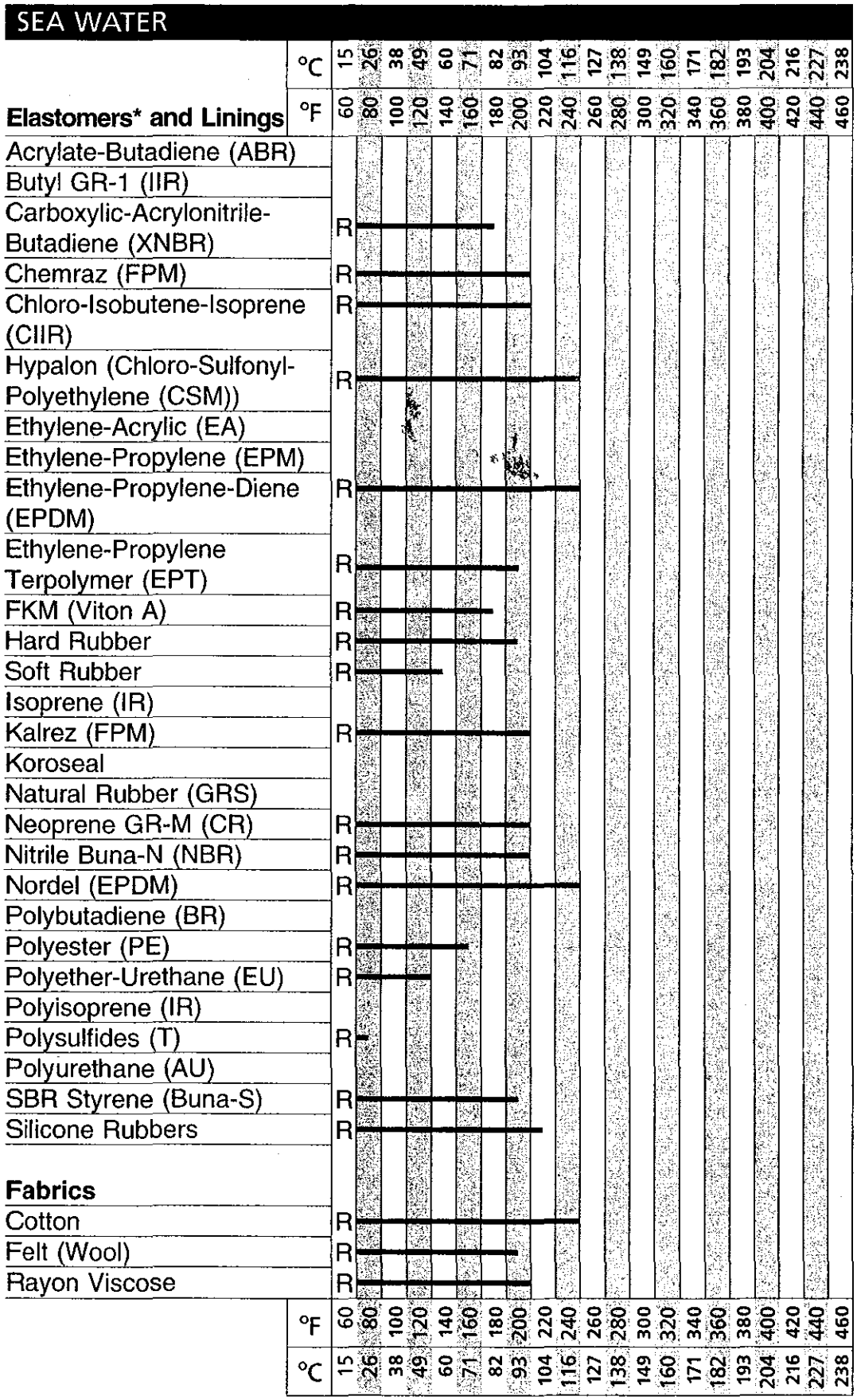
SEA WATER



*See also Nylon 11 under PLASTICS

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SELENIUS ACID, 30%

Metals	°C	°F
Admiralty Brass		
Aluminum		
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel		
Columbium (Niobium)		
Copper		
Hastelloy B/B-2		
Hastelloy C/C-276		
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625		
Incolloy 800/825		
Lead		
Monel 400		
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347		
Type 316/316 L	G	
Type 400 series		
Type 317/317 L	G	
17-4 PH		
20 Cb 3	G	
E-Bright 26-1		
Silicon Bronze		
Silicon Copper		
Stellite		
Tantalum		
Titanium		
Zirconium		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

Schweitzer/*Corrosion Resistance Tables: Fifth Edition, Revised and Expanded* DOI: 10.1081/5672-X-120029009

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SELENIUS ACID, 30%

Nonmetallic Materials
Borosilicate Glass
Carbon
Carbon-Graphite Resin Impregnated
Ceramics
Coatings
Acrylic
Asphalt
Chlorinated Rubber
Coal Tar
Coal Tar Epoxy
Epoxy General Purpose
Epoxy Chemical Resistant
Epoxy Polyamide
Oil Base (Alkyd, Epoxy, Urethane)
Phenolic
Polyester
Polyvinyl Chloride
Silicones
Urethanes
Vinyls
Water Base
Zinc Rich
Mortars
Silicate
Sodium Silicate
Potassium Silicate
Silica
Sulfur
Furan Resin
Polyester
Epoxy

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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SELENIUS ACID, 30%

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP																						
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)		R																				
Ryton																						
TFE (Teflon)																						
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SELENIUS ACID, 30%

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)																					
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)																					
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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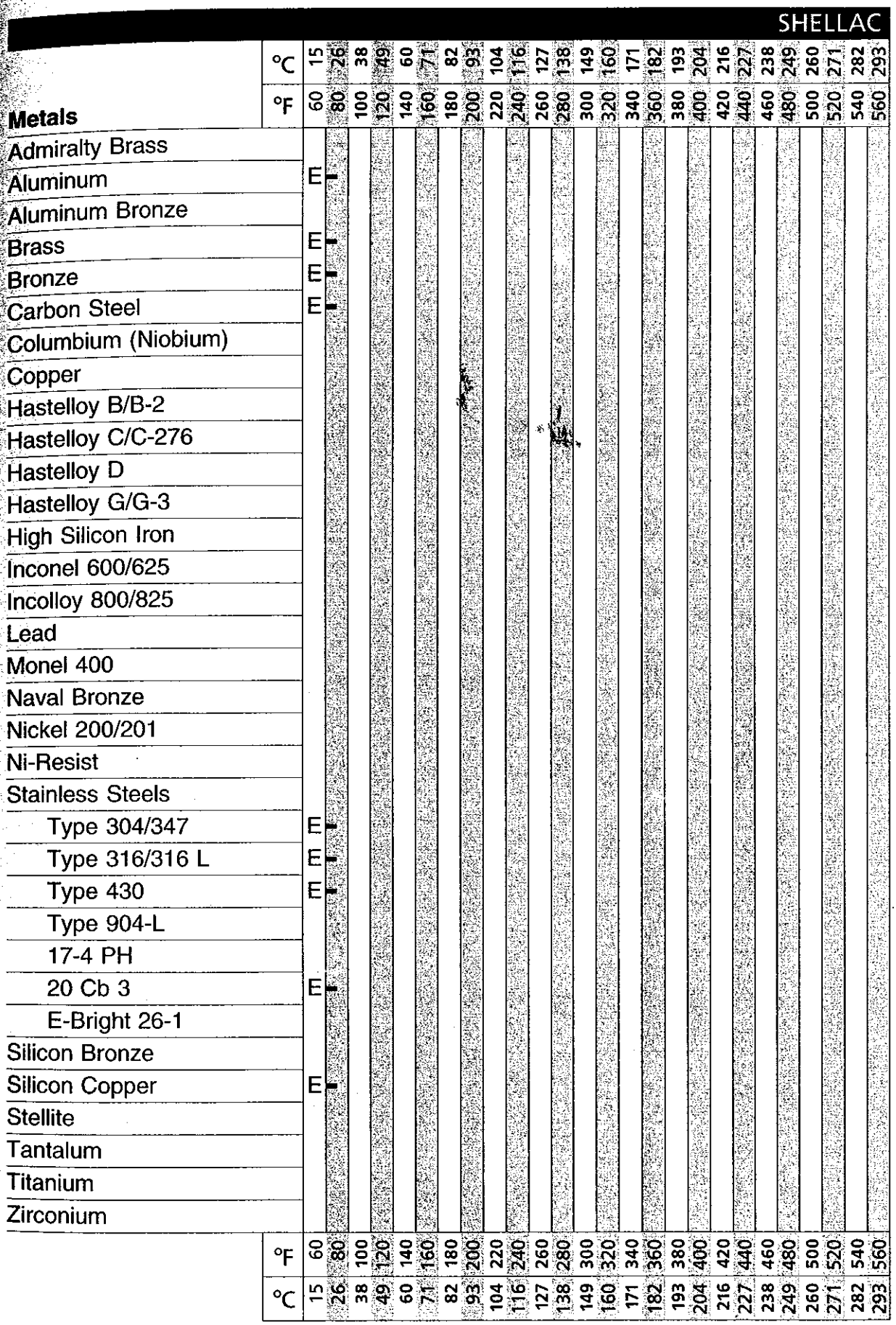

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

Schweitzer/*Corrosion Resistance Tables: Fifth Edition, Revised and Expanded* DOI: 10.1081/5672-X-120029010

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SHELLAC

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon		R																				
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																					
Acetal																					
Acrylics																					
Asbestos Reinforced Epoxy																					
Asbestos Reinforced Phenolic																					
Chlorinated Polyether (Penton)																					
CPVC																					
E-CTFE (Halar)																					
Epoxy	R																				
ETFE (Tefzel)																					
FEP	R																				
Furan (Furfural Alcohol)																					
Noryl																					
Nylon 6																					
Nylon 11																					
Nylon 66																					
Phenolic																					
PFA (Teflon)																					
Polyamide-Imide																					
Polyesters																					
Bisphenol A–fumarate																					
Halogenated																					
Hydrogenated Bisphenol A																					
–Bisphenol A																					
Isophthalic																					
Terephthalate (PET)																					
Polyetherimide (ULTEM)																					
Polyetheretherketone (PEEK)																					
Polyethersulfone (PES)																					
Polyethylene HMW	R																				
Polyethylene UHMW	U																				
Polymethylpentene																					
Polypropylene (PP)	R																				
Polystyrene																					
Polysulfone																					
Polyvinylidene Chloride																					
PVC Type 1	R																				
PVC Type 2	R																				
PVDF (Kynar)																					
Ryton																					
TFE (Teflon)	R																				
Vinyl Ester																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SHELLAC

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
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Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
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Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)																					
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)																					
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G																									
Aluminum Bronze		G																									
Brass		E																									
Bronze		G																									
Carbon Steel		G																									
Columbium (Niobium)																											
Copper		E																									
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze		E																									
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		G																									
Type 316/316 L		G																									
Type 400 series		G																									
Type 904-L																											
17-4 PH		G																									
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze		G																									
Silicon Copper																											
Stellite		G																									
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SILICONE OIL

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon		R	—																			
Carbon-Graphite Resin Impregnated		R																				
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones		U																				
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SILICONE OIL

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Polycarbonate (PC)		R																				
Polyphenylene Oxide		R																				
Polybutylene Terephthalate		R																				
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC		R																				
E-CTFE (Halar)		R																				
Epoxy		R																				
ETFE (Tefzel)																						
FEP		R																				
Furan (Furfural Alcohol)																						
Noryl		R																				
Nylon 6		R																				
Nylon 11		R																				
Nylon 66		R																				
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic		R																				
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW		R																				
Polymethylpentene																						
Polypropylene (PP)		R																				
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1		R																				
PVC Type 2																						
PVDF (Kynar)		R																				
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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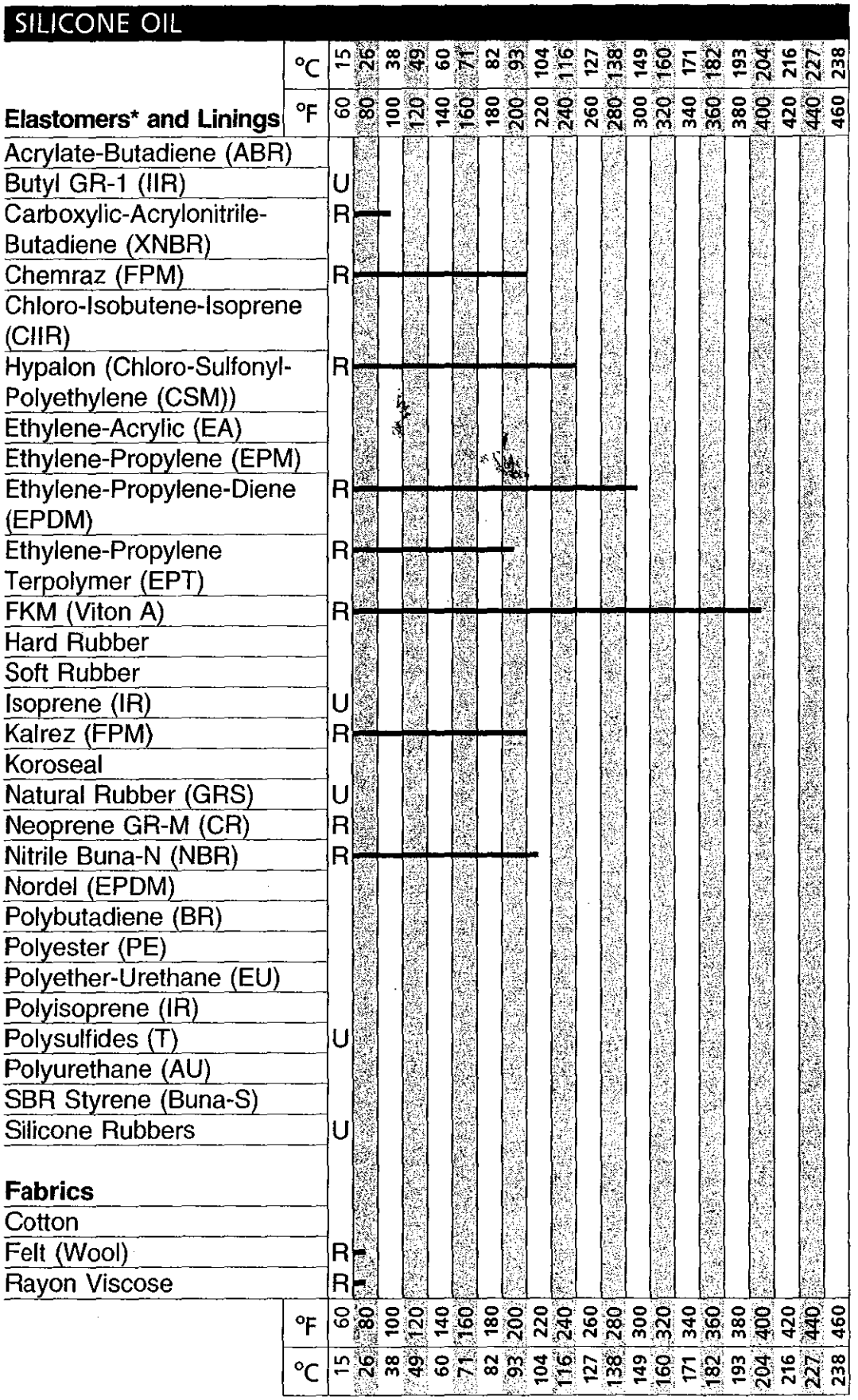
SILICONE OIL



*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass		U																									
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper		U																									
Hastelloy B/B-2		E																									
Hastelloy C/C-276		E																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 825		E																									
Galv. Stl.		U																									
Monel 400		E	G																								
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		U																									
Type 316/316 L		U																									
Type 400 series		U																									
Type 317/317 L		U																									
Type 321		U																									
20 Cb 3		E																									
E-Bright 26-1																											
Silicon Bronze		U																									
Silicon Copper																											
Stellite																											
Tantalum		E																									
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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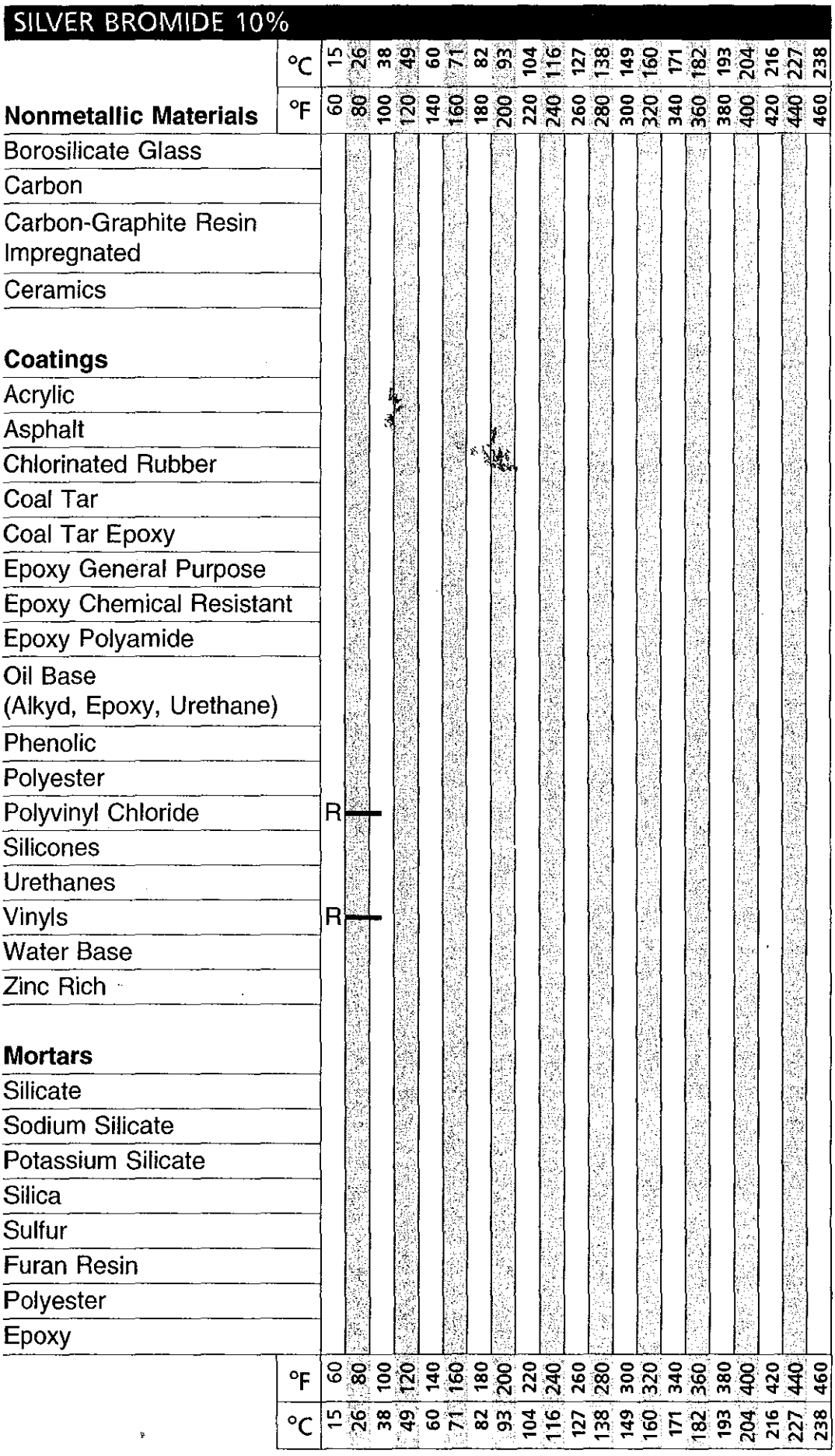
SILVER BROMIDE 10%



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SILVER BROMIDE 10%

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC	R	
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A–Bisphenol A		
Isophthalic	R	
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1	R	
PVC Type 2	R	
PVDF (Kynar)	R	
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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SILVER BROMIDE 10%

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)																					
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)																					
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SILVER CHLORIDE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum			U																									
Aluminum Bronze			U																									
Brass			U																									
Bronze			U																									
Carbon Steel			U																									
Columbium (Niobium)																												
Copper			U																									
Hastelloy B/B-2			U																									
Hastelloy C/C-276	10%		G																									
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625			S																									
Incolloy 825			E																									
Galv. Stl.			U																									
Monel 400			G																									
Naval Bronze			U																									
Nickel 200/201			S																									
Ni-Resist																												
Stainless Steels																												
Type 304/347			U																									
Type 316/316 L			U																									
Type 400 series			U																									
Type 904-L																												
17-4 PH			U																									
20 Cb 3			G																									
E-Bright 26-1																												
Silicon Bronze			U																									
Silicon Copper			U																									
Stellite																												
Tantalum			E																									
Titanium			E																									
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SILVER CHLORIDE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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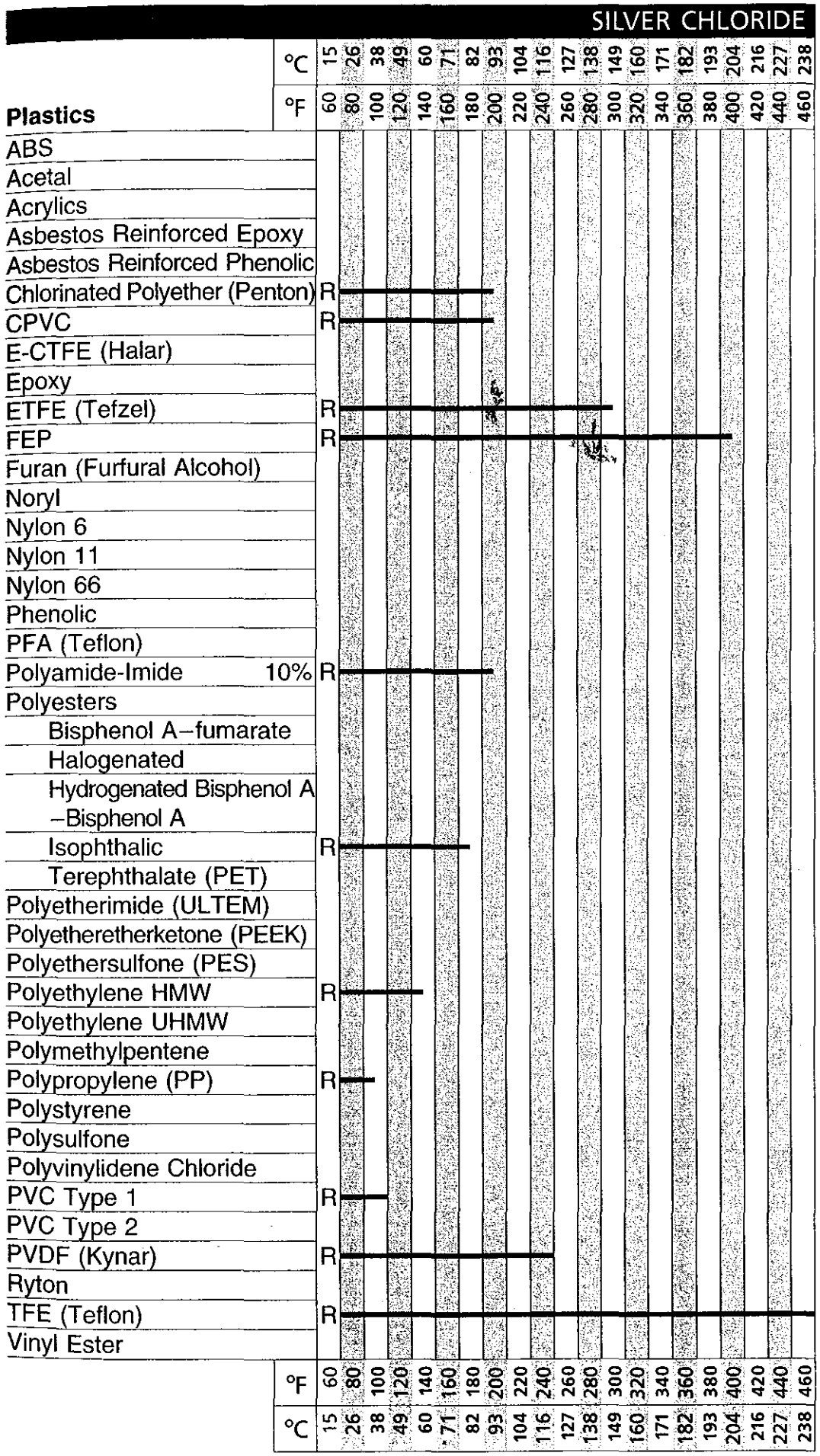

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SILVER CHLORIDE

Elastomers* and Linings	°F	°C
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)	R	
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)		
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)	R	
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)	R	
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)		
Nitrile Buna-N (NBR)		
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton	U	
Felt (Wool)		
Rayon Viscose		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		U																									
Aluminum Bronze		U																									
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper		U																									
Hastelloy B/B-2		E																									
Hastelloy C/C-276		E																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825		E																									
Lead																											
Monel 400		G																									
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		E																									
Type 316/316 L		E																									
Type 400 series		E																									
Type 904-L																											
17-4 PH																											
20 Cb 3		E																									
E-Bright 26-1																											
Silicon Bronze		U																									
Silicon Copper		U																									
Stellite																											
Tantalum		E																									
Titanium		E																									
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SILVER CYANIDE

Nonmetallic Materials	°F	°C
Borosilicate Glass		
Carbon	R	R
Carbon-Graphite Resin Impregnated	R	R
Ceramics		
Coatings		
Acrylic		
Asphalt		
Chlorinated Rubber		
Coal Tar		
Coal Tar Epoxy		
Epoxy General Purpose		
Epoxy Chemical Resistant		
Epoxy Polyamide		
Oil Base (Alkyd, Epoxy, Urethane)		
Phenolic		
Polyester		
Polyvinyl Chloride	R	R
Silicones		
Urethanes		
Vinyls	R	R
Water Base		
Zinc Rich		
Mortars		
Silicate		
Sodium Silicate		
Potassium Silicate		
Silica		
Sulfur		
Furan Resin		
Polyester		
Epoxy		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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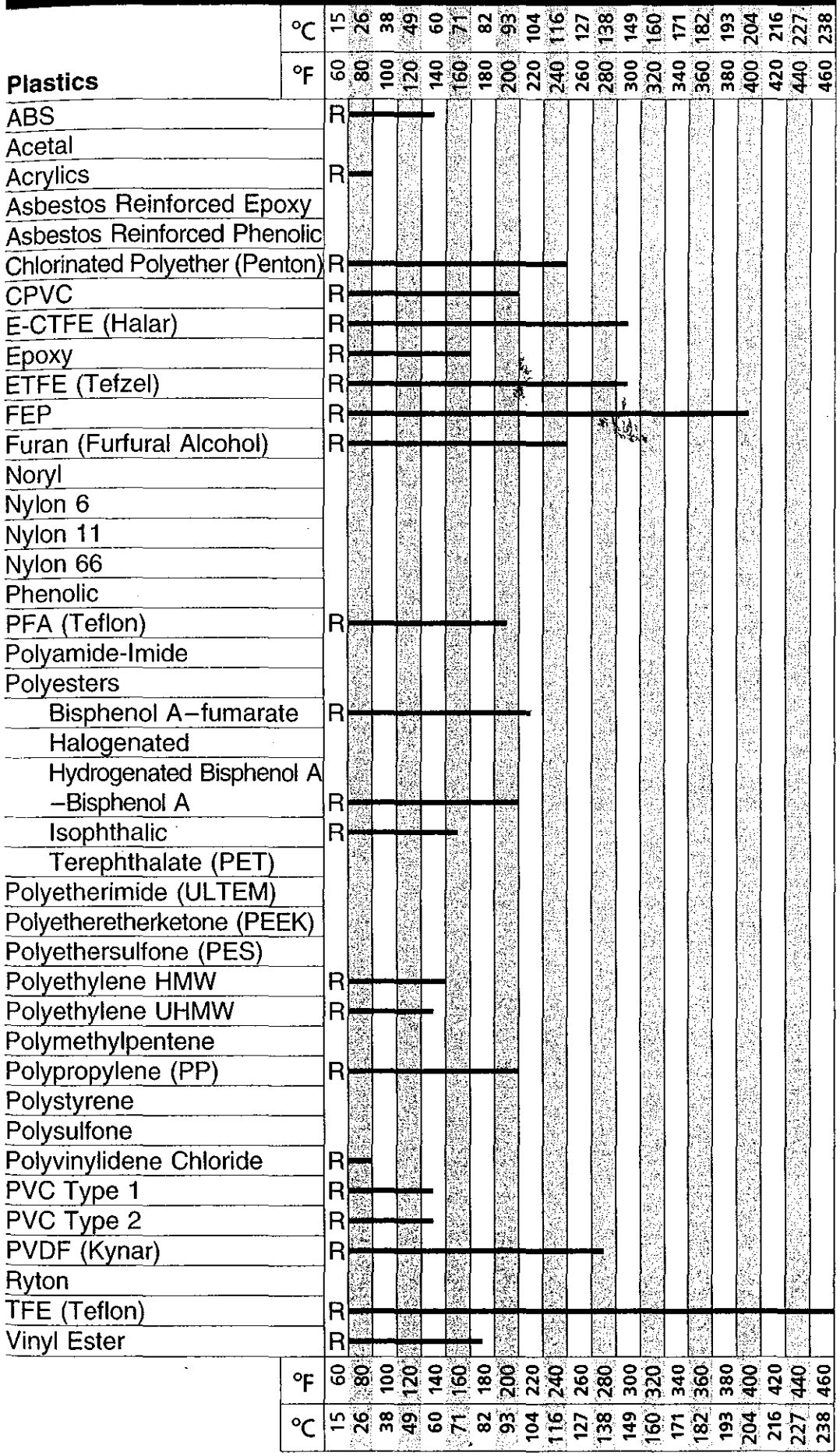
SILVER CYANIDE



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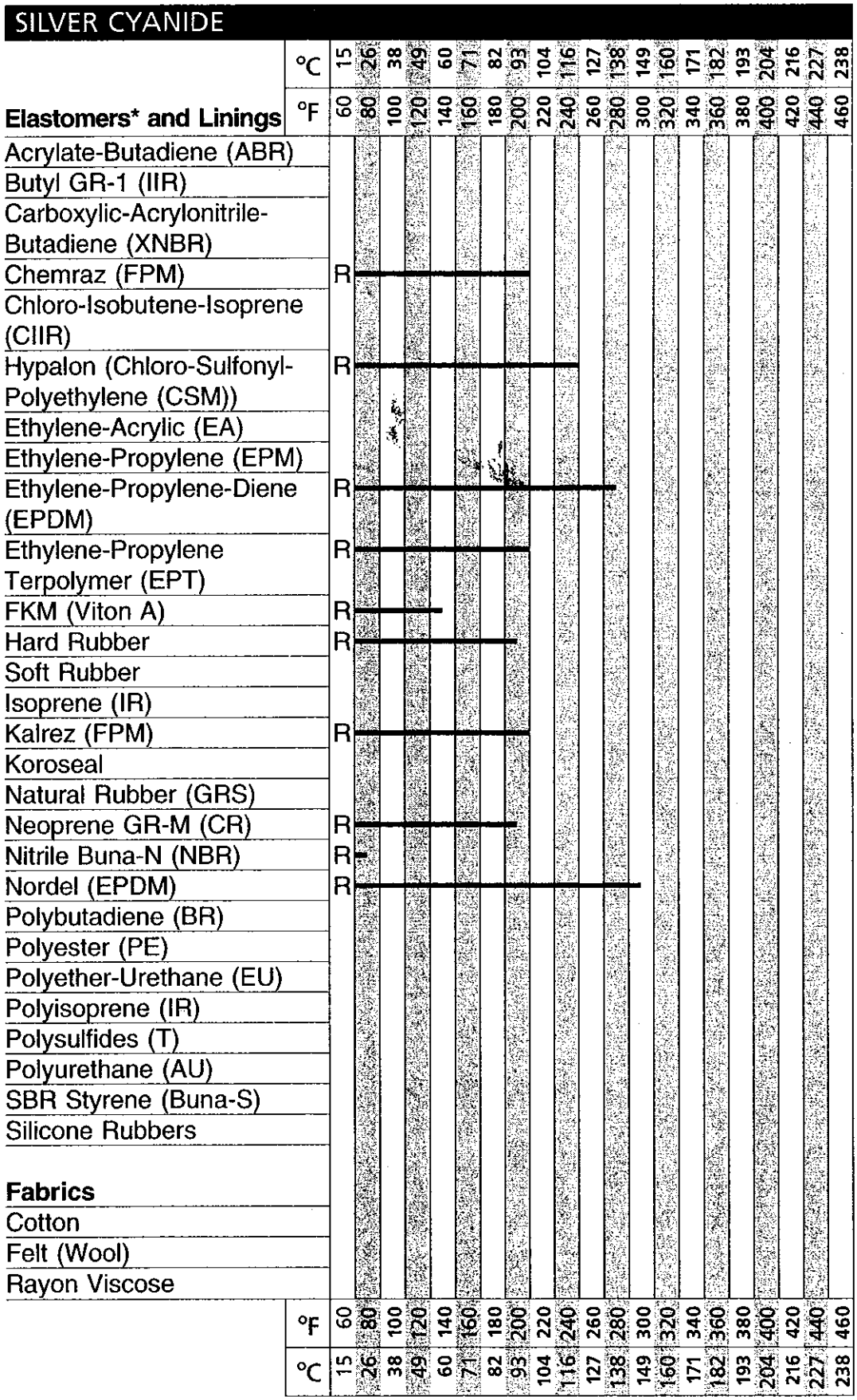
SILVER CYANIDE



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SILVER NITRATE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum			U																									
Aluminum Bronze			U																									
Brass			U																									
Bronze			U																									
Carbon Steel			U																									
Columbium (Niobium)			E																									
Copper			U																									
Hastelloy B/B-2	10–40%		E																									
Hastelloy C/C-276	10–40%		E																									
Hastelloy D	10–40%		E																									
Hastelloy G/G-3																												
High Silicon Iron			G																									
Inconel 600/625			G																									
Incolloy 800/825			G																									
Lead			U																									
Monel 400			U																									
Naval Bronze			U																									
Nickel 200/201			U																									
Galv. Stl.			U																									
Stainless Steels																												
Type 304/347			G																									
Type 316/316 L			E		G																							
Type 400 series	10–90%		G																									
Type 904-L																												
17-4 PH																												
20 Cb 3			G																									
E-Bright 26-1																												
Silicon Bronze			U																									
Silicon Copper			U																									
Stellite																												
Tantalum	50%		E																									
Titanium	50%		E																									
Zirconium	50%		G																									
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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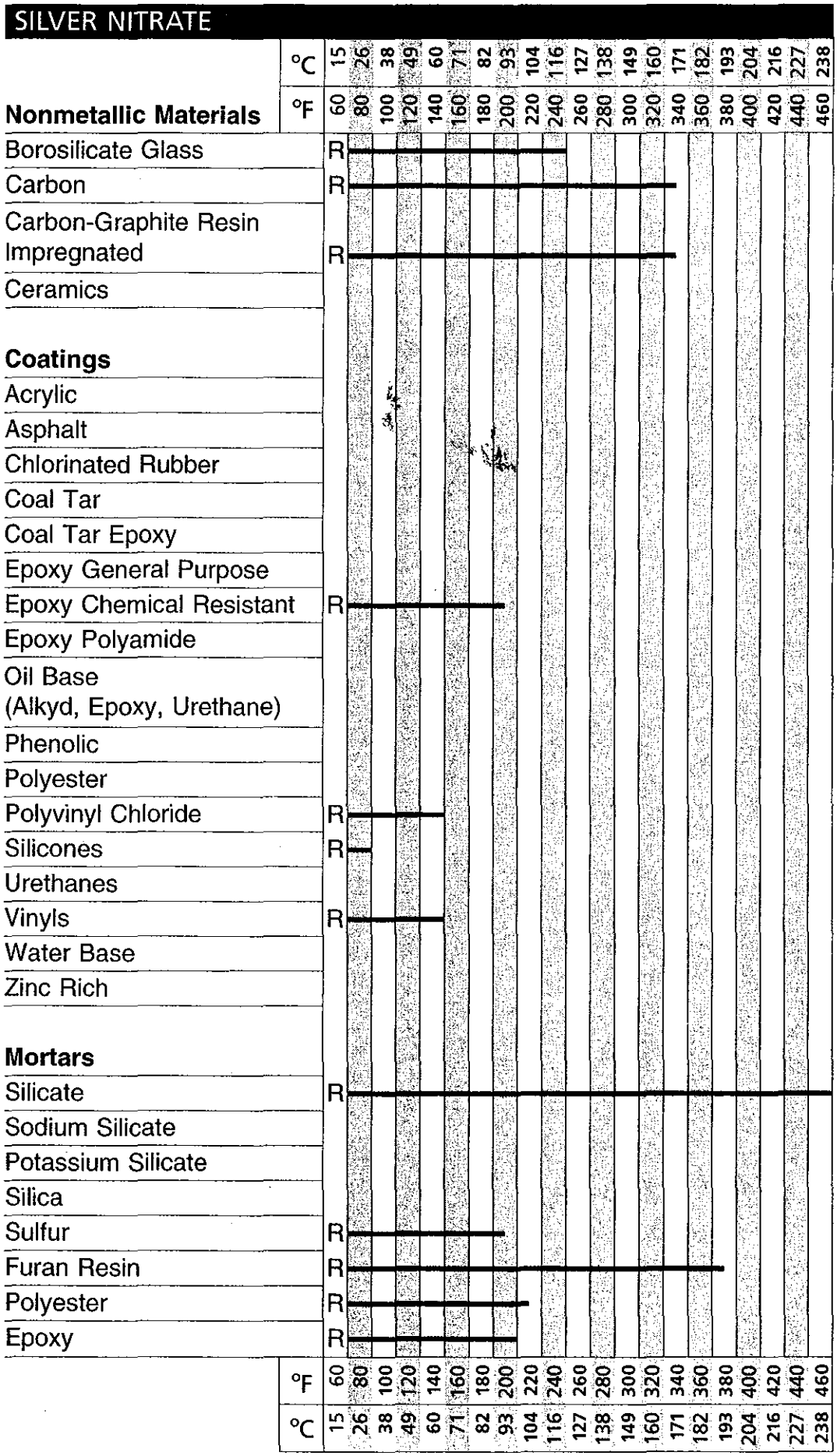
SILVER NITRATE



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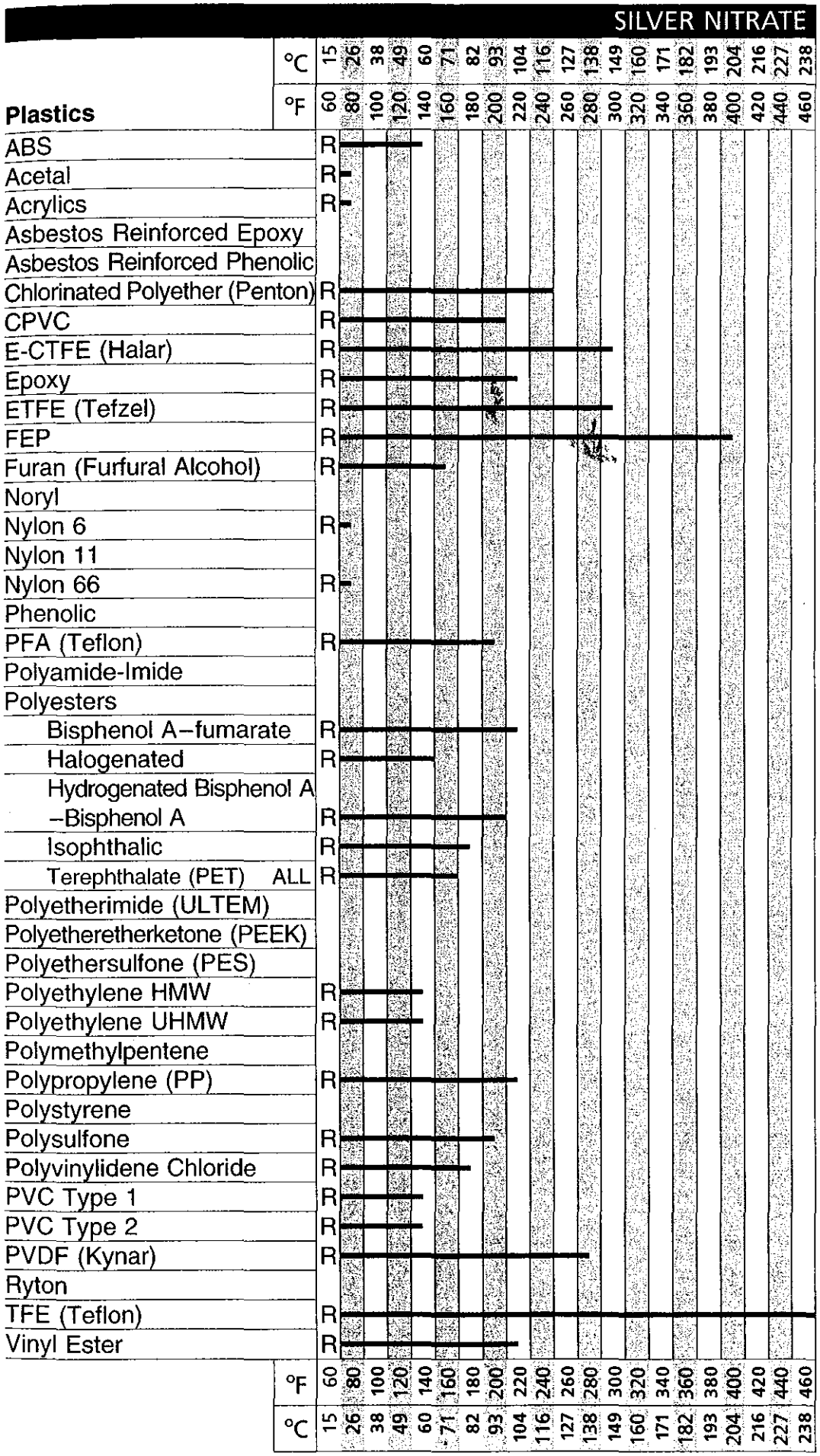
SILVER NITRATE



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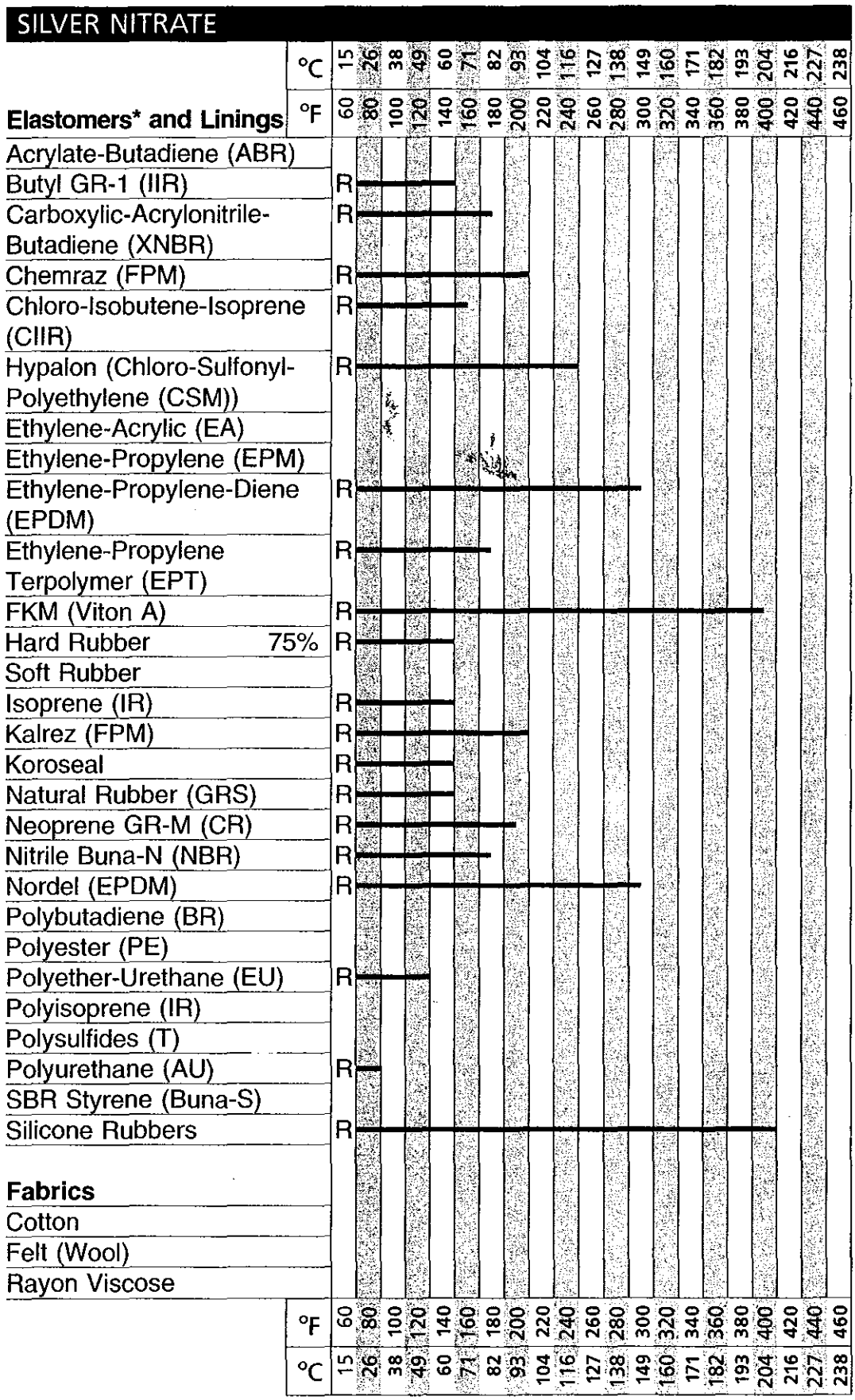
SILVER NITRATE



*See also Nylon 11 under PLASTICS

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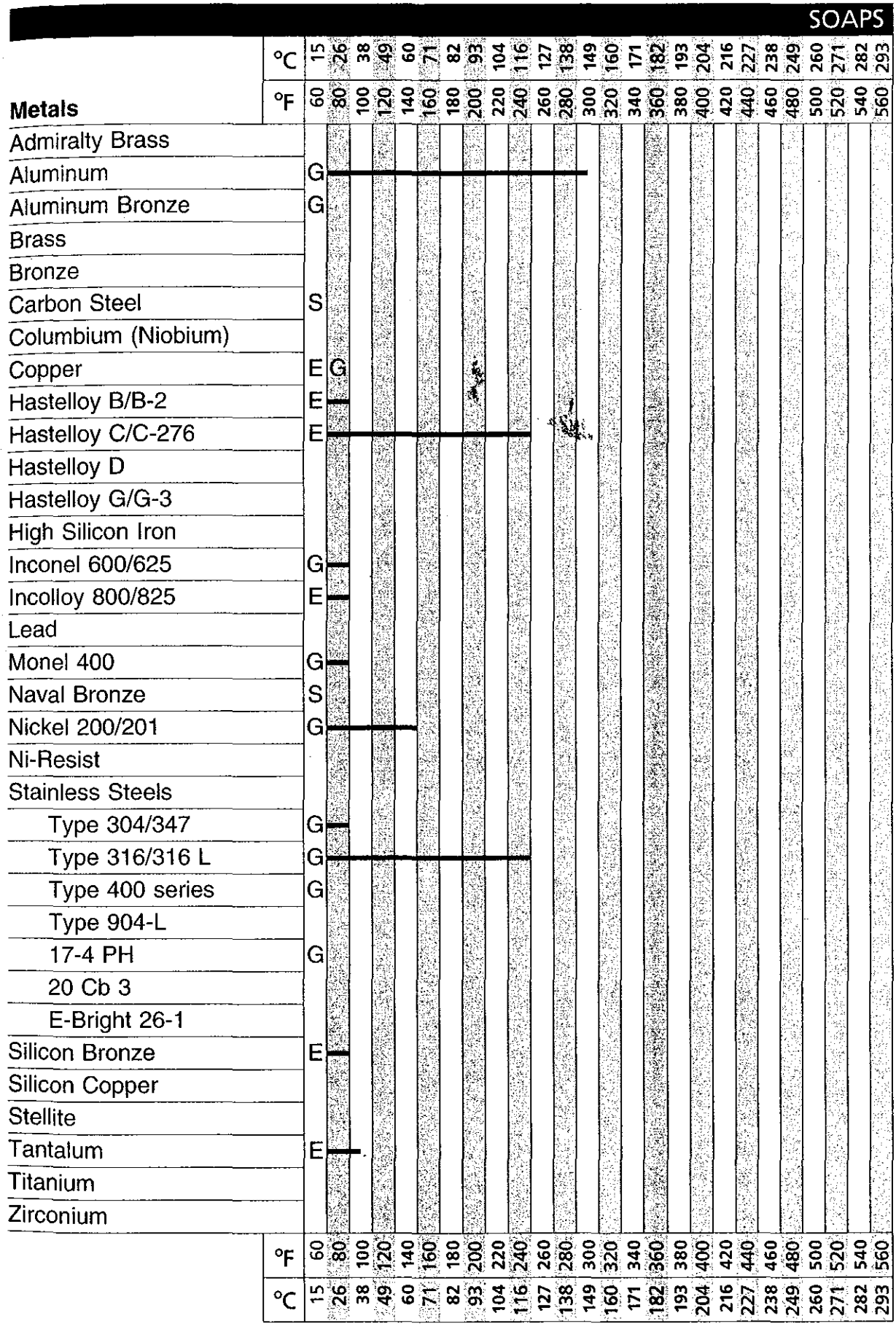

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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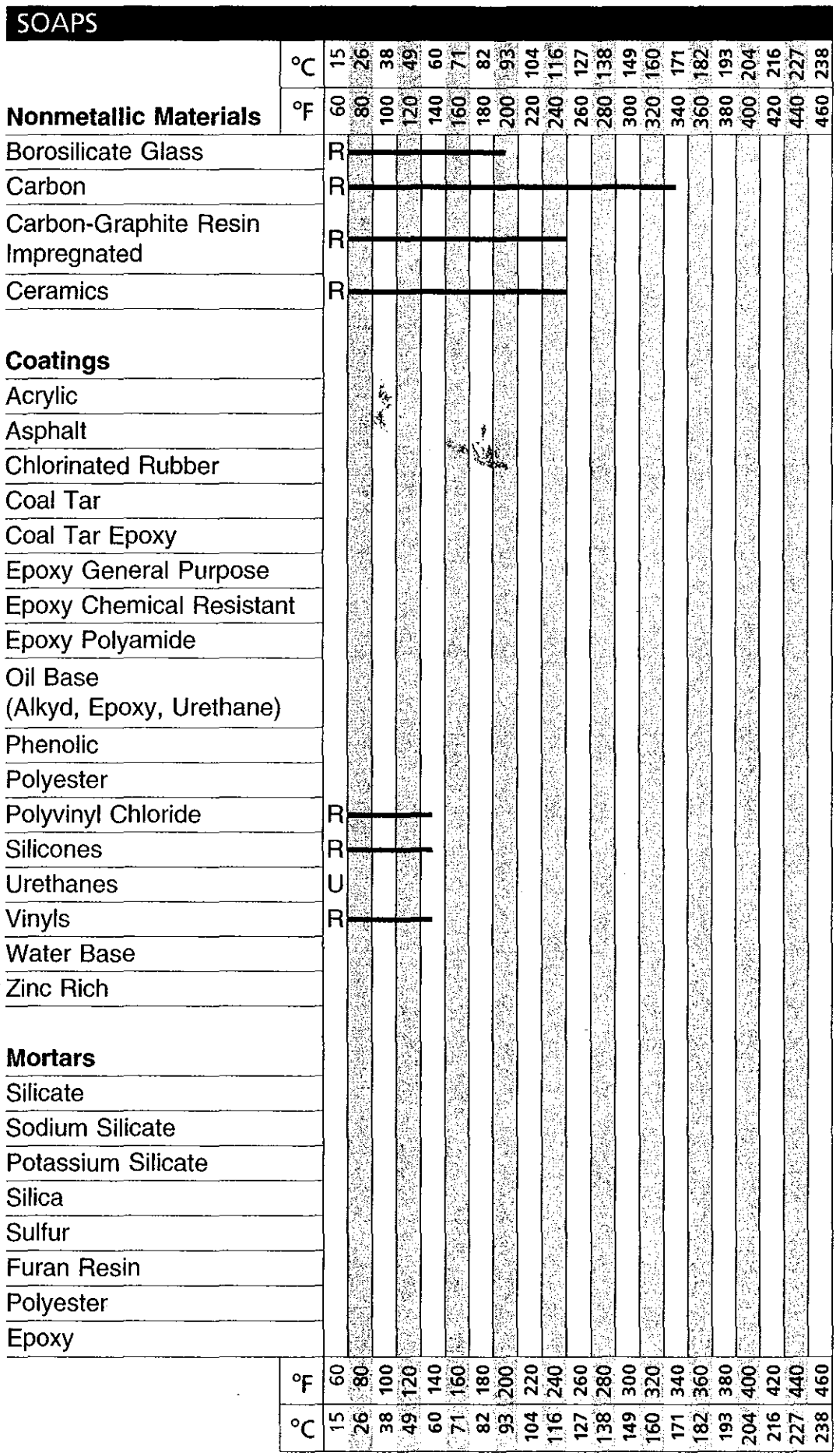
SOAPS



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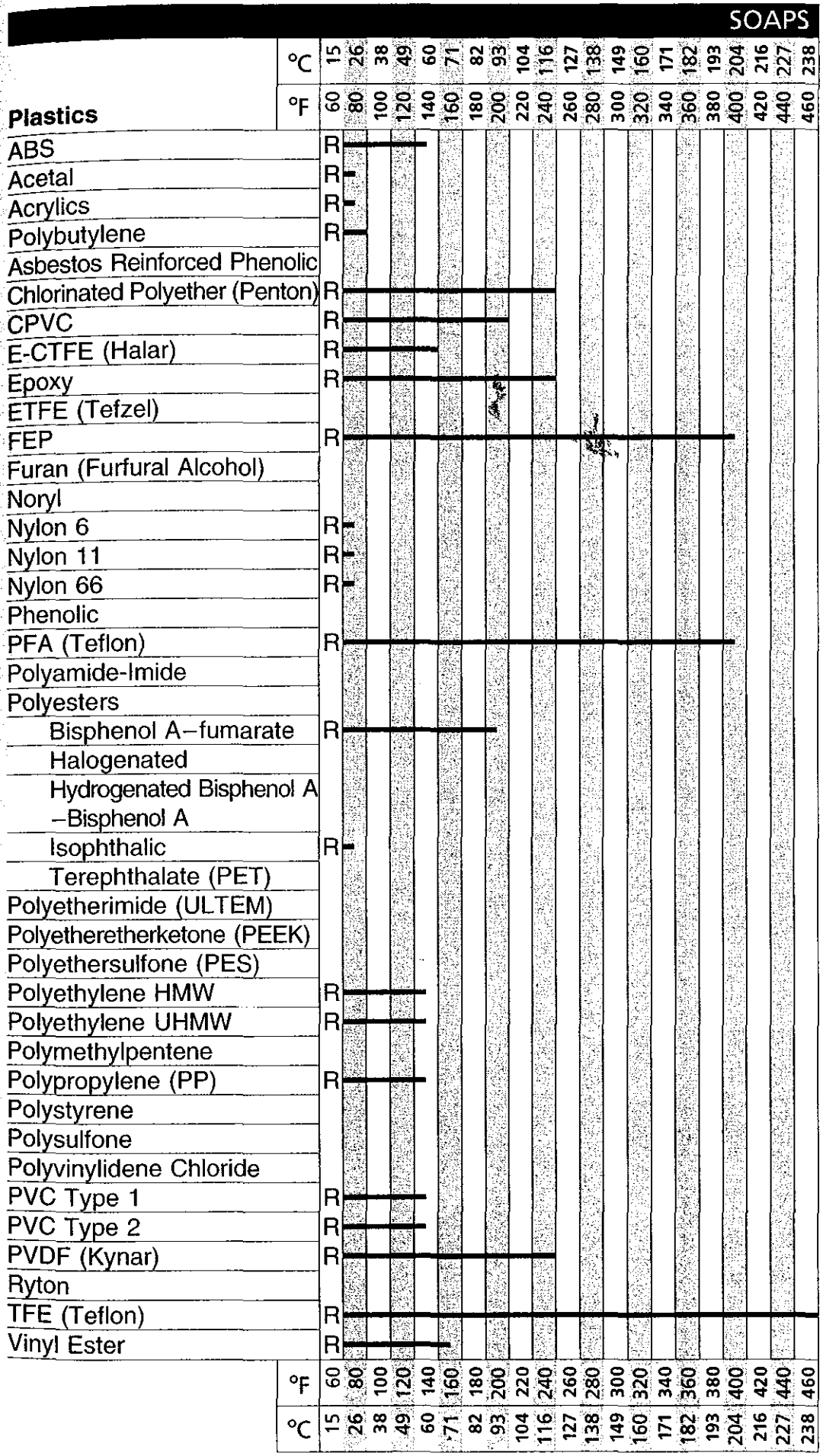

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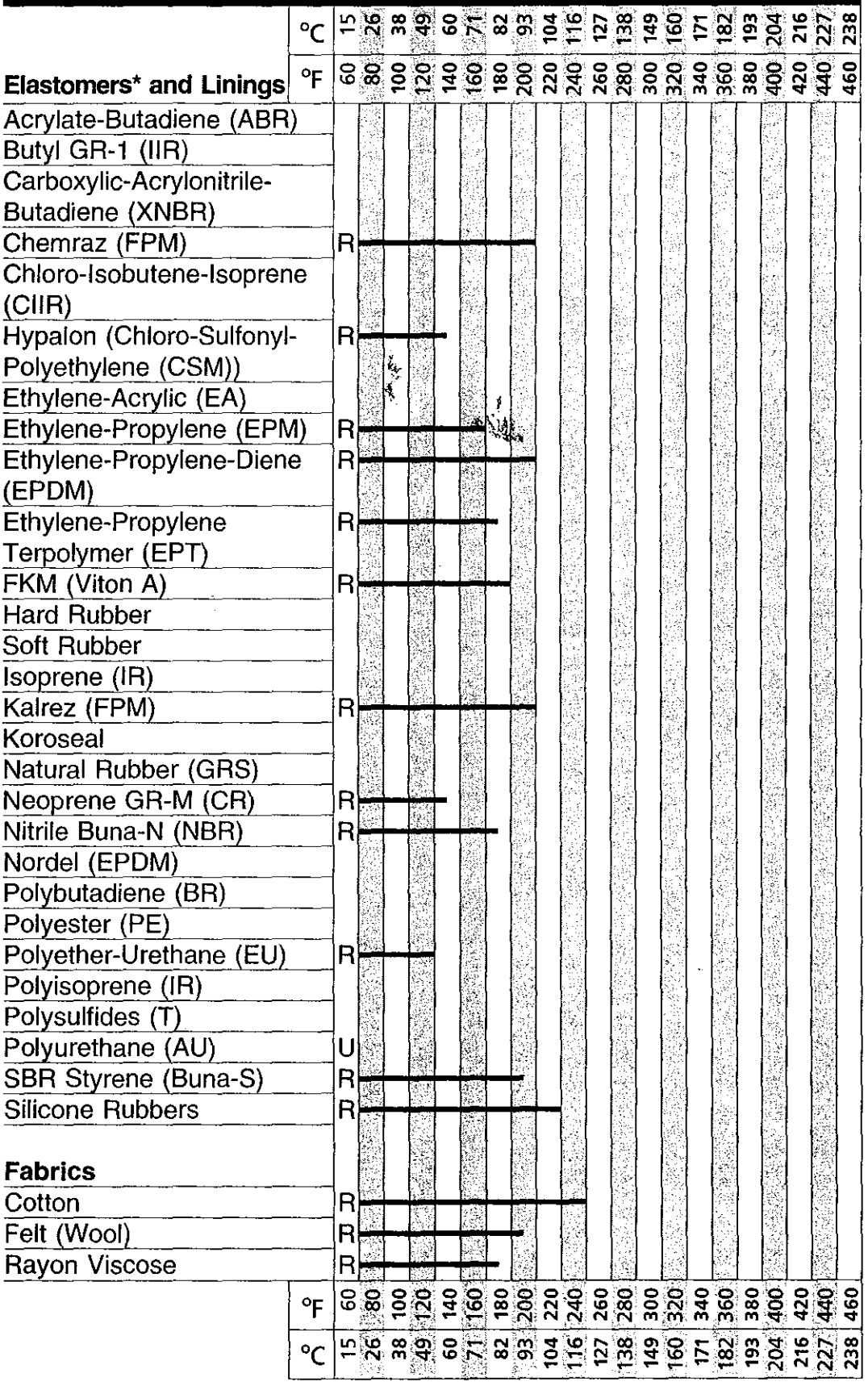
SOAPS



*See also Nylon 11 under PLASTICS

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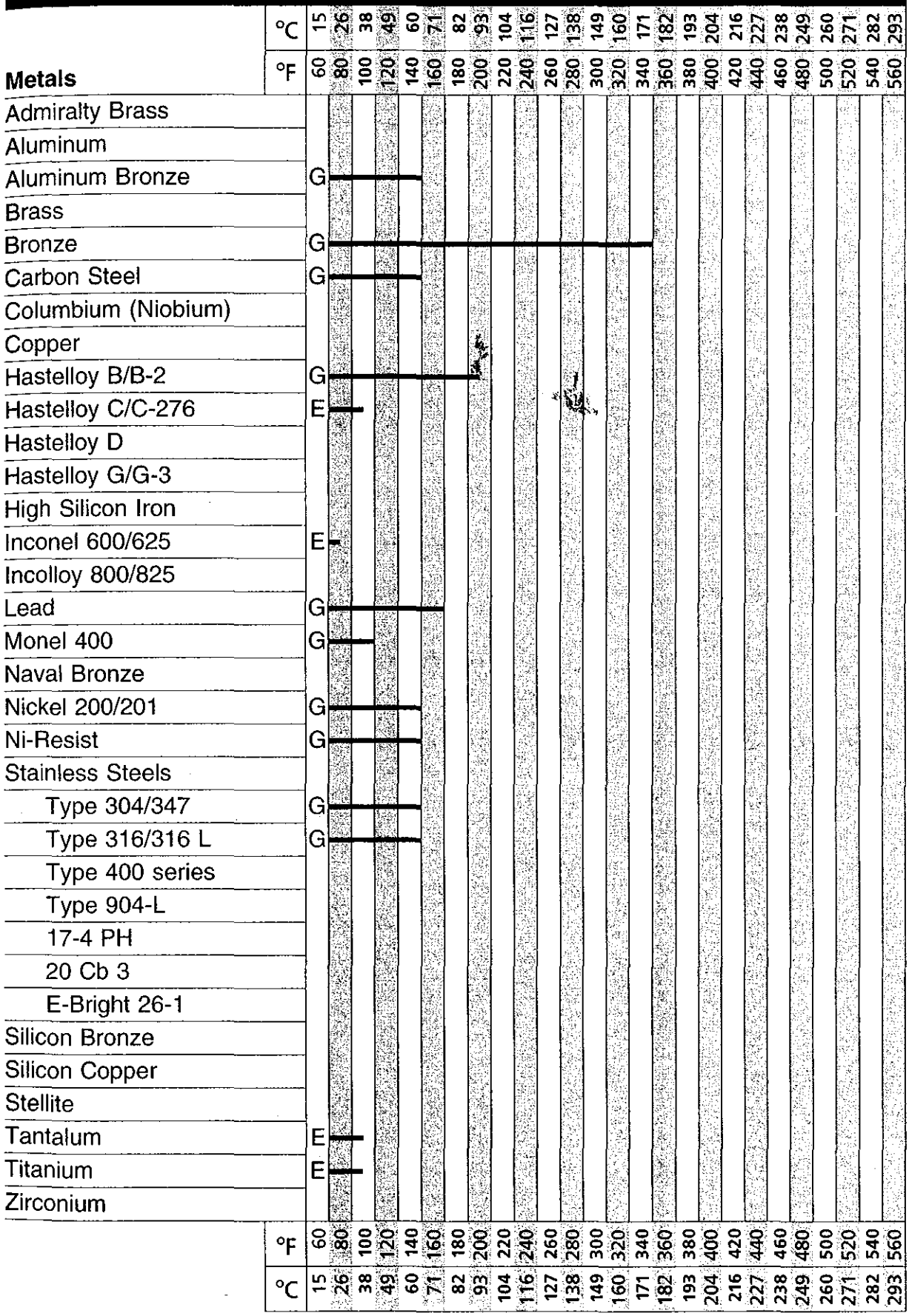
SOAP SOLUTION 5%



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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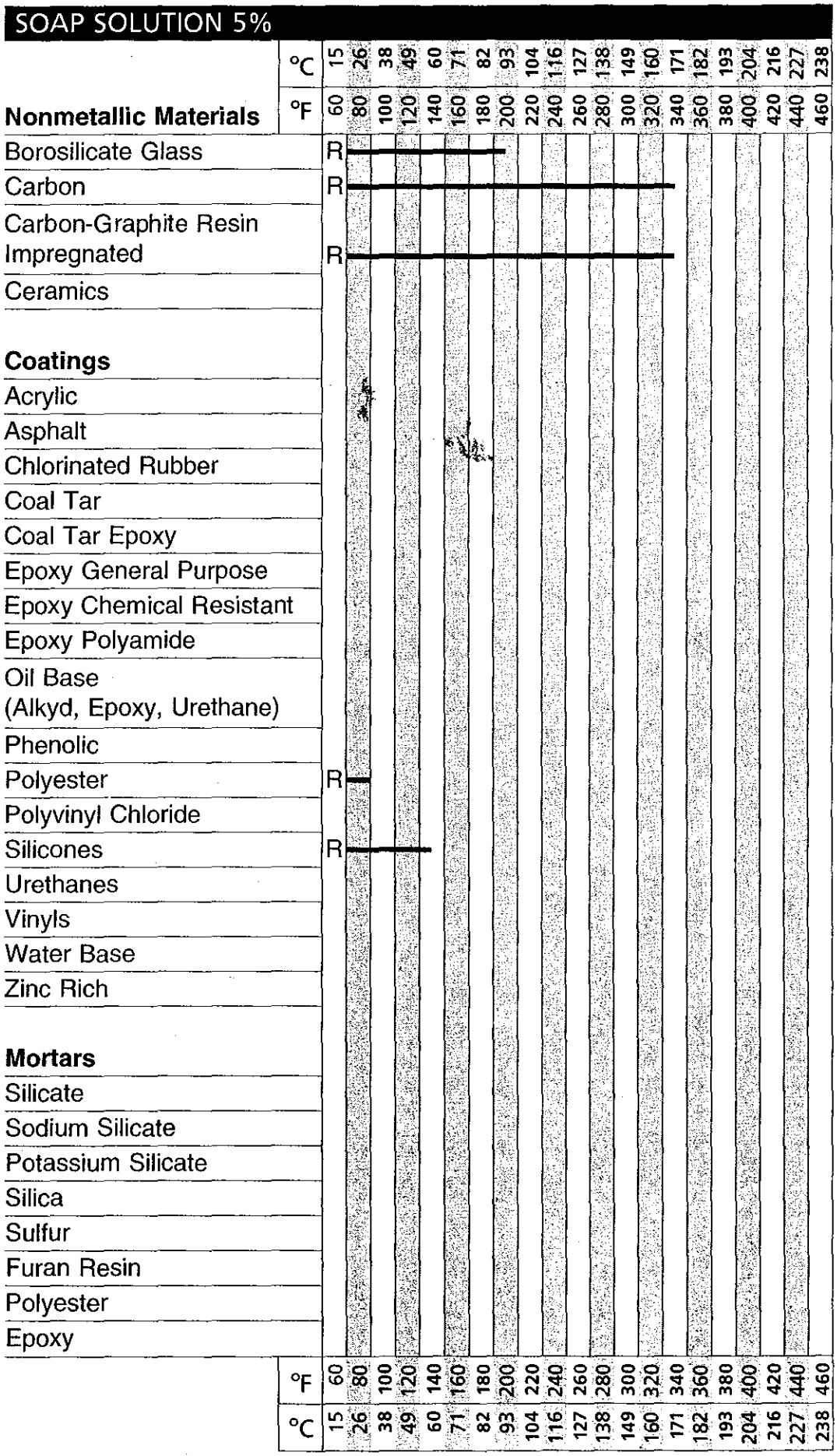

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SOAP SOLUTION 5%

Plastics	
Polybutylene Terephthalate	R
Acetal	R
Acrylics	R
Polycarbonate	R
Polyphenylene Oxide	R
Chlorinated Polyether (Penton)	R
CPVC	R
E-CTFE (Halar)	
Epoxy	R
ETFE (Tefzel)	
FEP	R
Furan (Furfural Alcohol)	
Noryl	R
Nylon 6	R
Nylon 11	R
Nylon 66	R
Phenolic	
PFA (Teflon)	R
Polyamide-Imide	
Polyesters	
Bisphenol A–fumarate	R
Halogenated	R
Hydrogenated Bisphenol A –Bisphenol A	
Isophthalic	R
Terephthalate (PET)	
Polyetherimide (ULTEM)	
Polyetheretherketone (PEEK)	
Polyethersulfone (PES)	
Polyethylene HMW	R
Polyethylene UHMW	R
Polymethylpentene	
Polypropylene (PP)	R
Polystyrene	
Polysulfone	R
Polyvinylidene Chloride	R
PVC Type 1	R
PVC Type 2	R
PVDF (Kynar)	R
Ryton	
TFE (Teflon)	R
Vinyl Ester	R

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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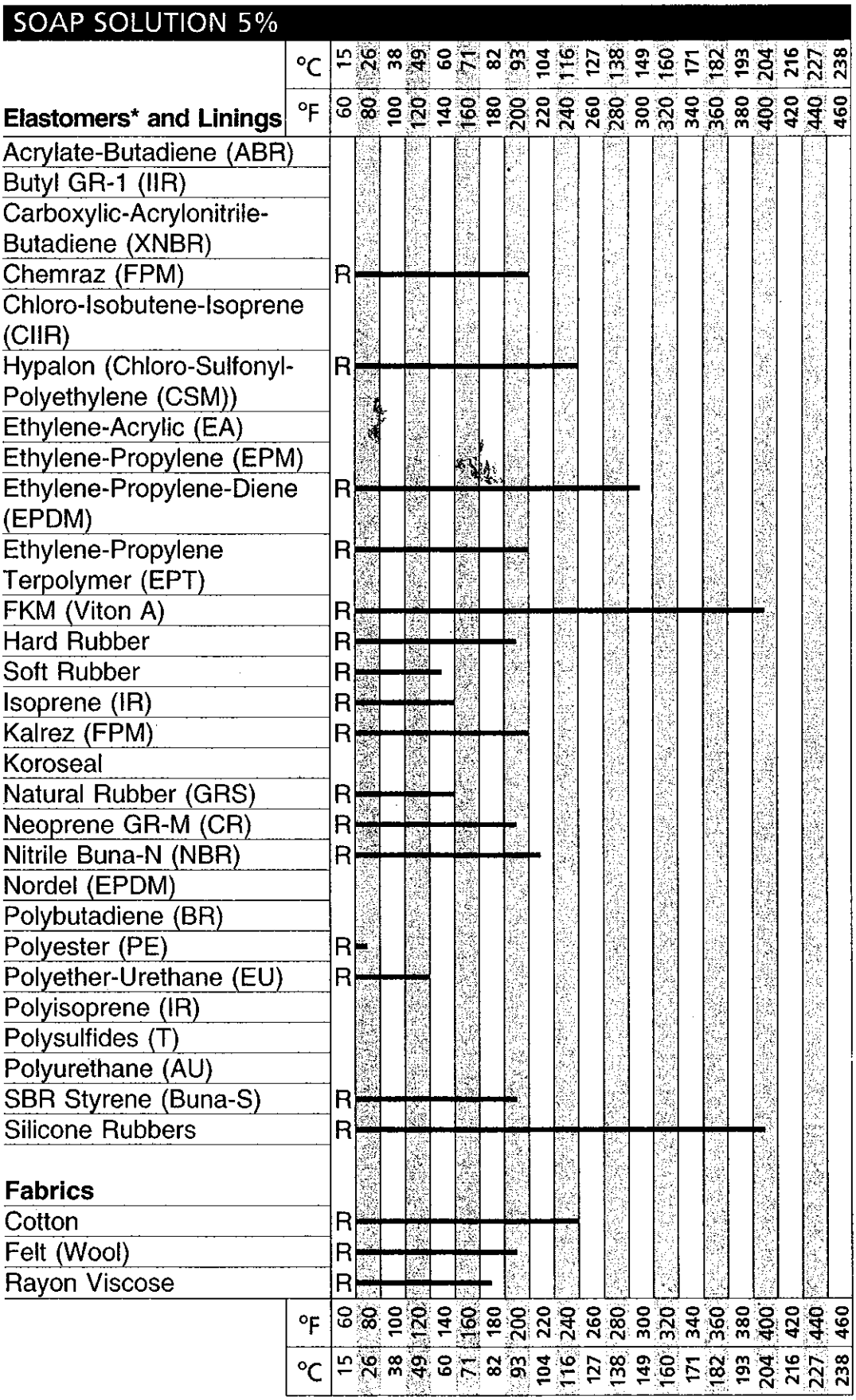
SOAP SOLUTION 5%



*See also Nylon 11 under PLASTICS

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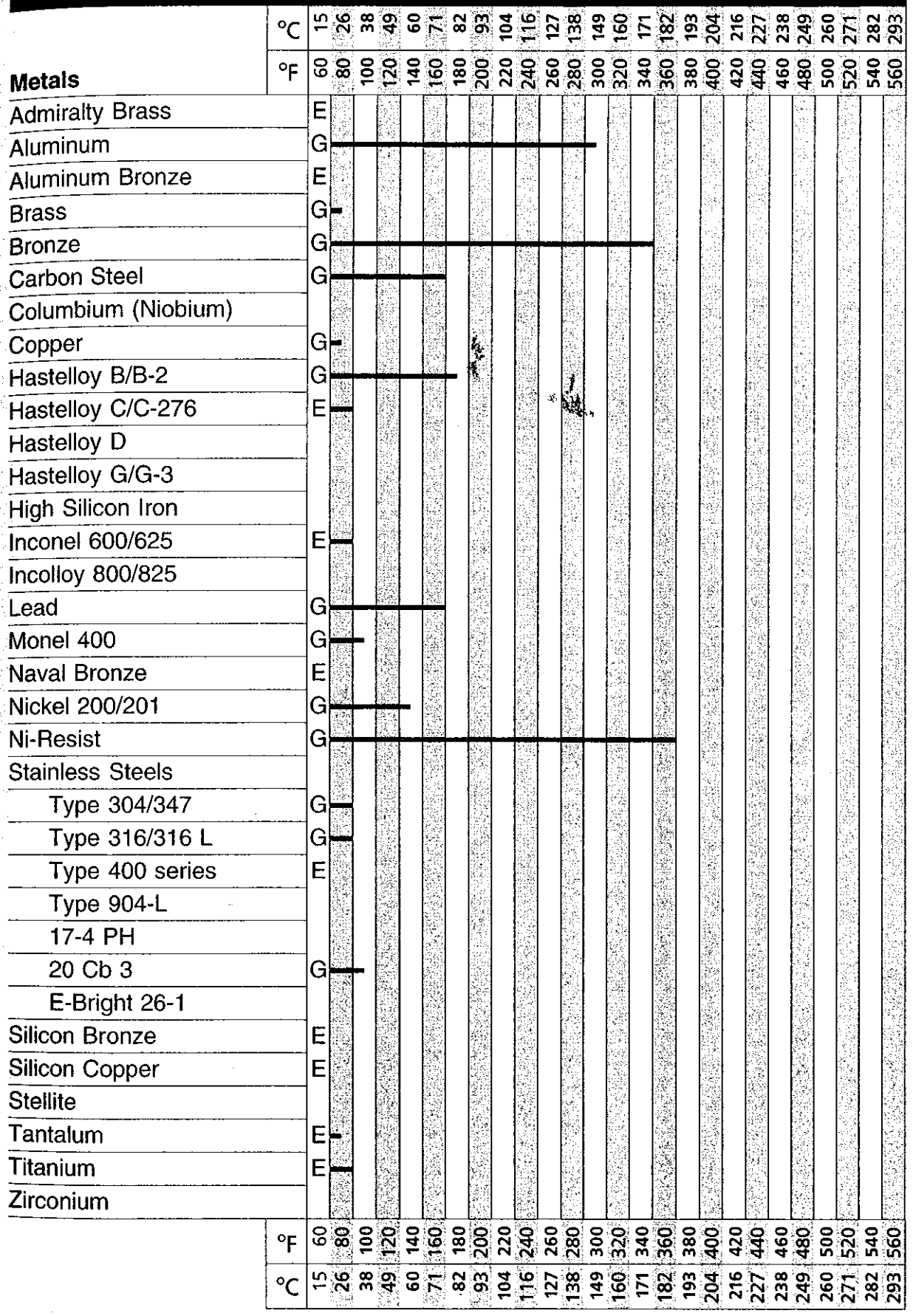

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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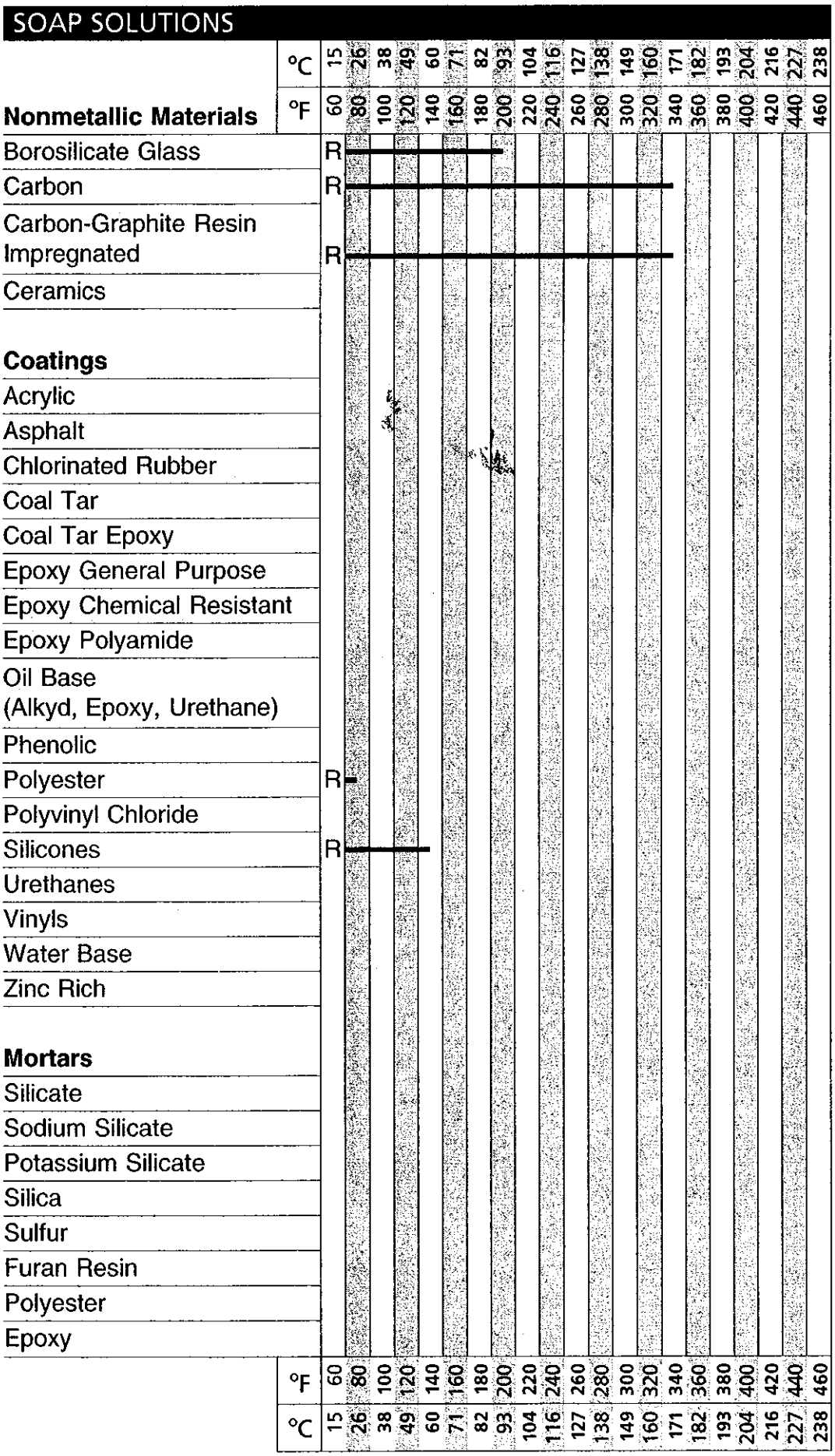
SOAP SOLUTIONS



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SOAP SOLUTIONS

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Polybutylene Terephthalate		R																				
Acetal		R																				
Acrylics		R																				
Polycarbonate		R																				
Polyphenylene Oxide		R																				
Chlorinated Polyether (Penton)		R																				
CPVC		R																				
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP		R																				
Furan (Furfural Alcohol)																						
Noryl		R																				
Nylon 6		R																				
Nylon 11		R																				
Nylon 66		R																				
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate	1%	R																				
Halogenated	1%	R																				
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic	1%	R																				
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		R																				
Polyethylene UHMW		R																				
Polymethylpentene																						
Polypropylene (PP)		R																				
Polystyrene																						
Polysulfone		R																				
Polyvinylidene Chloride		R																				
PVC Type 1		R																				
PVC Type 2		R																				
PVDF (Kynar)		R																				
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester		R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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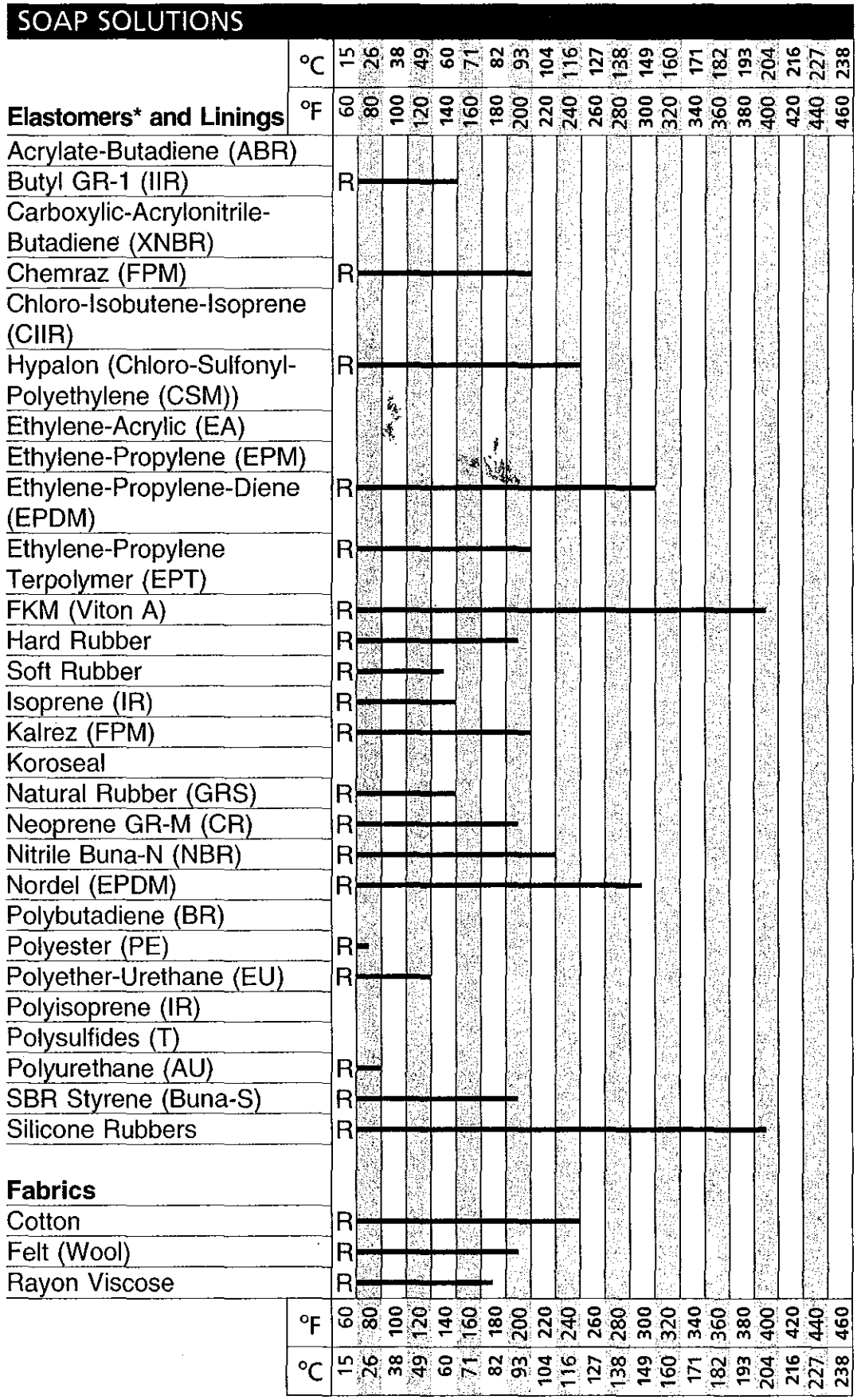
SOAP SOLUTIONS



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Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass	10%		G																									
Aluminum			E																									
Aluminum Bronze																												
Brass	ALL		G																									
Bronze			G																									
Carbon Steel	10%		U																									
Columbium (Niobium)																												
Copper			G																									
Hastelloy B/B-2	60%		G																									
Hastelloy C/C-276	60%		G																									
Hastelloy D	60%		G																									
Hastelloy G/G-3																												
High Silicon Iron			G																									
Inconel 600/625	60%		G																									
Incolloy 800/825	5%		G																									
Galv. Stl.			U																									
Monel 400	ALL		G																									
Naval Bronze	10–60%		G																									
Nickel 200/201	60%		G																									
Ni-Resist			G																									
Stainless Steels																												
Type 304/347			G																									
Type 316/316 L			G																									
Type 400 series TO	60% 1		G																									
Type 904-L																												
17-4 PH																												
20 Cb 3			G																									
E-Bright 26-1																												
Silicon Bronze			G																									
Silicon Copper	10%		G																									
Stellite																												
Tantalum			E																									
Titanium	SAT		E																									
Zirconium	60%		E																									
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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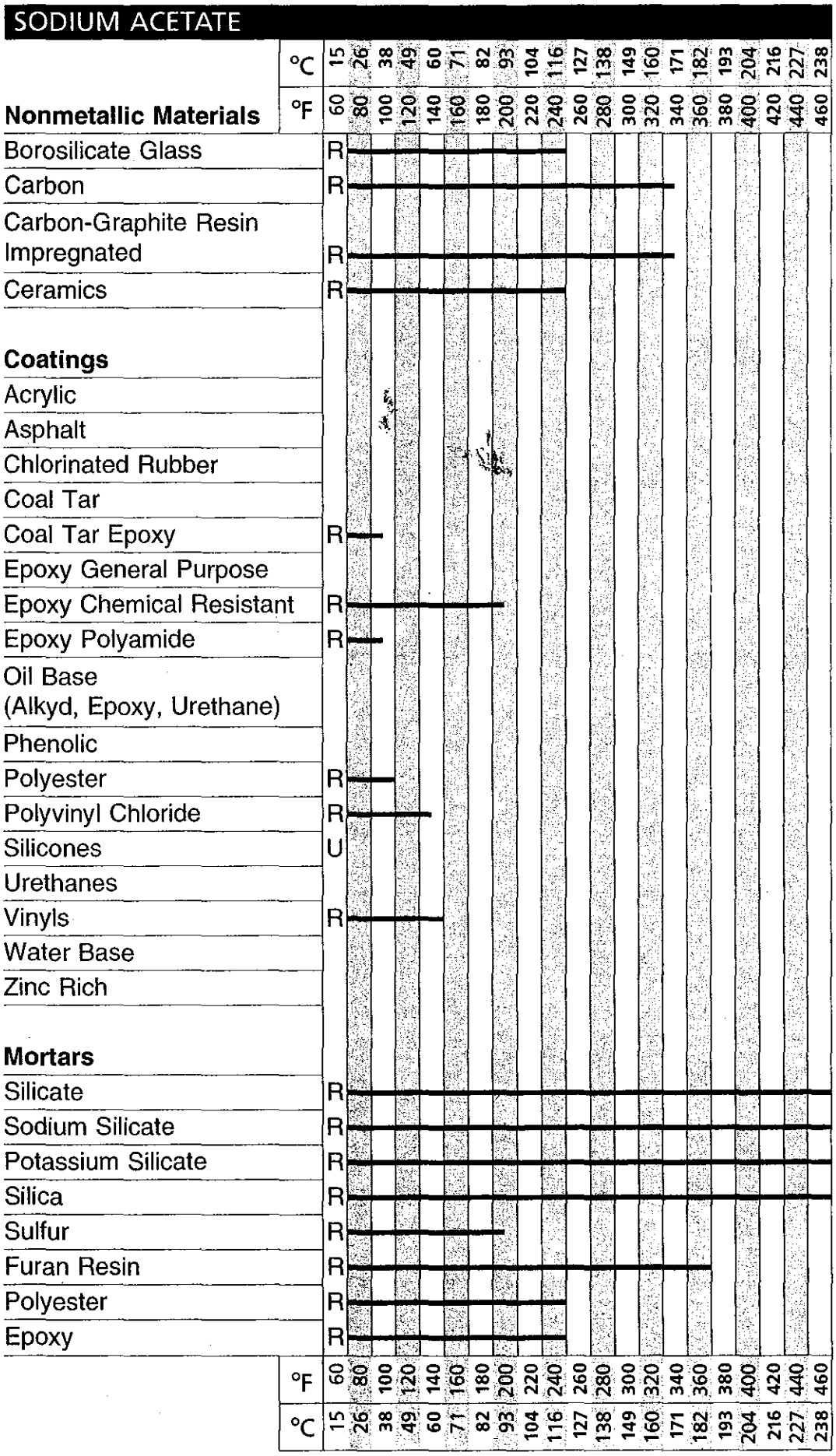
SODIUM ACETATE



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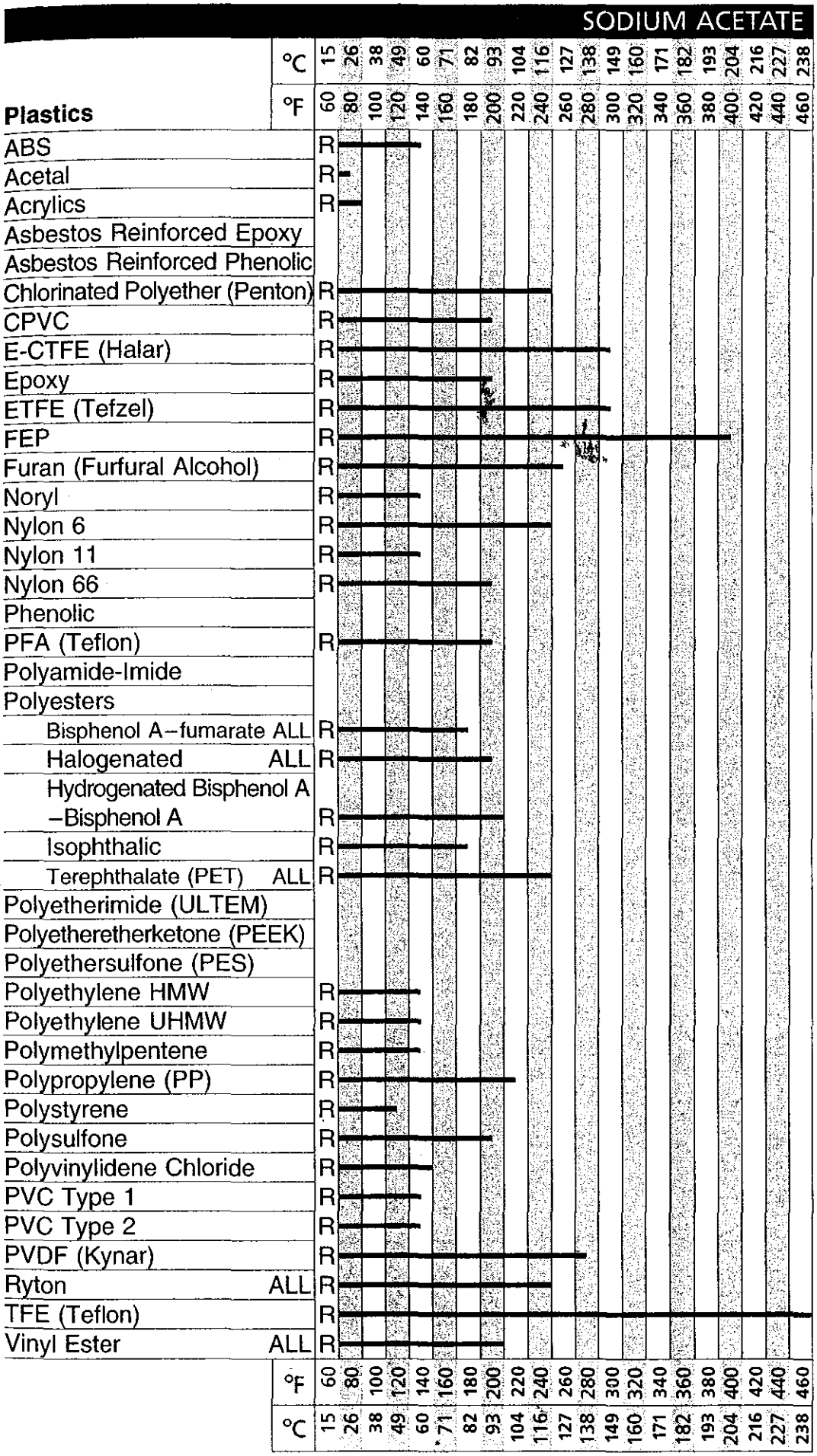
SODIUM ACETATE



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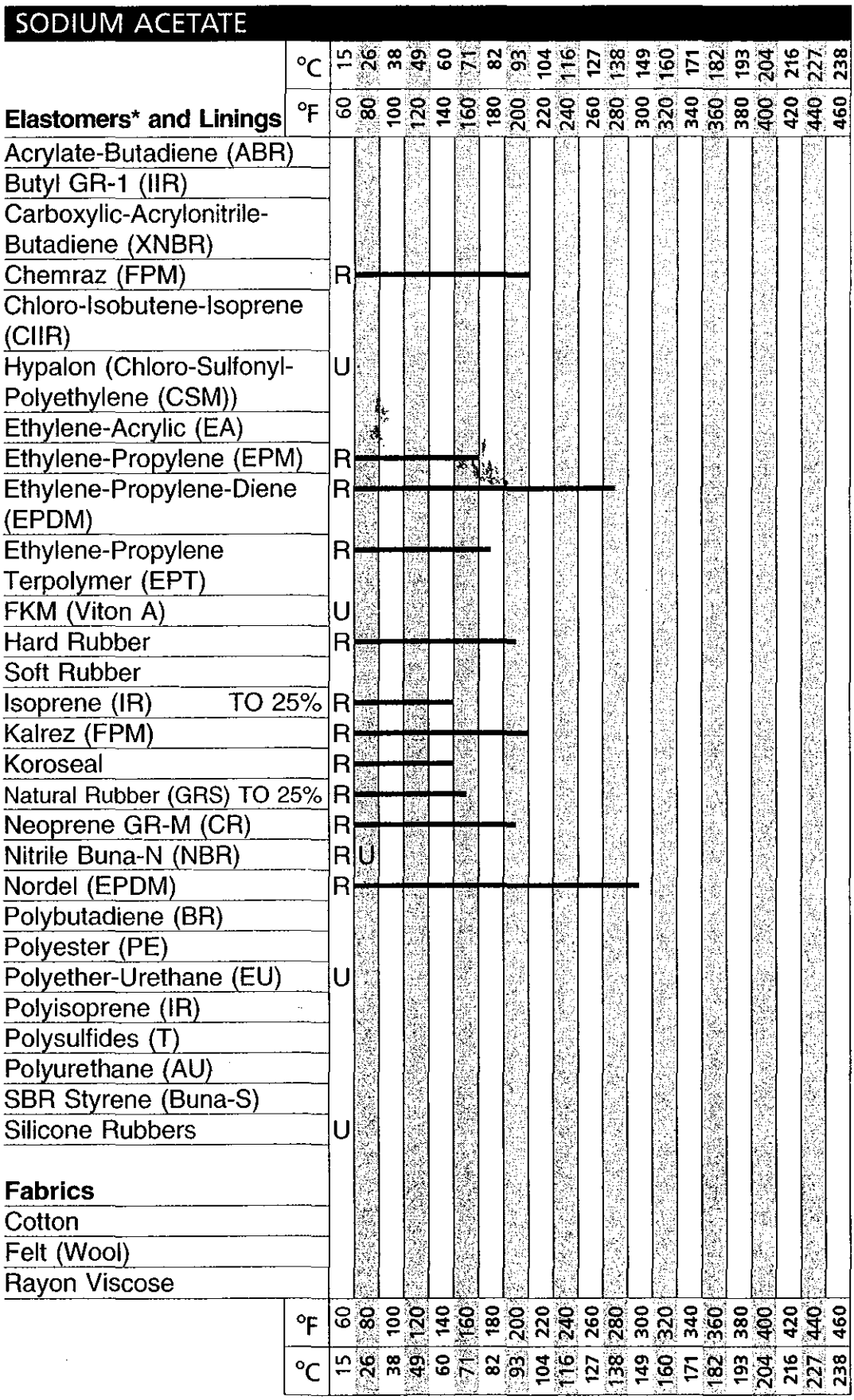
SODIUM ACETATE



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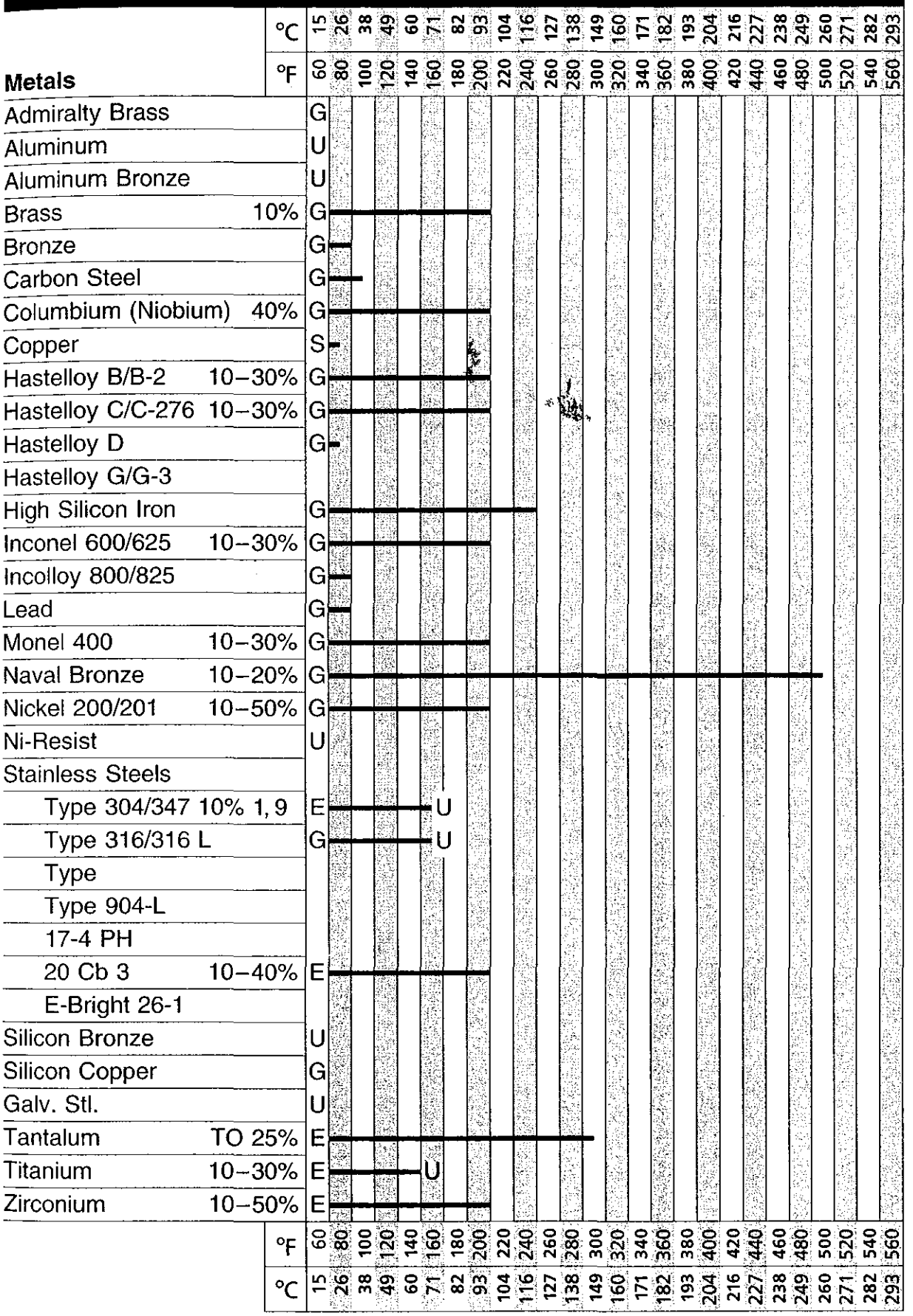

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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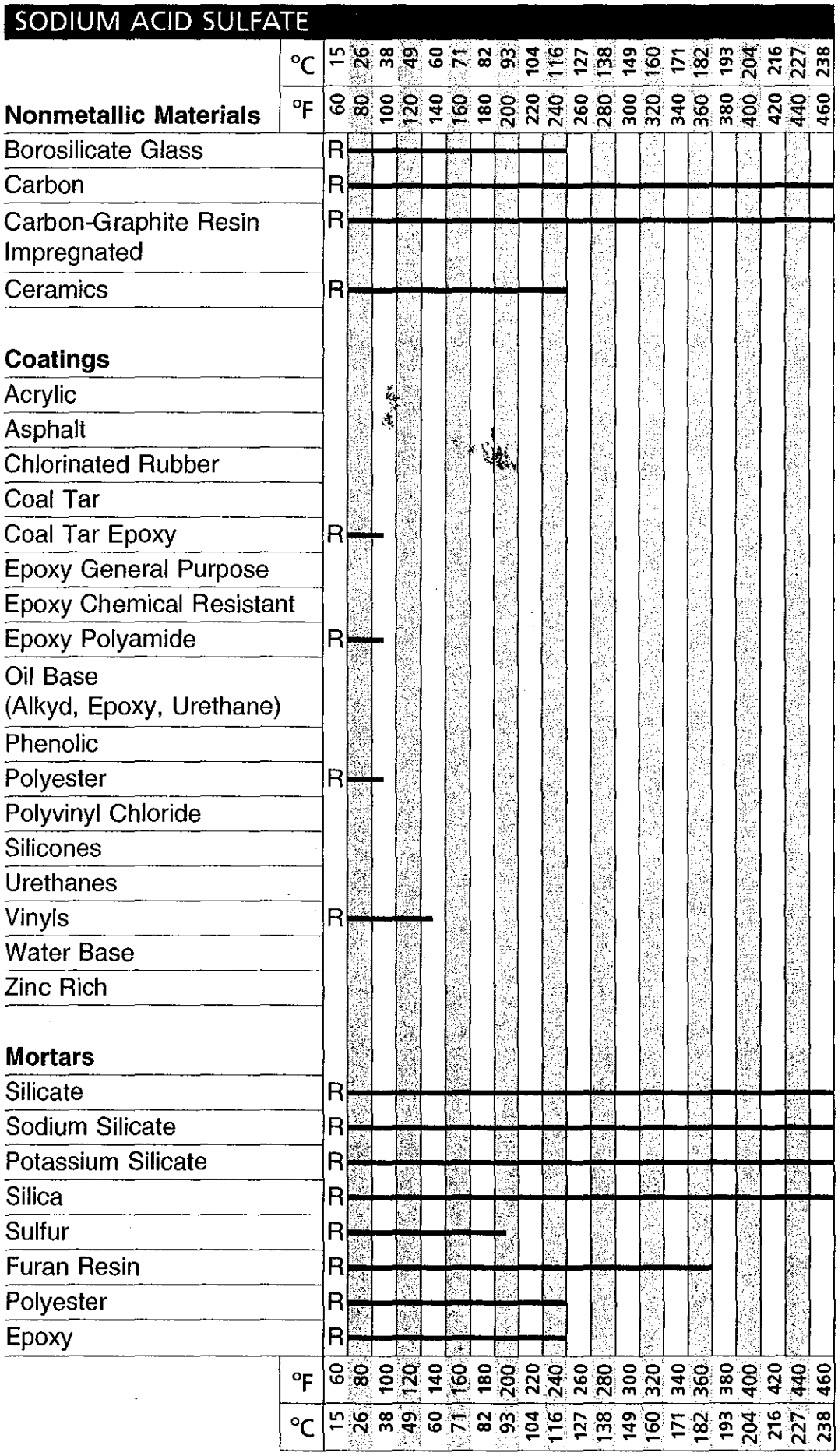
SODIUM ACID SULFATE



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SODIUM ACID SULFATE

Plastics		°C	°F
ABS	6.5%	R	R
Acetal			
Acrylics		R	R
Asbestos Reinforced Epoxy		R	R
Asbestos Reinforced Phenolic		R	R
Chlorinated Polyether (Penton)		R	R
CPVC		R	R
E-CTFE (Halar)		R	R
Epoxy		R	R
ETFE (Tefzel)		R	R
FEP		R	R
Furan (Furfural Alcohol)		R	R
Noryl		R	R
Nylon 6		R	R
Nylon 11		R	R
Nylon 66		R	R
Phenolic		R	R
PFA (Teflon)		R	R
Polyamide-Imide			
Polyesters			
Bisphenol A–fumarate		R	R
Halogenated	ALL	R	R
Hydrogenated Bisphenol A –Bisphenol A			
Isophthalic		R	R
Terephthalate (PET)		R	R
Polyetherimide (ULTEM)			
Polyetheretherketone (PEEK)			
Polyethersulfone (PES)			
Polyethylene HMW		R	R
Polyethylene UHMW		R	R
Polymethylpentene			
Polypropylene (PP)		R	R
Polystyrene		R	R
Polysulfone		R	R
Polyvinylidene Chloride		R	R
PVC Type 1		R	R
PVC Type 2		R	R
PVDF (Kynar)		R	R
Ryton	ALL	R	R
TFE (Teflon)		R	R
Vinyl Ester	ALL	R	R

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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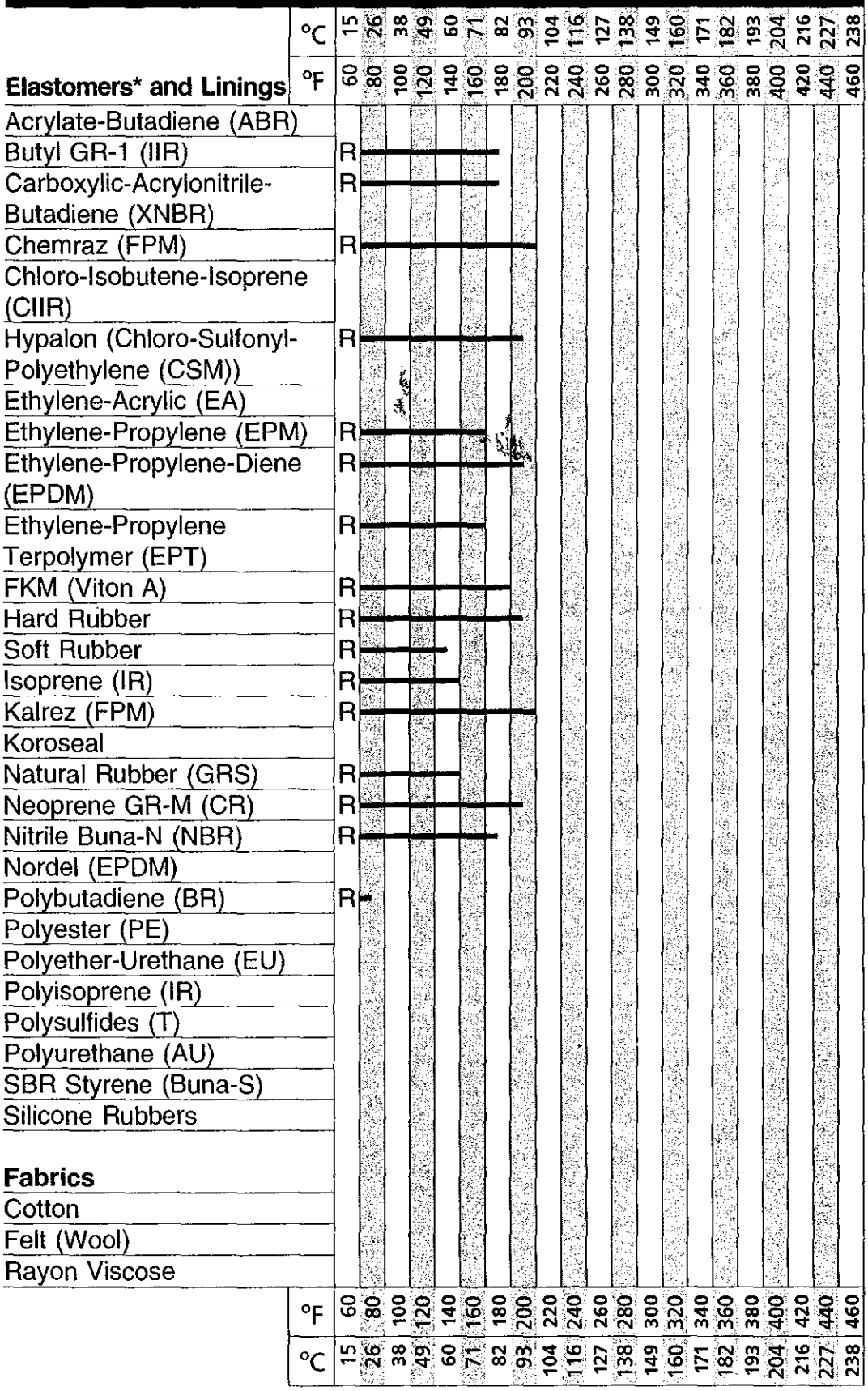
SODIUM ACID SULFATE



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Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum			G	—																								
Aluminum Bronze																												
Brass																												
Bronze			U																									
Carbon Steel			G	—	—	—	—																					
Columbium (Niobium)																												
Copper																												
Hastelloy B/B-2	10%		S	—																								
Hastelloy C/C-276			G	—	—	—	—																					
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625																												
Incolloy 800/825																												
Galv. Stl.			U																									
Monel 400			G	—	—	—	—																					
Naval Bronze																												
Nickel 200/201																												
Ni-Resist	TO 10%		G	—																								
Stainless Steels																												
Type 304/347			G	—																								
Type 316/316 L			G	—	—	—	—																					
Type 400 series																												
Type 904-L																												
17-4 PH																												
20 Cb 3			G	—	—	—	—																					
E-Bright 26-1																												
Silicon Bronze			U																									
Silicon Copper																												
Stellite																												
Tantalum	25%		E	—	—	—	—	—	—	—																		
Titanium	25%		E	—	—	—	—	—	—	—																		
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SODIUM ALUMINATE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated		R																				
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SODIUM ALUMINATE

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC	R	
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6	R	
Nylon 11	R	
Nylon 66	R	
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate	R	
Halogenated	U	
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic	U	
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1		
PVC Type 2		
PVDF (Kynar)		
Ryton		
TFE (Teflon)	R	
Vinyl Ester	R	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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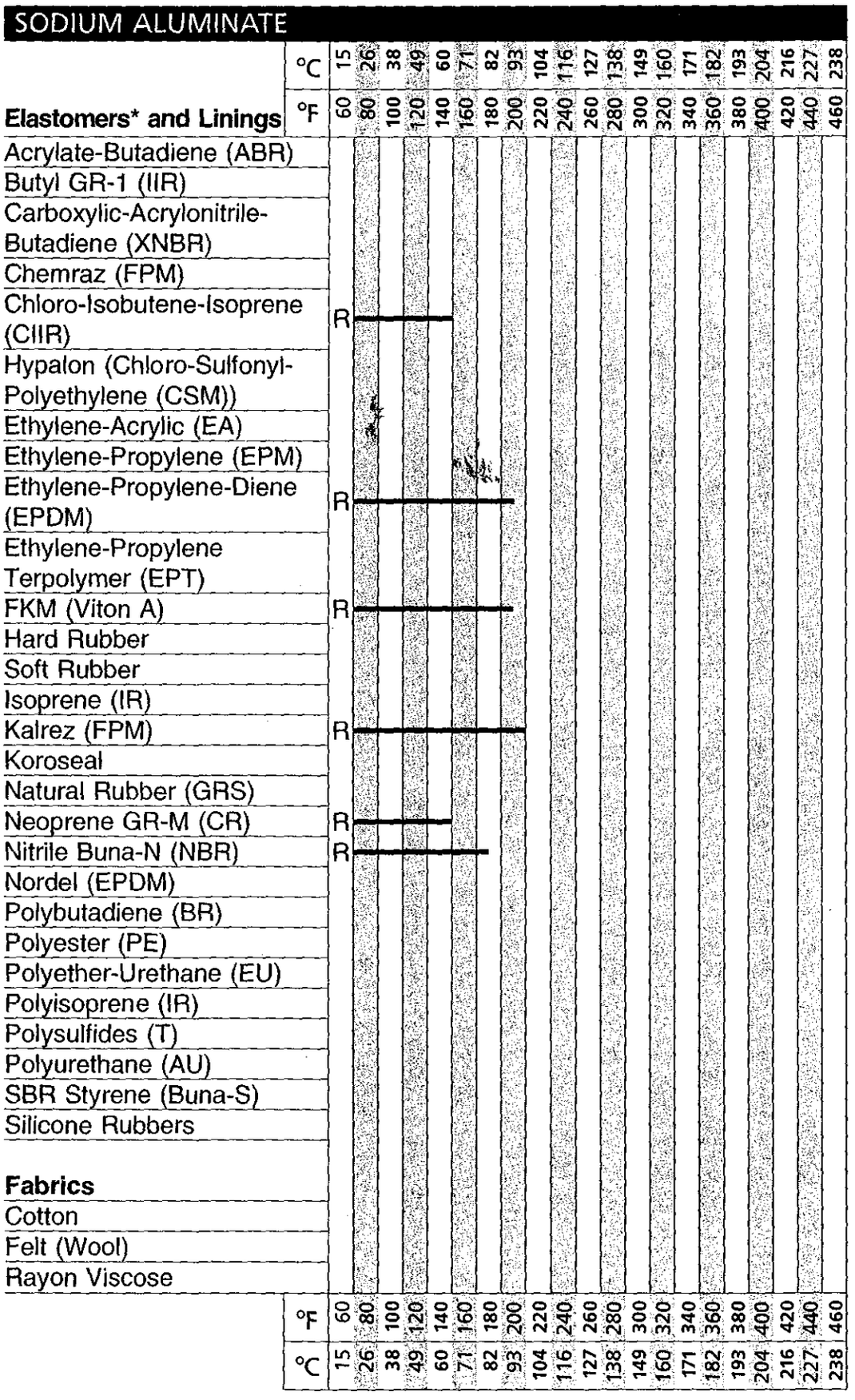
SODIUM ALUMINATE



*See also Nylon 11 under PLASTICS

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SODIUM BENZOATE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum			G	—																								
Aluminum Bronze																												
Brass																												
Bronze																												
Carbon Steel																												
Columbium (Niobium)																												
Copper			E	—																								
Hastelloy B/B-2			G	—																								
Hastelloy C/C-276			G	—																								
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625			G	—																								
Incolloy 800/825			E	G	—																							
Galv. Stl.	2%		G	—																								
Monel 400			G	—																								
Naval Bronze																												
Nickel 200/201			G	—																								
Ni-Resist																												
Stainless Steels																												
Type 304/347																												
Type 316/316 L																												
Type 400 series																												
Type 904-L																												
17-4 PH																												
20 Cb 3																												
E-Bright 26-1																												
Silicon Bronze			G	—																								
Silicon Copper			E	—																								
Stellite																												
Tantalum			E	—																								
Titanium			E	—																								
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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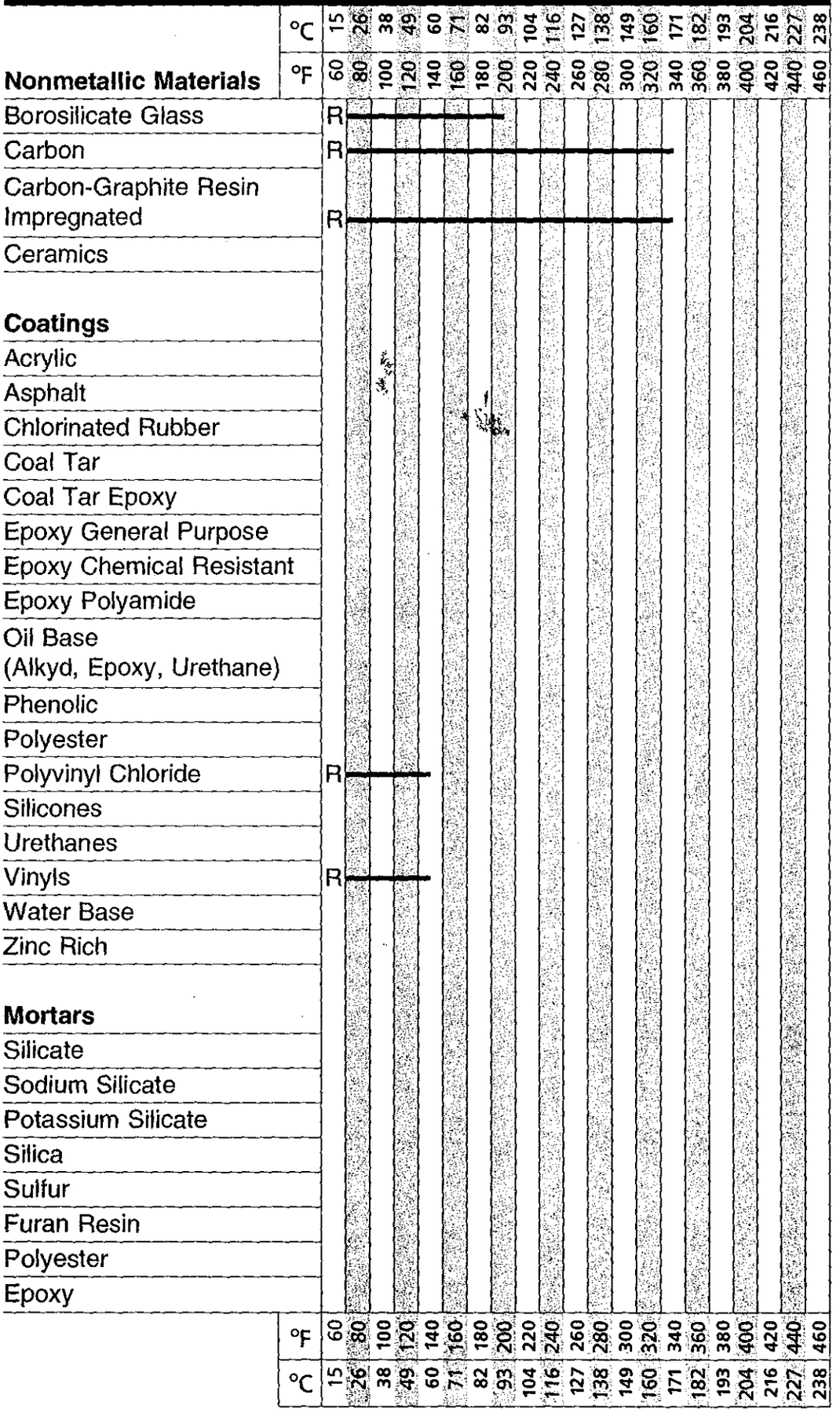
SODIUM BENZOATE



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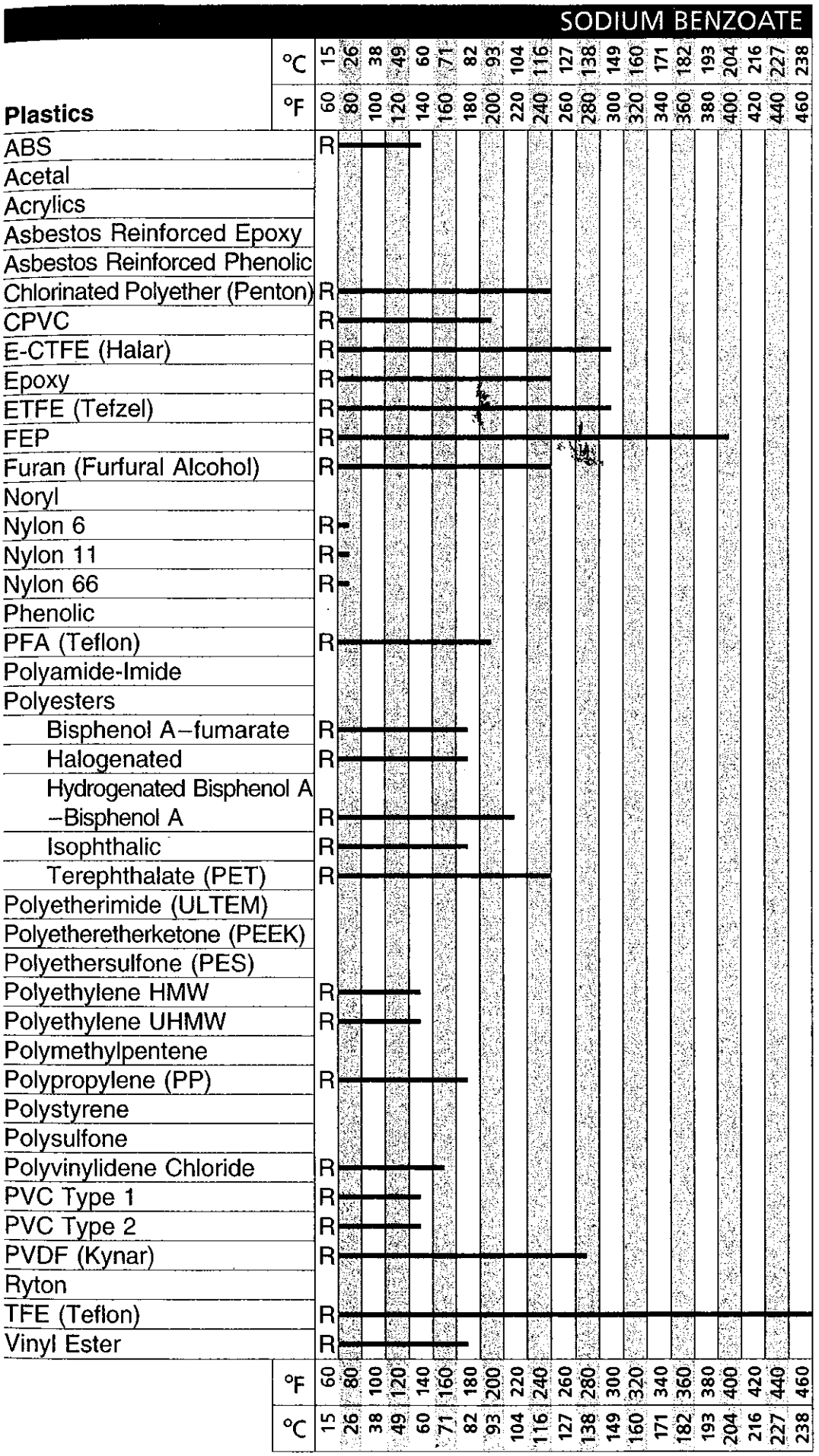

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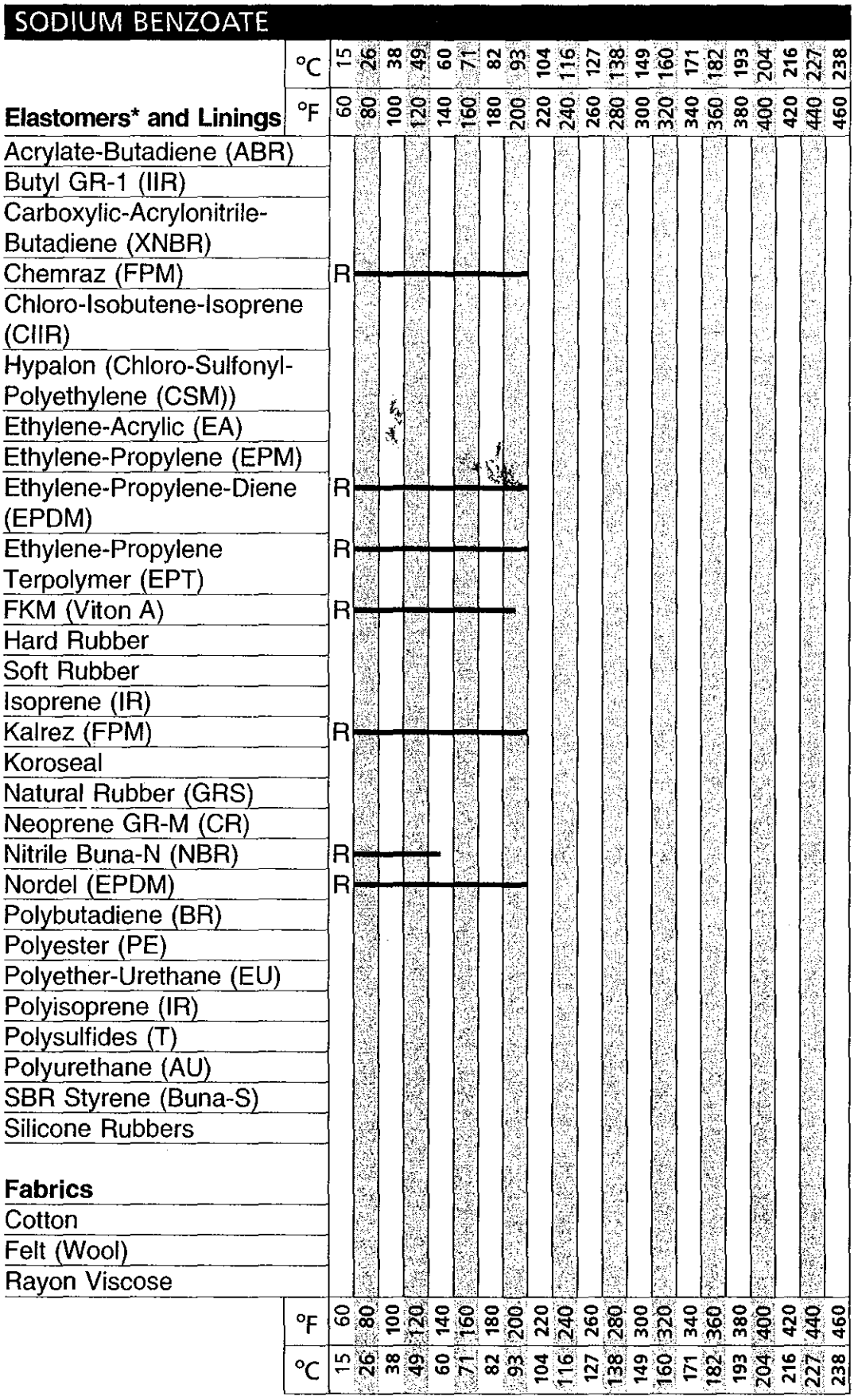
SODIUM BENZOATE



*See also Nylon 11 under PLASTICS

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SODIUM BICARBONATE 20%

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass			G																									
Aluminum			G																									
Aluminum Bronze			G																									
Brass			G																									
Bronze			G																									
Carbon Steel			S																									
Columbium (Niobium)																												
Copper			S																									
Hastelloy B/B-2	10–20%		E																									
Hastelloy C/C-276	10–20%		E																									
Hastelloy D	10–20%		E																									
Hastelloy G/G-3																												
High Silicon Iron			G																									
Inconel 600/625			E																									
Incolloy 800/825			G																									
Lead			G																									
Monel 400			E																									
Naval Bronze			G																									
Nickel 200/201			E																									
Ni-Resist			E																									
Stainless Steels																												
Type 304/347			E																									
Type 316/316 L			E																									
Type 400 series			G																									
Type 904-L																												
17-4 PH			G																									
20 Cb 3			E																									
E-Bright 26-1																												
Silicon Bronze			G																									
Silicon Copper			E																									
Galv. Stl.			U																									
Tantalum	ALL		E																									
Titanium			E																									
Zirconium			E																									
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
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FOR METALS

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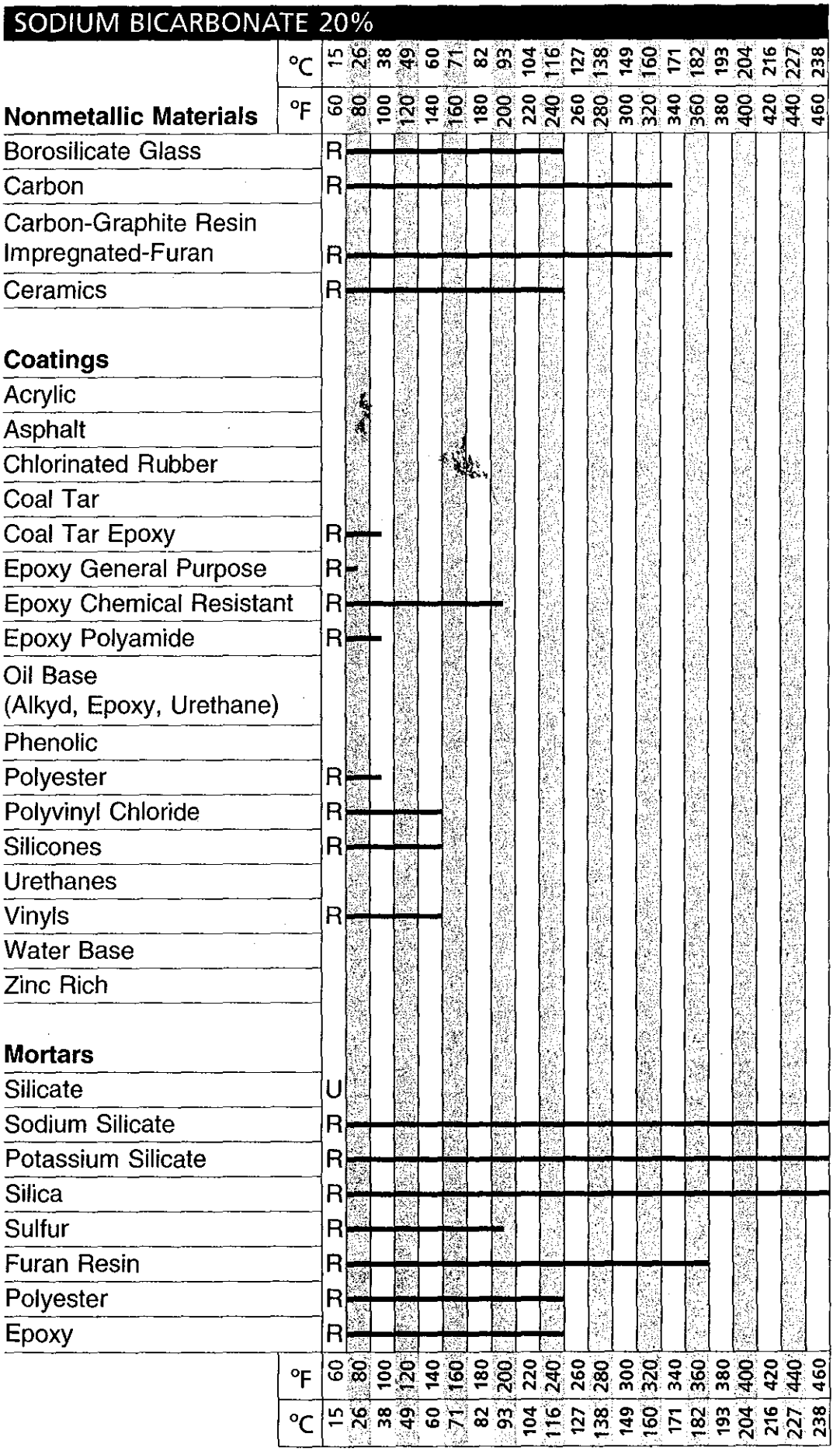
SODIUM BICARBONATE 20%



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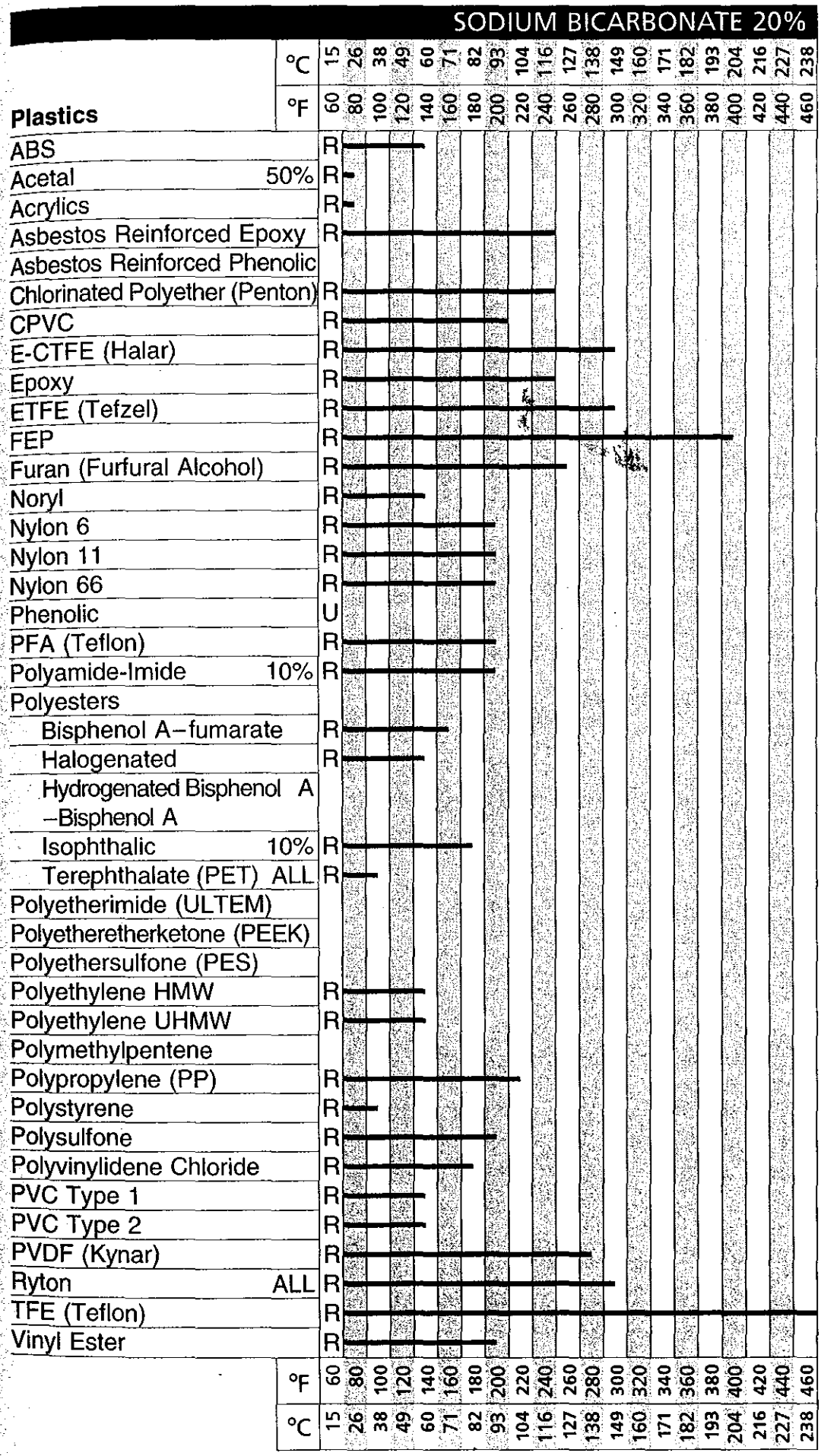

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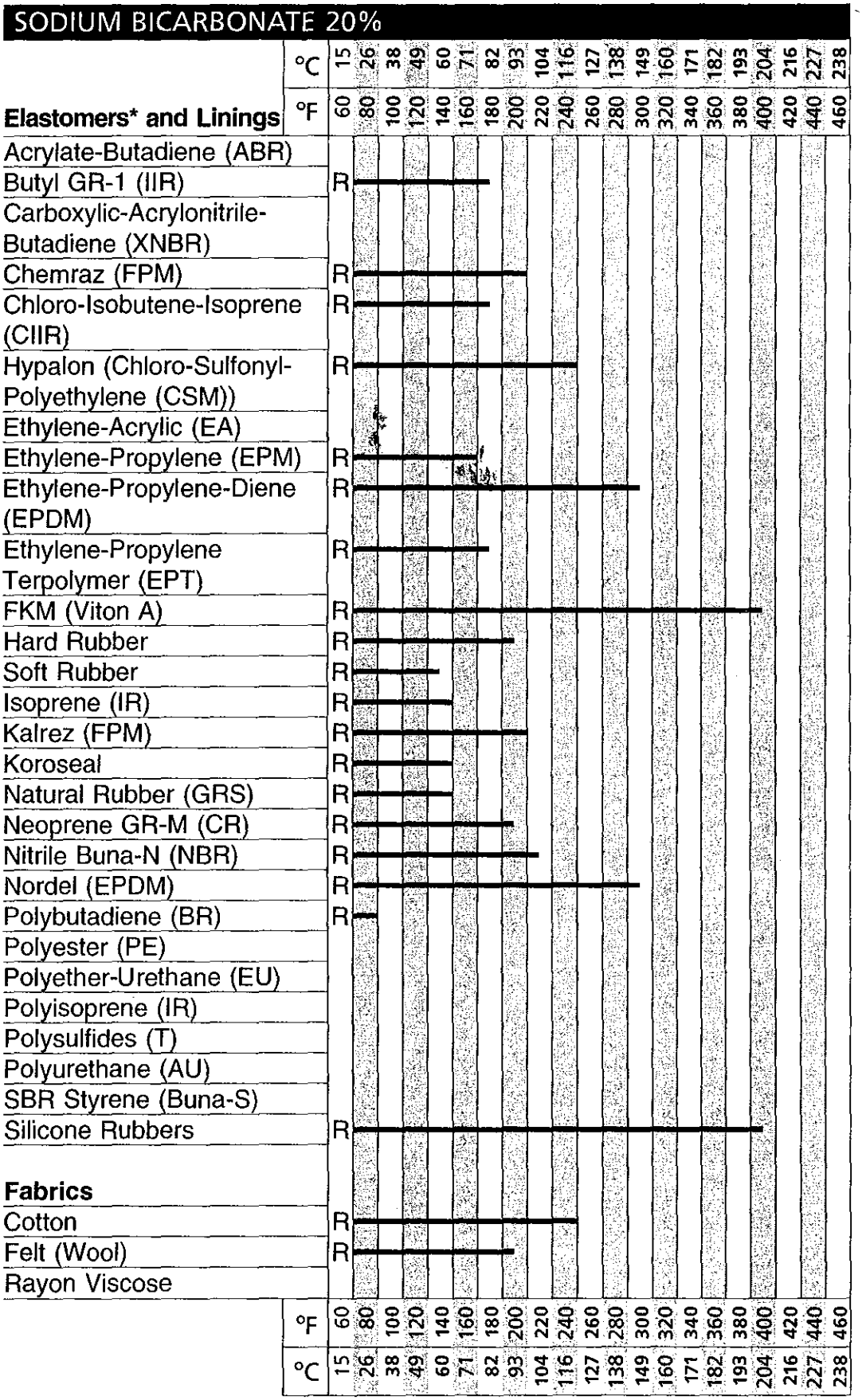
SODIUM BICARBONATE 20%



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SODIUM BICHROMATE NEUTRAL

Metals	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																										
Aluminum	G																									
Aluminum Bronze																										
Brass																										
Bronze																										
Carbon Steel																										
Columbium (Niobium)																										
Copper	G																									
Hastelloy B/B-2	U																									
Hastelloy C/C-276	G																									
Hastelloy D																										
Hastelloy G/G-3																										
High Silicon Iron																										
Inconel 600/625	G																									
Incolloy 800/825	G																									
Lead																										
Monel 400																										
Naval Bronze																										
Nickel 200/201																										
Ni-Resist																										
Stainless Steels																										
Type 304/347	G																									
Type 316/316 L	G																									
Type 400 series	G																									
Type 904-L																										
17-4 PH																										
20 Cb 3	G																									
E-Bright 26-1																										
Silicon Bronze	G																									
Silicon Copper																										
Stellite																										
Tantalum	G																									
Titanium	G																									
Zirconium																										
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

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FOR NONMETALLICS

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U = Unsatisfactory

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SODIUM BICHROMATE NEUTRAL

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated		R																				
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate	50%	R																				
Silica	50%	R																				
Sulfur	50%	R																				
Furan Resin	50%	R																				
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SODIUM BICHROMATE NEUTRAL

Plastics		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																							
Acetal																							
Acrylics																							
Asbestos Reinforced Epoxy																							
Asbestos Reinforced Phenolic																							
Chlorinated Polyether (Penton)																							
CPVC			R																				
E-CTFE (Halar)			R																				
Epoxy																							
ETFE (Tefzel)																							
FEP			R																				
Furan (Furfural Alcohol)			R																				
Noryl																							
Nylon 6	5%		R																				
Nylon 11	5%		R																				
Nylon 66	5%		R																				
Phenolic																							
PFA (Teflon)																							
Polyamide-Imide																							
Polyesters																							
Bisphenol A–fumarate			R																				
Halogenated			R																				
Hydrogenated Bisphenol A –Bisphenol A																							
Isophthalic			R																				
Terephthalate (PET)																							
Polyetherimide (ULTEM)																							
Polyetheretherketone (PEEK)																							
Polyethersulfone (PES)																							
Polyethylene HMW																							
Polyethylene UHMW																							
Polymethylpentene																							
Polypropylene (PP)																							
Polystyrene																							
Polysulfone																							
Polyvinylidene Chloride																							
PVC Type 1			R																				
PVC Type 2																							
PVDF (Kynar)																							
Ryton			R																				
TFE (Teflon)			R																				
Vinyl Ester			R																				
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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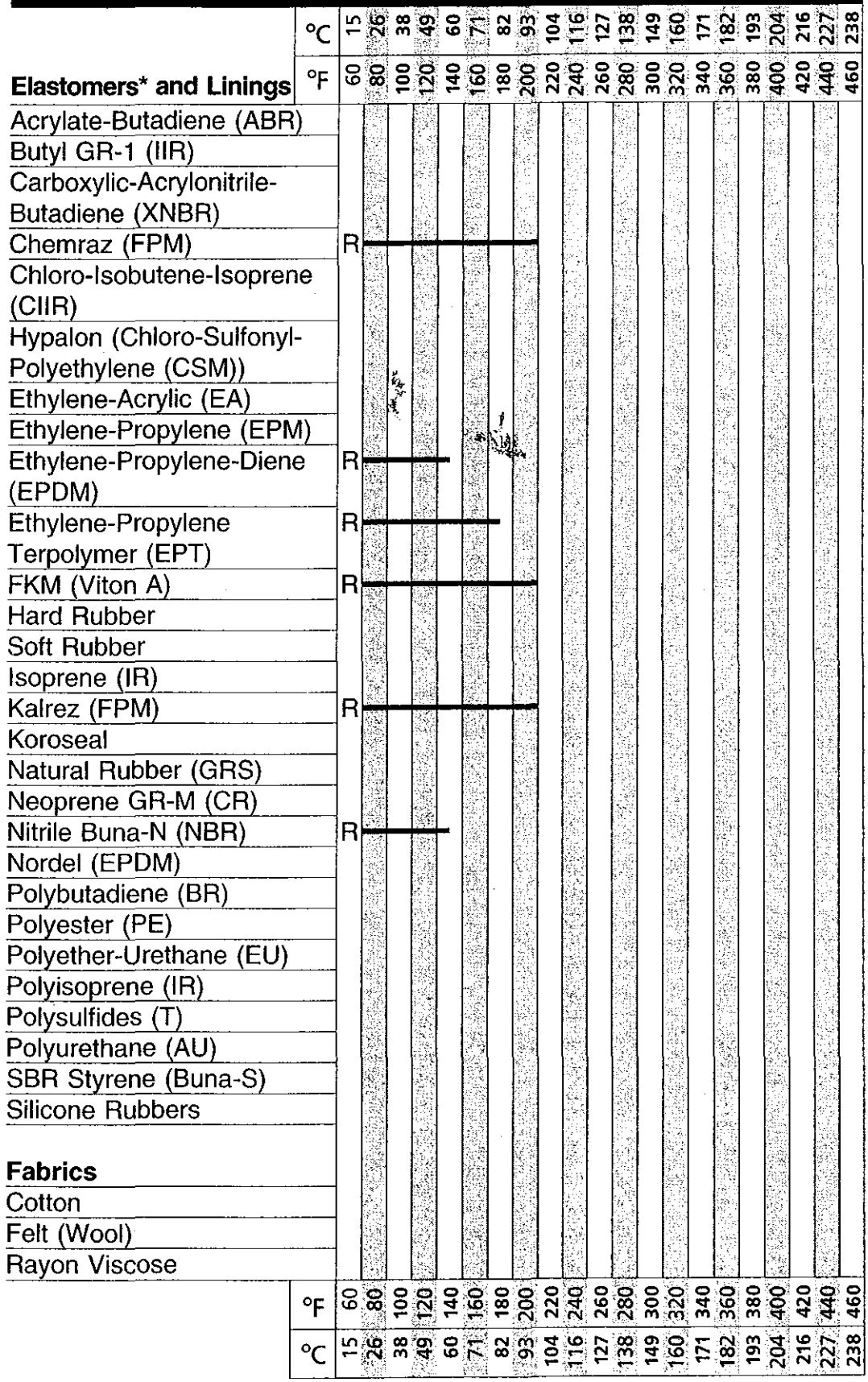
SODIUM BICHROMATE NEUTRAL



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SODIUM BISULFATE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass			G																									
Aluminum			U																									
Aluminum Bronze			U																									
Brass	10%		G																									
Bronze			G																									
Carbon Steel			G																									
Columbium (Niobium)	40%		G																									
Copper			S																									
Hastelloy B/B-2	10–30%		G																									
Hastelloy C/C-276	10–30%		G																									
Hastelloy D			G																									
Hastelloy G/G-3																												
High Silicon Iron			G																									
Inconel 600/625	10–30%		G																									
Incolloy 800/825			G																									
Lead			G																									
Monel 400	10–30%		G																									
Naval Bronze	10–20%		G																									
Nickel 200/201	10–50%		G																									
Ni-Resist			U																									
Stainless Steels																												
Type 304/347	10% 1,9		E						U																			
Type 316/316 L	10%		E						U																			
Type 400 series	10%		E																									
Type 904-L																												
17-4 PH																												
20 Cb 3	10–40%		E																									
E-Bright 26-1																												
Silicon Bronze			U																									
Silicon Copper			G																									
Galv. Stl.			U																									
Tantalum	TO 25%		E																									
Titanium	10–30%		E						U																			
Zirconium	10–50%		E																									
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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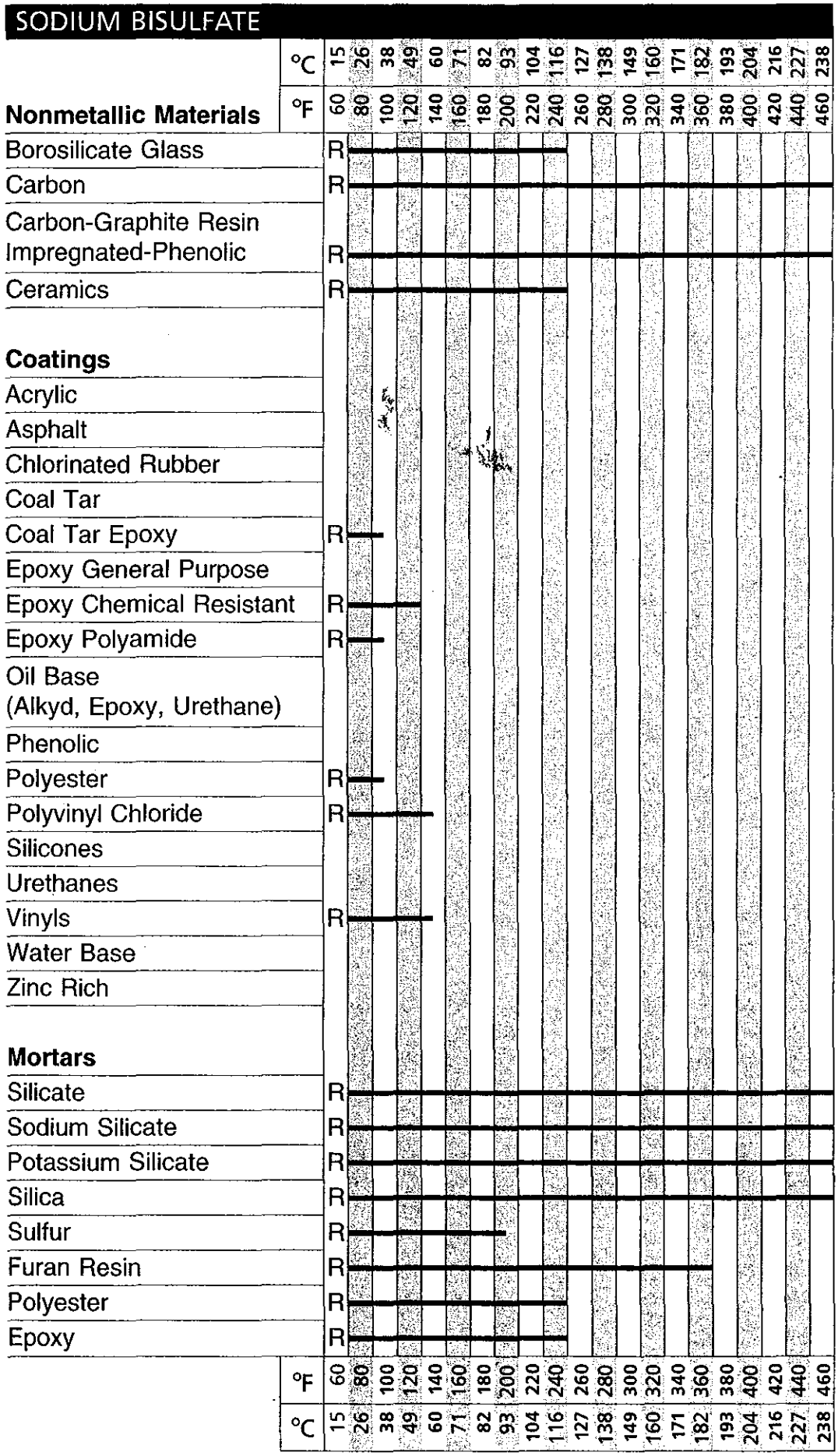

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SODIUM BISULFATE

Plastics		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS	6.5%		R																				
KEL-F (CTFE)			R																				
Acrylics			R																				
Asbestos Reinforced Epoxy			R																				
Asbestos Reinforced Phenolic			R																				
Chlorinated Polyether (Penton)			R																				
CPVC			R																				
E-CTFE (Halar)			R																				
Epoxy			R																				
ETFE (Tefzel)			R																				
FEP			R																				
Furan (Furfural Alcohol)			R																				
Noryl			R																				
Nylon 6			R																				
Nylon 11			R																				
Nylon 66			R																				
Phenolic			R																				
PFA (Teflon)			R																				
Polyamide-Imide																							
Polyesters																							
Bisphenol A–fumarate			R																				
Halogenated	ALL		R																				
Hydrogenated Bisphenol A –Bisphenol A																							
Isophthalic			R																				
Terephthalate (PET)			R																				
Polyetherimide (ULTEM)																							
Polyetheretherketone (PEEK)																							
Polyethersulfone (PES)																							
Polyethylene HMW			R																				
Polyethylene UHMW			R																				
Polymethylpentene																							
Polypropylene (PP)			R																				
Polystyrene			R																				
Polysulfone			R																				
Polyvinylidene Chloride			R																				
PVC Type 1			R																				
PVC Type 2			R																				
PVDF (Kynar)			R																				
Ryton	ALL		R																				
TFE (Teflon)			R																				
Vinyl Ester	ALL		R																				
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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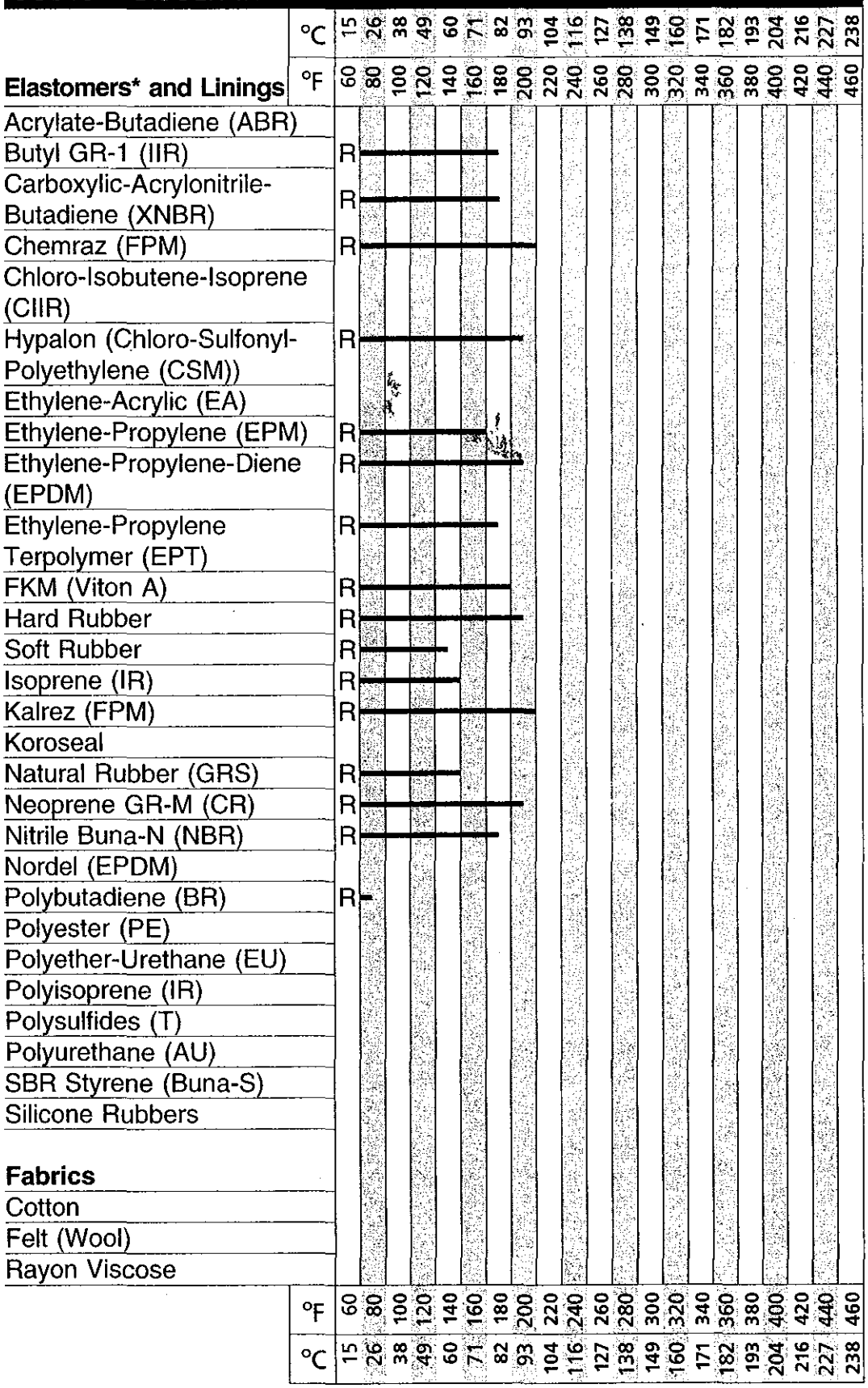
SODIUM BISULFATE



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SODIUM BISULFITE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass			G																									
Aluminum			U																									
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Brass			G																									
Bronze			U																									
Carbon Steel			U																									
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Hastelloy B/B-2	10–40%		G																									
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Inconel 600/625	20%		G																									
Incolloy 800/825																												
Lead			G																									
Monel 400	10–40%		G																									
Naval Bronze			G																									
Nickel 200/201	10–40%		G																									
Ni-Resist																												
Stainless Steels																												
Type 304/347	20% 2		G																									
Type 316/316 L	10–40%		G																									
Type 400 series																												
Type 904-L																												
17-4 PH																												
20 Cb 3	10–40%		G																									
E-Bright 26-1																												
Silicon Bronze			G																									
Silicon Copper			G																									
Stellite																												
Tantalum			G																									
Titanium	10–40%		G																									
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

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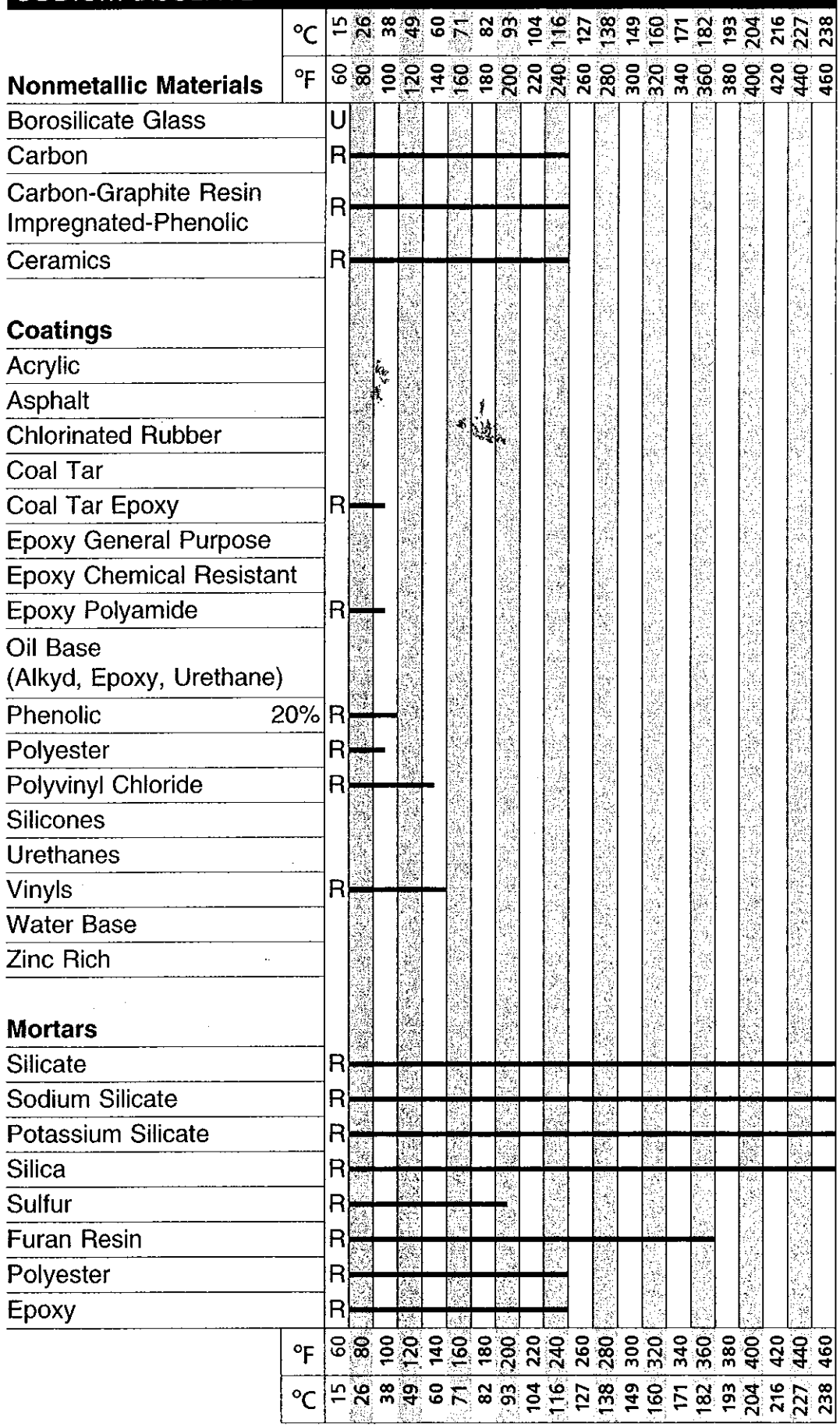
SODIUM BISULFITE



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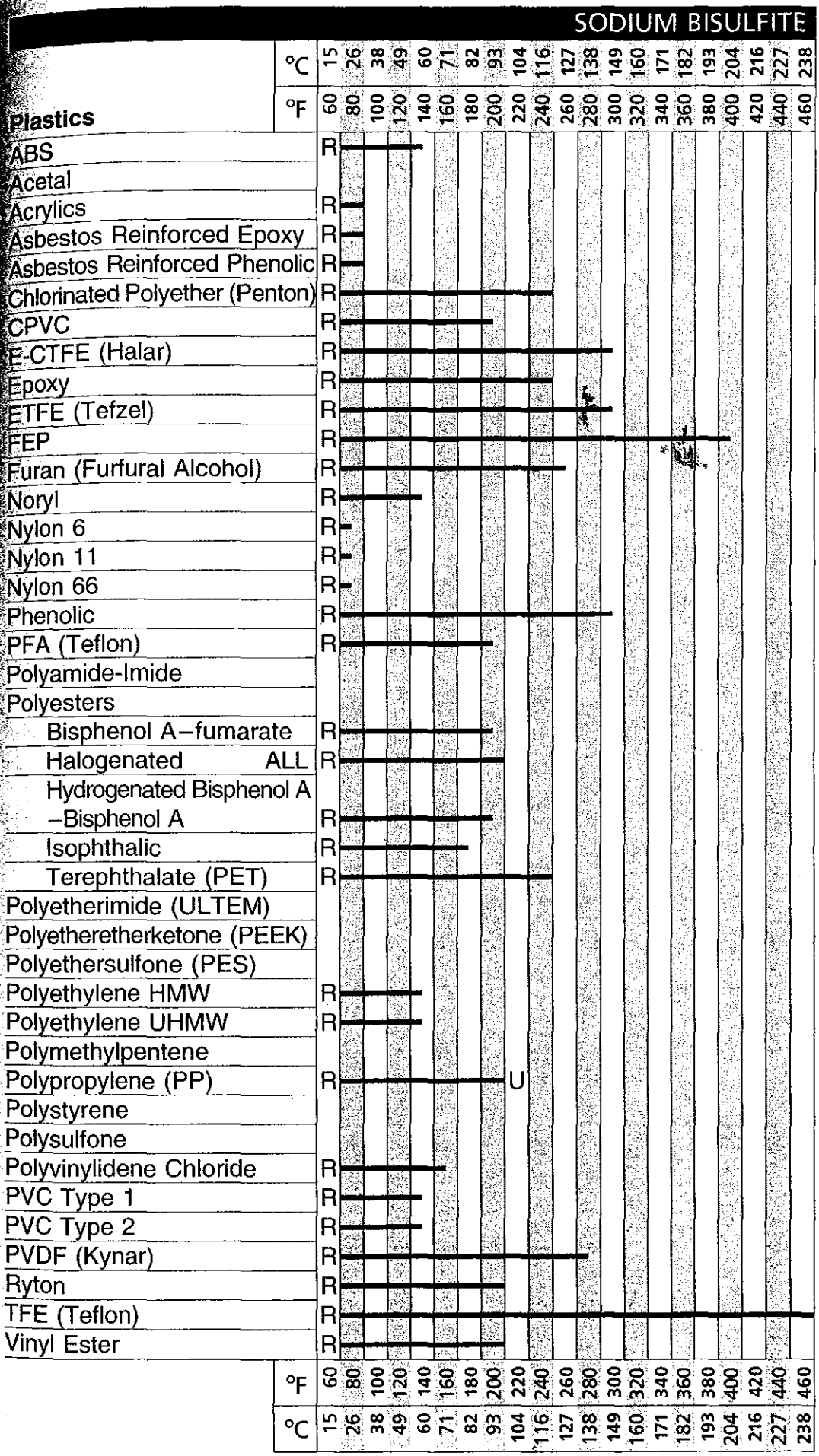

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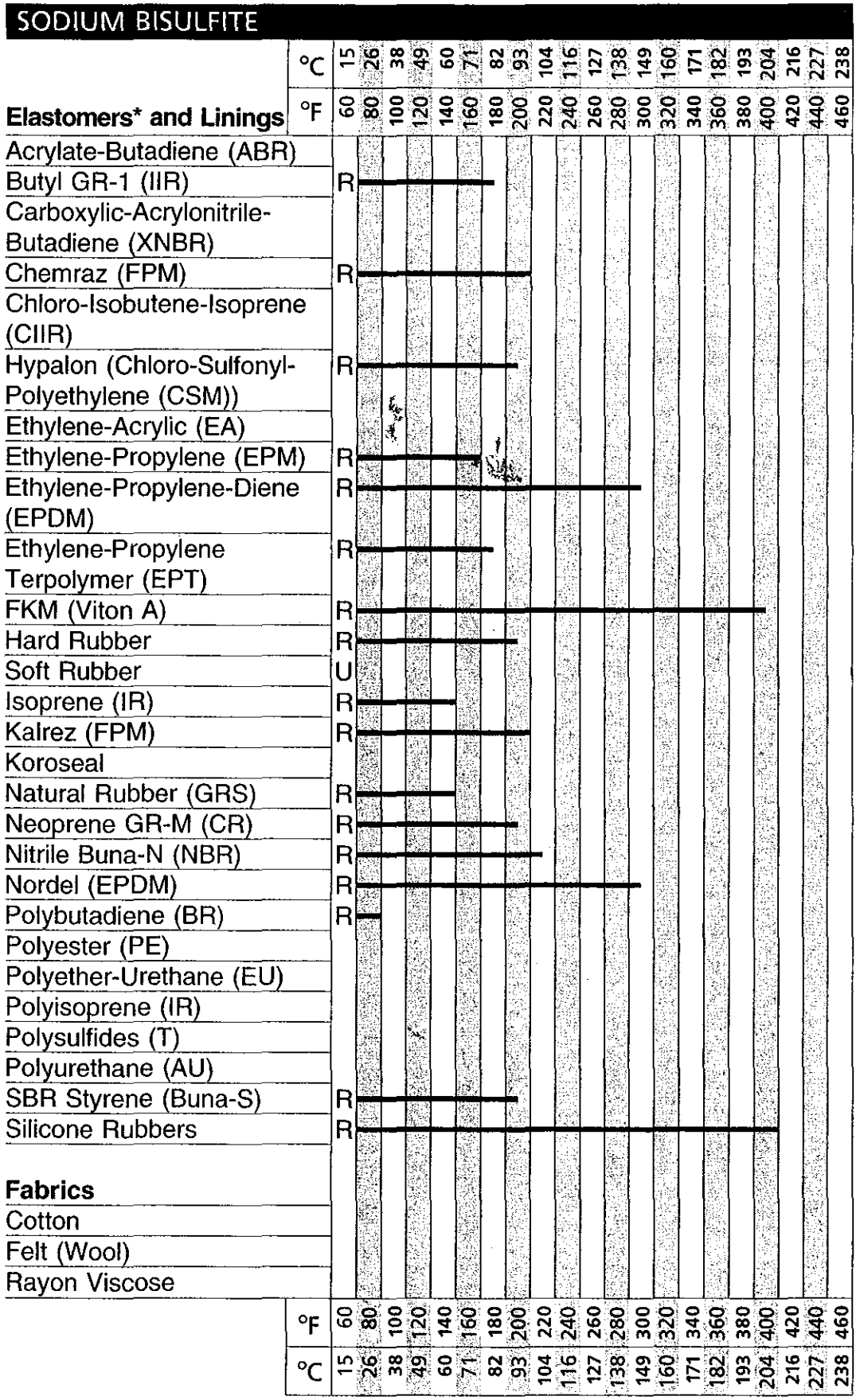

*See also Nylon 11 under PLASTICS

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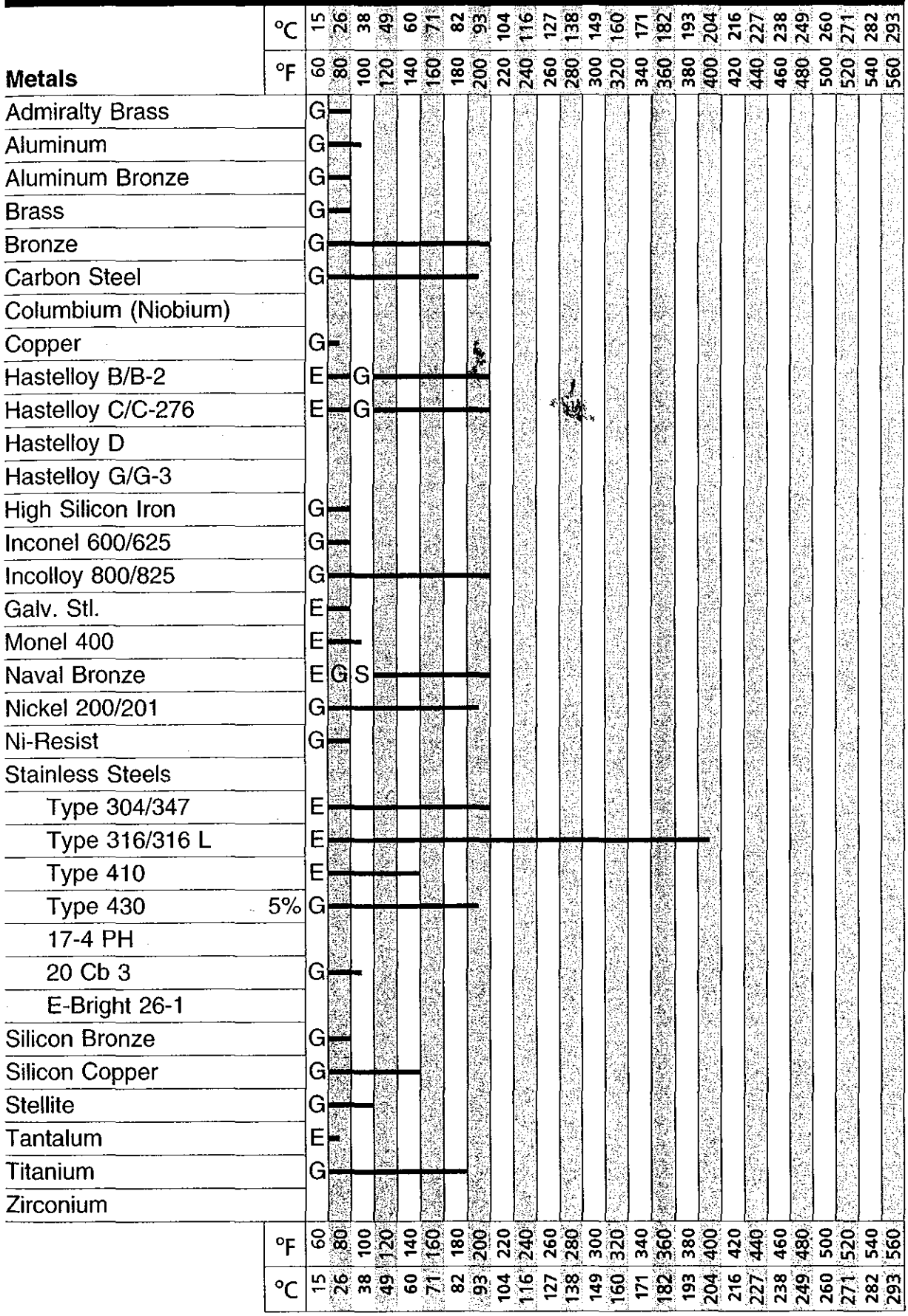

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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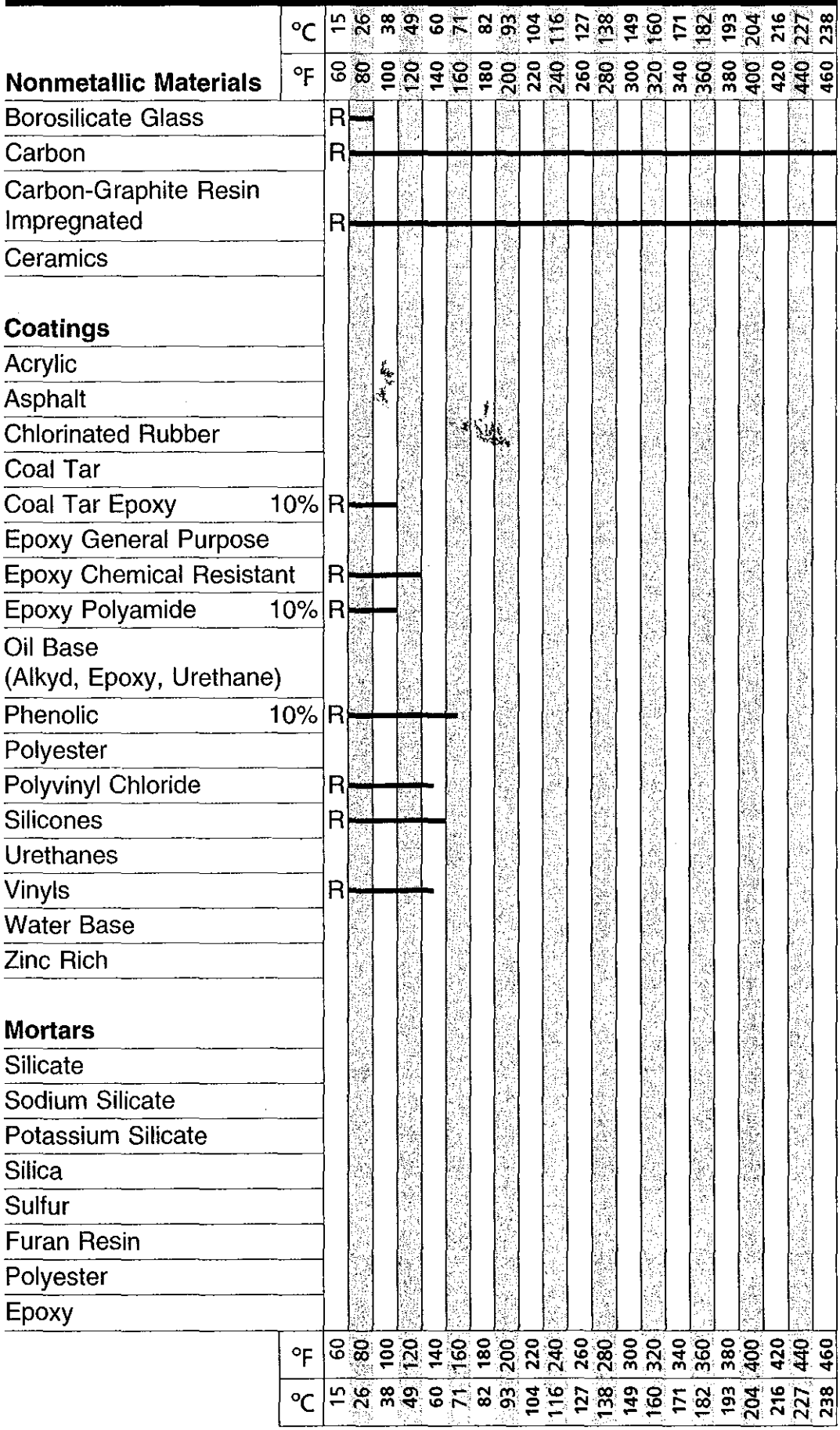

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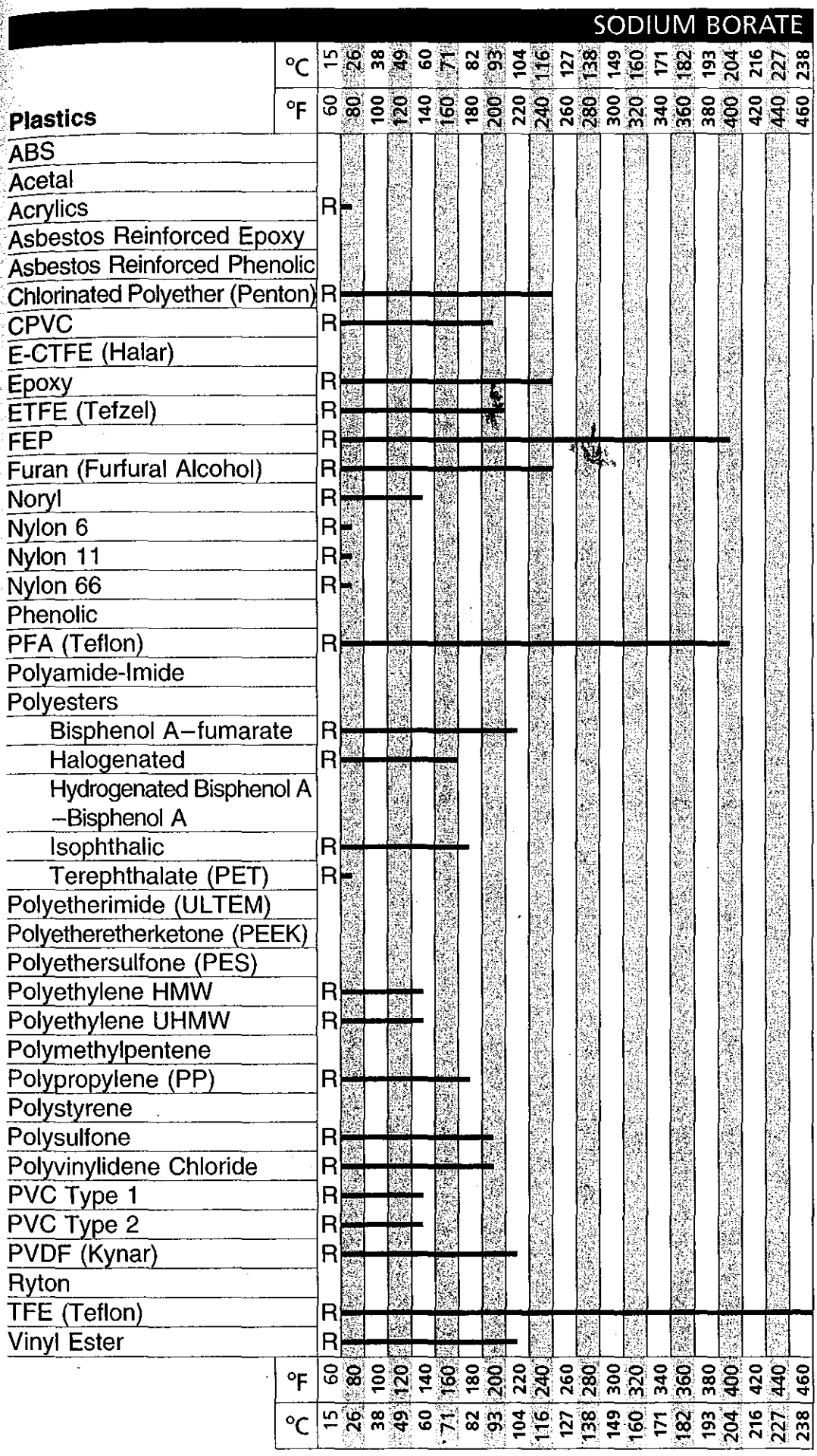

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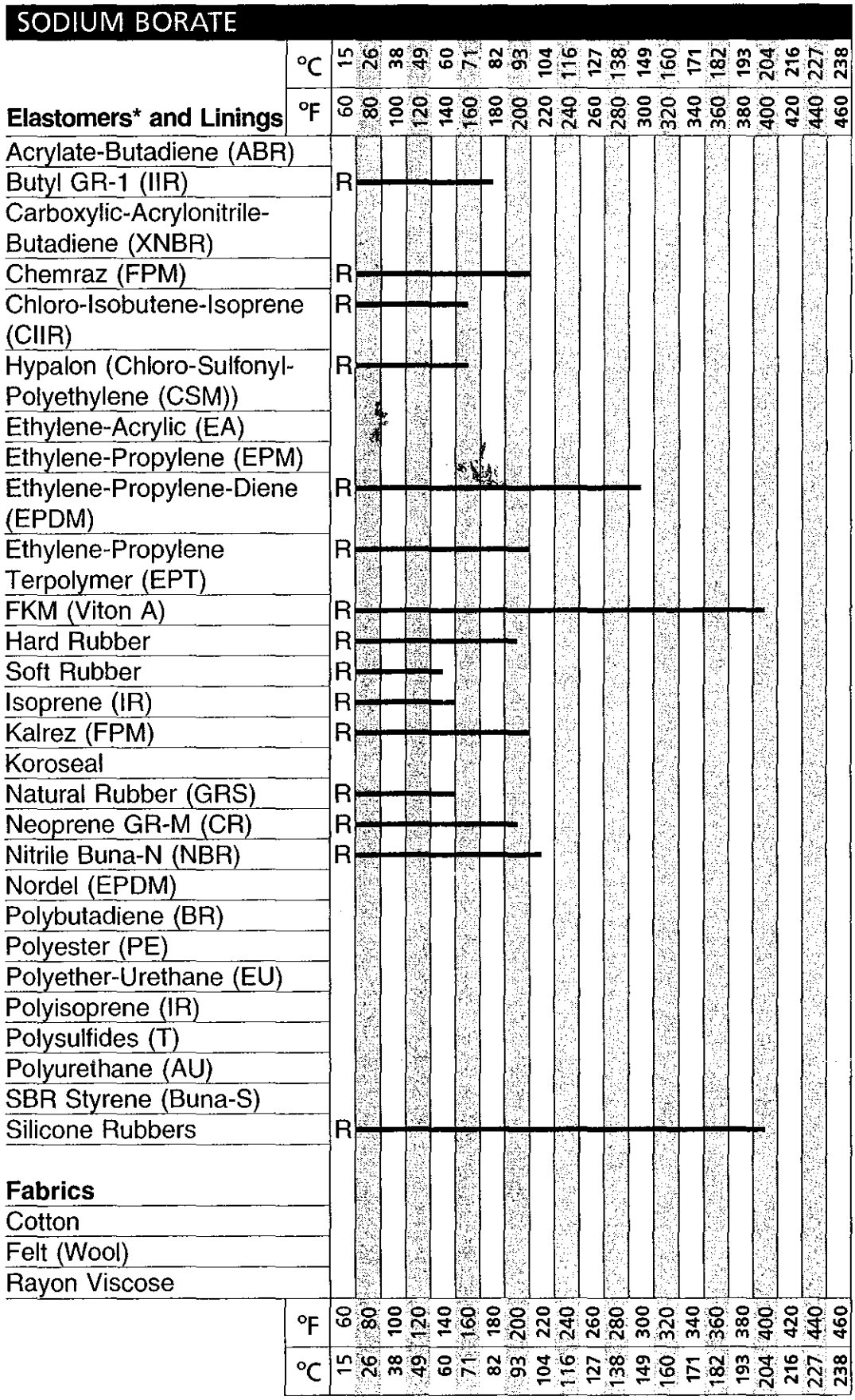

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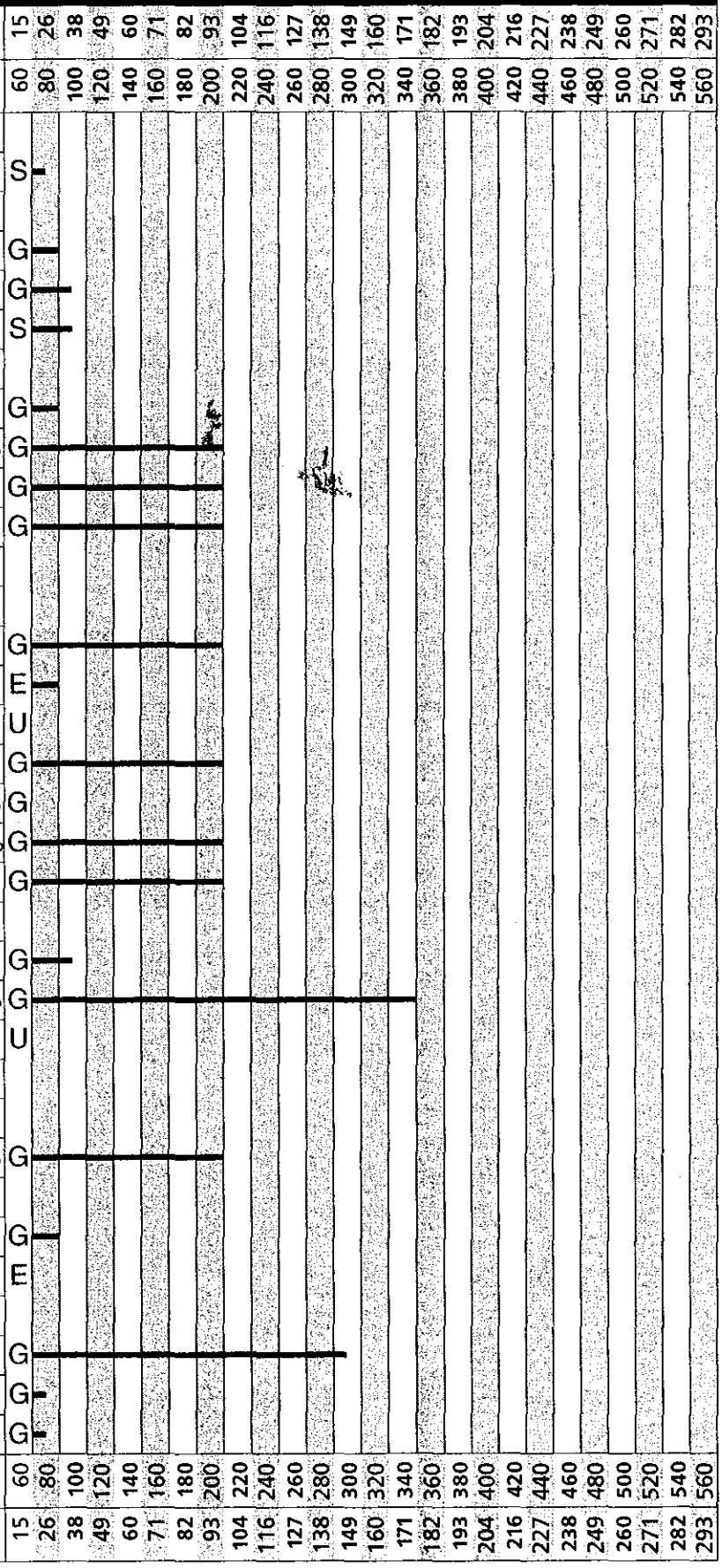
SODIUM BROMIDE

Metals		°C	°F
Admiralty Brass			
Aluminum	10%	S	
Aluminum Bronze			
Brass	10%	G	
Bronze	10%	G	
Carbon Steel	10%	S	
Columbium (Niobium)			
Copper	5%	G	
Hastelloy B/B-2	10–50%	G	
Hastelloy C/C-276	10–50%	G	
Hastelloy D	10–50%	G	
Hastelloy G/G-3			
High Silicon Iron			
Inconel 600/625	10–50%	G	
Incolloy 800/825	5%	E	
Galv. Stl.		U	
Monel 400	10–40%	G	
Naval Bronze	10%	G	
Nickel 200/201	10–50%	G	
Ni-Resist		G	
Stainless Steels			
Type 304/347	10%	G	
Type 316/316 L	10–50%	G	
Type 400 series		U	
Type 904-L			
17-4 PH			
20 Cb 3	10–50%	G	
E-Bright 26-1			
Silicon Bronze		G	
Silicon Copper	5%	E	
Stellite			
Tantalum		G	
Titanium		G	
Zirconium		G	



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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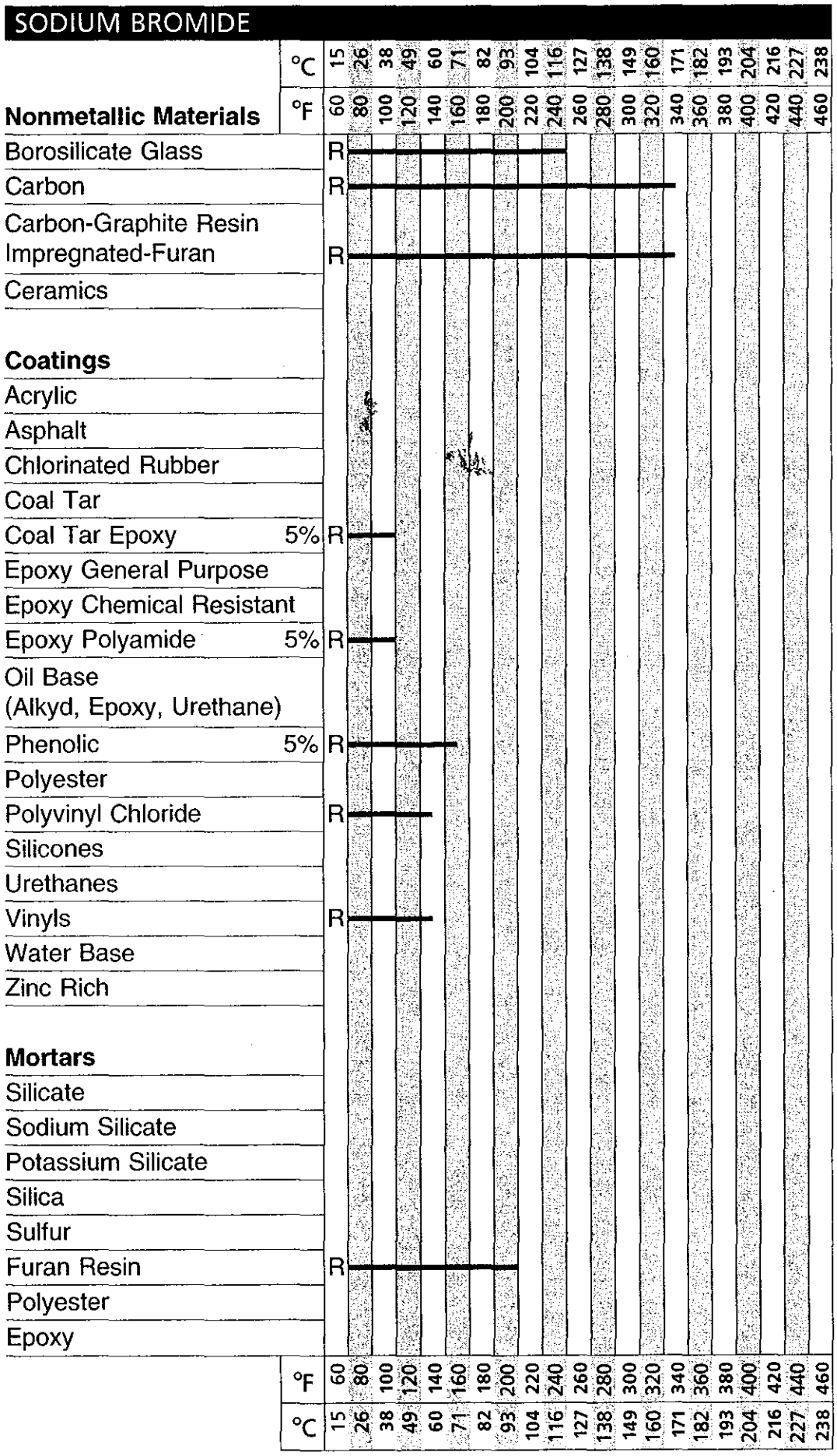

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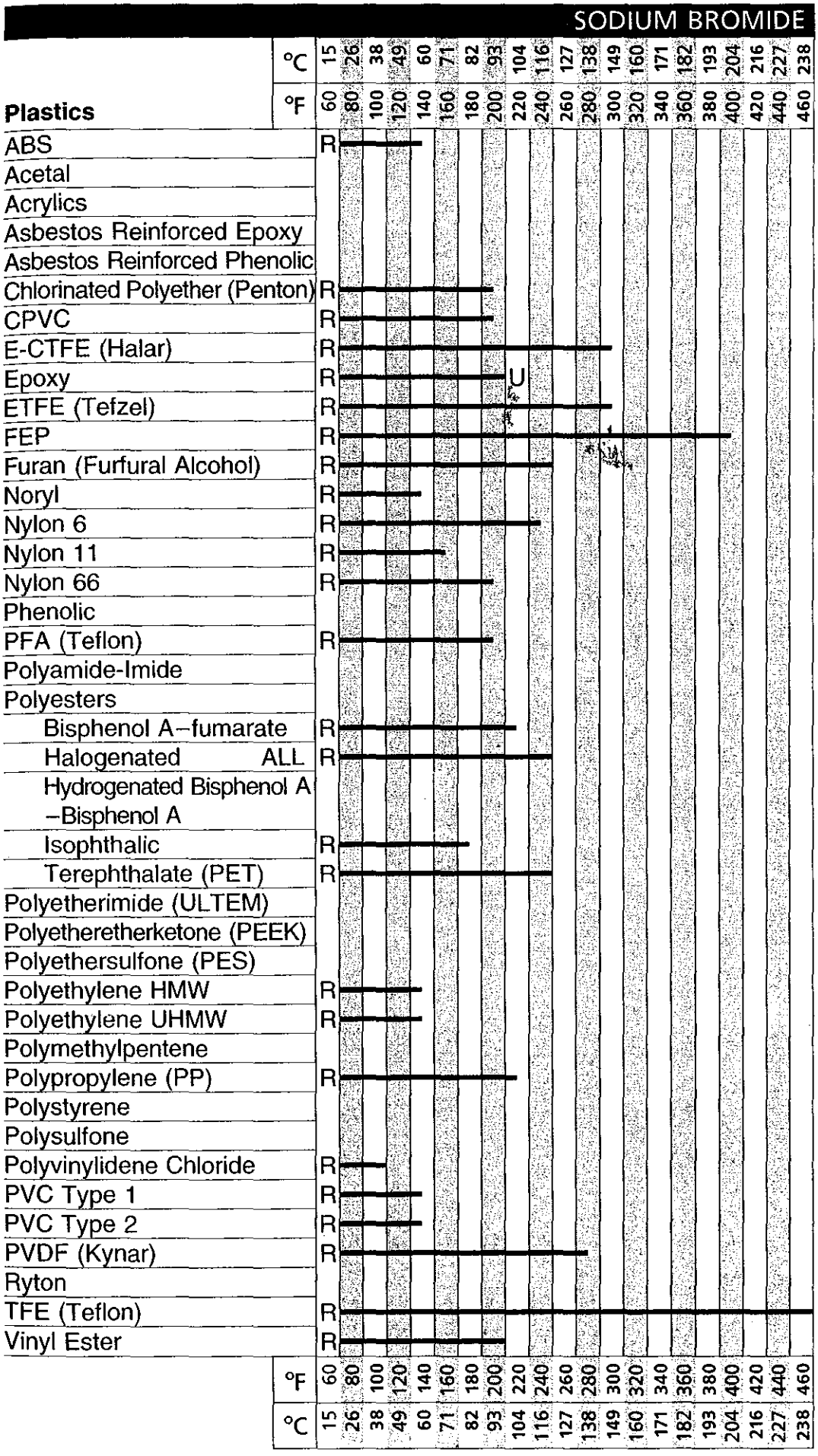

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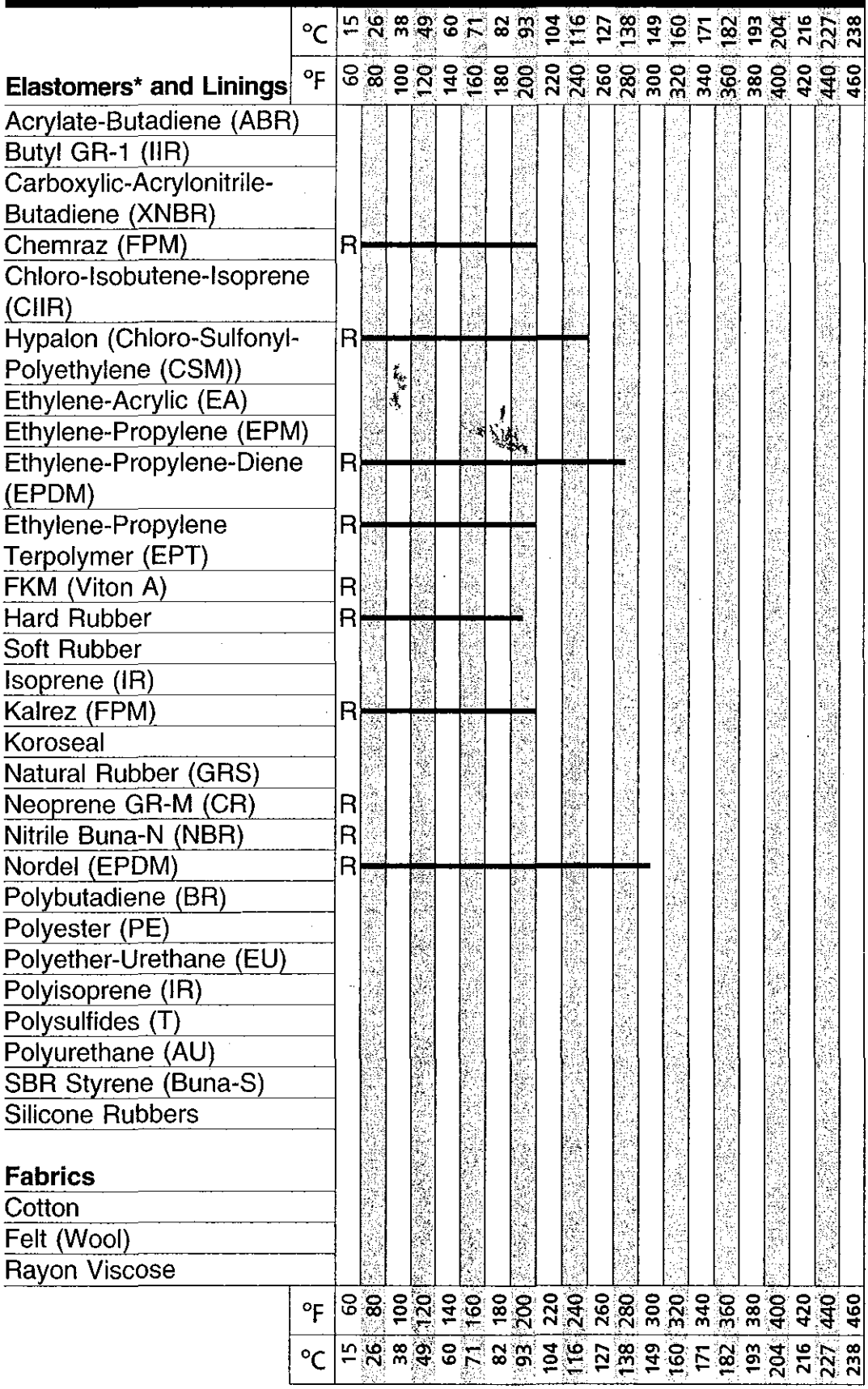
SODIUM BROMIDE



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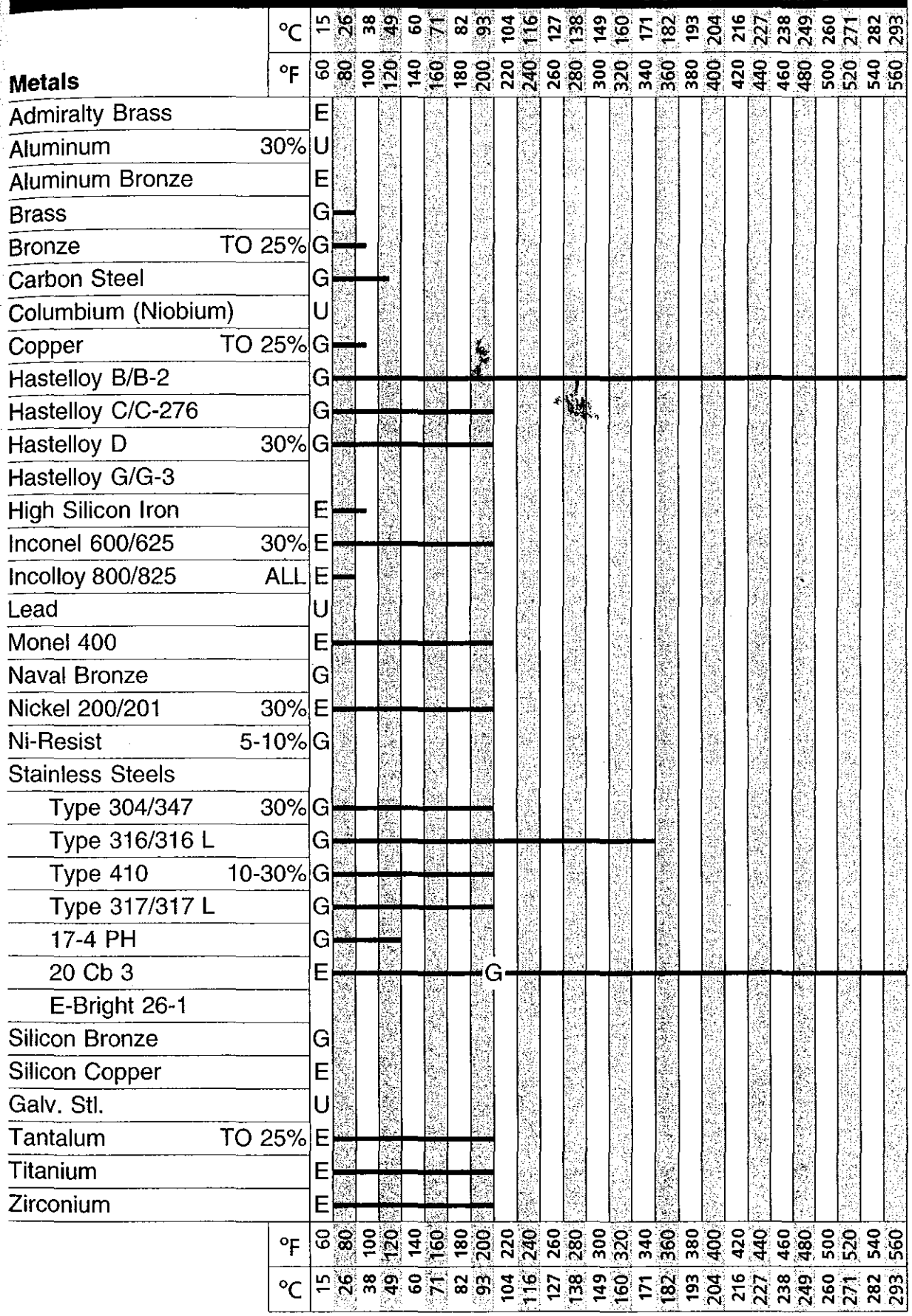

FOR METALS

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S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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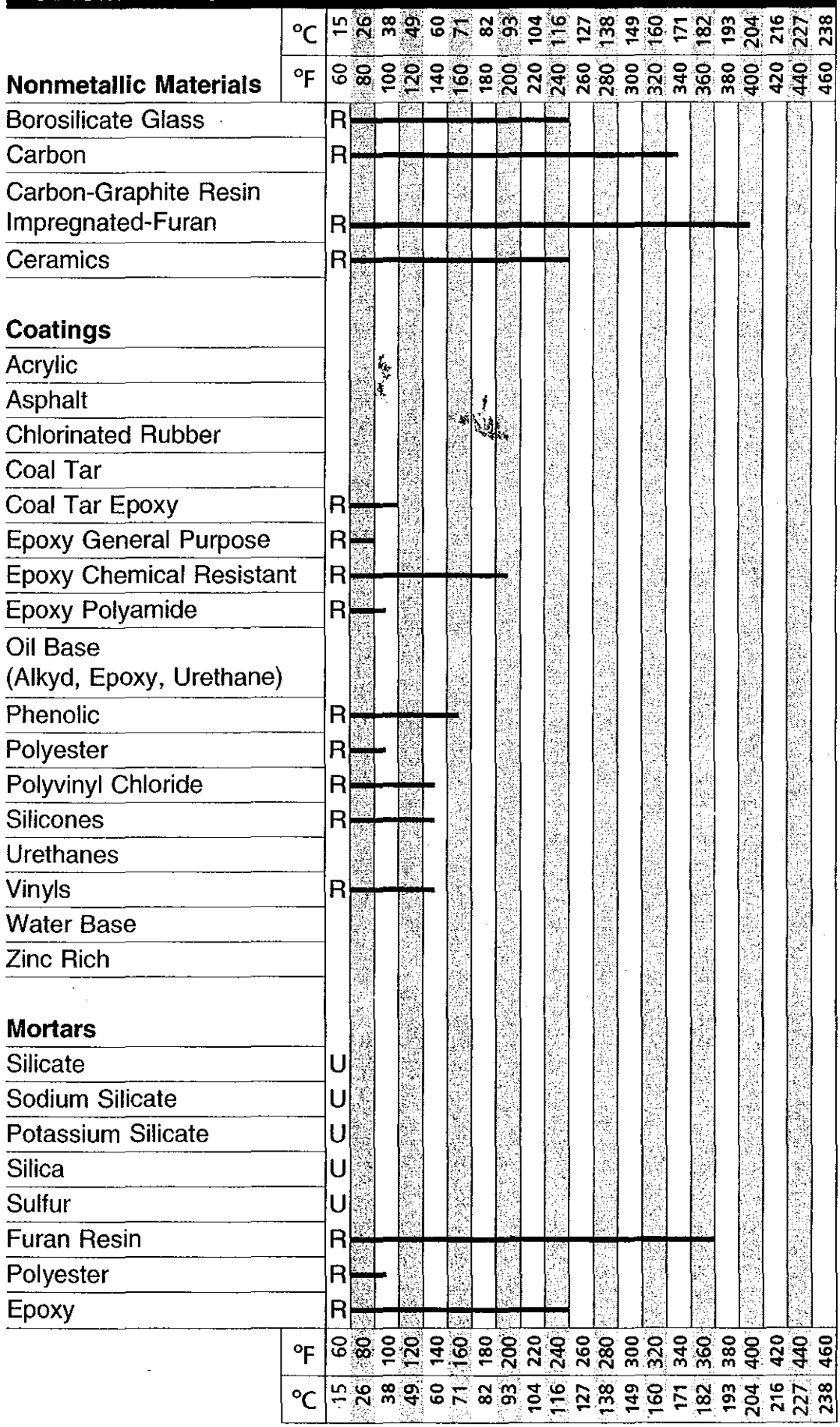

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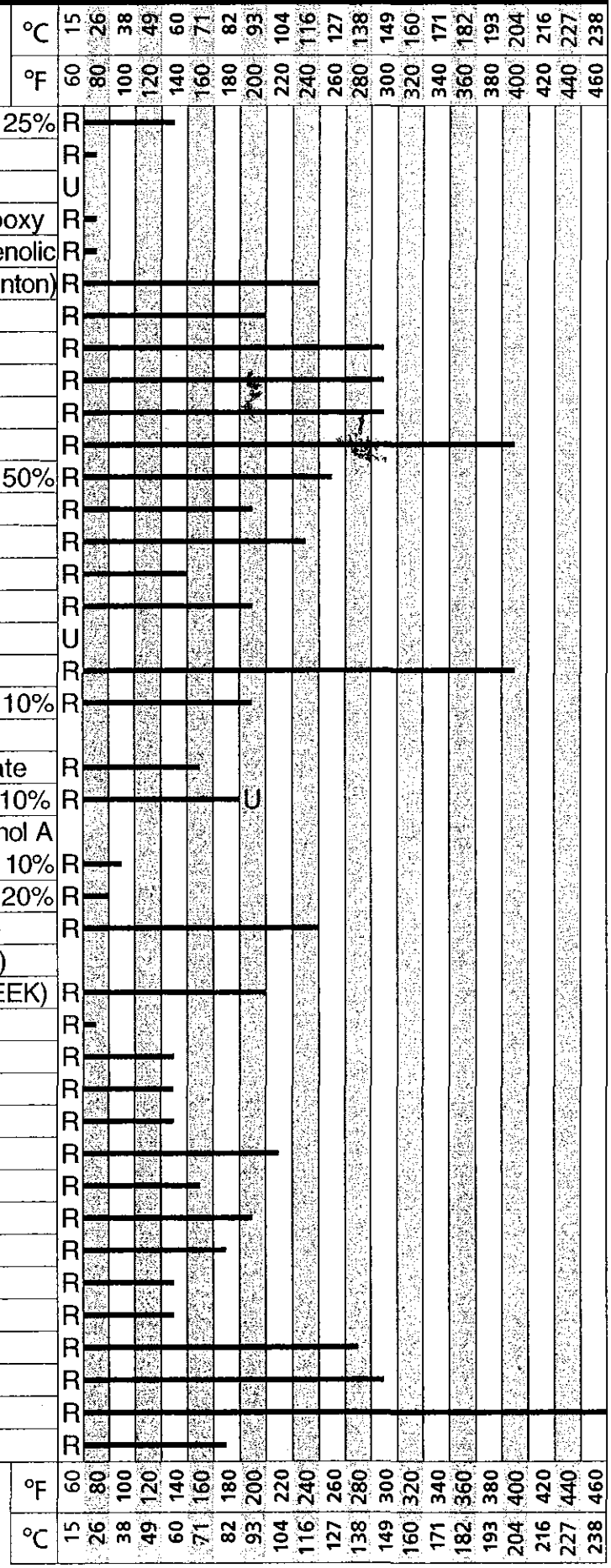
SODIUM CARBONATE

Plastics	
ABS	25% R
Acetal	R
Acrylics	U
Asbestos Reinforced Epoxy	R
Asbestos Reinforced Phenolic	R
Chlorinated Polyether (Penton)	R
CPVC	R
E-CTFE (Halar)	R
Epoxy	R
ETFE (Tefzel)	R
FEP	R
Furan (Furfural Alcohol)	50% R
Noryl	R
Nylon 6	R
Nylon 11	R
Nylon 66	R
Phenolic	U
PFA (Teflon)	R
Polyamide-Imide	10% R
Polyesters	
Bisphenol A–fumarate	R
Halogenated	10% R
Hydrogenated Bisphenol A –Bisphenol A	10% R
Isophthalic	20% R
Terephthalate (PET)	R
Polyetherimide (ULTEM)	
Polyetheretherketone (PEEK)	R
Polyethersulfone (PES)	R
Polyethylene HMW	R
Polyethylene UHMW	R
Polymethylpentene	R
Polypropylene (PP)	R
Polystyrene	R
Polysulfone	R
Polyvinylidene Chloride	R
PVC Type 1	R
PVC Type 2	R
PVDF (Kynar)	R
Ryton	R
TFE (Teflon)	R
Vinyl Ester	R



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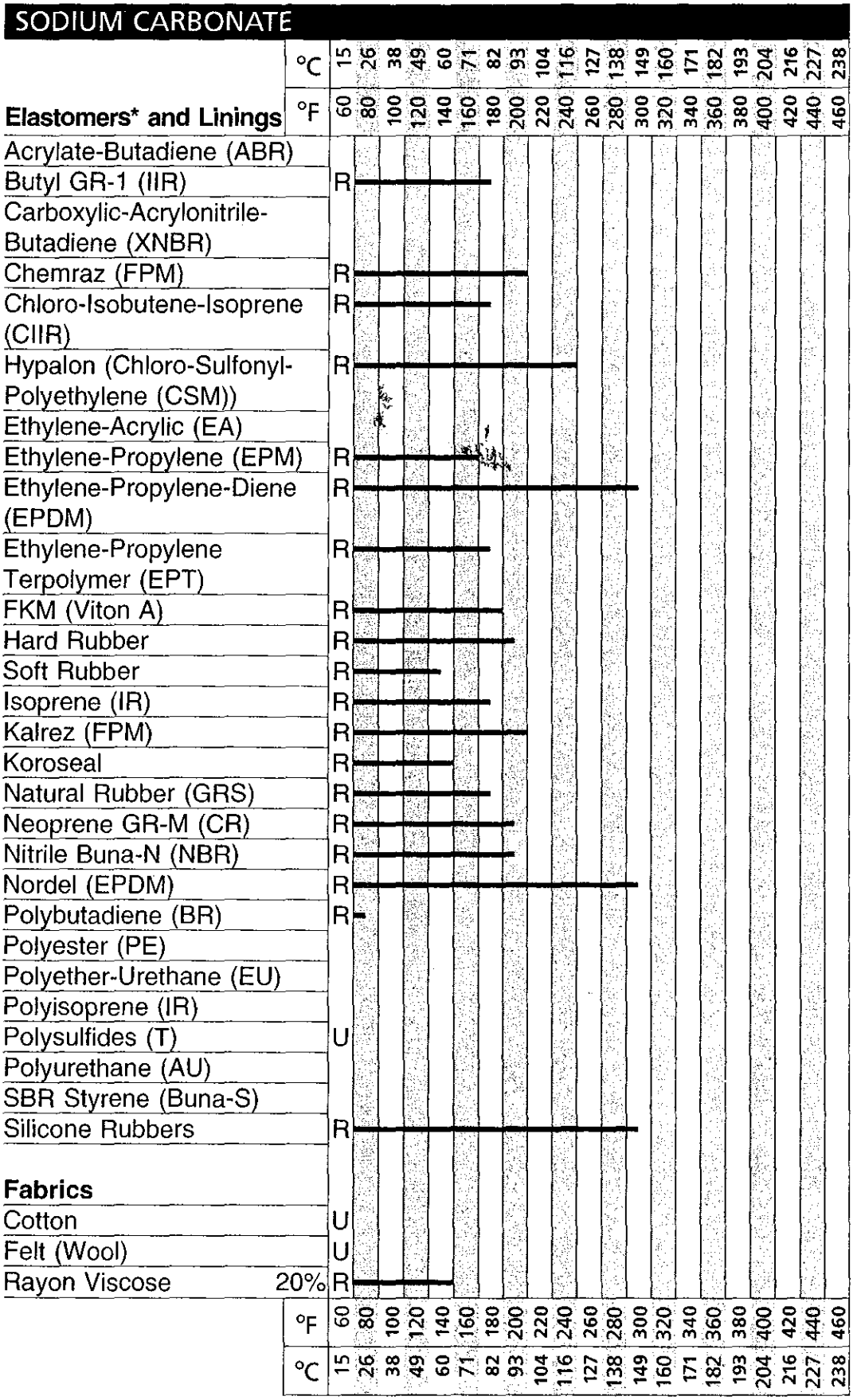

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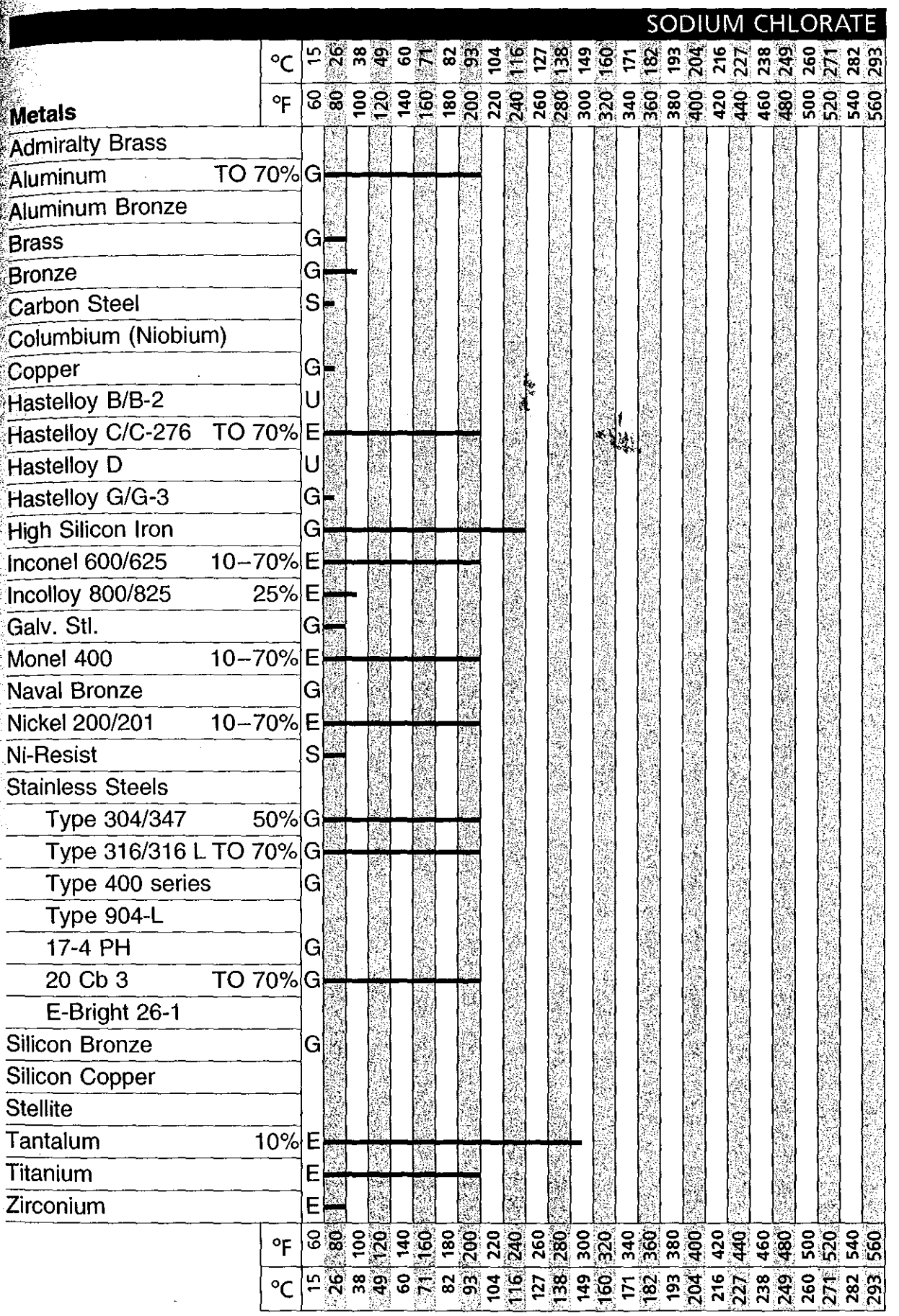

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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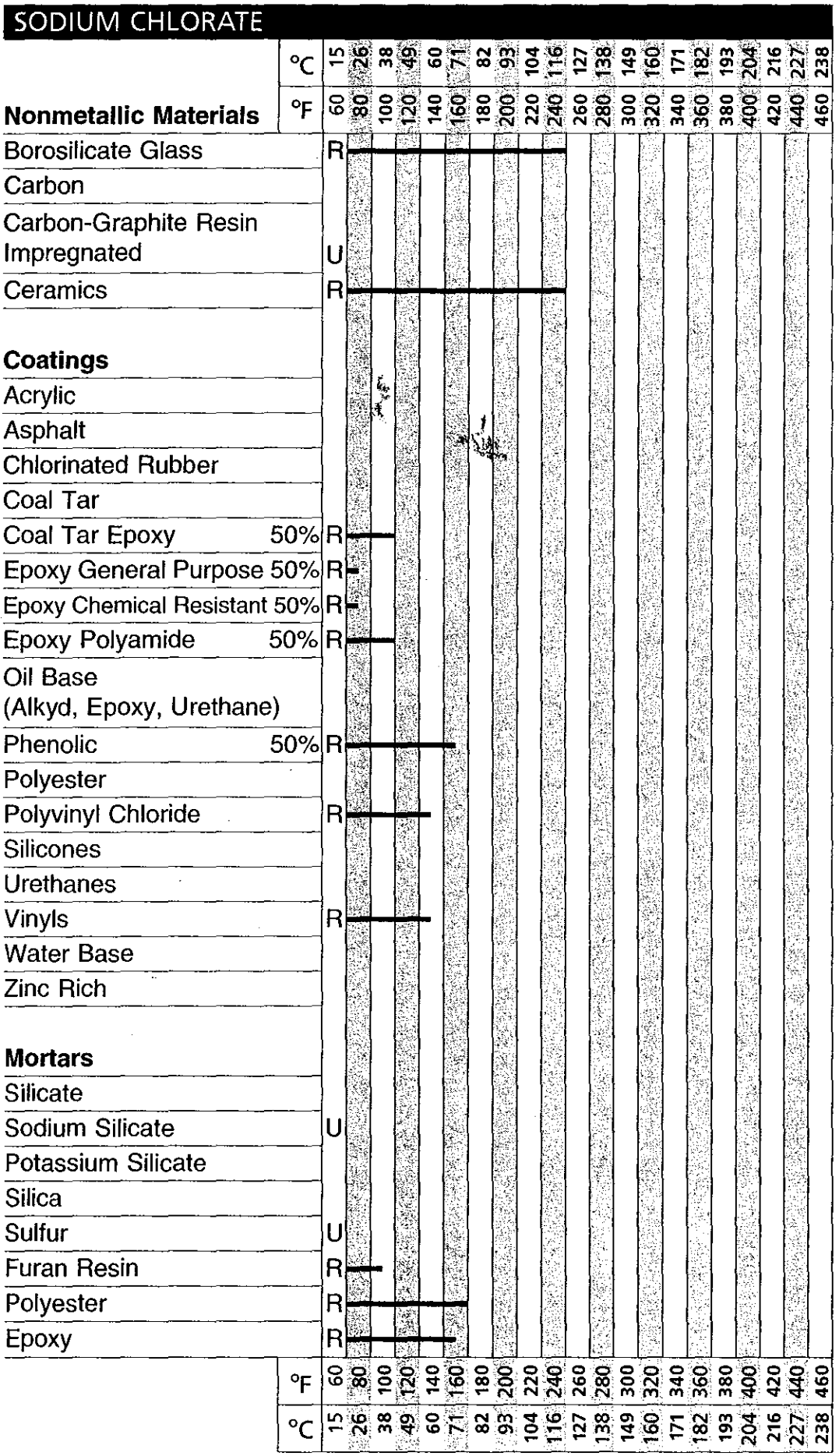

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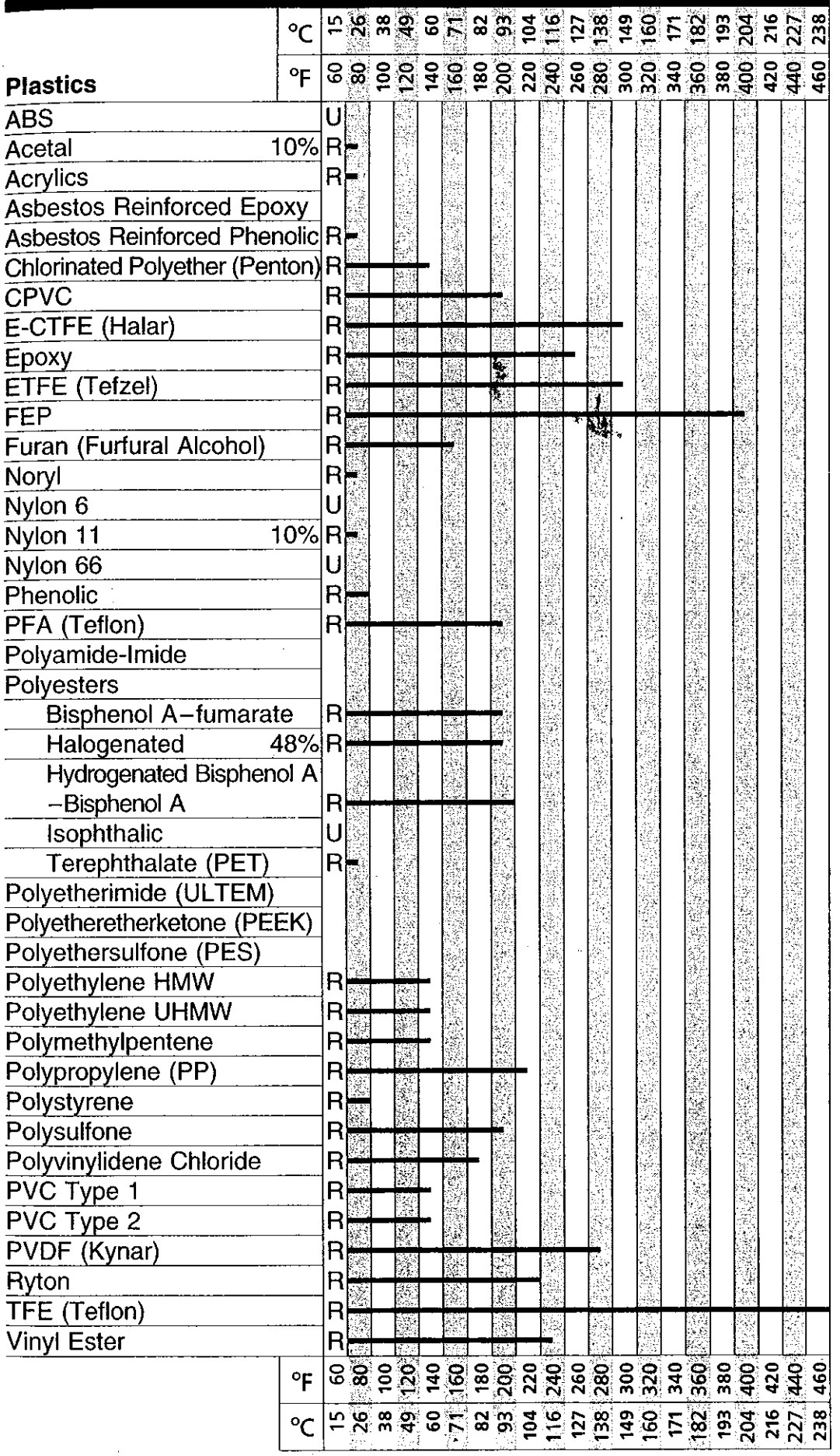

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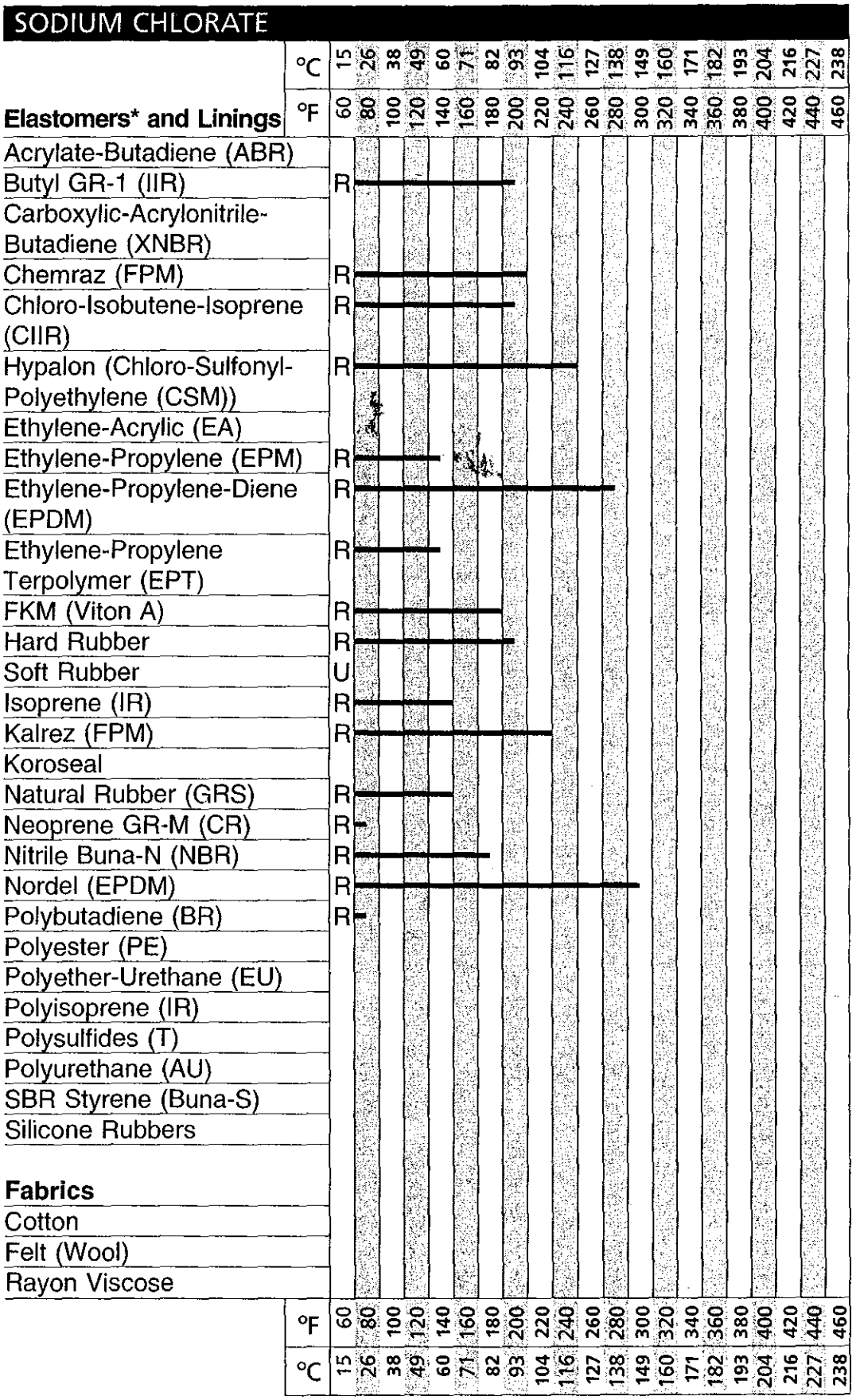

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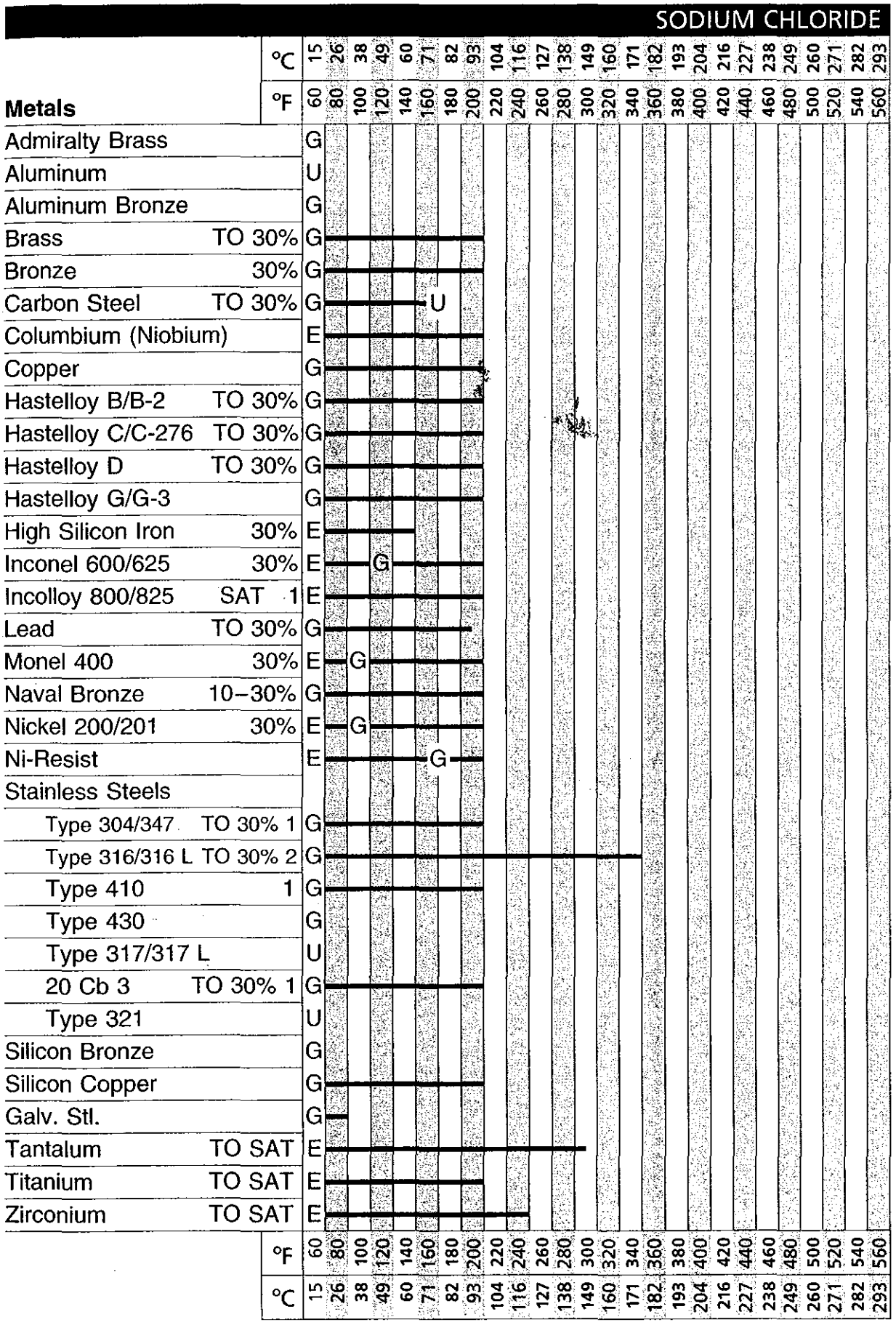

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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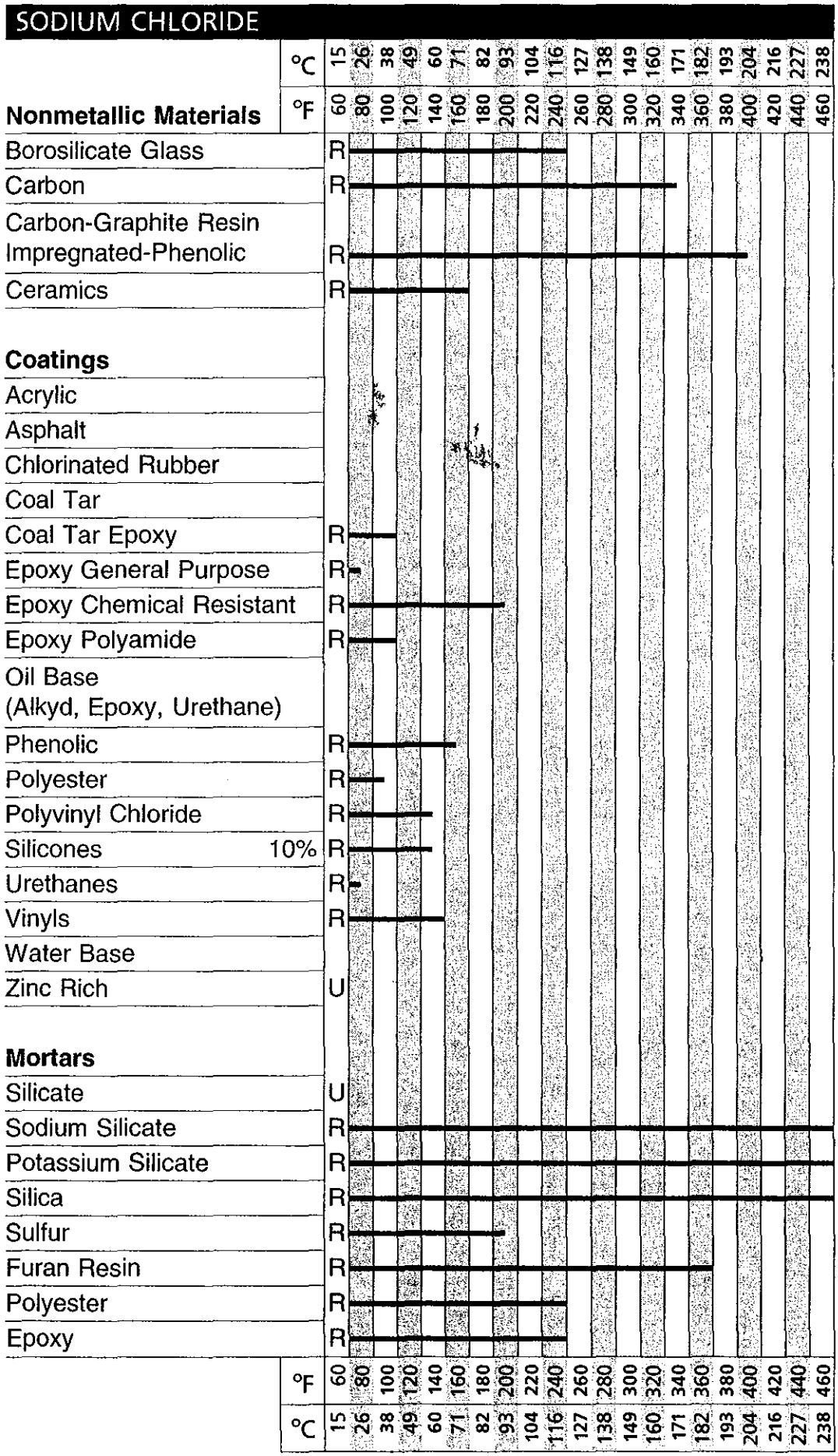

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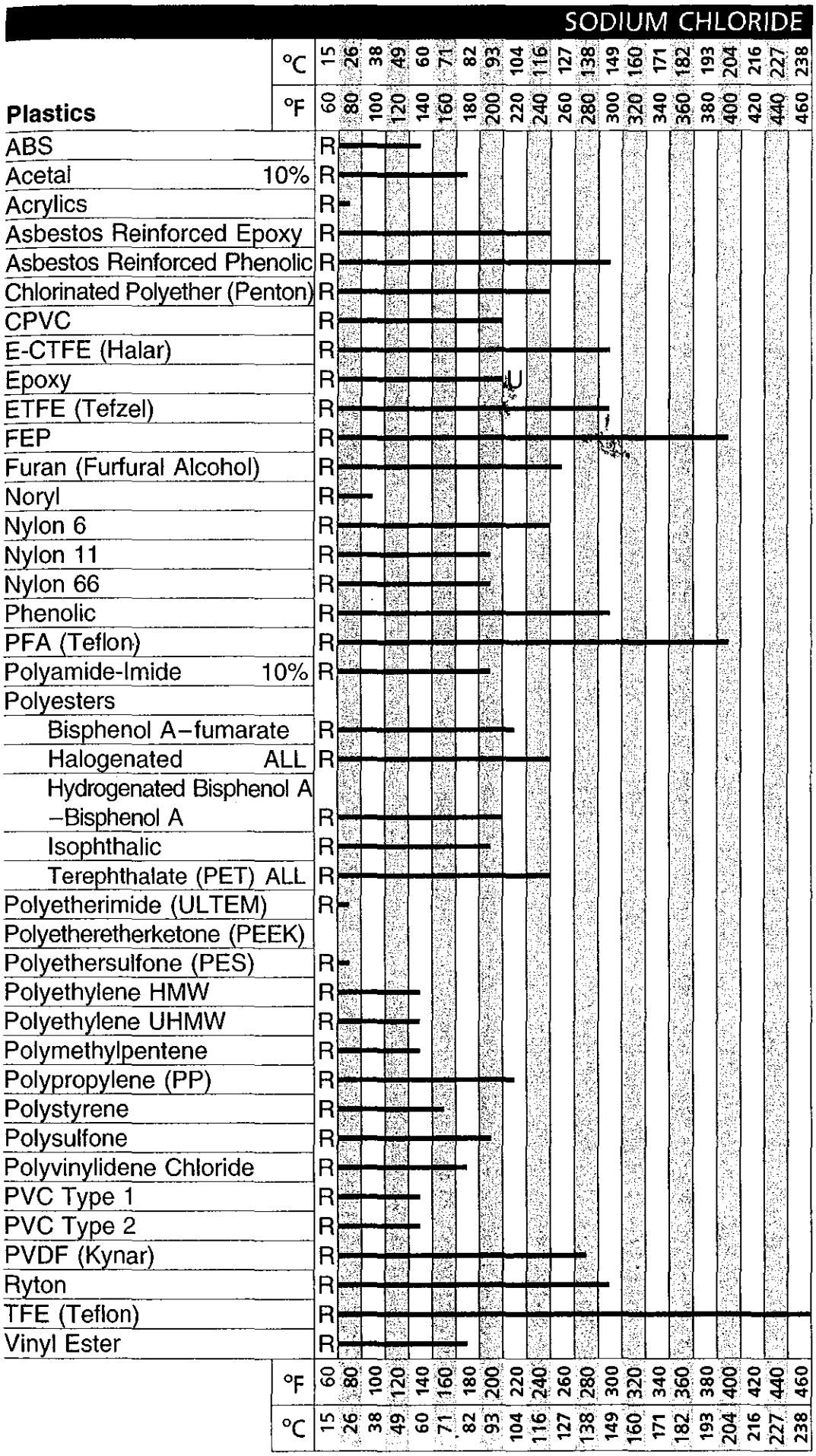

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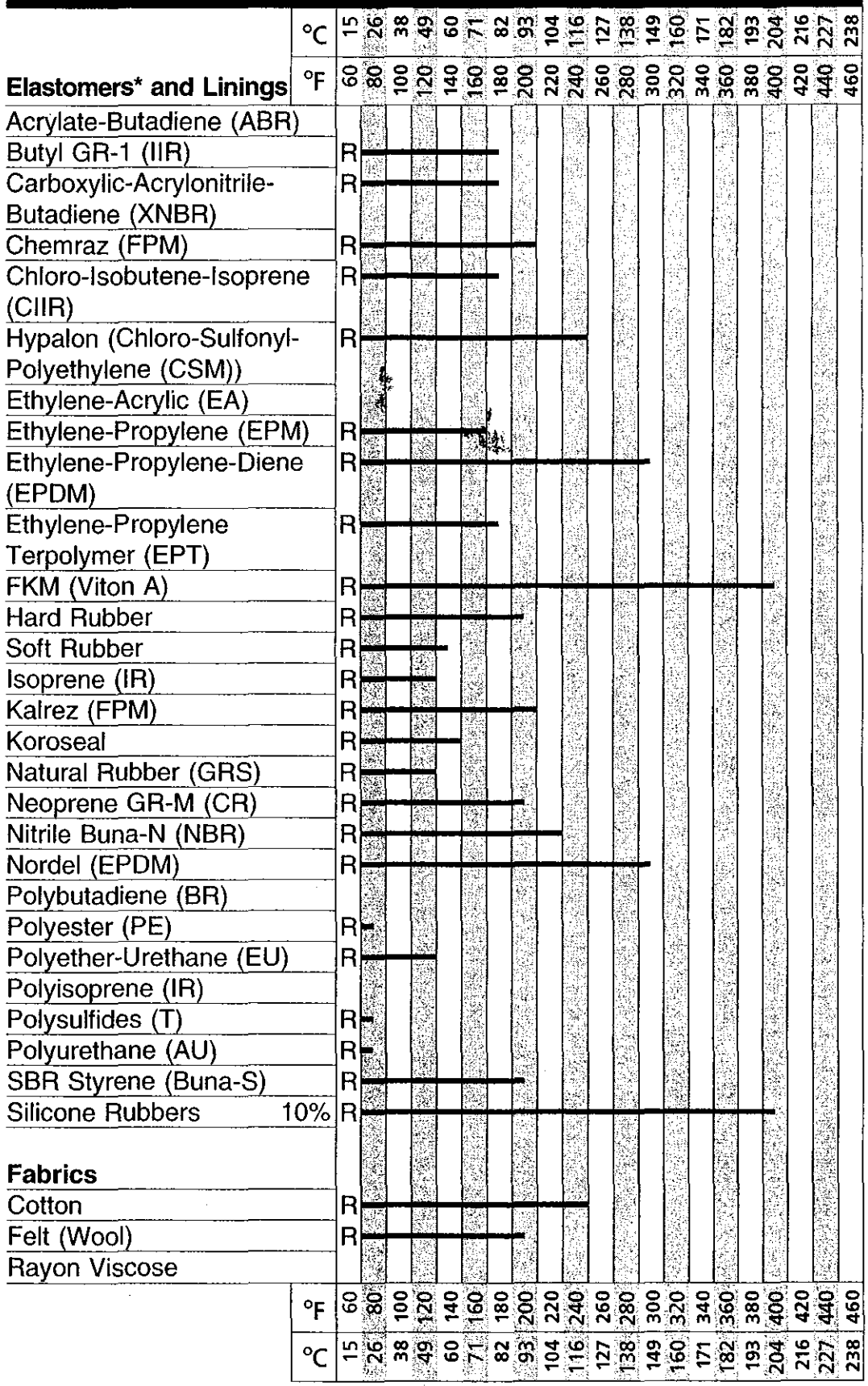

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SODIUM CHLORITE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum																												
Aluminum Bronze																												
Brass																												
Bronze																												
Carbon Steel																												
Columbium (Niobium)			U																									
Copper																												
Hastelloy B/B-2																												
Hastelloy C/C-276	10%		G																									
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625																												
Incolloy 800/825																												
Galv. Stl.			G																									
Monel 400																												
Naval Bronze																												
Nickel 200/201																												
Ni-Resist																												
Stainless Steels																												
Type 304/347	5% 1		G																									
Type 316/316 L	5%		E																									
Type 400 series																												
Type 904-L																												
17-4 PH																												
20 Cb 3																												
E-Bright 26-1			E																									
Silicon Bronze																												
Silicon Copper																												
Stellite																												
Tantalum																												
Titanium																												
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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U = Unsatisfactory

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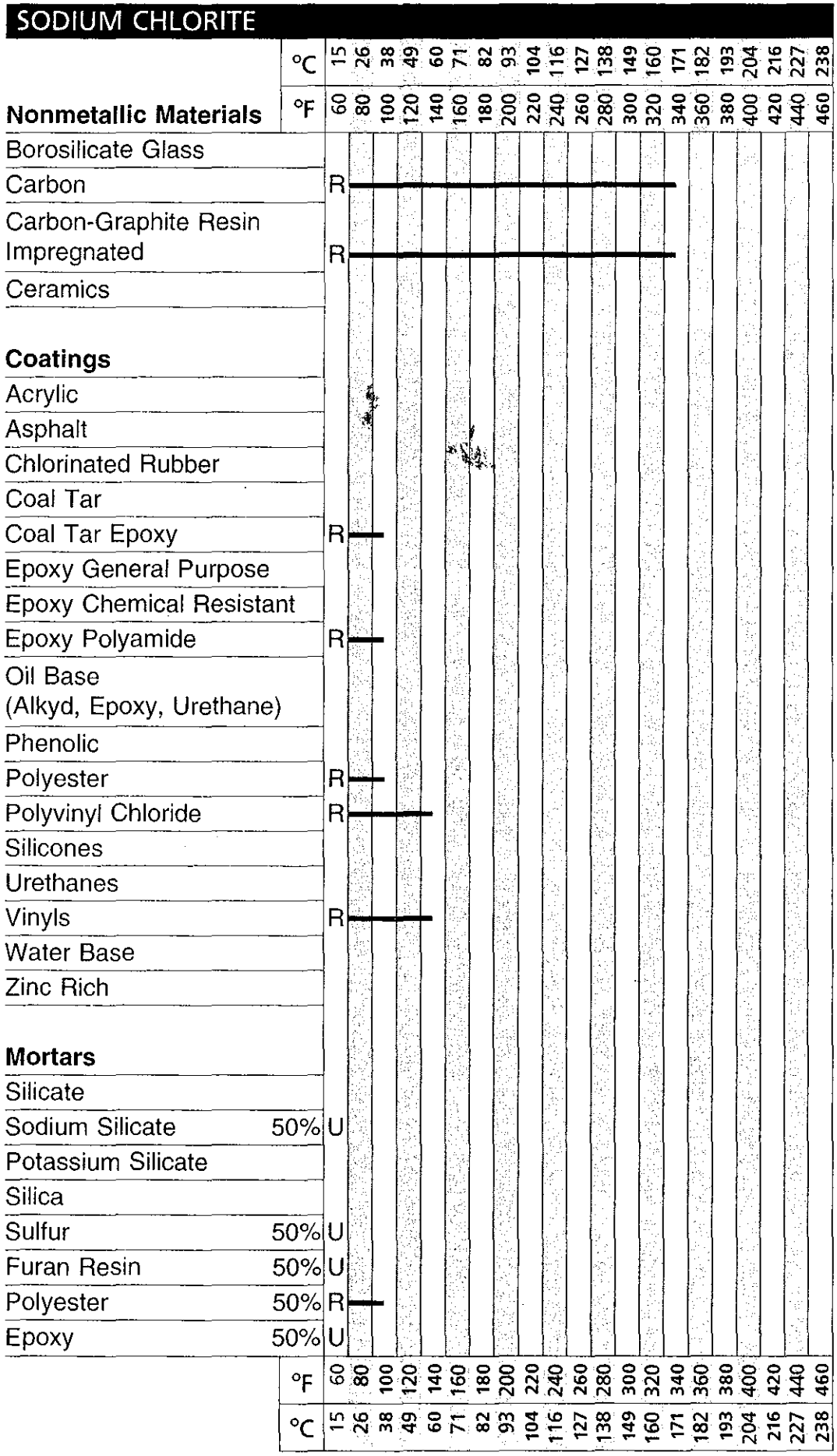

Nonmetallic Materials		
Borosilicate Glass		
Carbon		R
Carbon-Graphite Resin Impregnated		R
Ceramics		
Coatings		
Acrylic		
Asphalt		
Chlorinated Rubber		
Coal Tar		
Coal Tar Epoxy		R
Epoxy General Purpose		
Epoxy Chemical Resistant		
Epoxy Polyamide		R
Oil Base (Alkyd, Epoxy, Urethane)		
Phenolic		
Polyester		R
Polyvinyl Chloride		R
Silicones		
Urethanes		
Vinyls		R
Water Base		
Zinc Rich		
Mortars		
Silicate		
Sodium Silicate	50%	U
Potassium Silicate		
Silica		
Sulfur	50%	U
Furan Resin	50%	U
Polyester	50%	R
Epoxy	50%	U

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SODIUM CHLORITE

Plastics		°C	°F
ABS			
Acetal			
Acrylics			
Asbestos Reinforced Epoxy			
Asbestos Reinforced Phenolic			
Chlorinated Polyether (Penton)	R	15–71	60–160
CPVC	R	15–93	60–200
E-CTFE (Halar)			
Epoxy	25% R	15–71	60–160
ETFE (Tefzel)			
FEP	R	15–238	60–460
Furan (Furfural Alcohol)			
Noryl	20% R	15–60	60–140
Nylon 6			
Nylon 11			
Nylon 66			
Phenolic			
PFA (Teflon)			
Polyamide-Imide			
Polyesters			
Bisphenol A–fumarate	50% R	15–104	60–220
Halogenated	R	15–71	60–160
Hydrogenated Bisphenol A –Bisphenol A			
Isophthalic	U		
Terephthalate (PET)			
Polyetherimide (ULTEM)			
Polyetheretherketone (PEEK)			
Polyethersulfone (PES)			
Polyethylene HMW			
Polyethylene UHMW	50% R	15–38	60–100
Polymethylpentene			
Polypropylene (PP)	U		
Polystyrene			
Polysulfone			
Polyvinylidene Chloride	R	15–49	60–120
PVC Type 1	R	15–60	60–140
PVC Type 2	U		
PVDF (Kynar)	R	15–116	60–240
Ryton	10–50% R	15–71	60–160
TFE (Teflon)	R	15–238	60–460
Vinyl Ester	50% R	15–26	60–80

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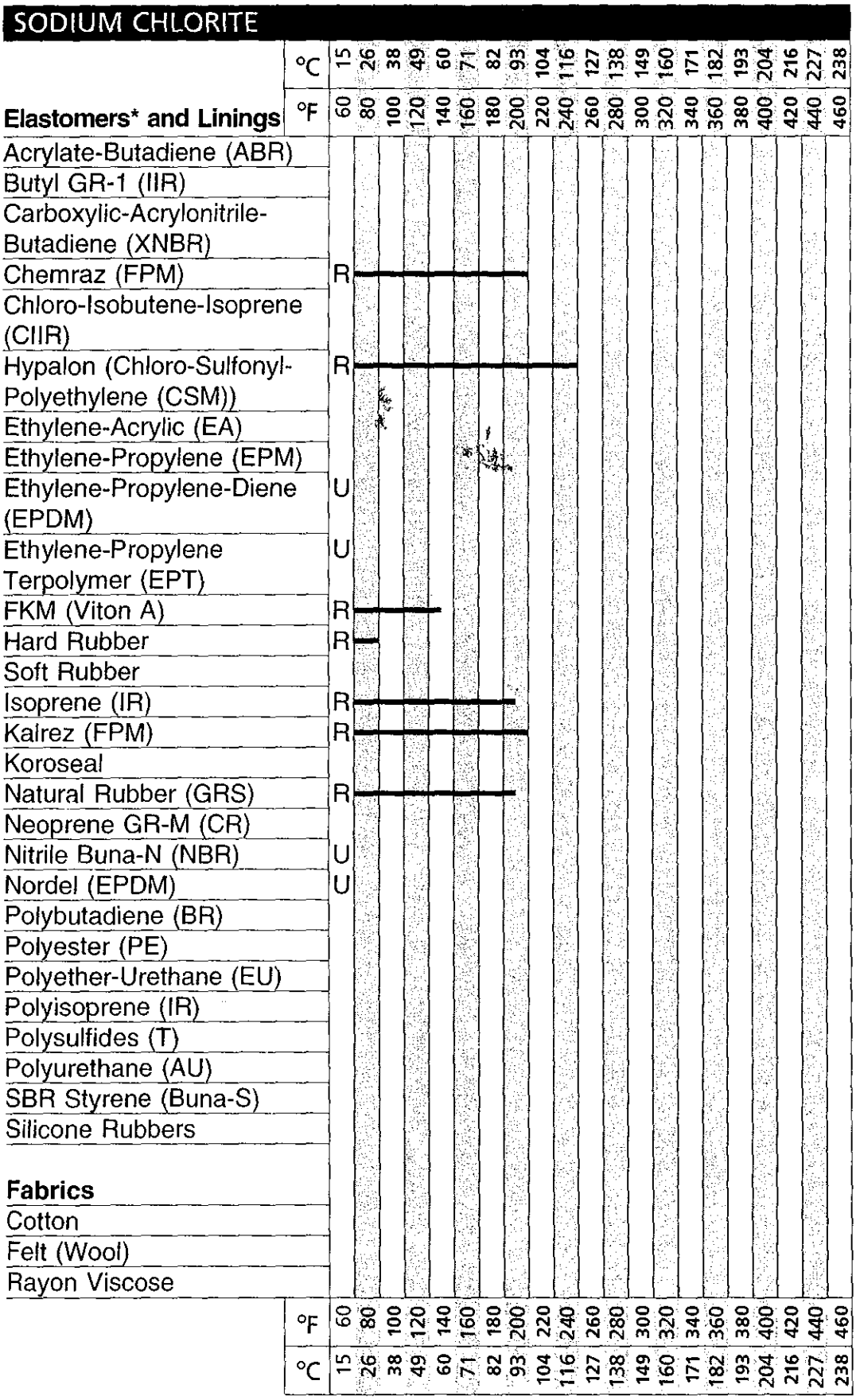
SODIUM CHLORITE



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SODIUM CHROMATE 80%

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass		E																									
Aluminum																											
Aluminum Bronze		E																									
Brass		E																									
Bronze		E																									
Carbon Steel		G																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2		E																									
Hastelloy C/C-276		E																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Galv. Stl.		U																									
Monel 400		E																									
Naval Bronze		E																									
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L		E																									
Type 400 series		E																									
Type 317/317 L		G																									
17-4 PH		E																									
20 Cb 3		E																									
E-Bright 26-1																											
Silicon Bronze		E																									
Silicon Copper		E																									
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

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U = Unsatisfactory

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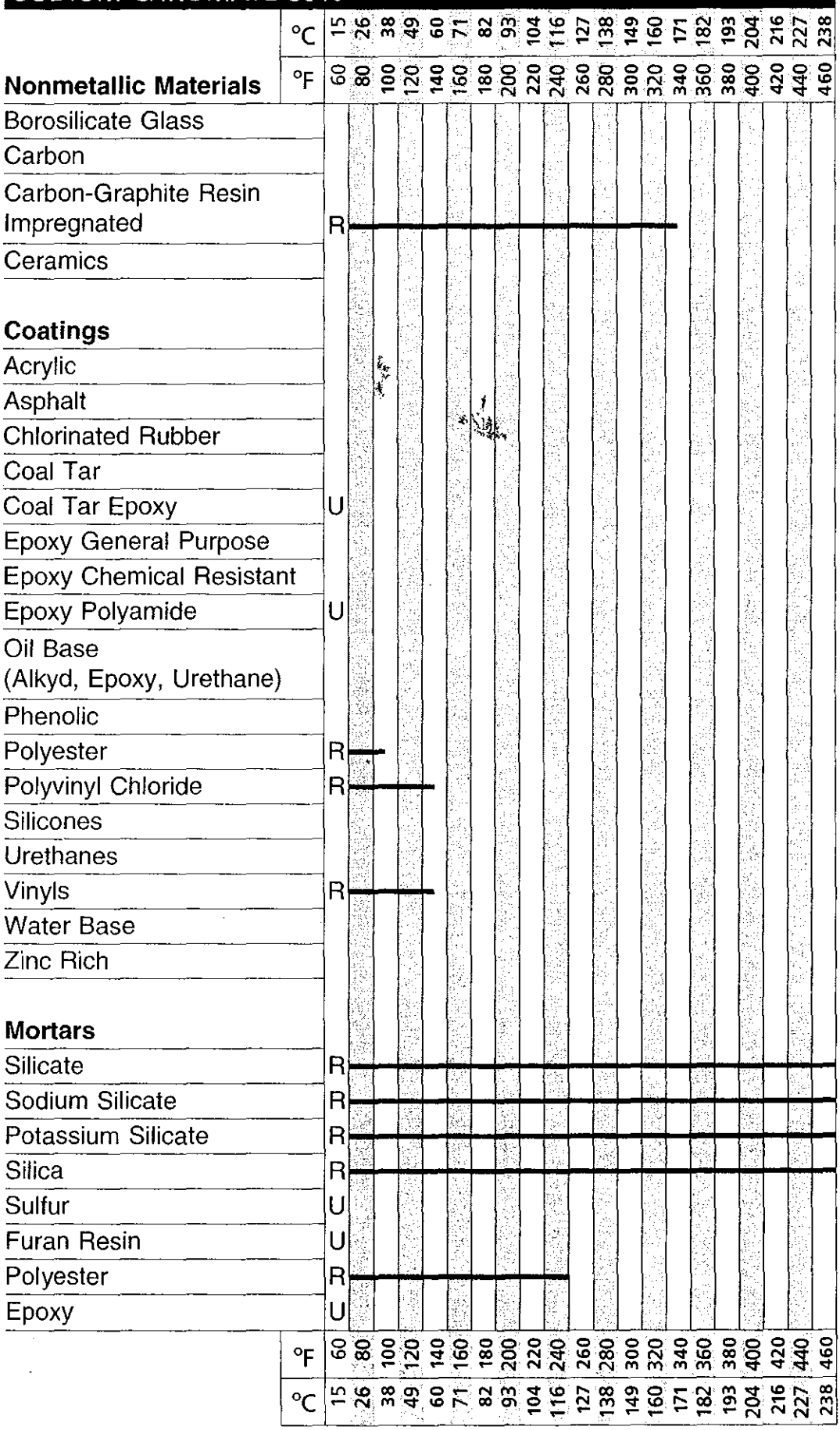
SODIUM CHROMATE 80%



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SODIUM CHROMATE 80%

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC	R	
E-CTFE (Halar)		
Epoxy	U	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)	R	
Noryl	R	
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate 50%	R	
Halogenated SAT	R	
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic	R	
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone	R	
Polyvinylidene Chloride		
PVC Type 1	R	
PVC Type 2	R	
PVDF (Kynar)	R	
Ryton 50%	R	
TFE (Teflon)	R	
Vinyl Ester 50%	R	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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SODIUM CHROMATE 80%

Elastomers* and Linings	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	R																				
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)	R																				
Nitrile Buna-N (NBR)	R																				
Nordel (EPDM)	R																				
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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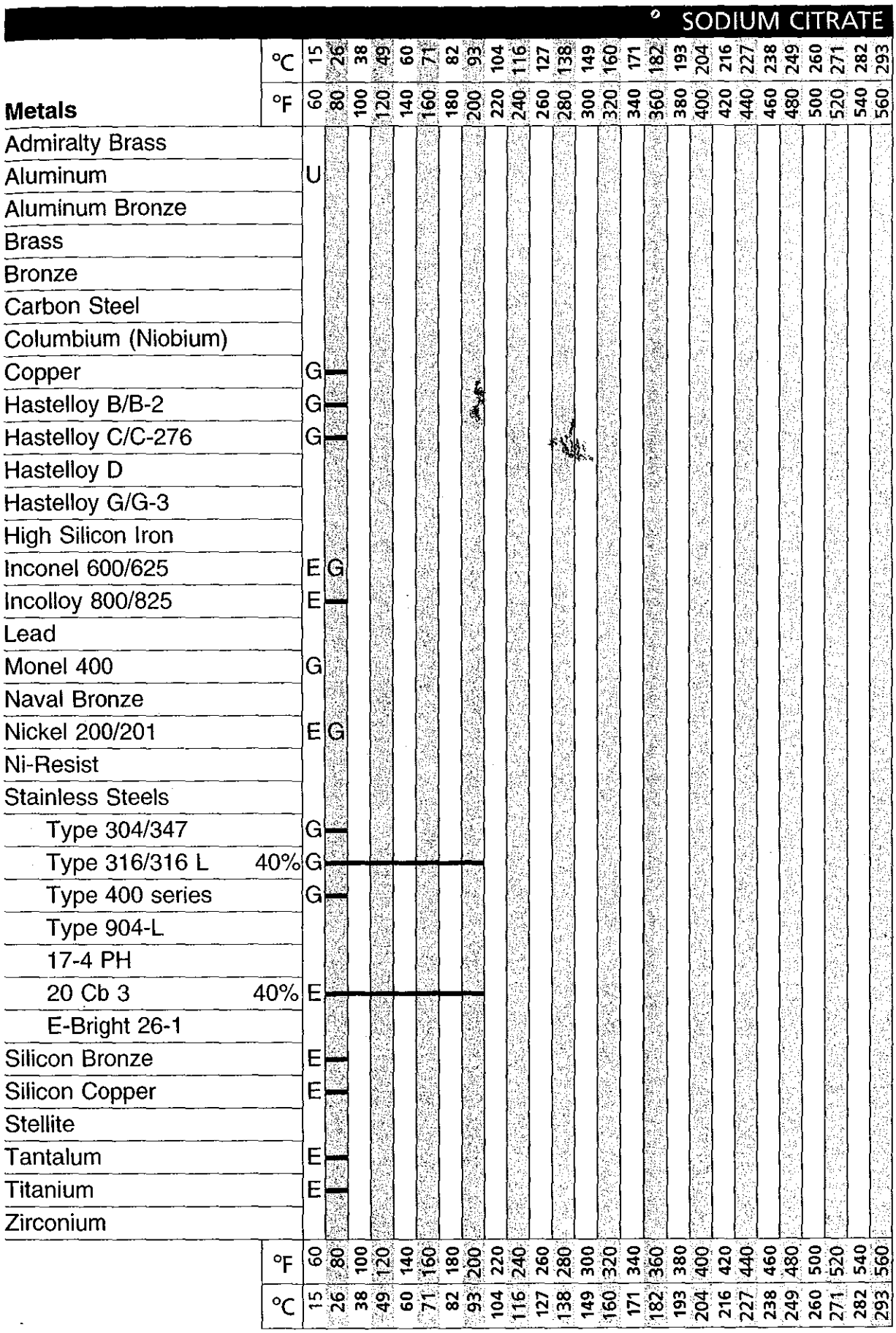

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SODIUM CITRATE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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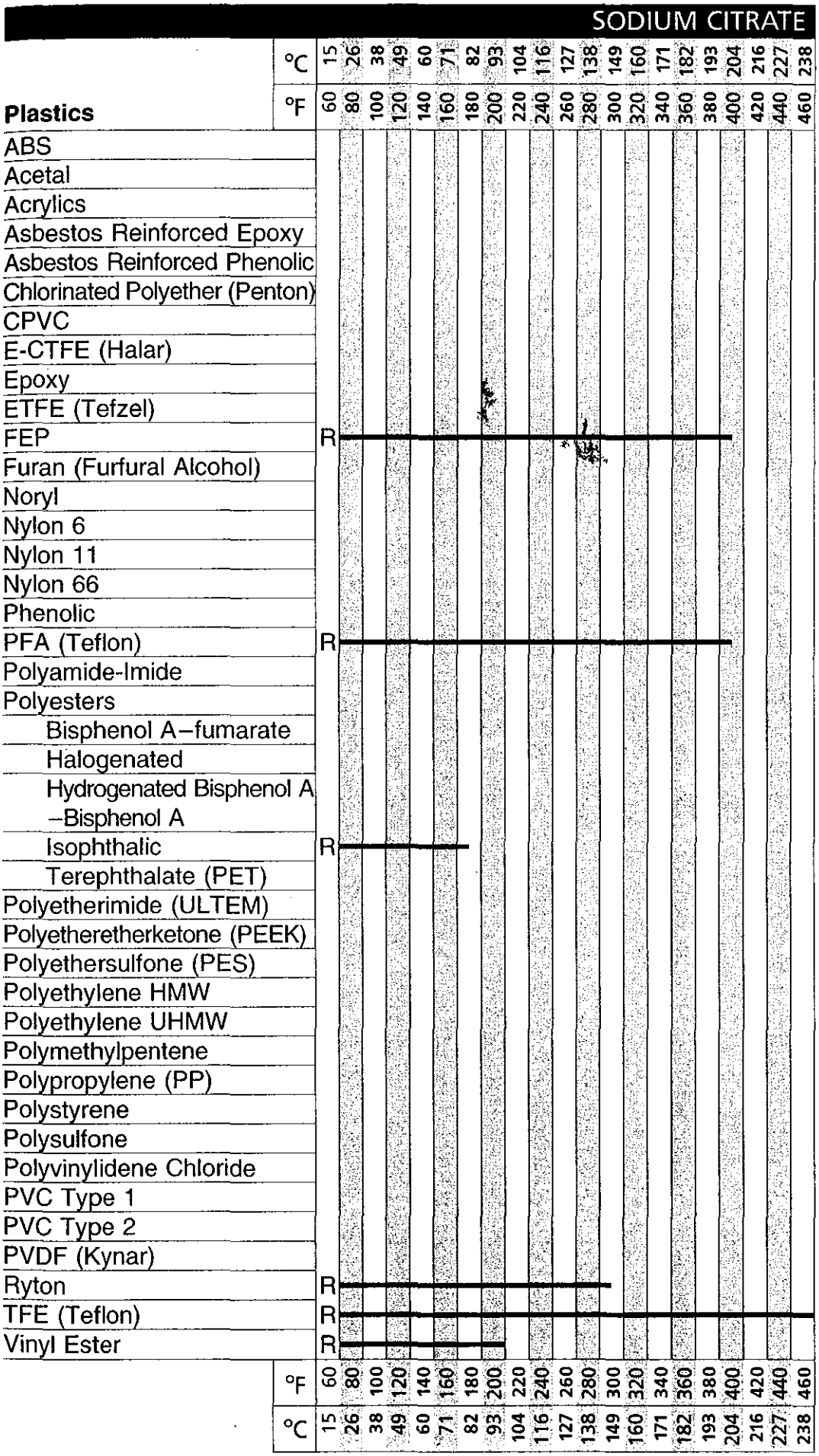

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SODIUM CITRATE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)	R																					
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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SODIUM CYANIDE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass			U																									
Aluminum			U																									
Aluminum Bronze			U																									
Brass			U																									
Bronze			U																									
Carbon Steel			G																									
Columbium (Niobium)																												
Copper			U																									
Hastelloy B/B-2			G																									
Hastelloy C/C-276			G																									
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron			G																									
Inconel 600/625			G																									
Incolloy 800/825																												
Lead			U																									
Monel 400			U																									
Naval Bronze			U																									
Nickel 200/201			U																									
Ni-Resist			G																									
Stainless Steels																												
Type 304/347	10% 1		E																									
Type 316/316 L	10%		E																									
Type 400 series 10–20% 1			E																									
Type 904-L																												
17-4 PH			G																									
20 Cb 3	ALL		E																									
E-Bright 26-1																												
Silicon Bronze			U																									
Silicon Copper			U																									
Stellite																												
Tantalum			G																									
Titanium			E																									
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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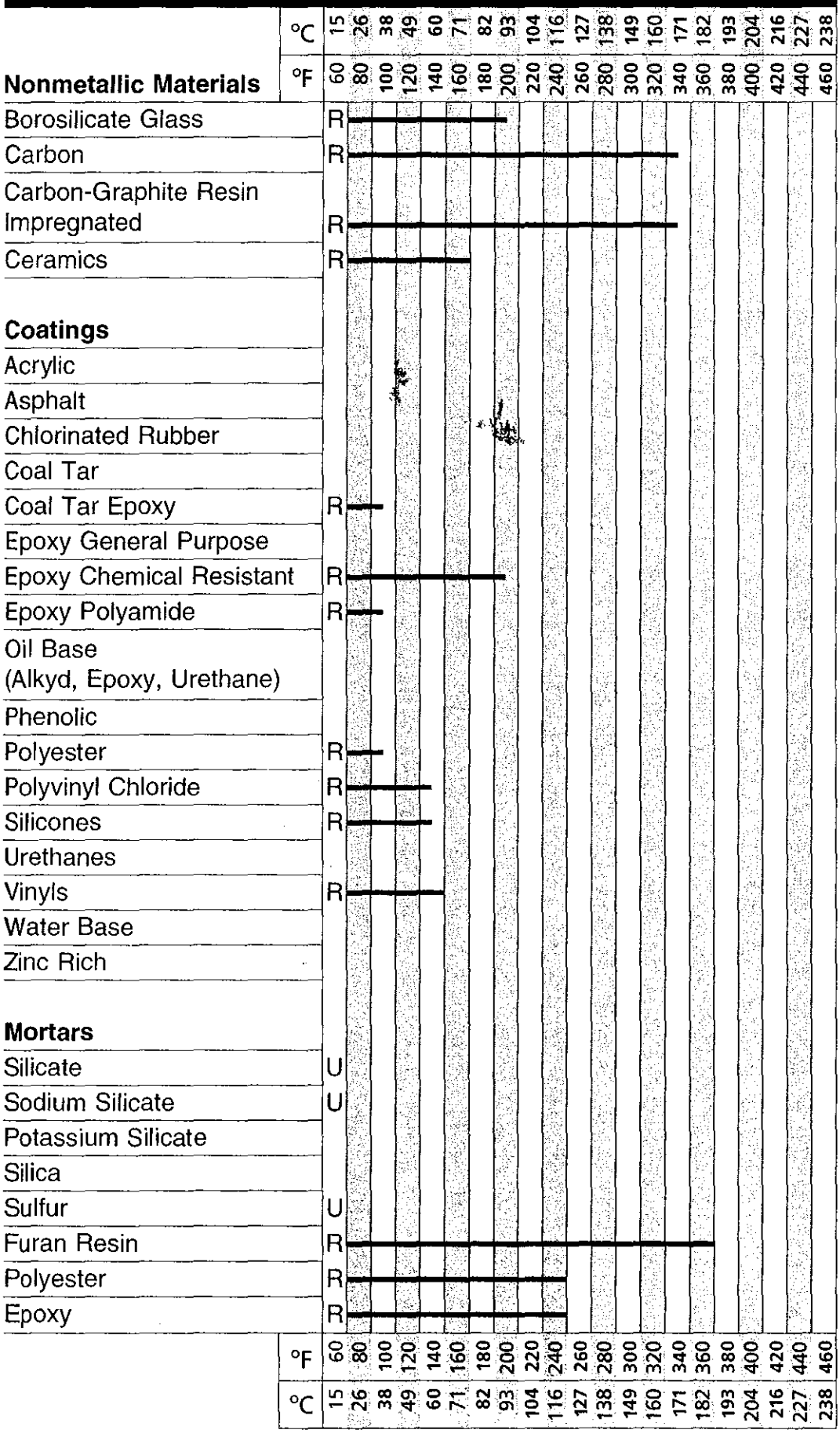
SODIUM CYANIDE



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Plastics	
ABS	R
Acetal	10% R
Acrylics	R
Asbestos Reinforced Epoxy	
Asbestos Reinforced Phenolic	
Chlorinated Polyether (Penton)	R
CPVC	R
E-CTFE (Halar)	R
Epoxy	R
ETFE (Tefzel)	R
FEP	R
Furan (Furfural Alcohol)	R
Noryl	R
Nylon 6	R
Nylon 11	R
Nylon 66	R
Phenolic	
PFA (Teflon)	R
Polyamide-Imide	
Polyesters	
Bisphenol A–fumarate	R
Halogenated	50% R U
Hydrogenated Bisphenol A –Bisphenol A	
Isophthalic	R
Terephthalate (PET)	ALL R
Polyetherimide (ULTEM)	
Polyetheretherketone (PEEK)	
Polyethersulfone (PES)	
Polyethylene HMW	R
Polyethylene UHMW	R
Polymethylpentene	
Polypropylene (PP)	R
Polystyrene	
Polysulfone	R
Polyvinylidene Chloride	R
PVC Type 1	R
PVC Type 2	R
PVDF (Kynar)	R
Ryton	R
TFE (Teflon)	R
Vinyl Ester	R

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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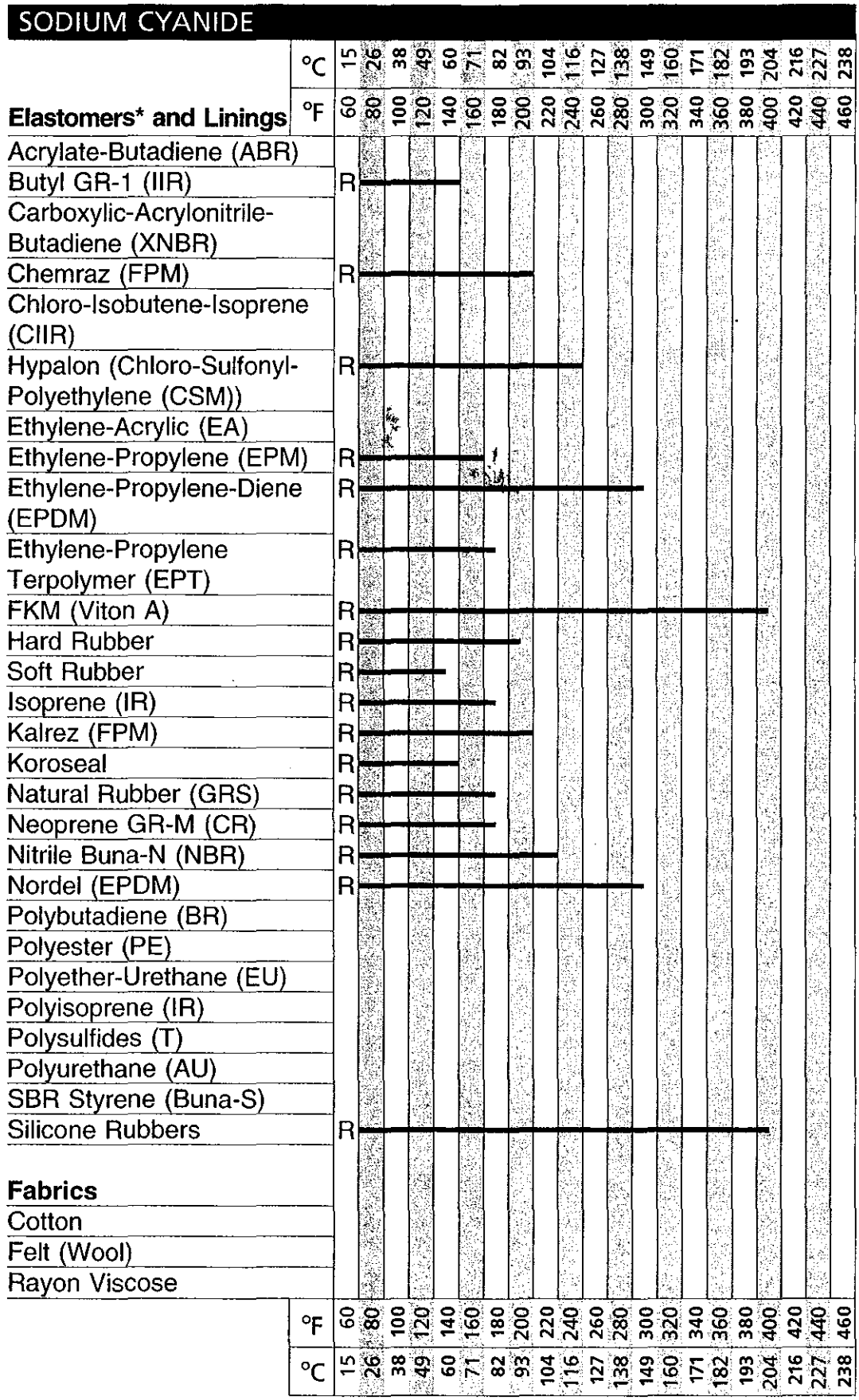
SODIUM CYANIDE



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SODIUM DICHROMATE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G	—	—	—	—	—	—	—																		
Aluminum Bronze		U																									
Brass		U																									
Bronze		U																									
Carbon Steel		G	—																								
Columbium (Niobium)																											
Copper		U																									
Hastelloy B/B-2		U																									
Hastelloy C/C-276		E	—																								
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Galv. Stl.		U																									
Monel 400																											
Naval Bronze		E	S																								
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		G	—																								
Type 316/316 L		G	—																								
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze		U																									
Silicon Copper																											
Stellite																											
Tantalum		E	—																								
Titanium	SAT	E	—																								
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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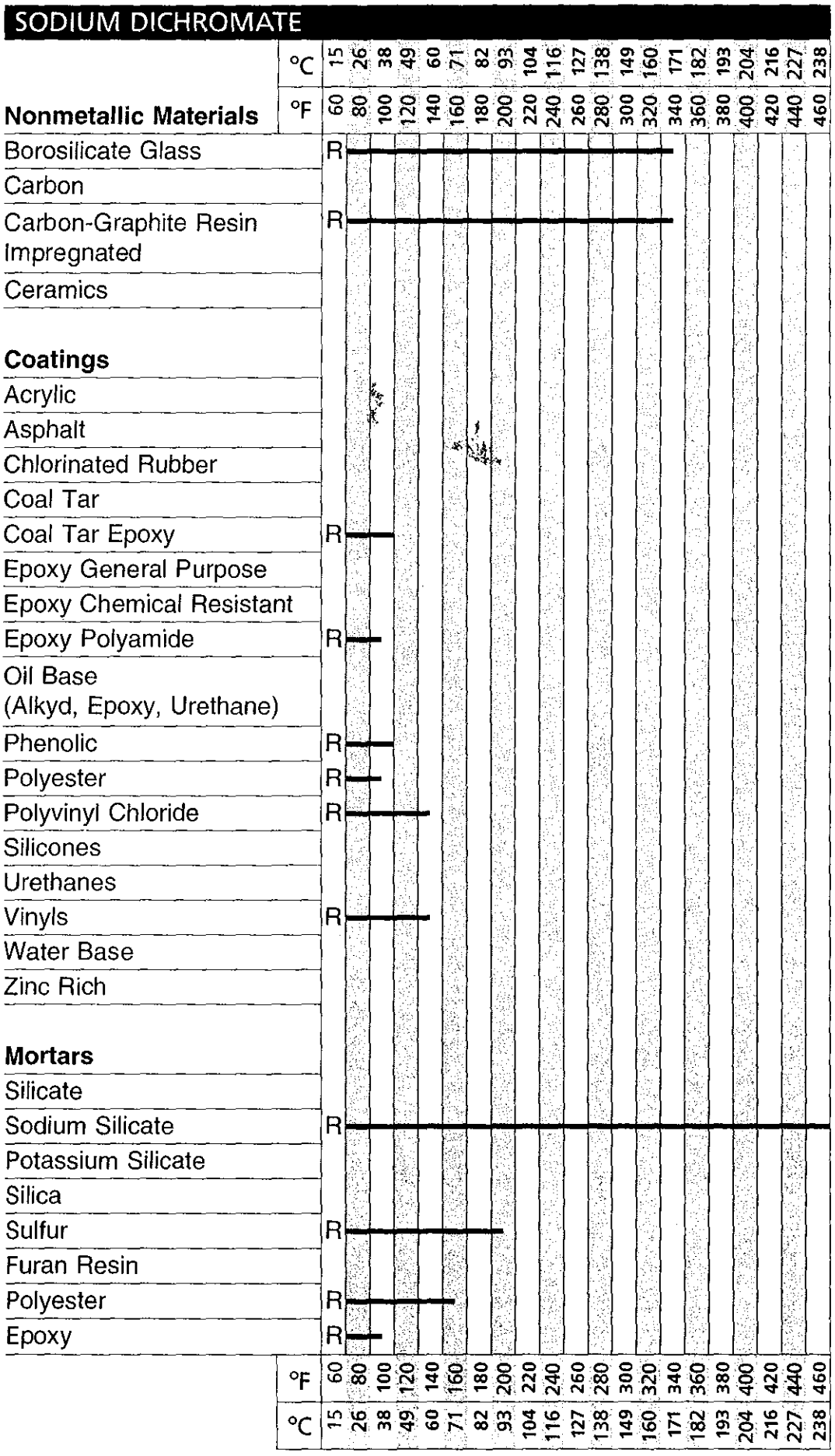
SODIUM DICHROMATE



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SODIUM DICHROMATE

Plastics	°C	°F
ABS	R	
Acetal		
Acrylics		
Asbestos Reinforced Epoxy	R	
Asbestos Reinforced Phenolic	R	
Chlorinated Polyether (Penton)	R	
CPVC	R	
E-CTFE (Halar)	R	
Epoxy	R	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)	R	
Noryl	R	
Nylon 6	U	
Nylon 11	U	
Nylon 66	U	
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate	R	
Halogenated	R	
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic	R	
Terephthalate (PET)	R	
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	R	
Polyethylene UHMW	R	
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone		
Polyvinylidene Chloride	R	
PVC Type 1	R	
PVC Type 2	R	
PVDF (Kynar)	R	
Ryton	R	
TFE (Teflon)	R	
Vinyl Ester	R	

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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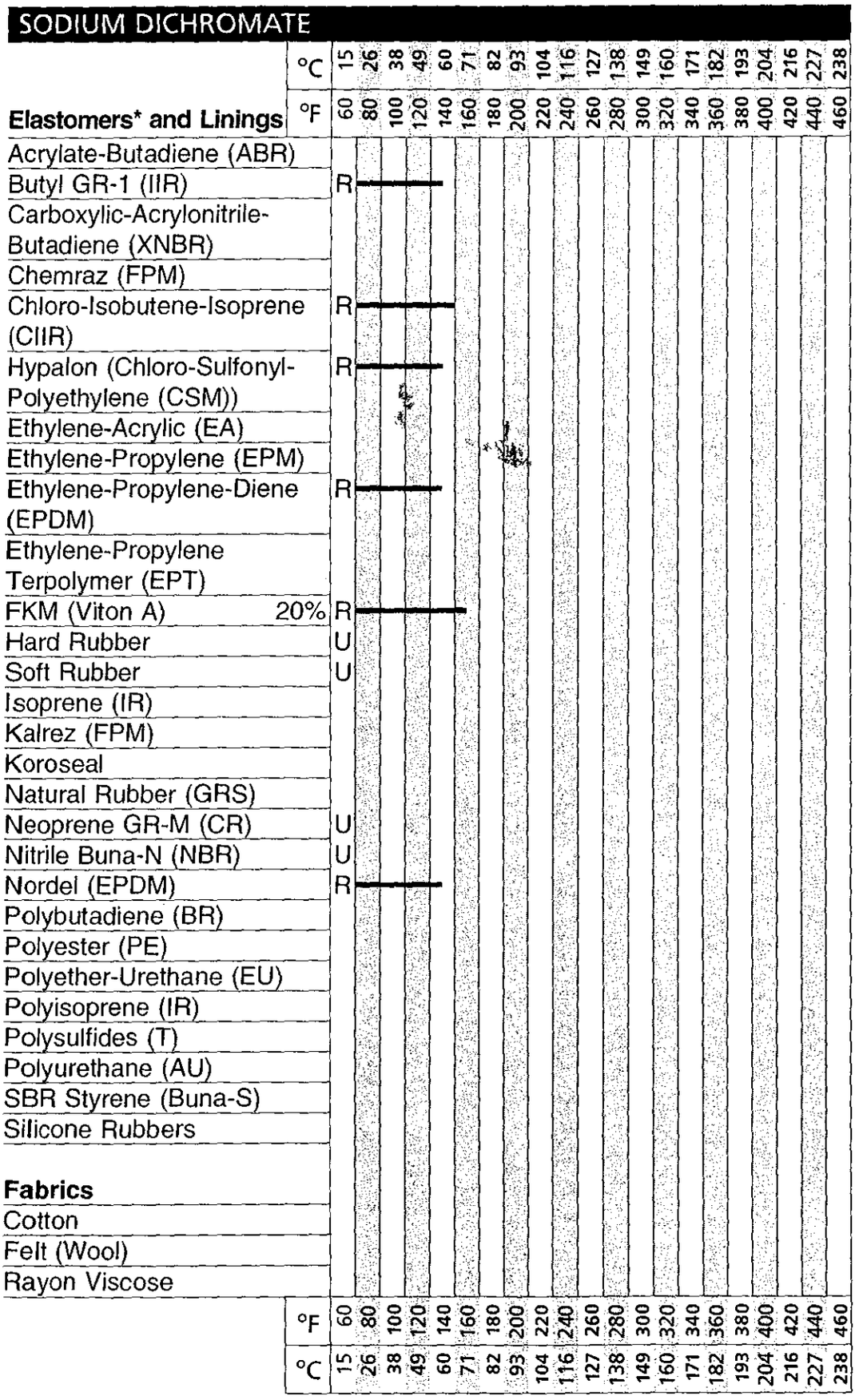
SODIUM DICHROMATE



*See also Nylon 11 under PLASTICS

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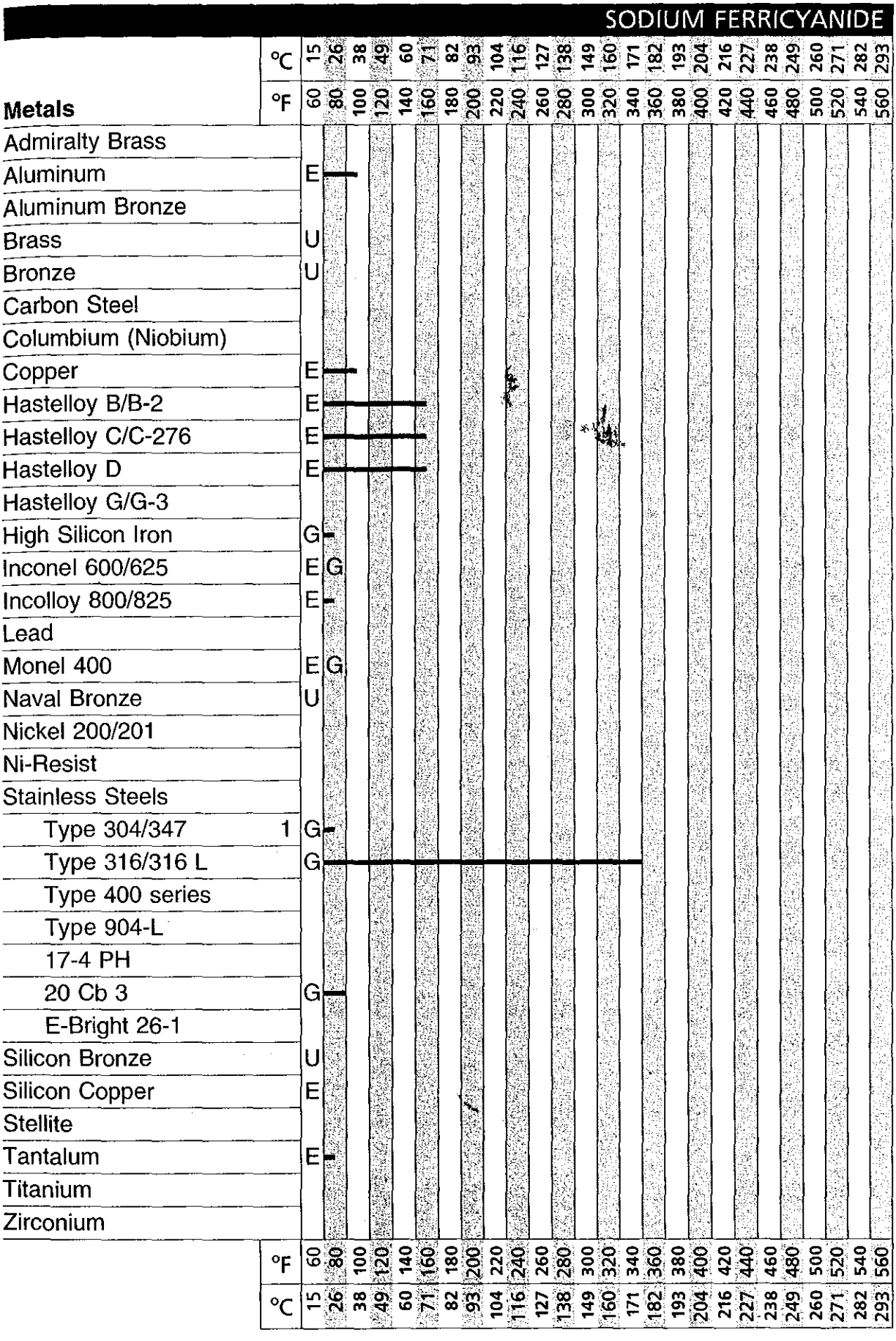

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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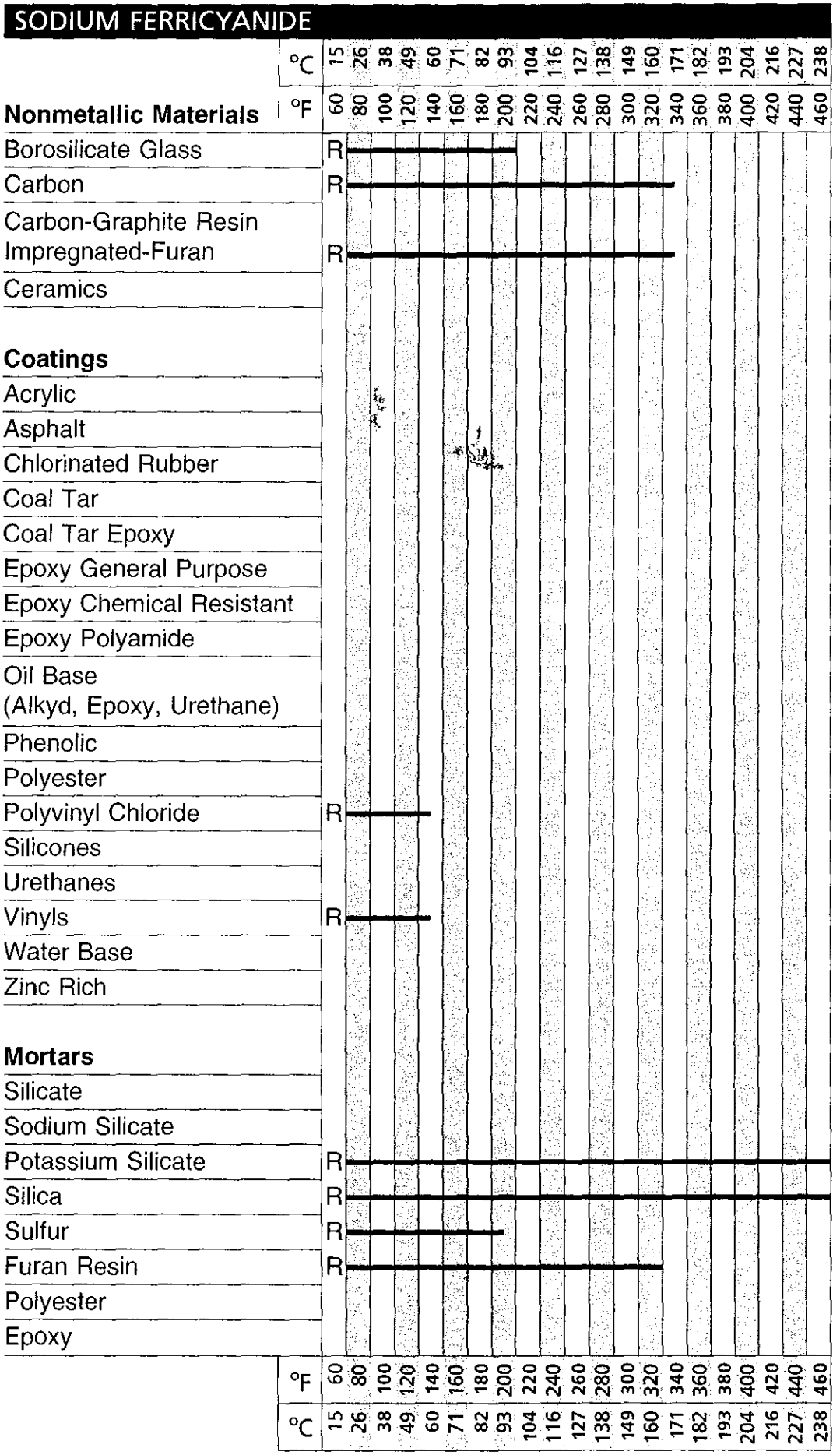
SODIUM FERRICYANIDE



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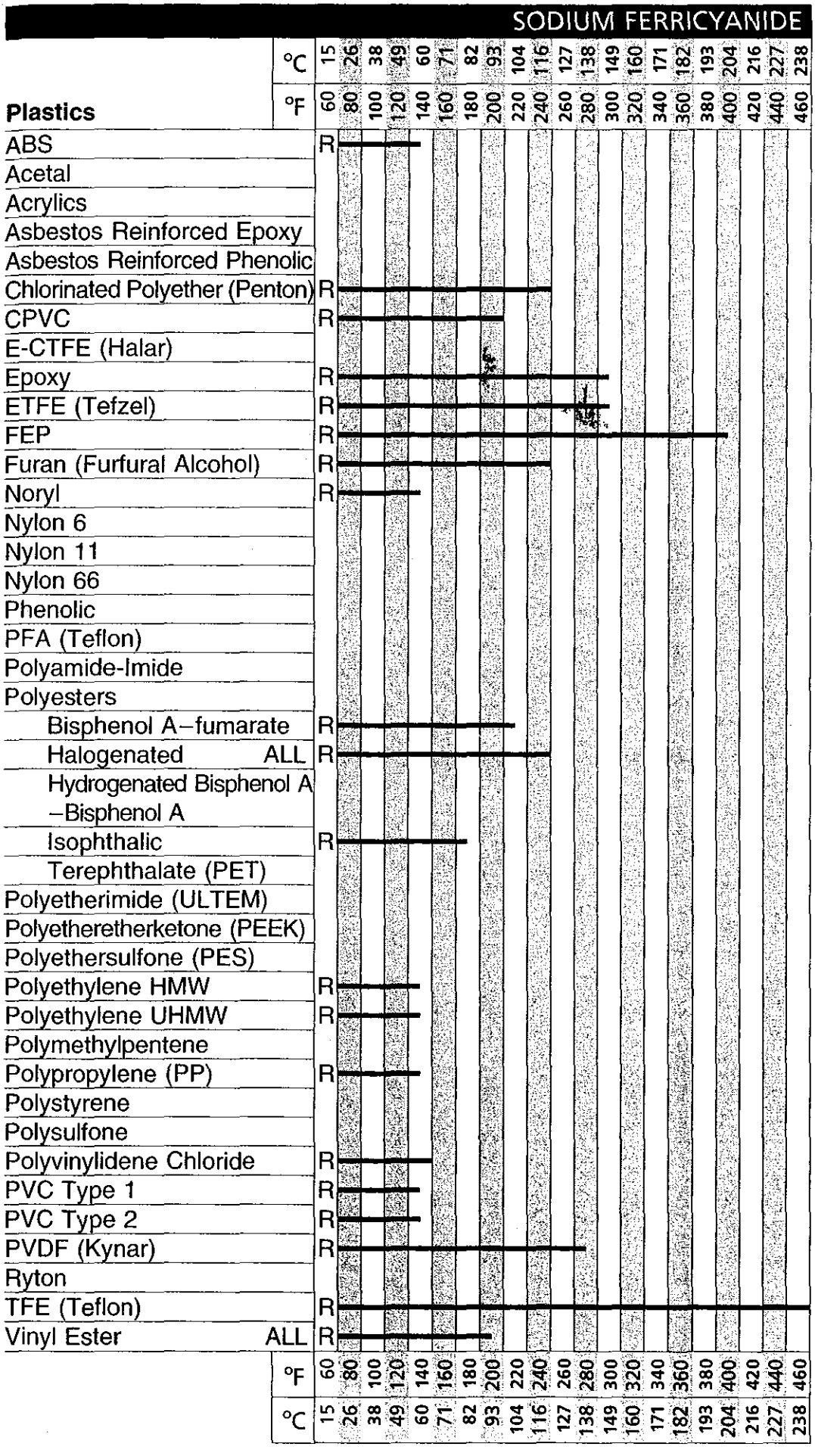

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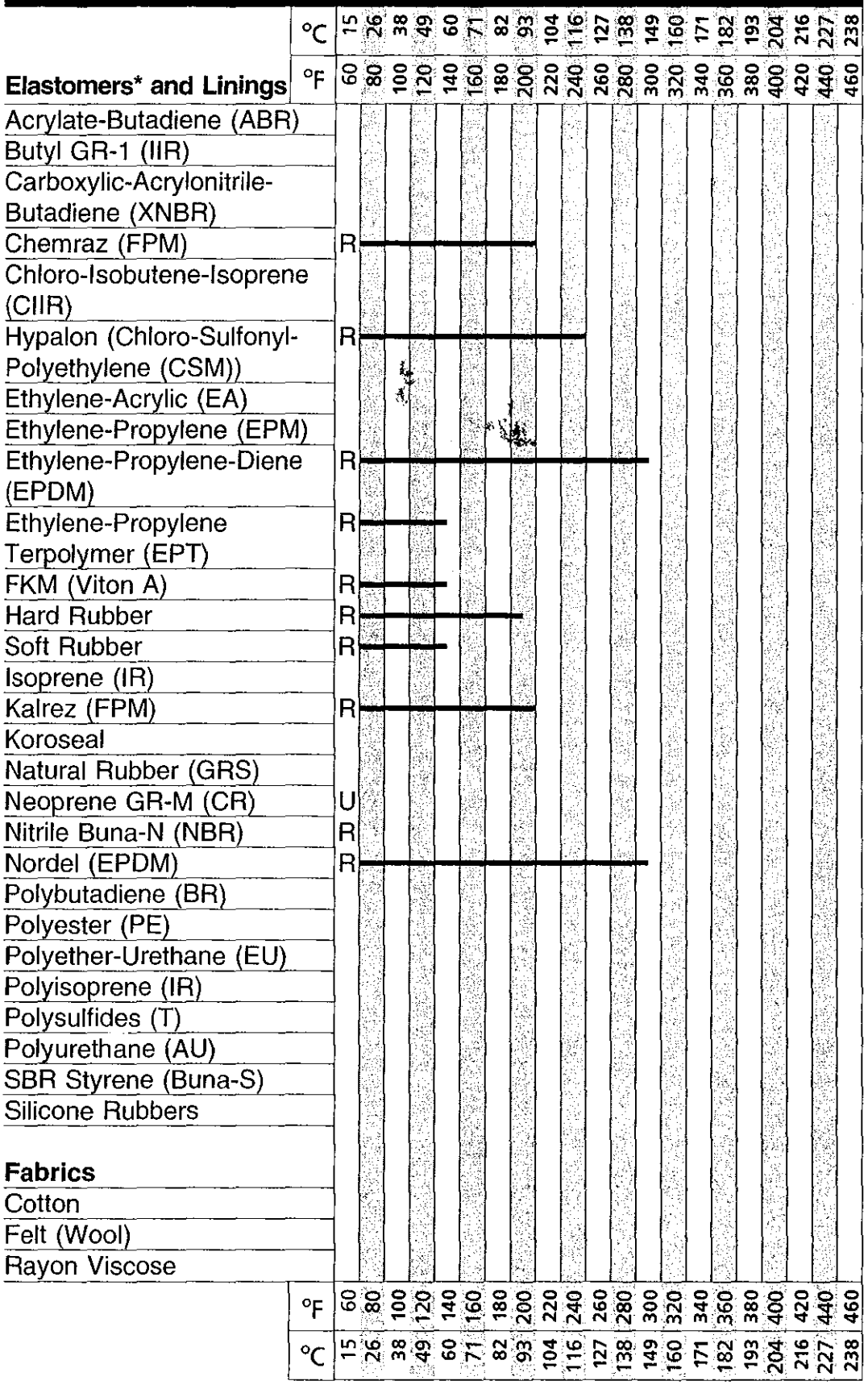

*See also Nylon 11 under PLASTICS

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SODIUM FERROCYANIDE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G																									
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper		G																									
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400		G																									
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L		G																									
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3		G																									
E-Bright 26-1																											
Silicon Bronze		G																									
Silicon Copper																											
Stellite																											
Tantalum		E																									
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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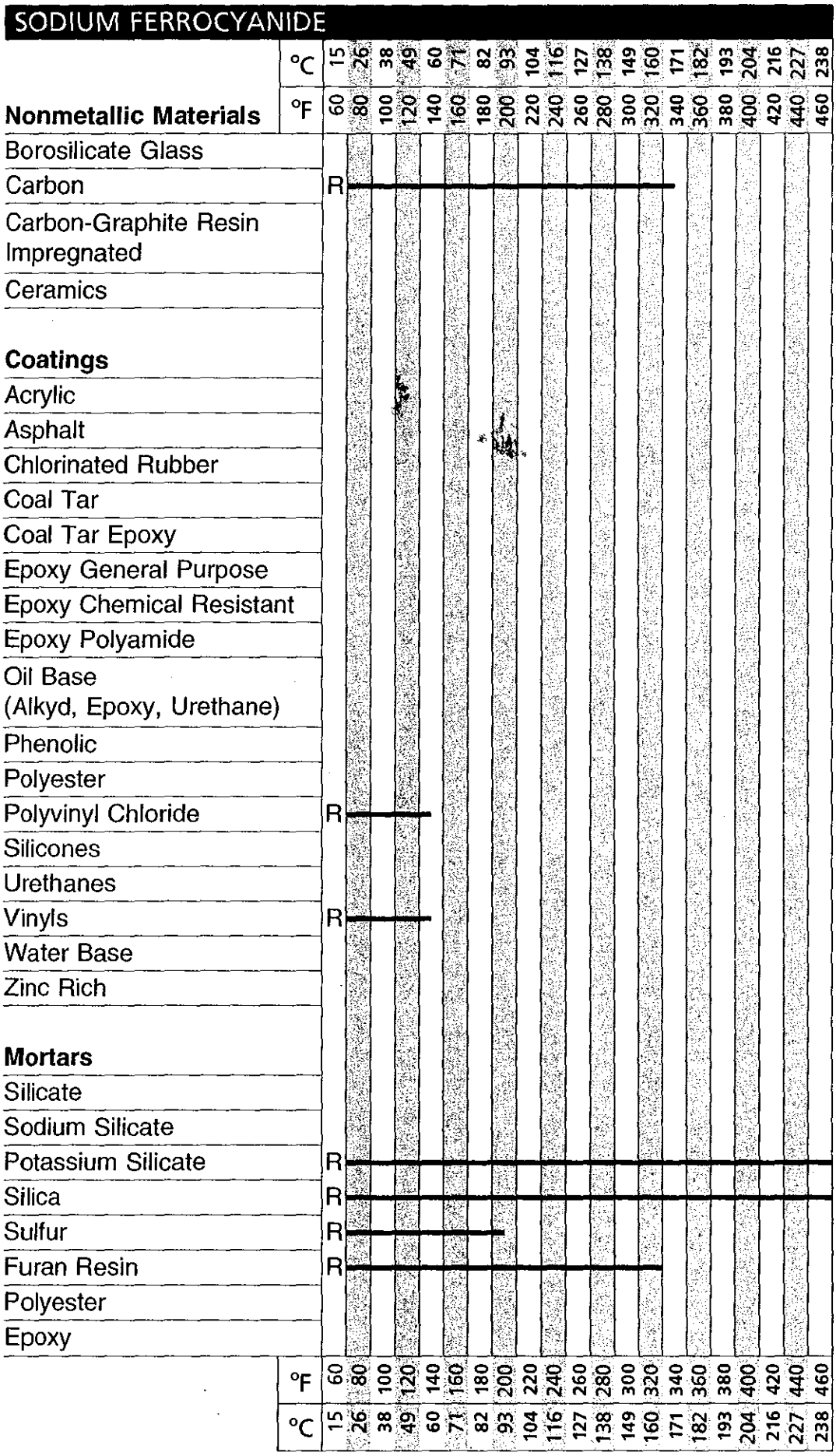
SODIUM FERROCYANIDE



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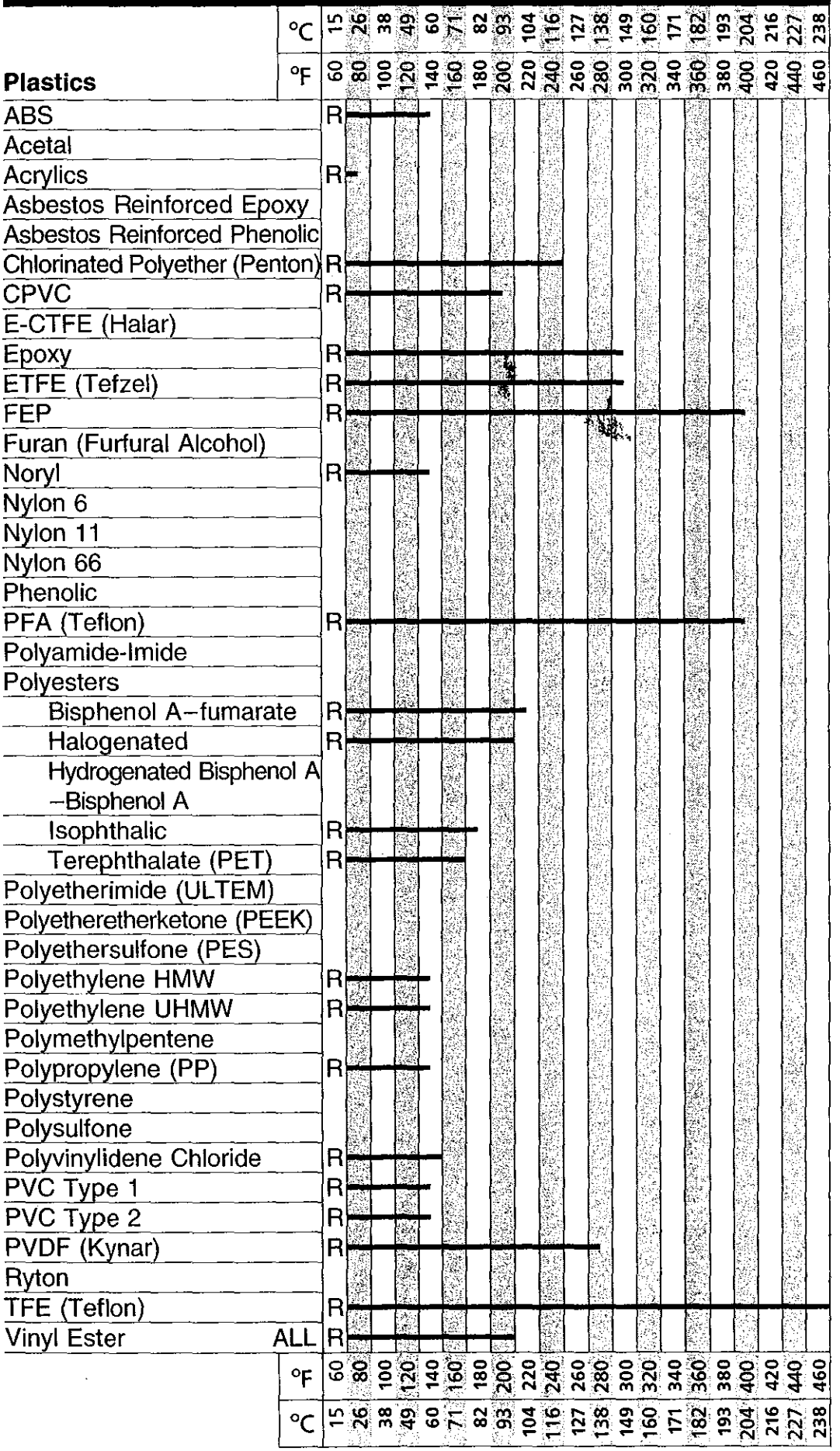

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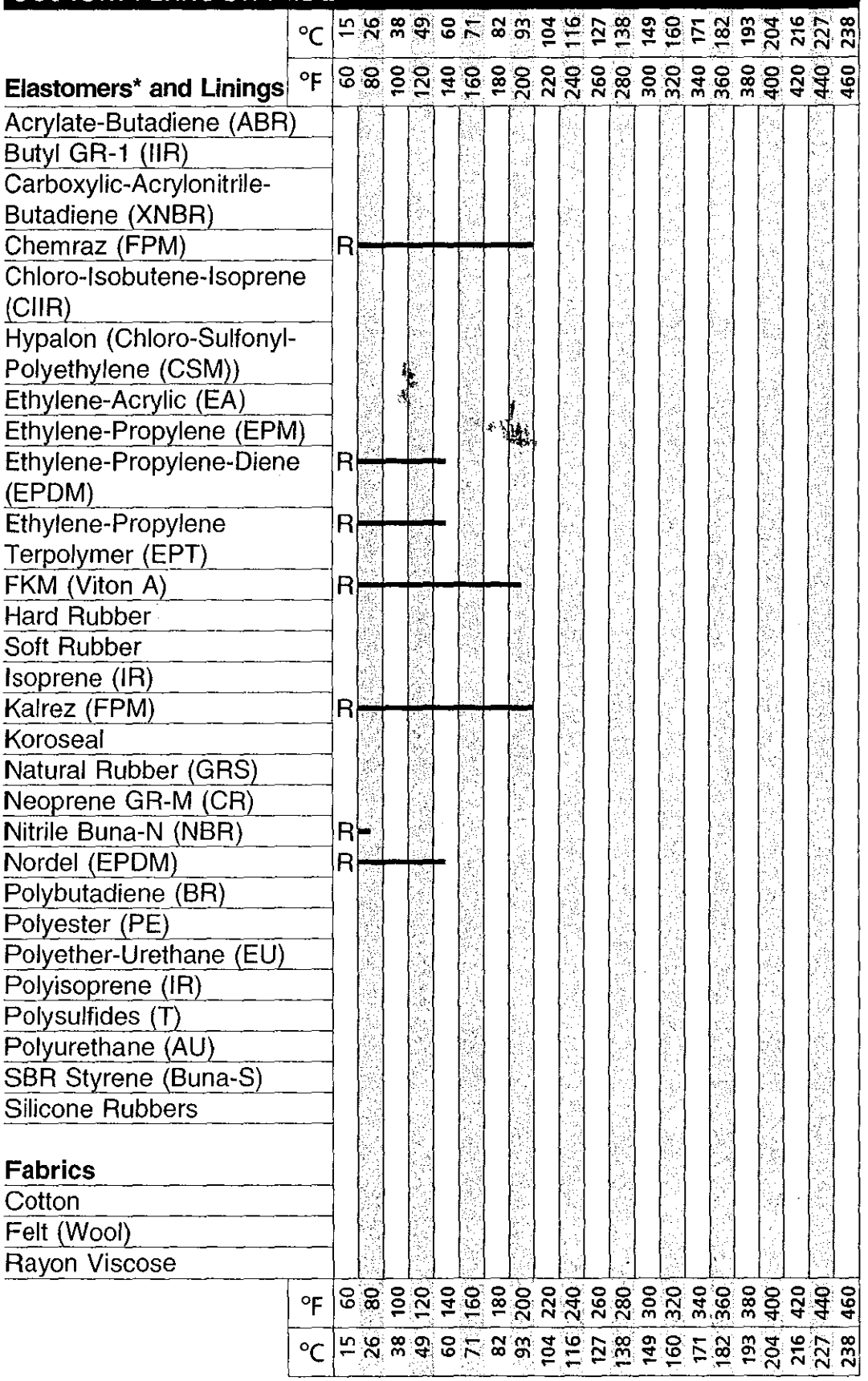

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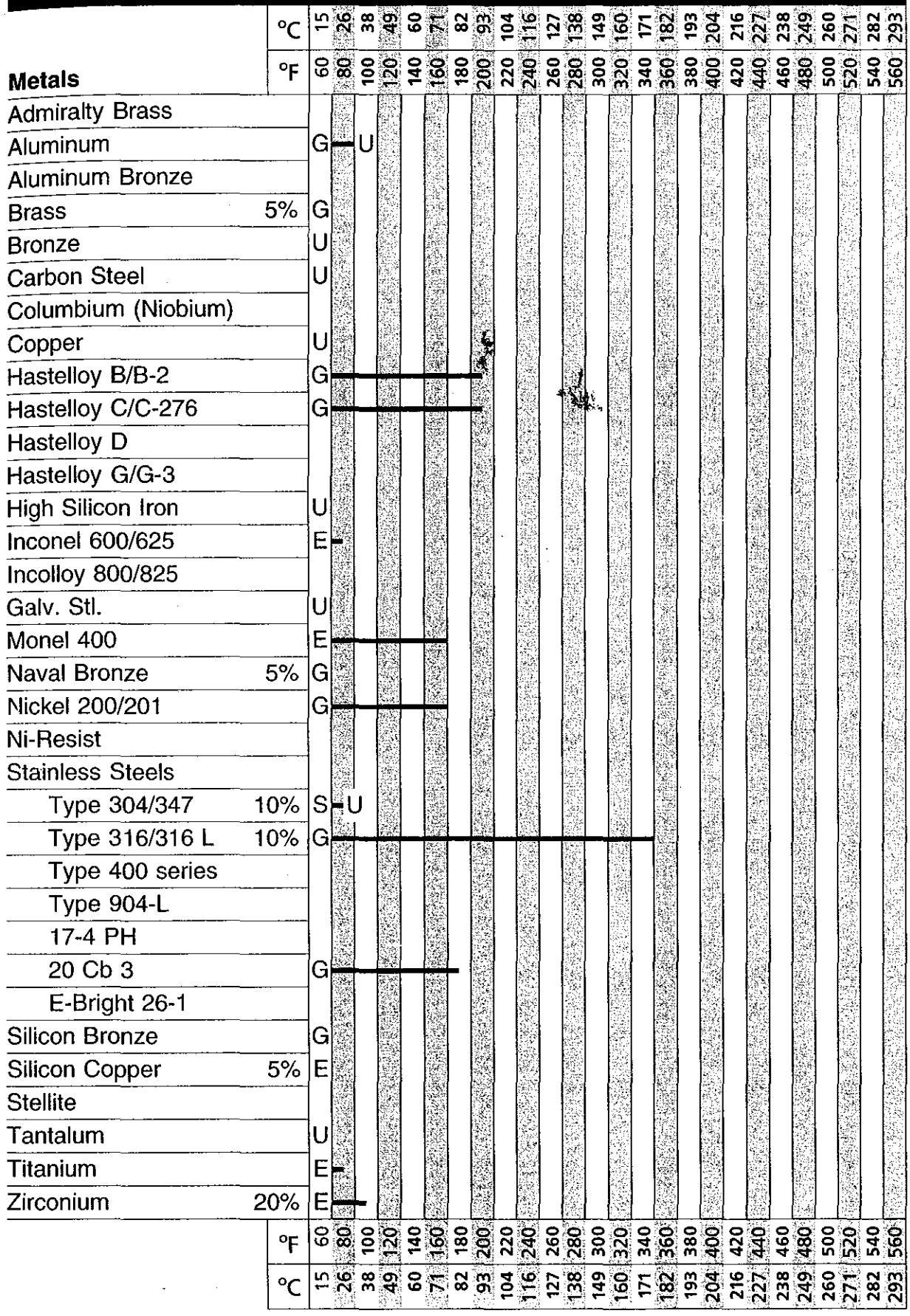

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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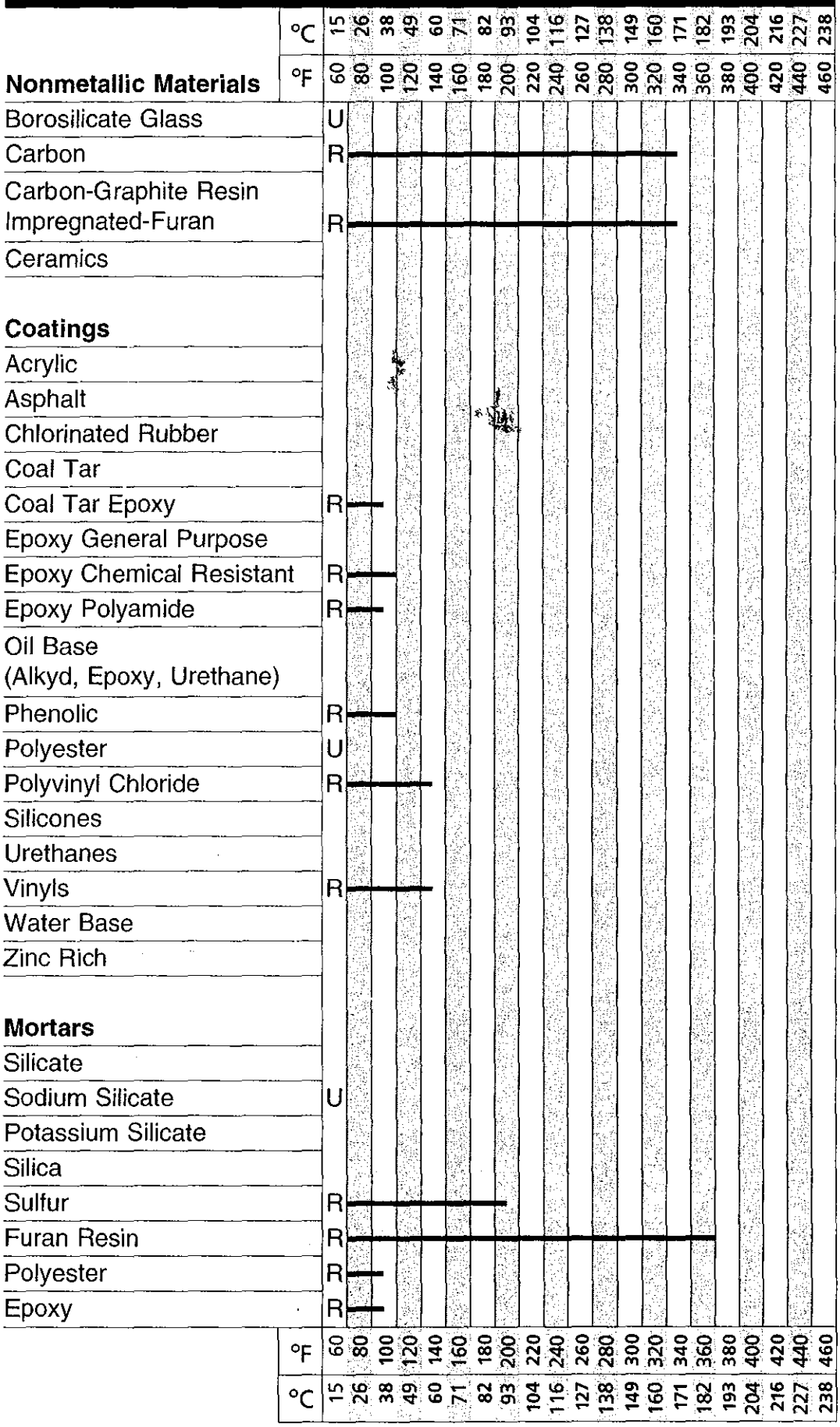
SODIUM FLUORIDE



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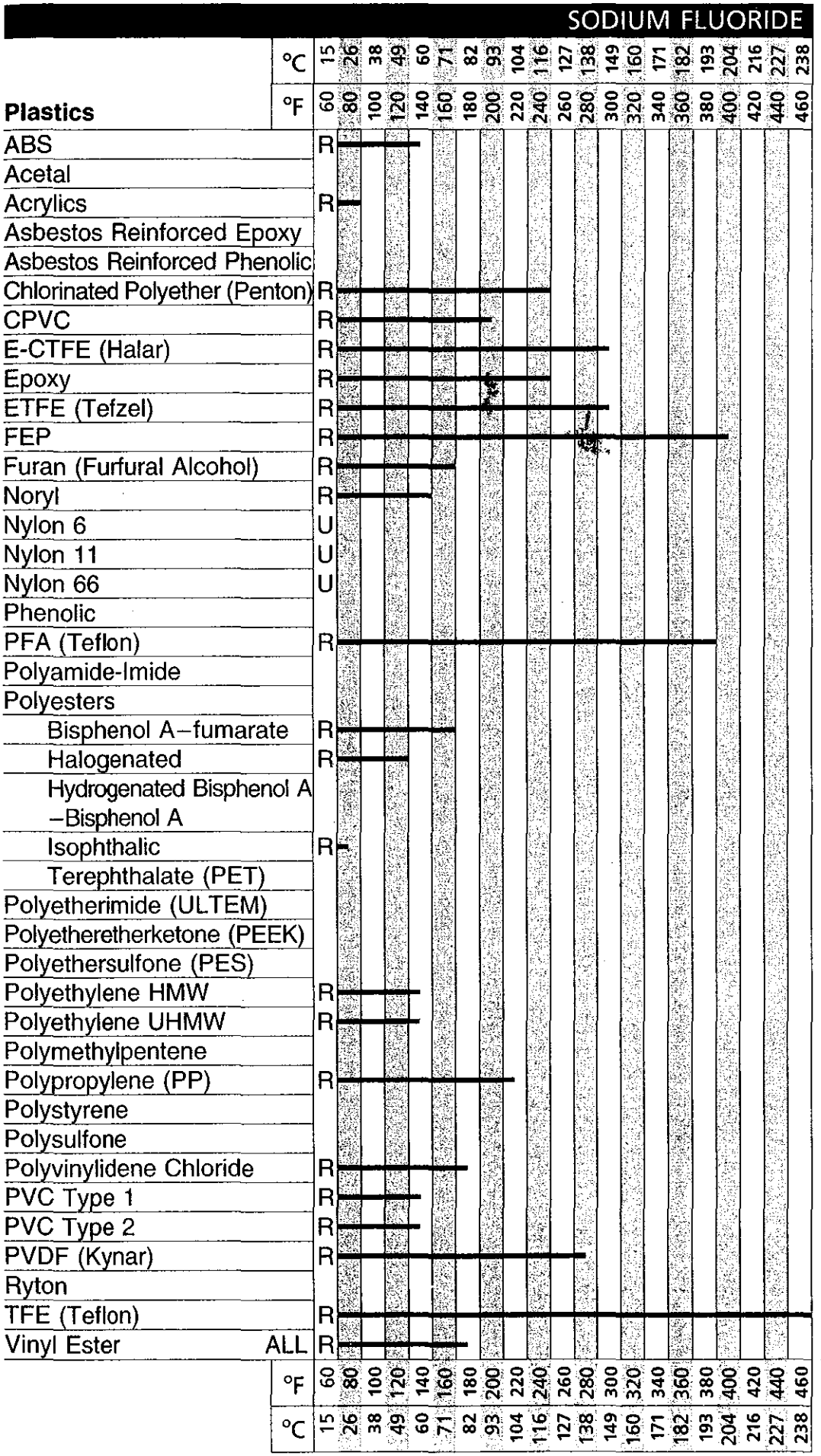

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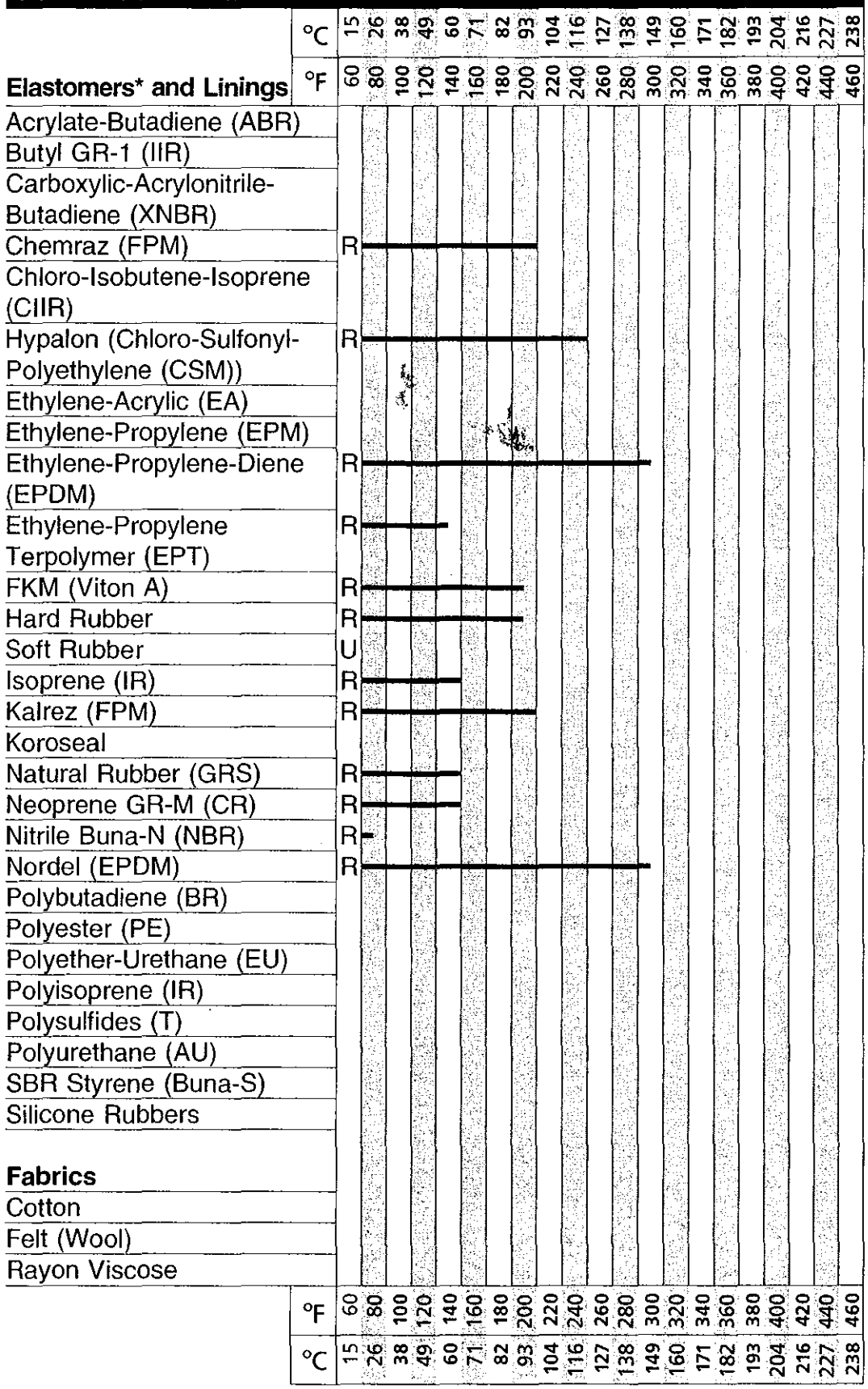

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SODIUM HYDROSULFIDE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum																												
Aluminum Bronze																												
Brass																												
Bronze																												
Carbon Steel																												
Columbium (Niobium)																												
Copper																												
Hastelloy B/B-2																												
Hastelloy C/C-276	12%	G																										
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625																												
Incolloy 800/825																												
Lead																												
Monel 400	40%	E																										
Naval Bronze																												
Nickel 200/201	45%	G																										
Ni-Resist																												
Stainless Steels																												
Type 304/347	30–50%	E																										
Type 316	30–50%	G																										
Type 400 series																												
Type 317/317 L	30–50%	G																										
17-4 PH																												
20 Cb 3	40%	E																										
E-Bright 26-1																												
Silicon Bronze																												
Silicon Copper																												
Stellite																												
Tantalum																												
Titanium																												
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SODIUM HYDROSULFIDE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SODIUM HYDROSULFIDE

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP		
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1		
PVC Type 2		
PVDF (Kynar)		
Ryton		
TFE (Teflon)		
Vinyl Ester		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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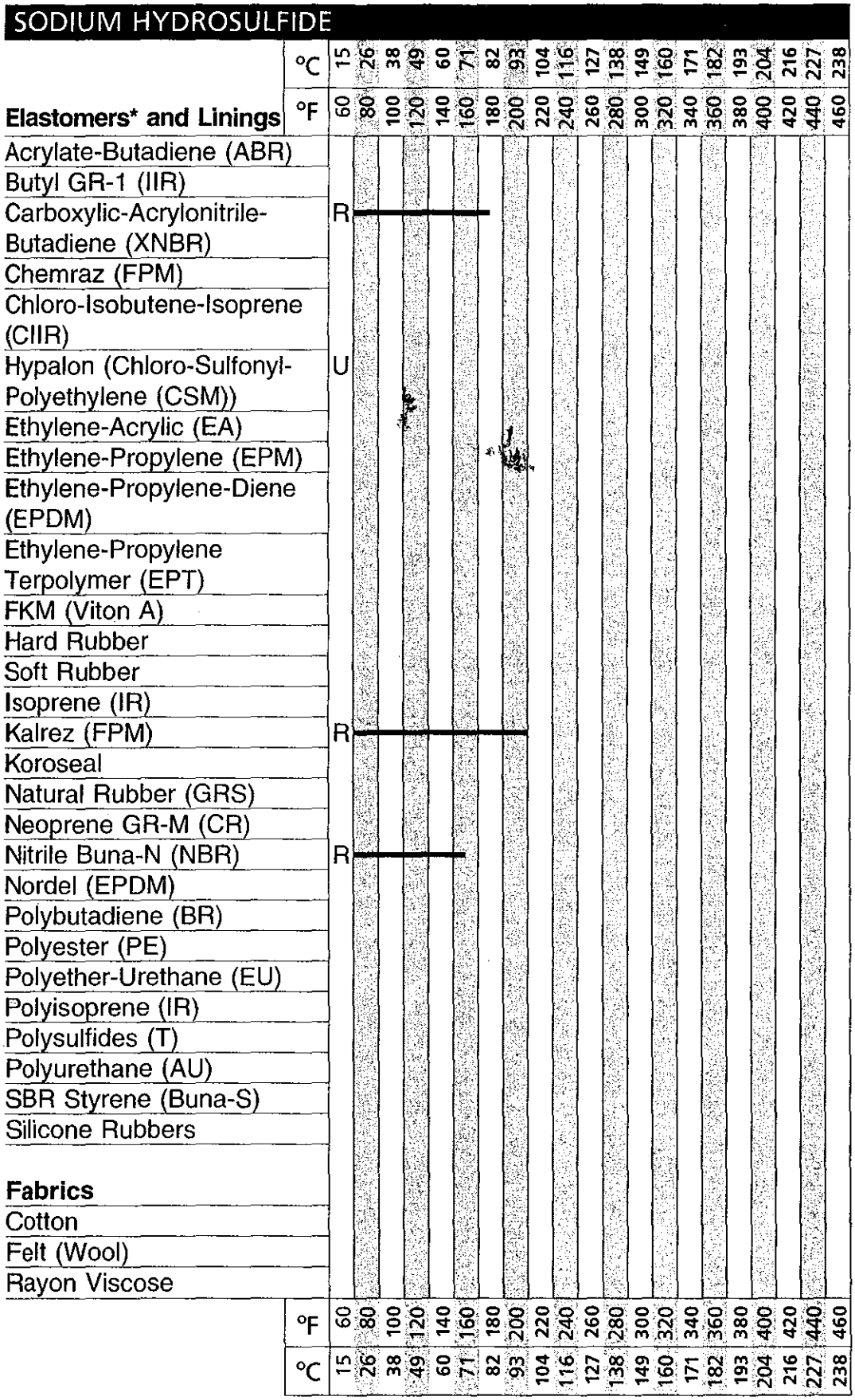
SODIUM HYDROSULFIDE



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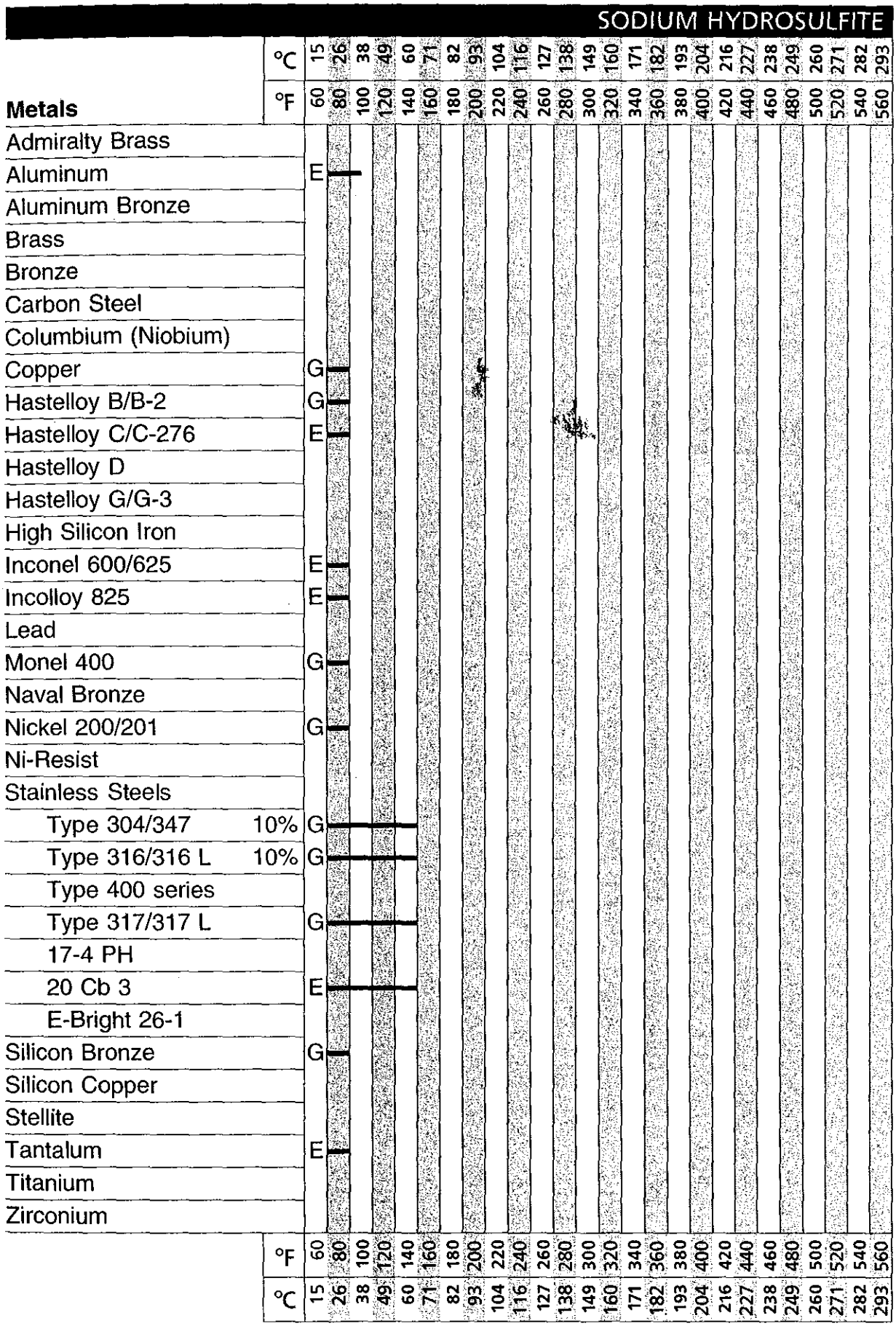
SODIUM HYDROSULFITE



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SODIUM HYDROSULFITE

Nonmetallic Materials	
Borosilicate Glass	
Carbon	
Carbon-Graphite Resin Impregnated	
Ceramics	
Coatings	
Acrylic	
Asphalt	
Chlorinated Rubber	
Coal Tar	
Coal Tar Epoxy	
Epoxy General Purpose	
Epoxy Chemical Resistant	
Epoxy Polyamide	
Oil Base (Alkyd, Epoxy, Urethane)	
Phenolic	
Polyester	
Polyvinyl Chloride	
Silicones	
Urethanes	
Vinyls	10% R
Water Base	
Zinc Rich	
Mortars	
Silicate	
Sodium Silicate	
Potassium Silicate	
Silica	
Sulfur	
Furan Resin	
Polyester	
Epoxy	

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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SODIUM HYDROSULFITE

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic	R	
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1		
PVC Type 2		
PVDF (Kynar)		
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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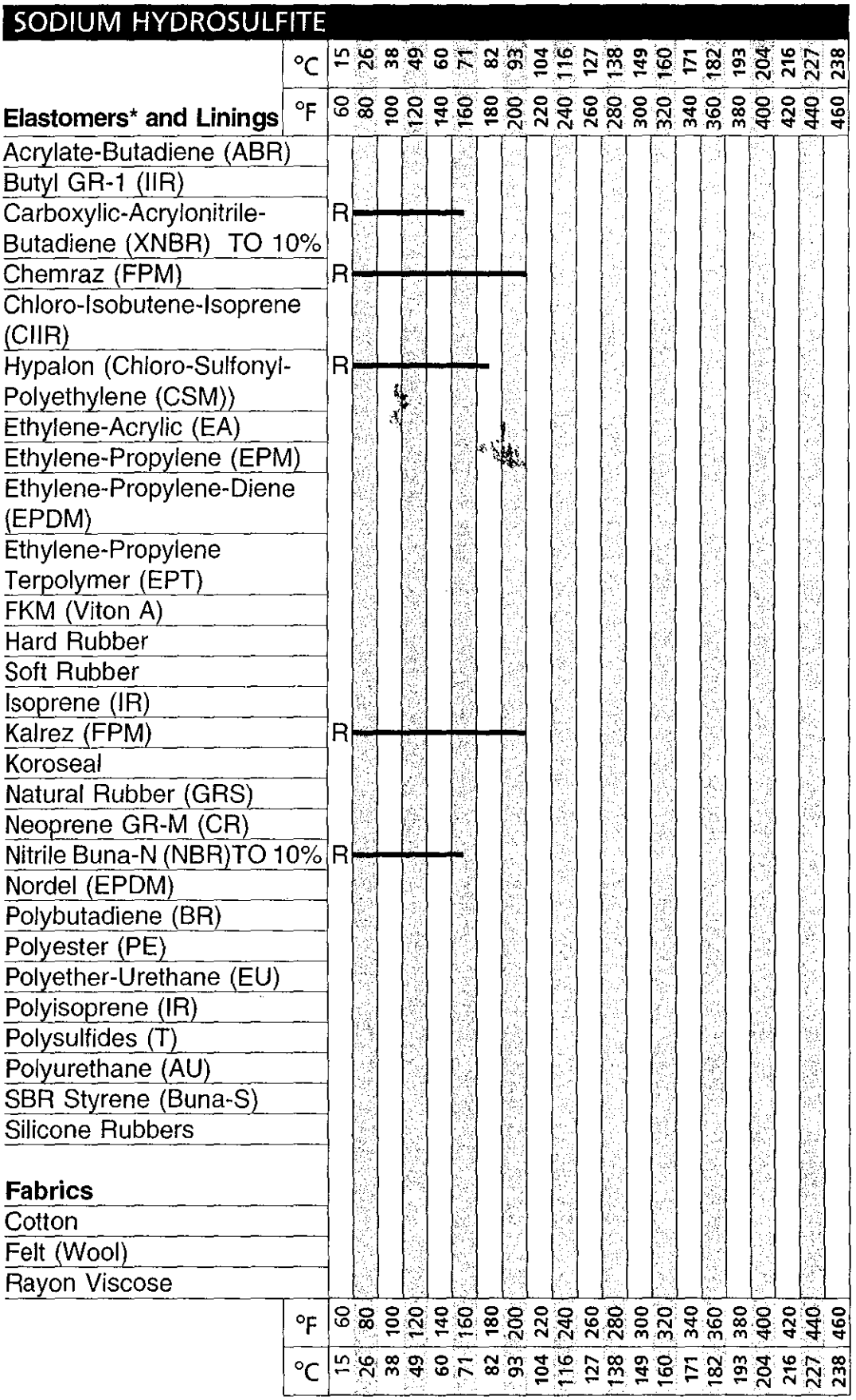
SODIUM HYDROSULFITE



*See also Nylon 11 under PLASTICS

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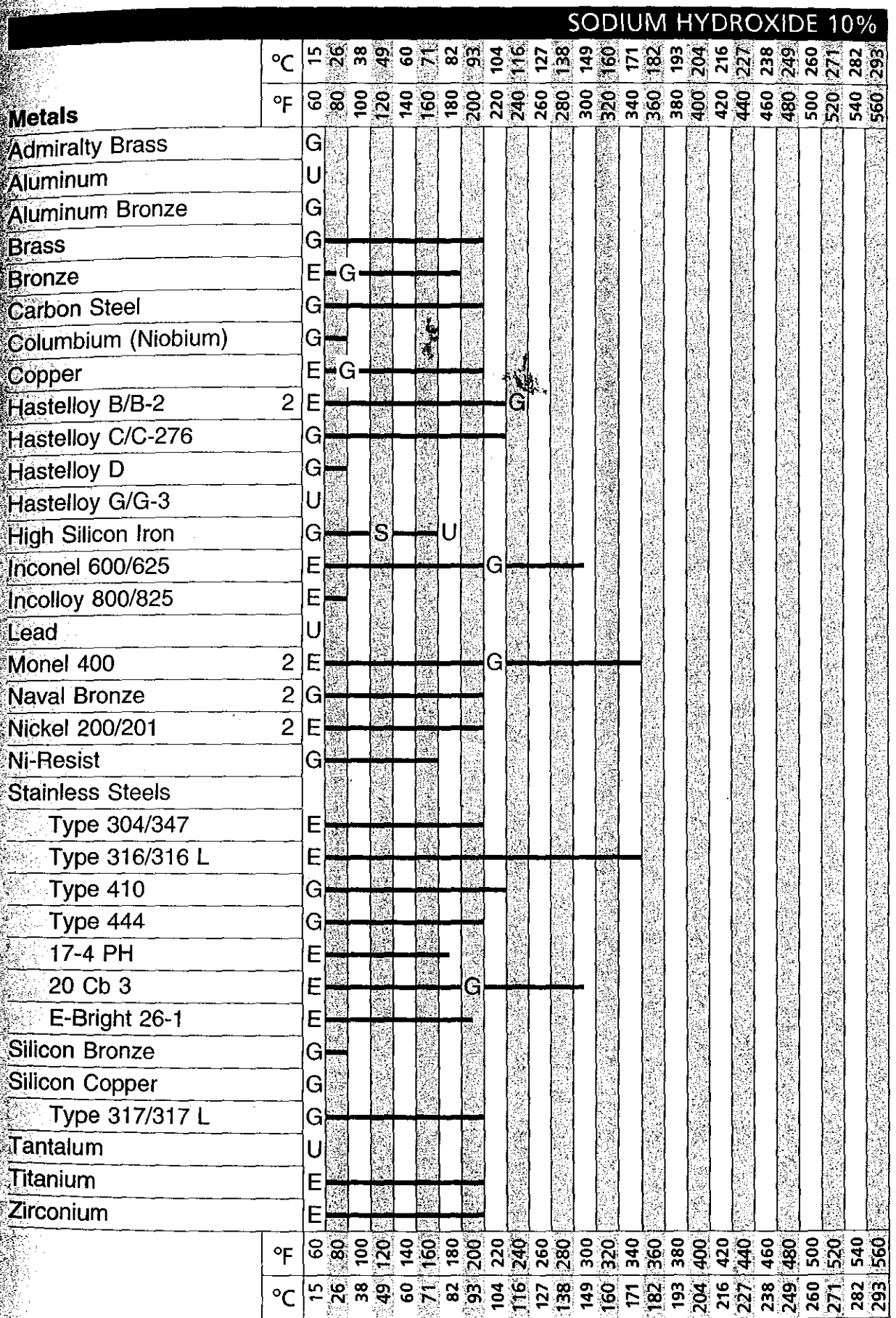

FOR METALS

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FOR NONMETALLICS

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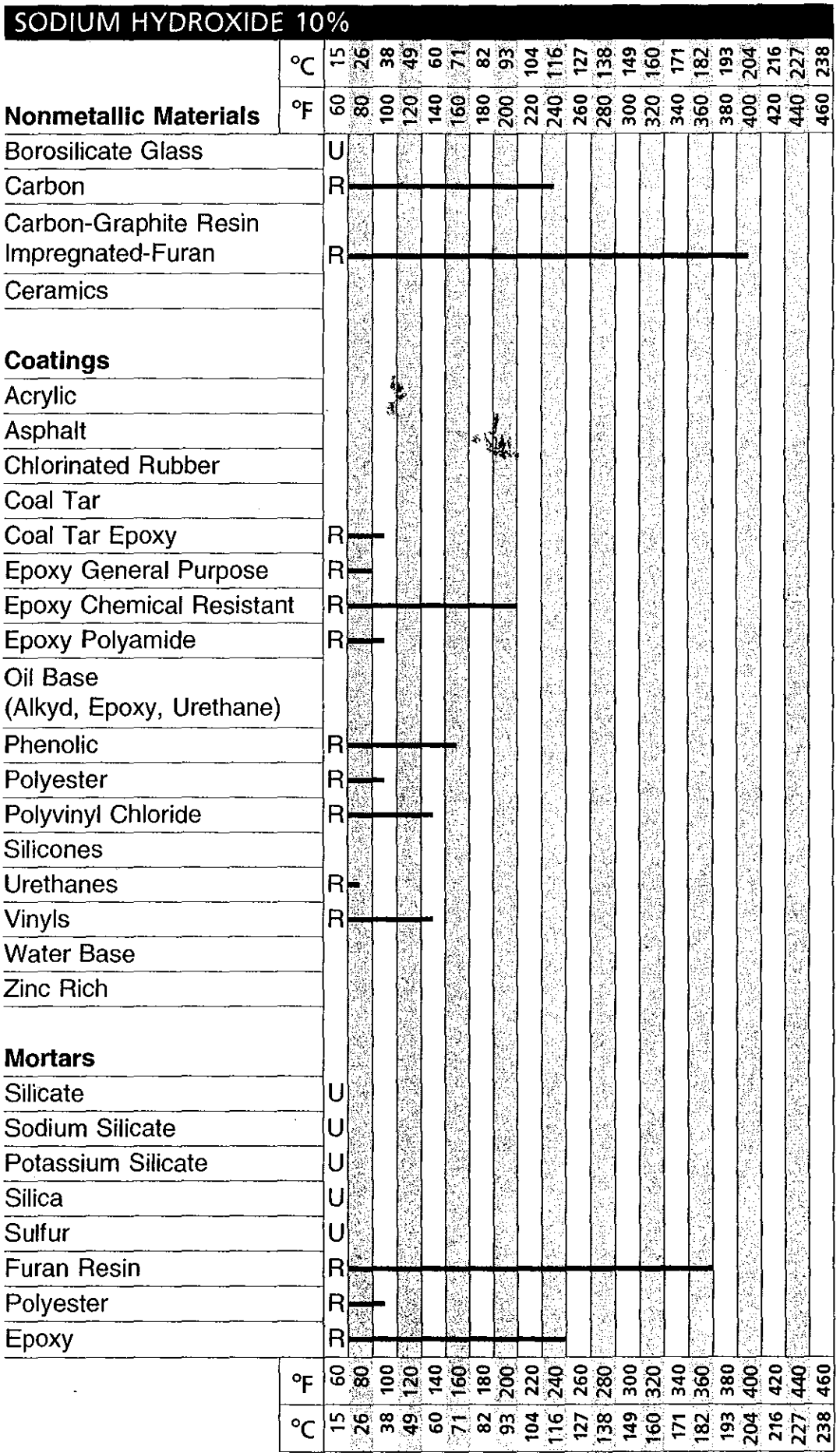

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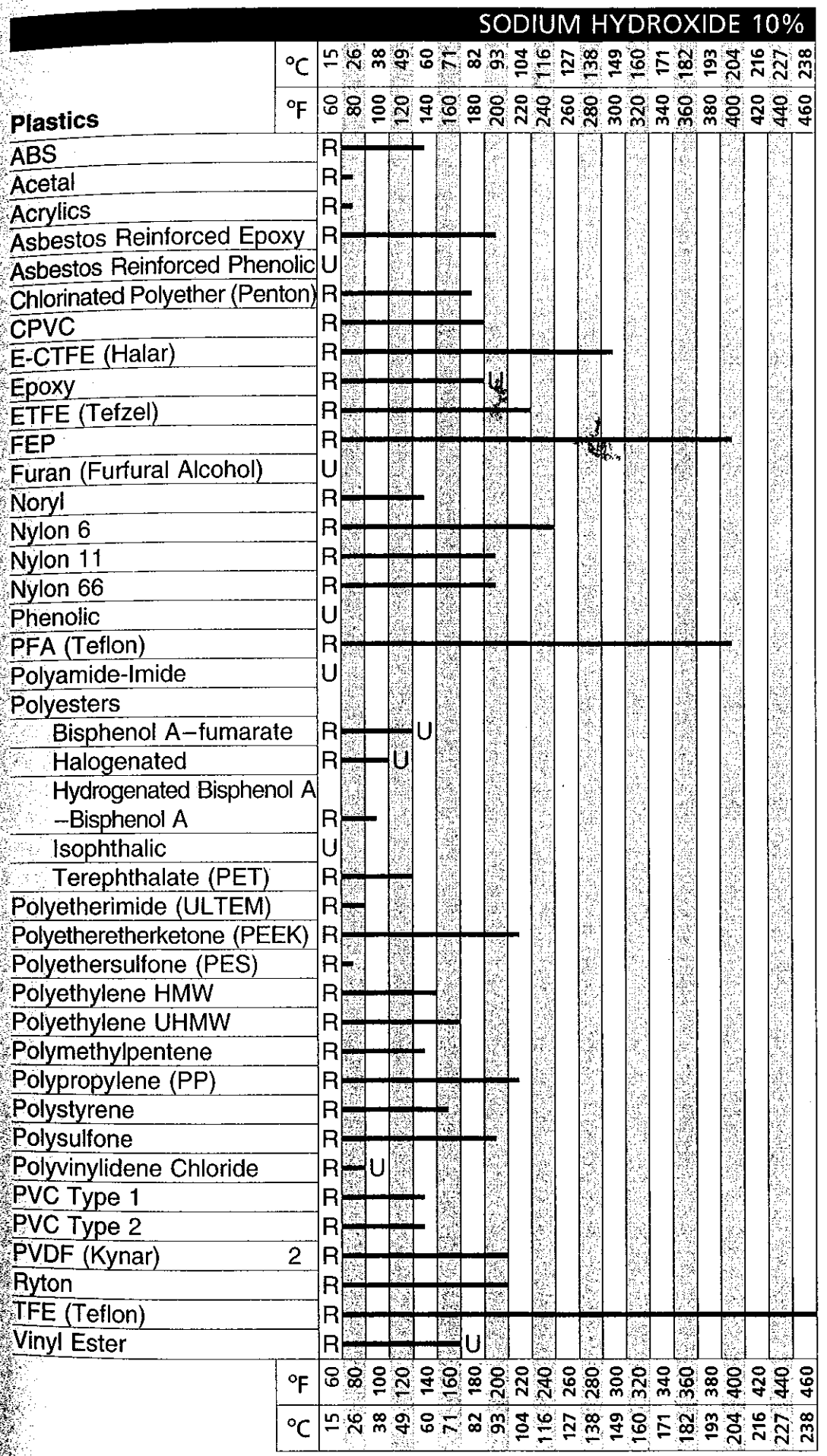

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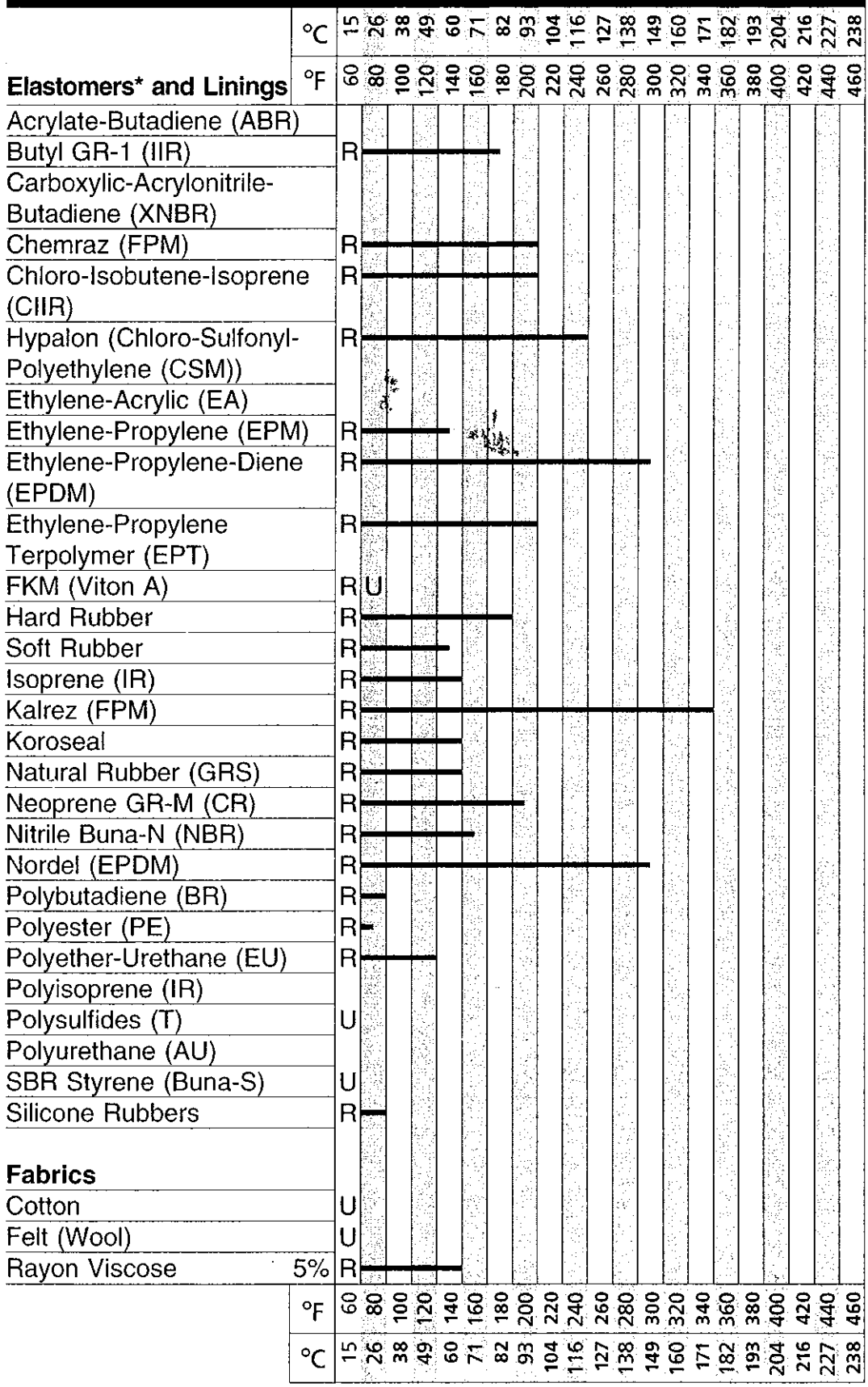

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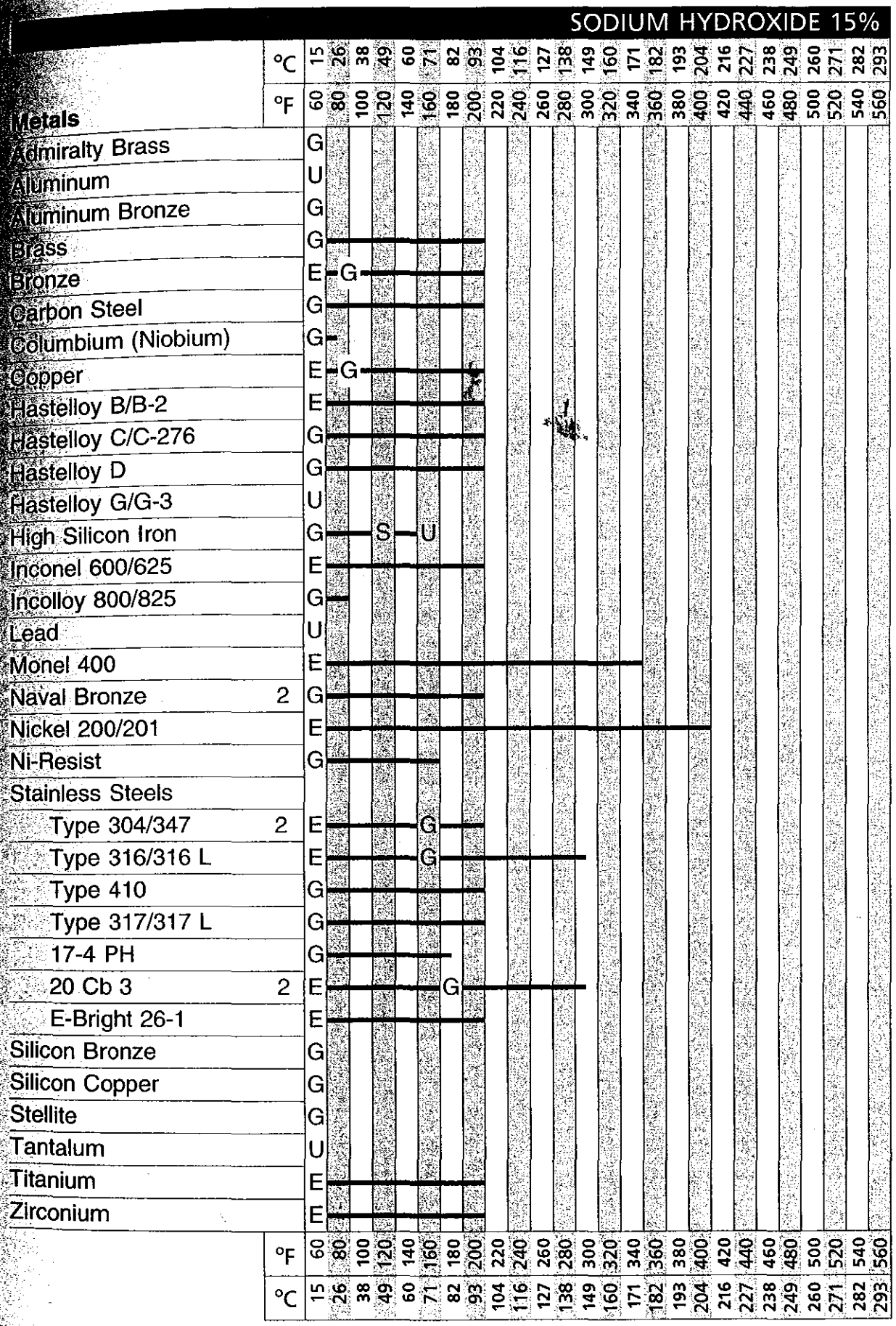

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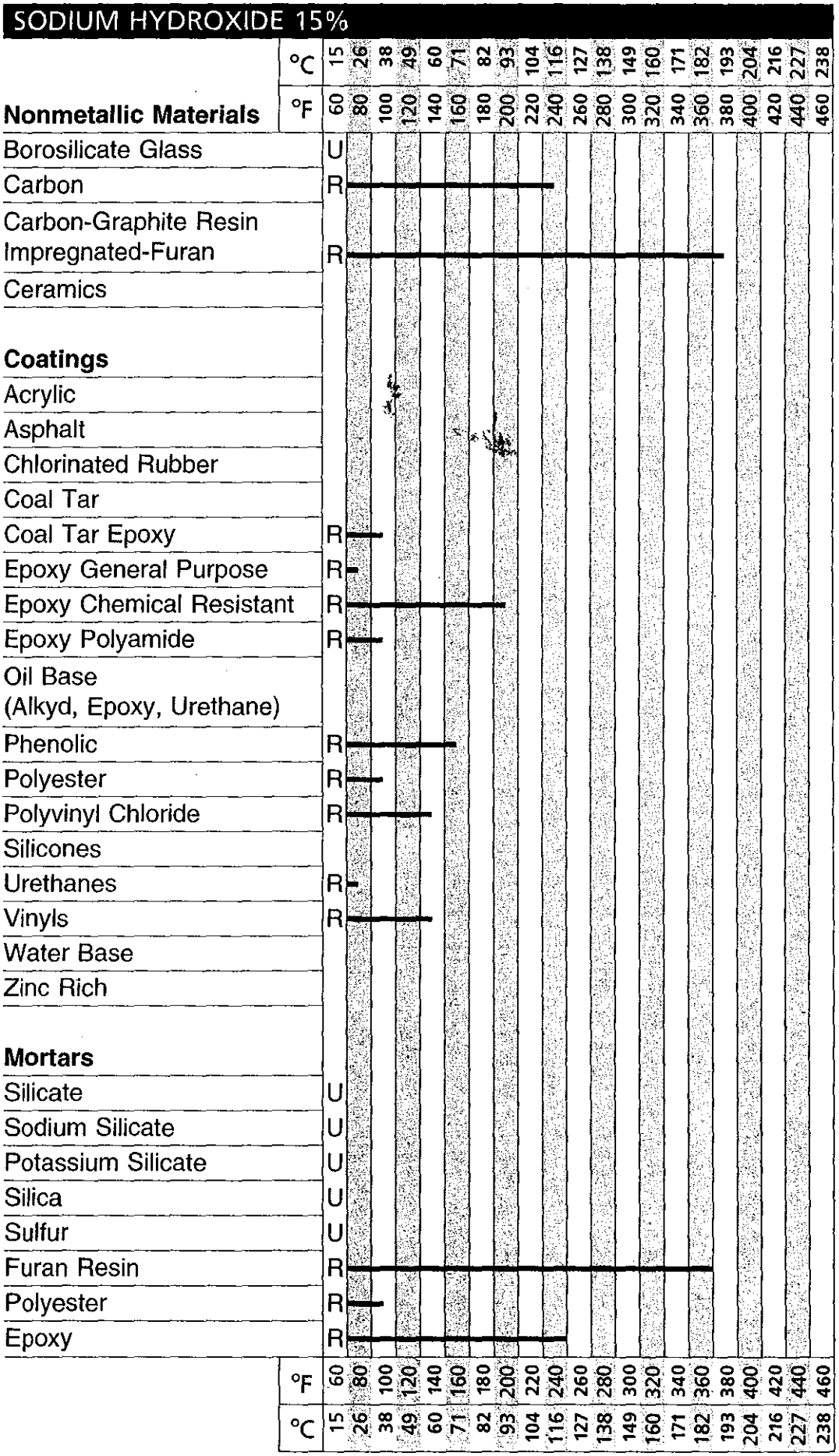

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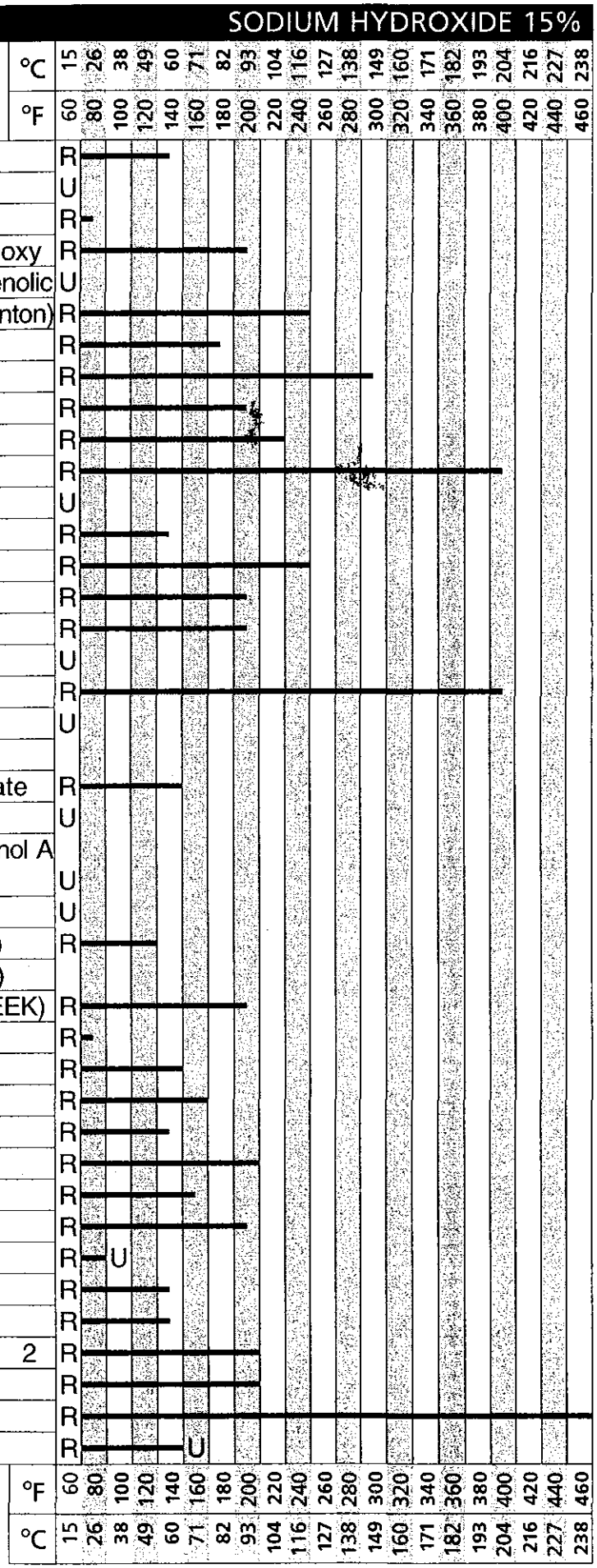

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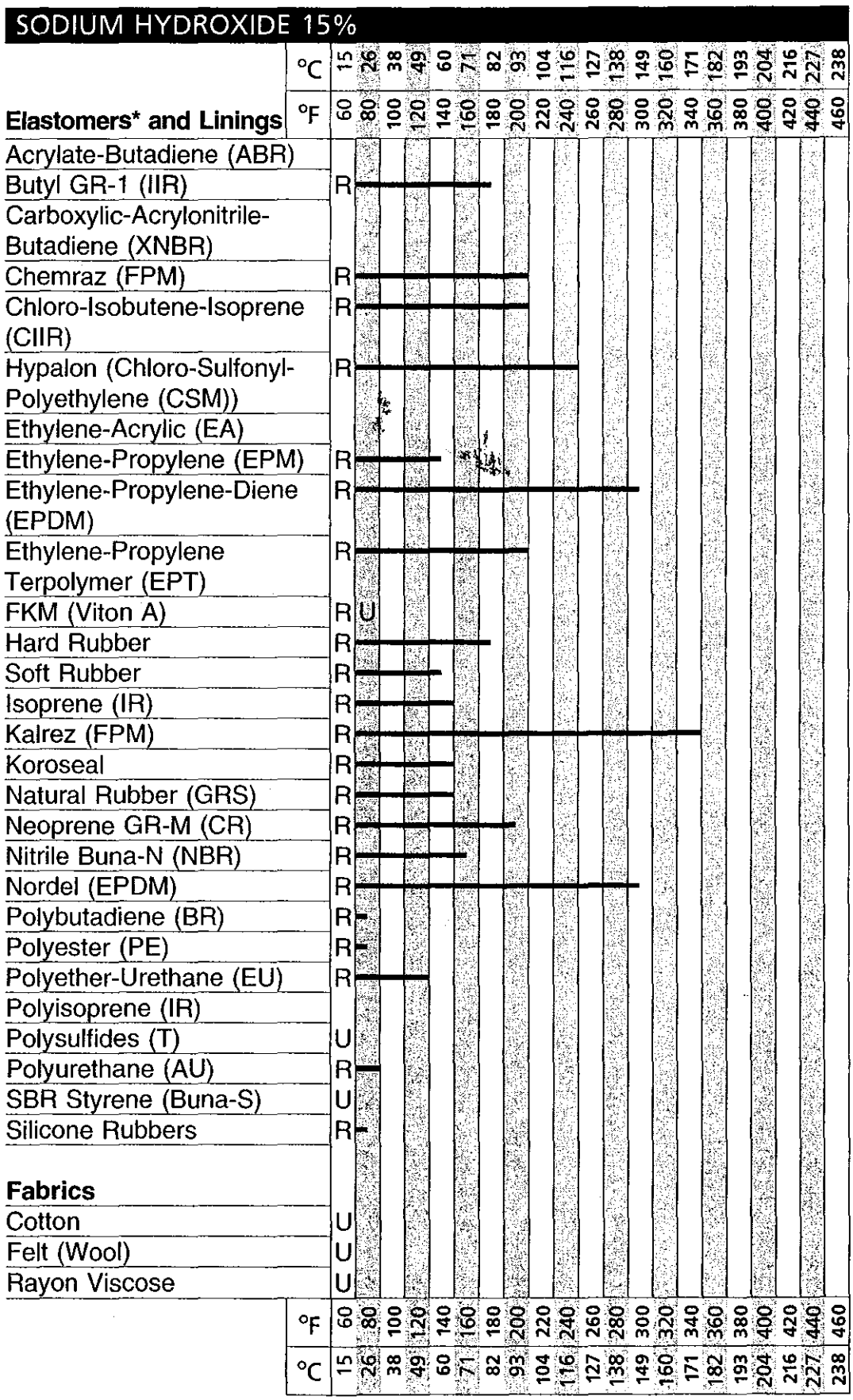

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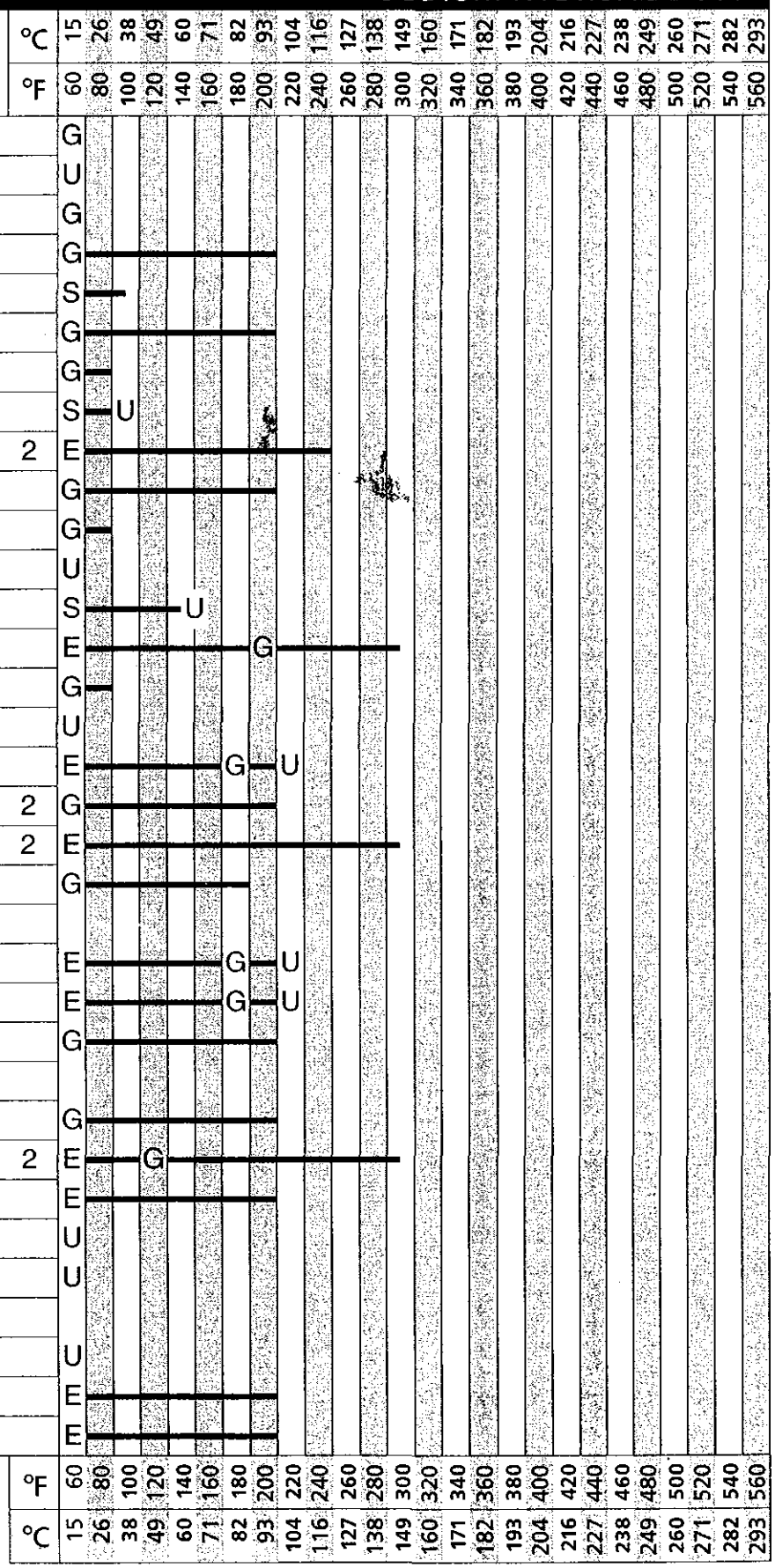

FOR METALS

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S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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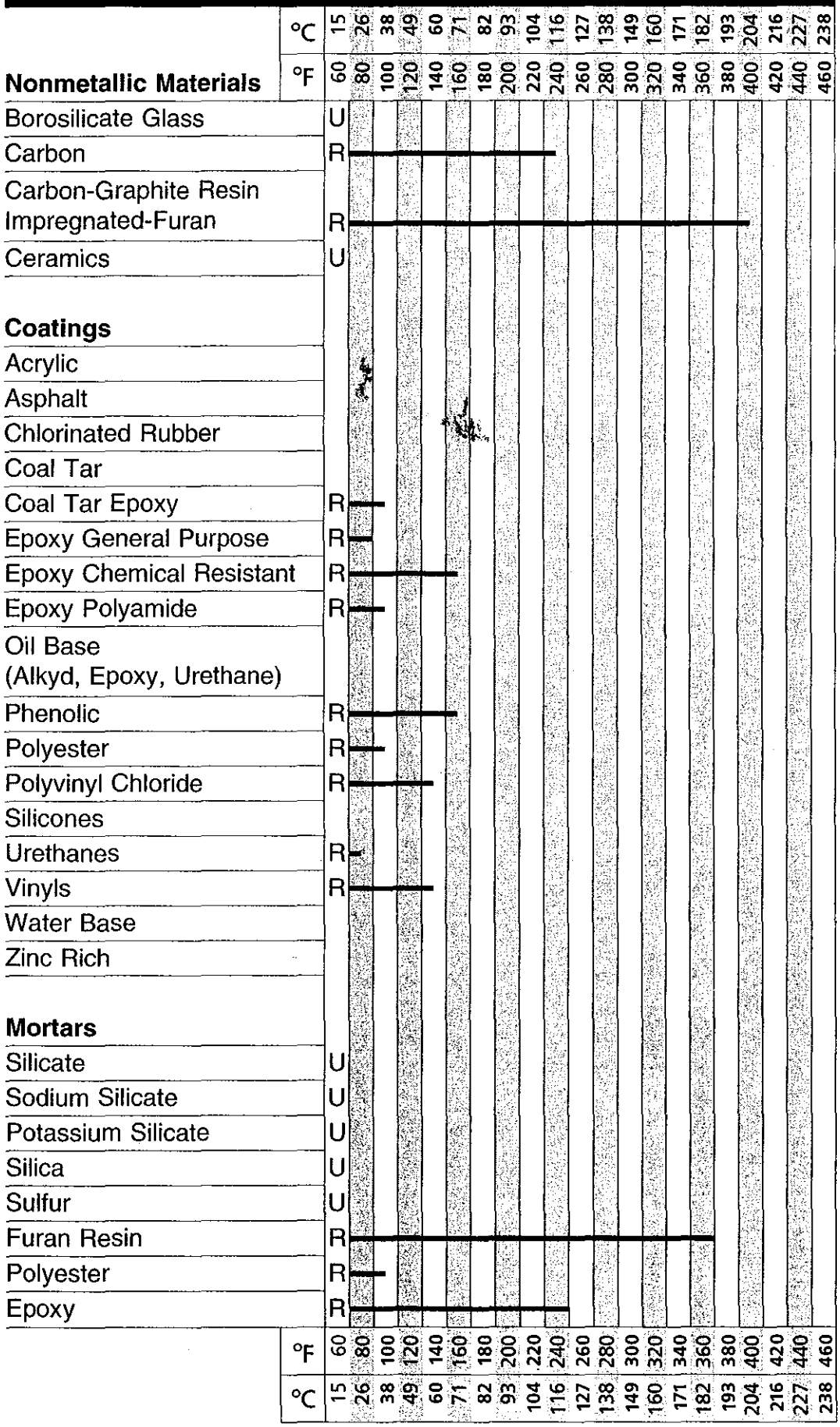

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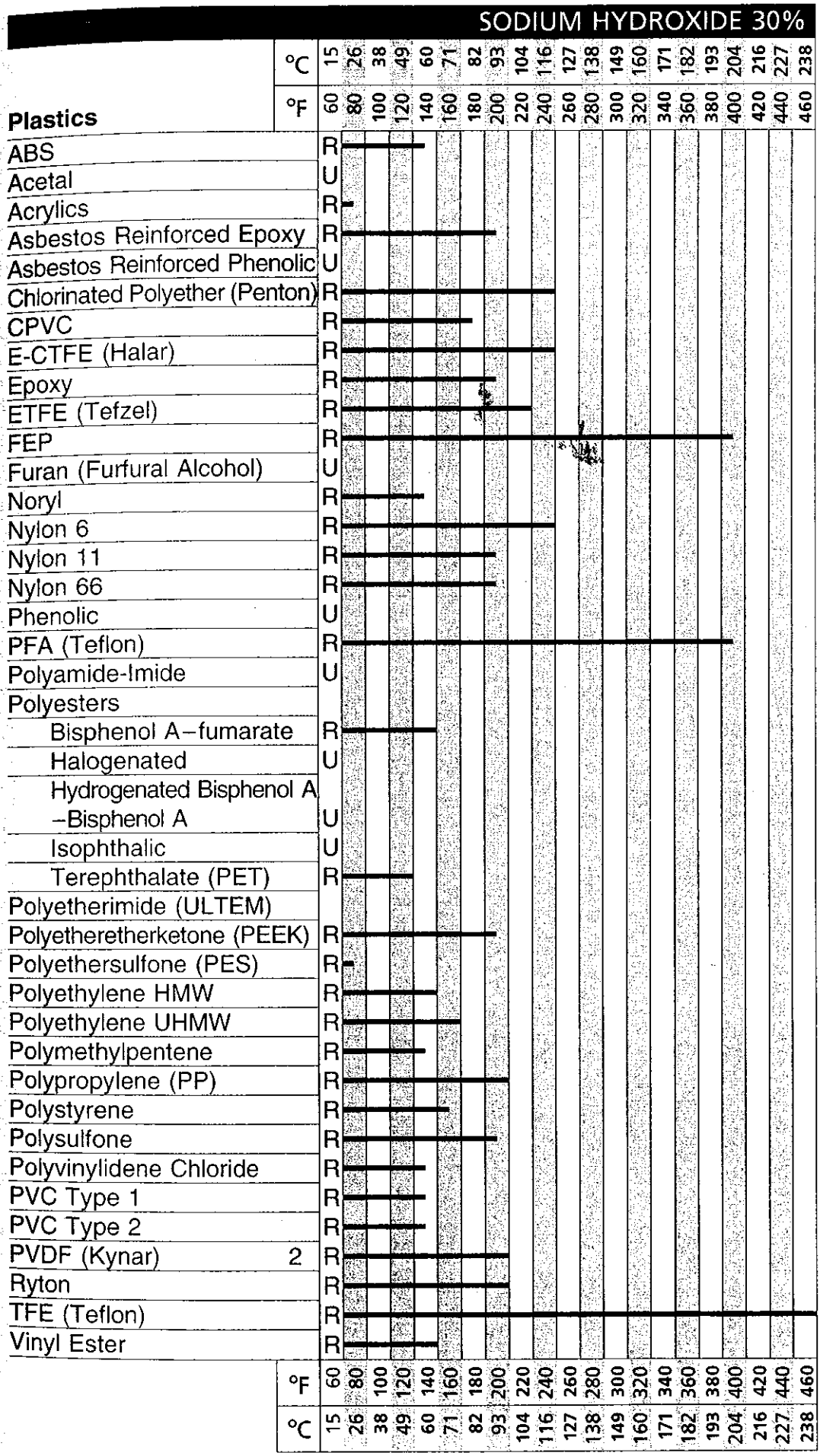

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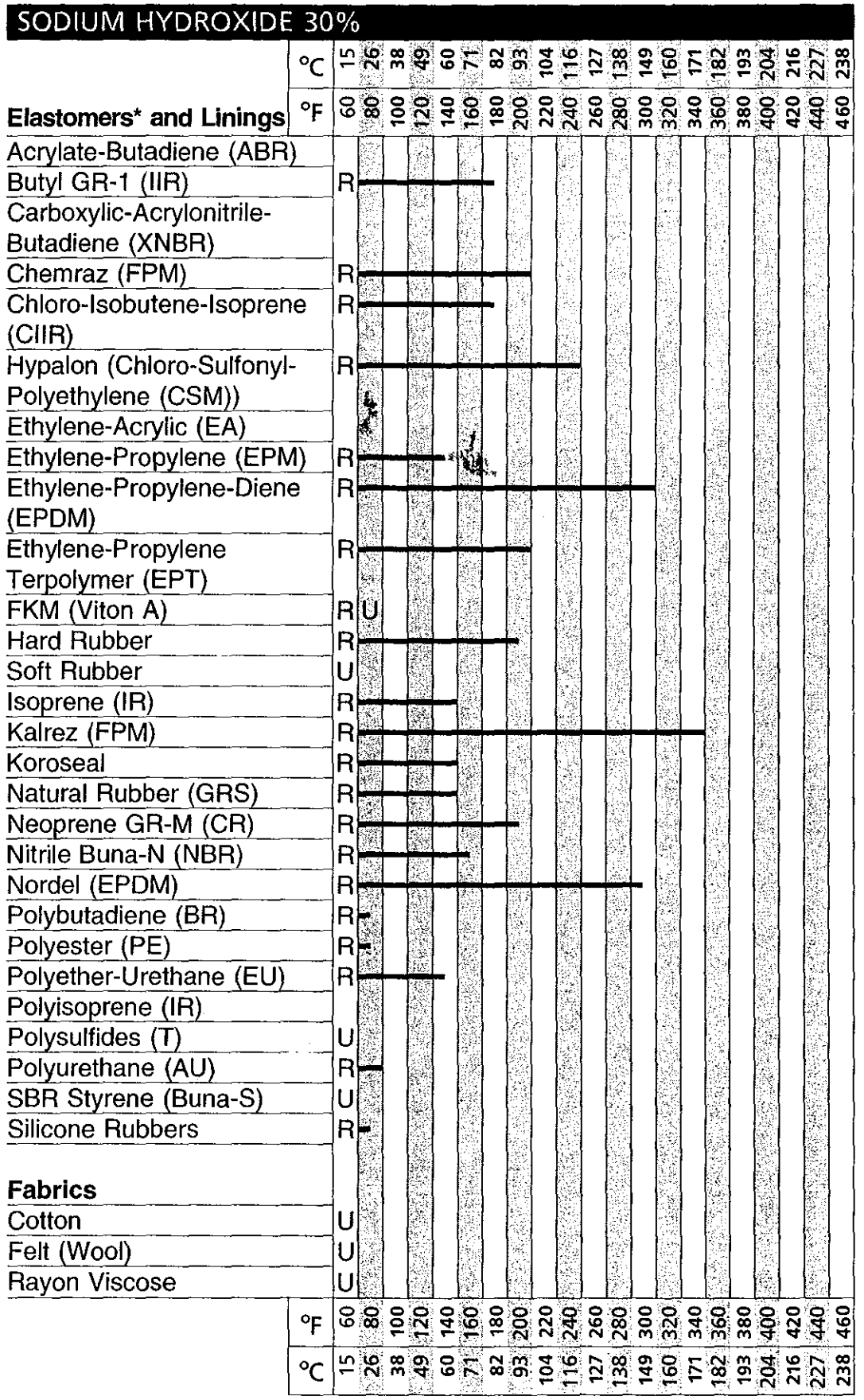

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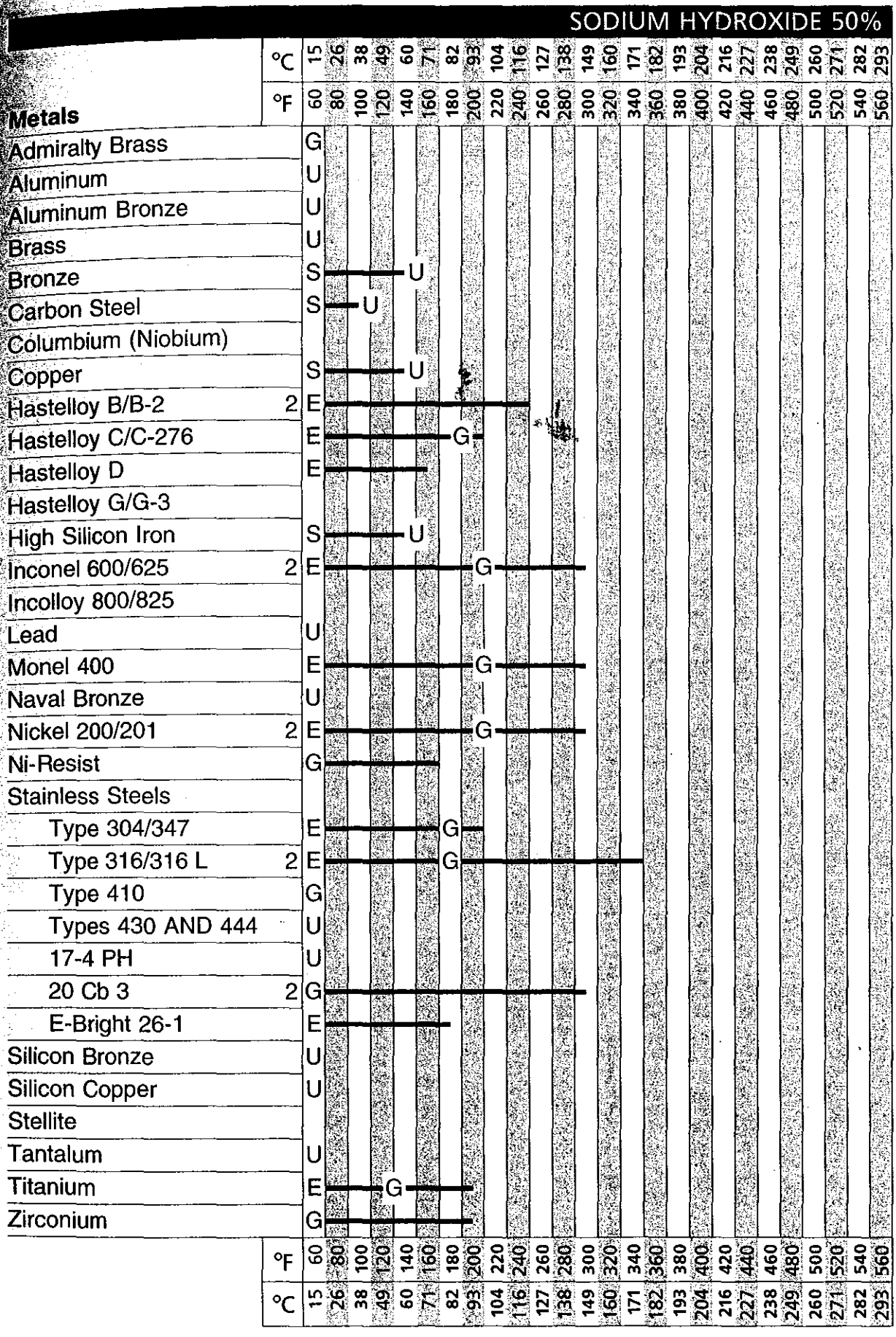

FOR METALS

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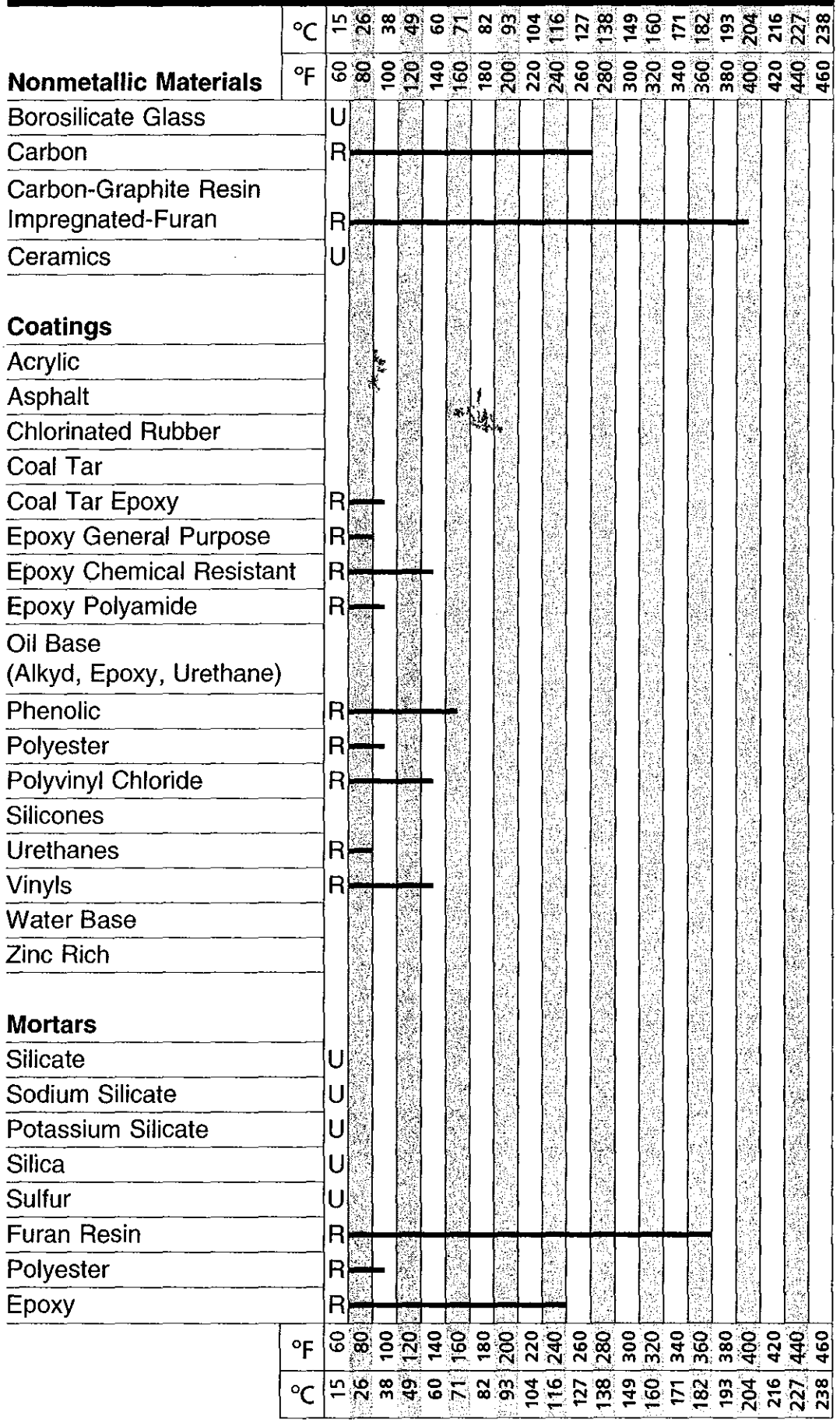

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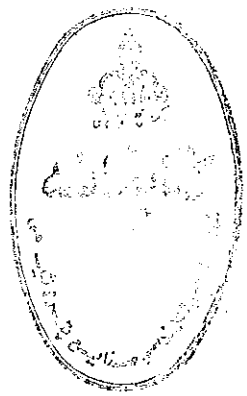
SODIUM HYDROXIDE 50%

Plastics	
ABS	R
Acetal	U
Acrylics	R
Asbestos Reinforced Epoxy	R
Asbestos Reinforced Phenolic	U
Chlorinated Polyether (Penton)	R
CPVC	R
E-CTFE (Halar)	R
Epoxy	R
ETFE (Tefzel)	R
FEP	R
Furan (Furfural Alcohol)	U
Noryl	R
Nylon 6	R
Nylon 11	R
Nylon 66	R
Phenolic	U
PFA (Teflon)	R
Polyamide-Imide	U
Polyesters	
Bisphenol A–fumarate	R
Halogenated	U
Hydrogenated Bisphenol A –Bisphenol A	U
Isophthalic	U
Terephthalate (PET)	U
Polyetherimide (ULTEM)	
Polyetheretherketone (PEEK)	R
Polyethersulfone (PES)	R
Polyethylene HMW	R
Polyethylene UHMW	R
Polymethylpentene	R
Polypropylene (PP)	R
Polystyrene	R
Polysulfone	R
Polyvinylidene Chloride	R
PVC Type 1	R
PVC Type 2	R
PVDF (Kynar) 2	R
Ryton	R
TFE (Teflon)	R
Vinyl Ester	R

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460



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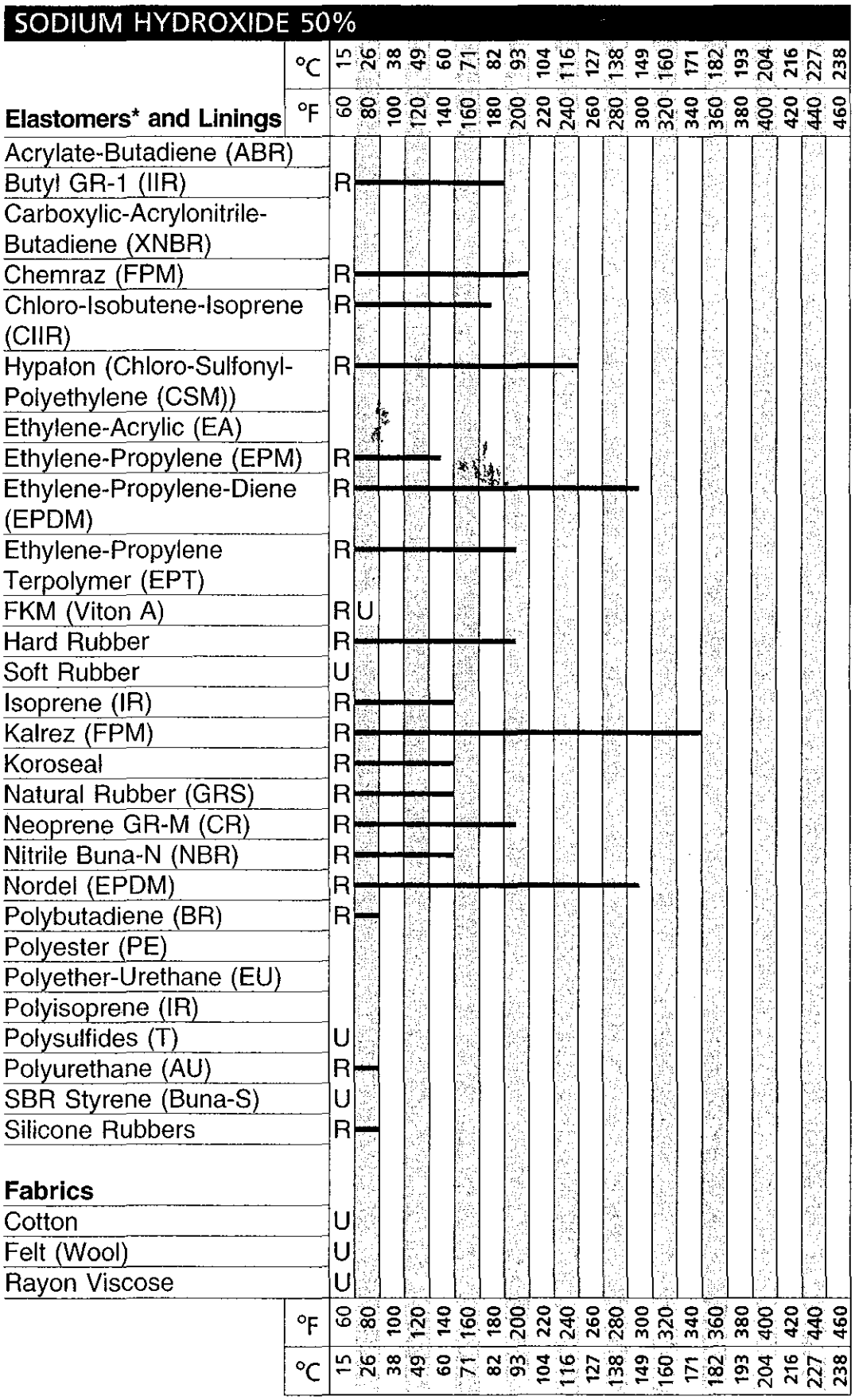
SODIUM HYDROXIDE 50%



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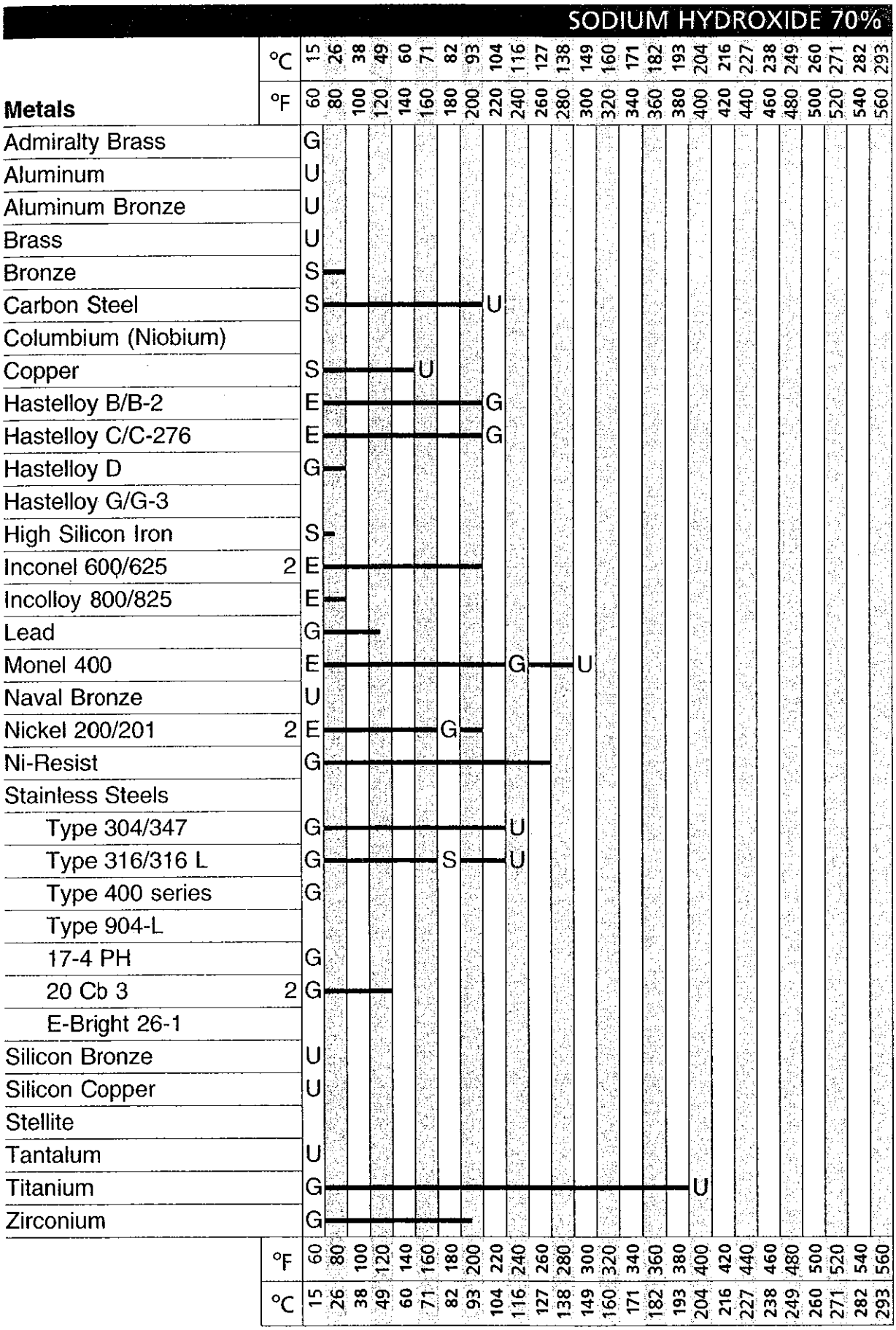
SODIUM HYDROXIDE 70%



Metals

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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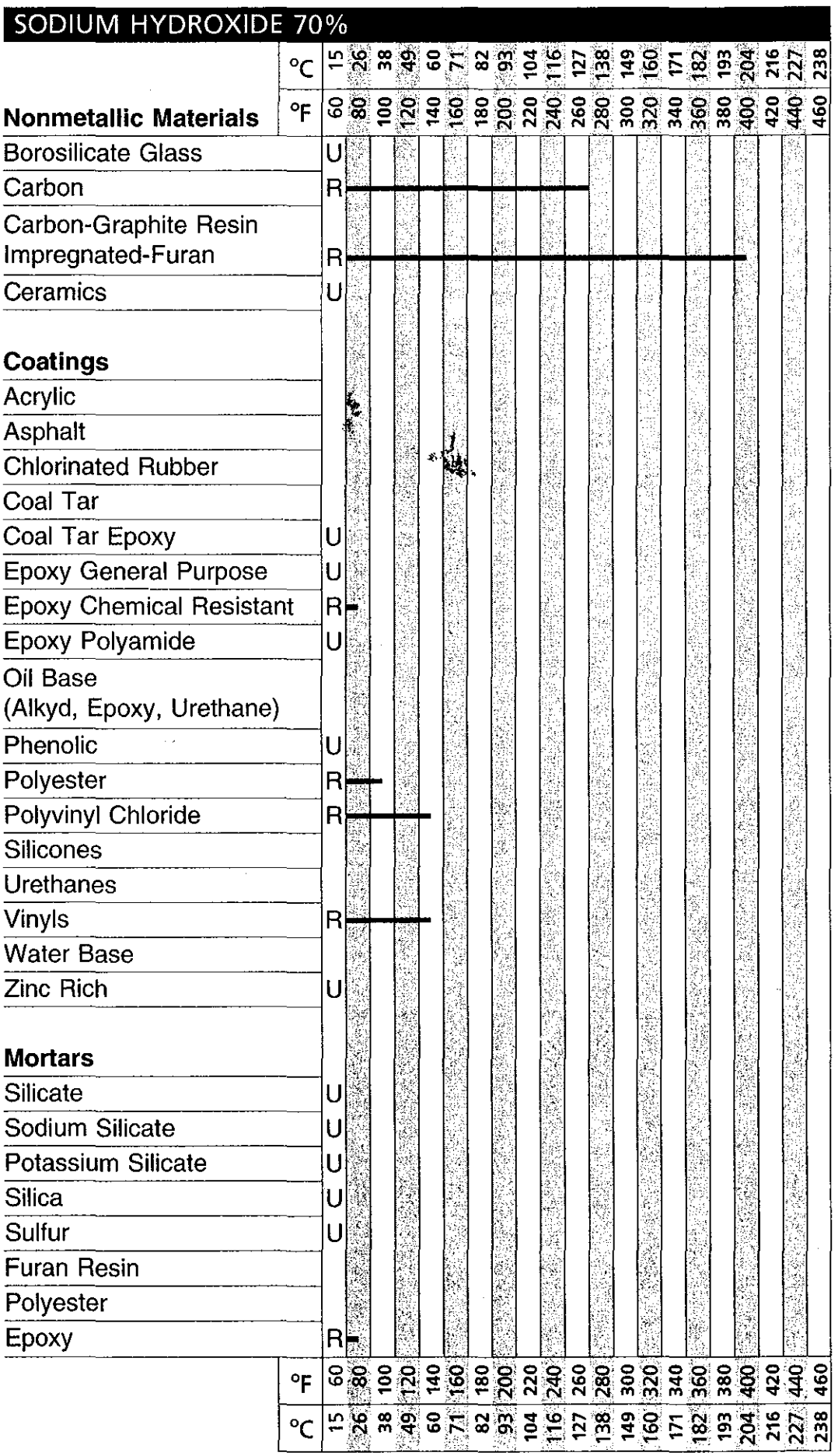
SODIUM HYDROXIDE 70%



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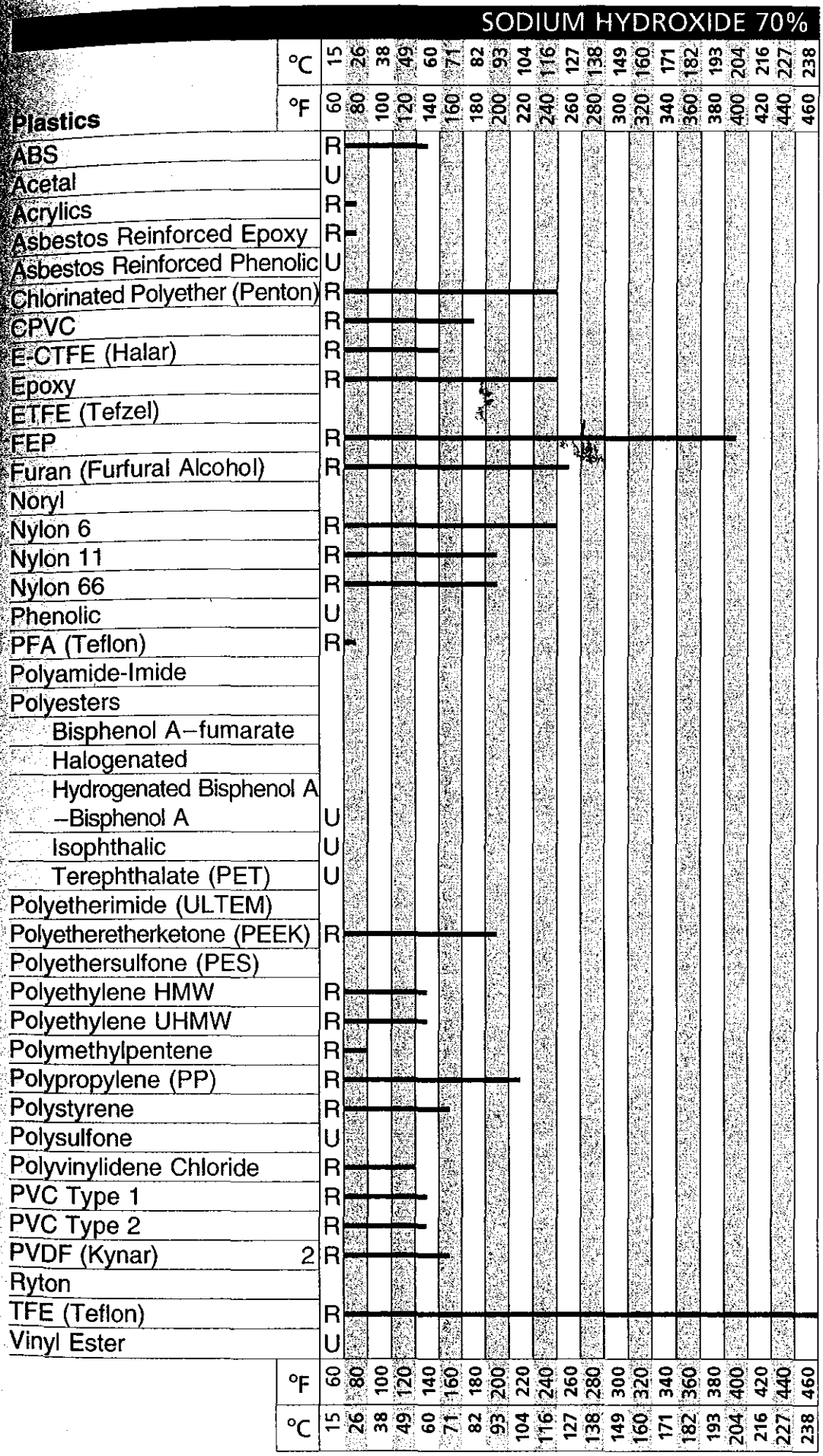

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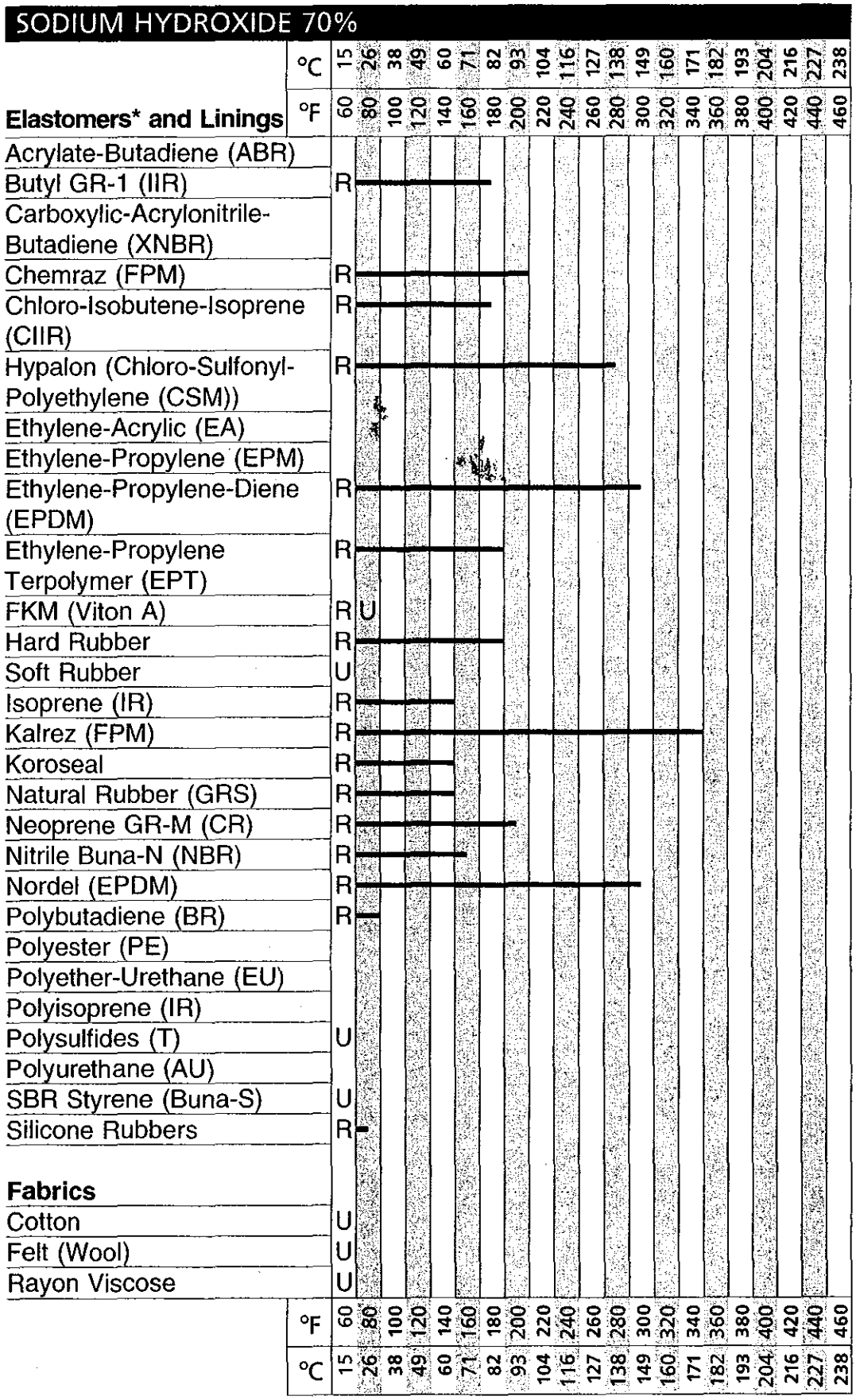
SODIUM HYDROXIDE 70%



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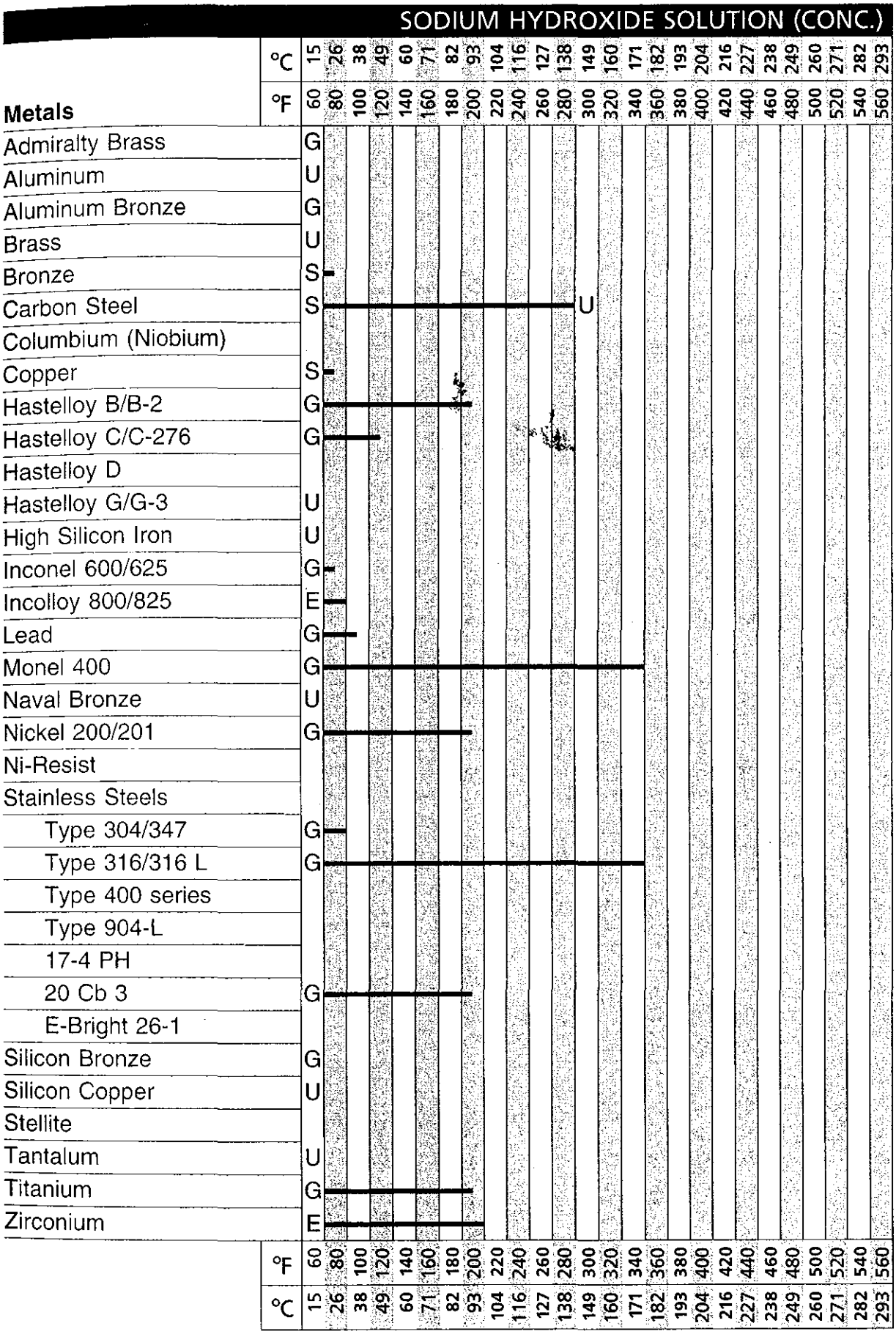
SODIUM HYDROXIDE SOLUTION (CONC.)



FOR METALS

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S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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U = Unsatisfactory

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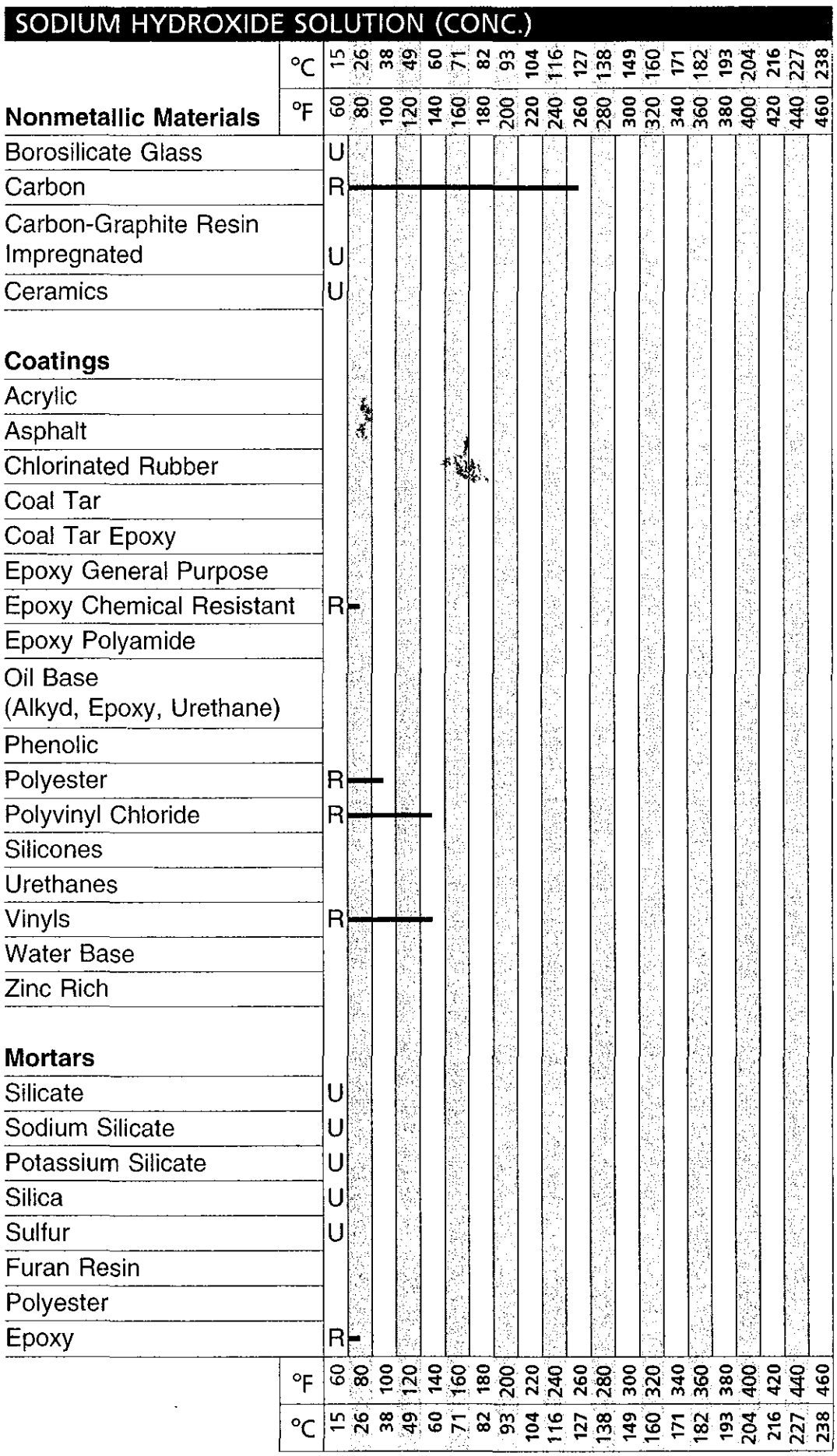
SODIUM HYDROXIDE SOLUTION (CONC.)



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SODIUM HYDROXIDE SOLUTION (CONC.)

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS		R																				
Acetal		U																				
Acrylics		R																				
Asbestos Reinforced Epoxy		R																				
Asbestos Reinforced Phenolic		U																				
Chlorinated Polyether (Penton)		R																				
CPVC		R																				
E-CTFE (Halar)		R																				
Epoxy																						
ETFE (Tefzel)																						
FEP		R																				
Furan (Furfural Alcohol)		U																				
Noryl		U																				
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic		U																				
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic		U																				
Terephthalate (PET)		U																				
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)		R																				
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene		R																				
Polypropylene (PP)		R																				
Polystyrene		R																				
Polysulfone		R																				
Polyvinylidene Chloride		U																				
PVC Type 1		R																				
PVC Type 2		R																				
PVDF (Kynar)	2	R																				
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester		U																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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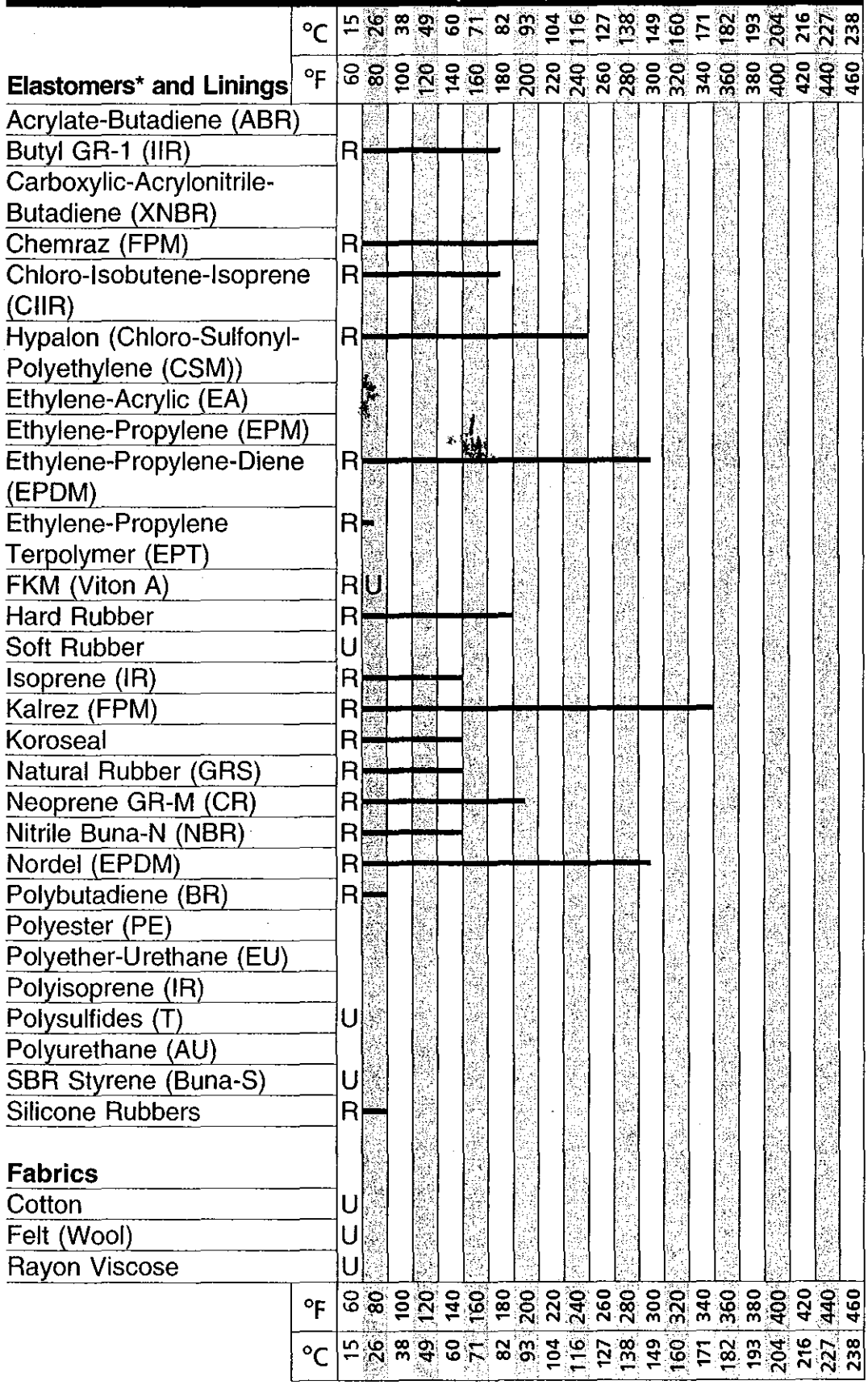
SODIUM HYDROXIDE SOLUTION (CONC.)



*See also Nylon 11 under PLASTICS

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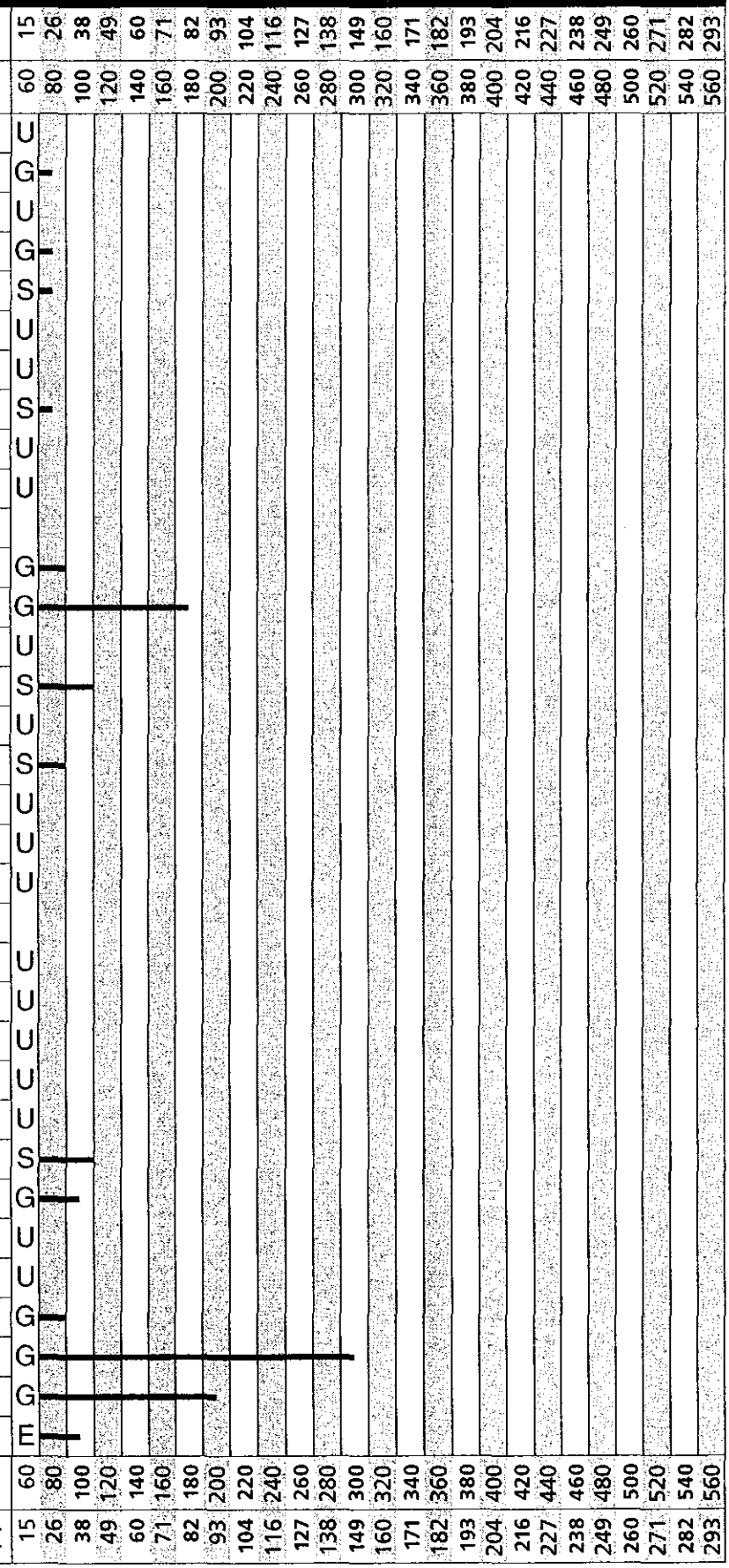
SODIUM HYPOCHLORITE 20%

Metals	
Admiralty Brass	U
Aluminum	G
Aluminum Bronze	U
Brass	G
Bronze	S
Carbon Steel	U
Columbium (Niobium)	U
Copper	S
Hastelloy B/B-2	U
Hastelloy C/C-276	U
Hastelloy D	
Hastelloy G/G-3	G
High Silicon Iron	G
Inconel 600/625	U
Incolloy 800/825	S
Lead	U
Monel	S
Naval Bronze	U
Nickel	U
Galv. Stl.	U
Stainless Steels	
Type 304/347	U
Type 316/316 L	U
Type 400 series	U
Type 317/317 L	U
Type 321	U
20 Cb 3	S
E-Bright 26-1	G
Silicon Bronze	U
Silicon Copper	U
Stellite	G
Tantalum	G
Titanium	G
Zirconium	E



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SODIUM HYPOCHLORITE 20%

Nonmetallic Materials	
Borosilicate Glass	R
Carbon	U
Carbon-Graphite Resin Impregnated	U
Ceramics	
Coatings	
Acrylic	
Asphalt	
Chlorinated Rubber	
Coal Tar	
Coal Tar Epoxy	U
Epoxy General Purpose	U
Epoxy Chemical Resistant	U
Epoxy Polyamide	U
Oil Base (Alkyd, Epoxy, Urethane)	
Phenolic	U
Polyester 17%	R
Polyvinyl Chloride	R
Silicones	
Urethanes	U
Vinyls	R
Water Base	
Zinc Rich	
Mortars	
Silicate	U
Sodium Silicate	U
Potassium Silicate	U
Silica	U
Sulfur	U
Furan Resin	U
Polyester	U
Epoxy	U

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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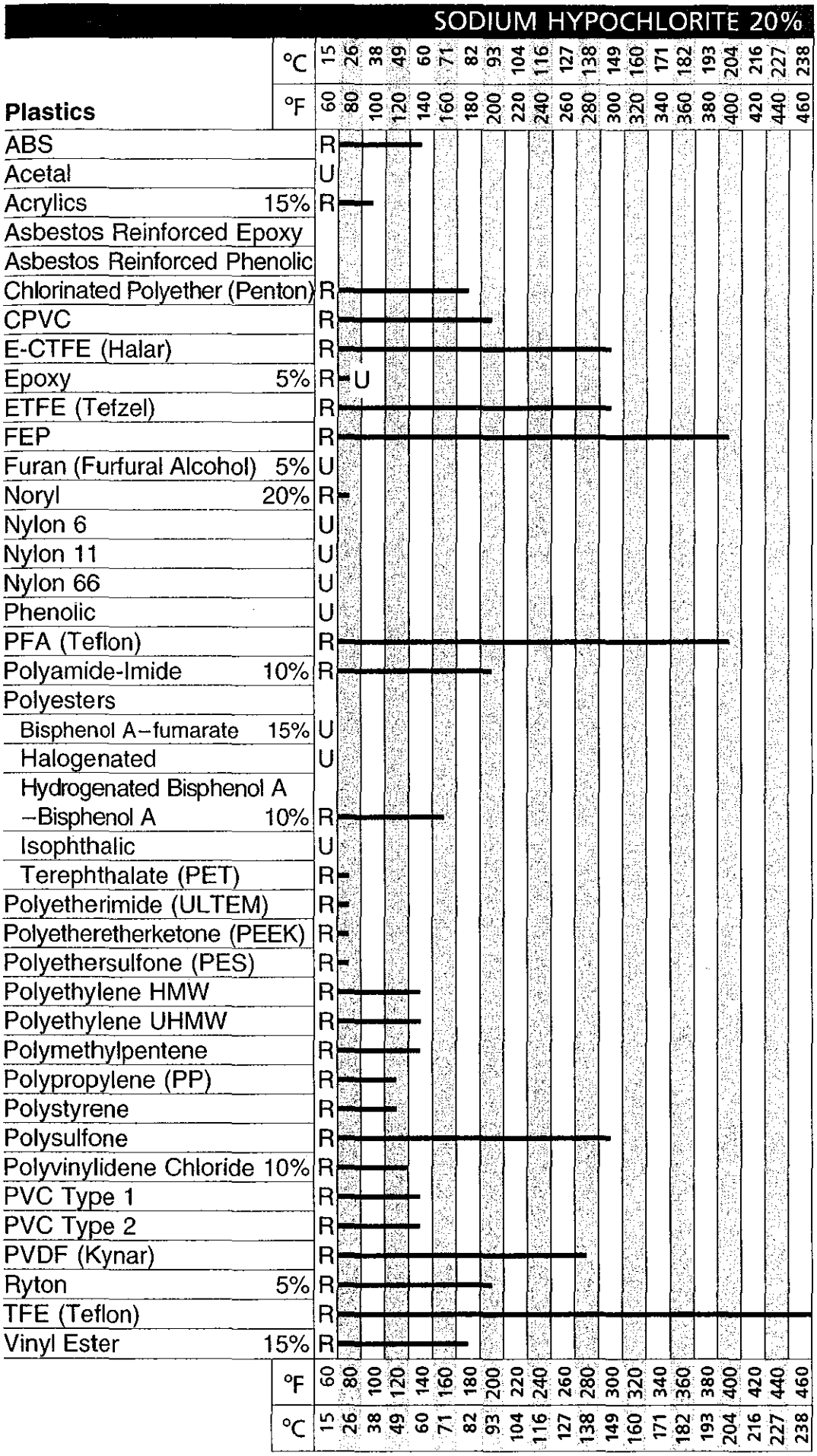

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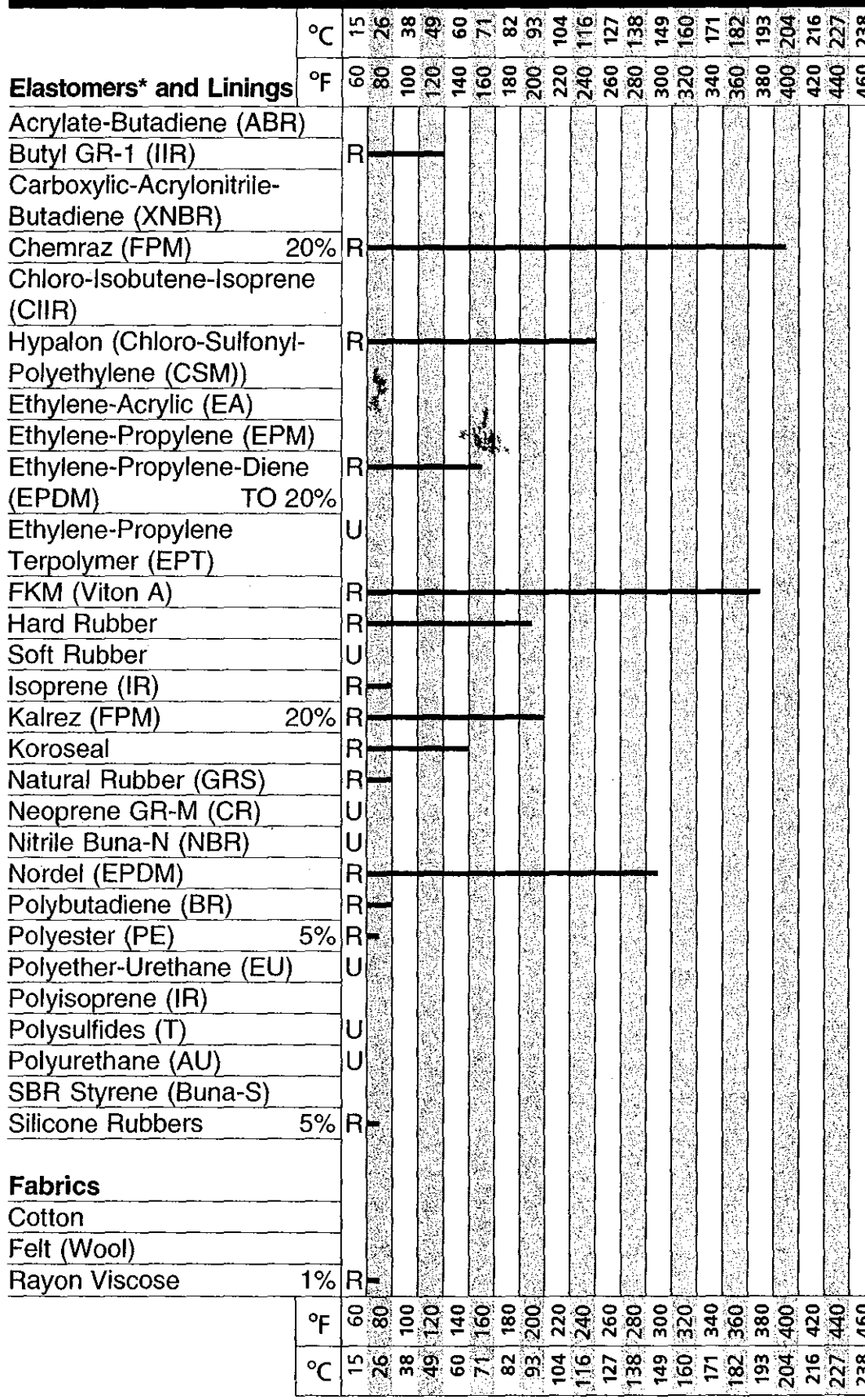
SODIUM HYPOCHLORITE 20%



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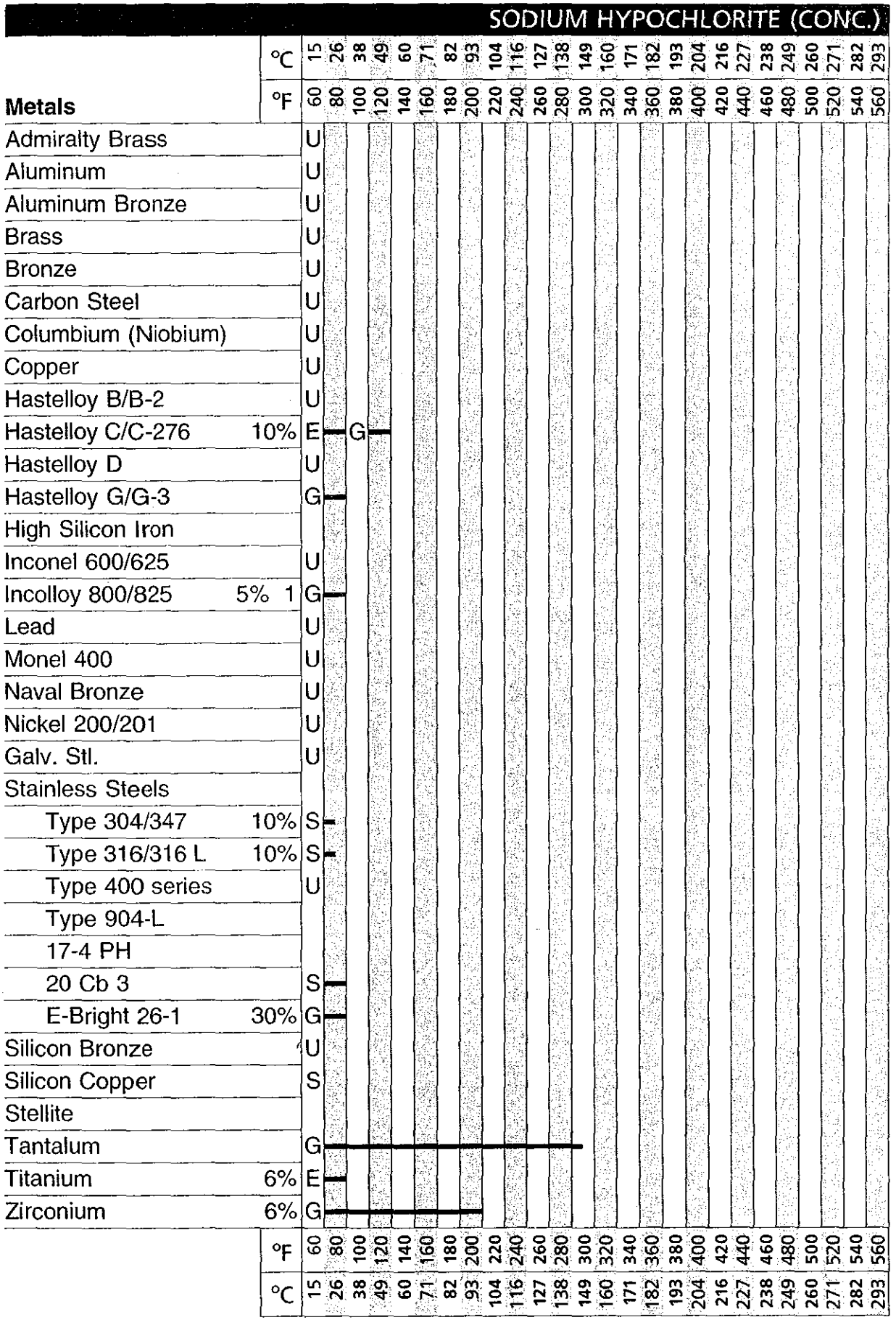

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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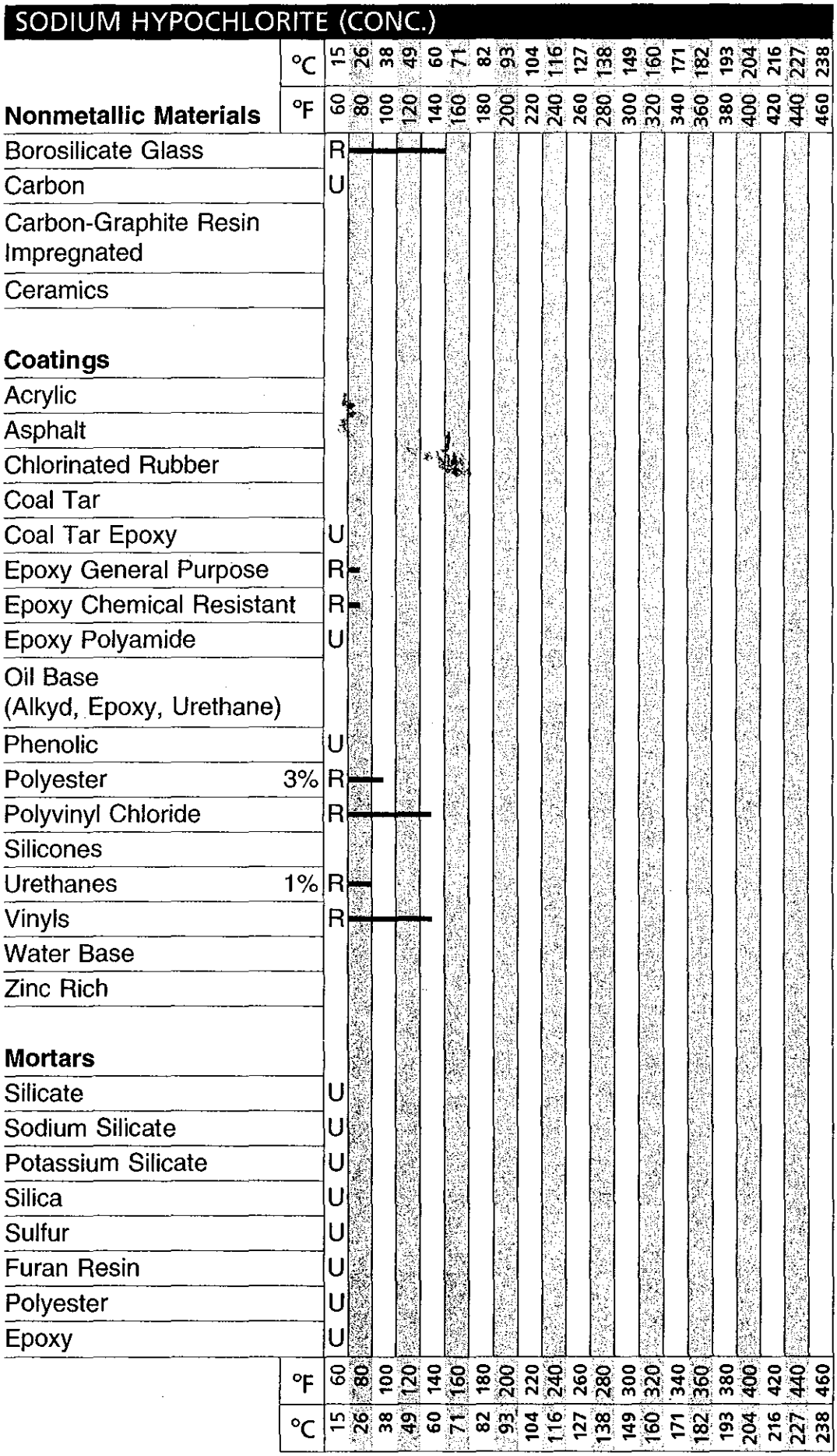
SODIUM HYPOCHLORITE (CONC.)



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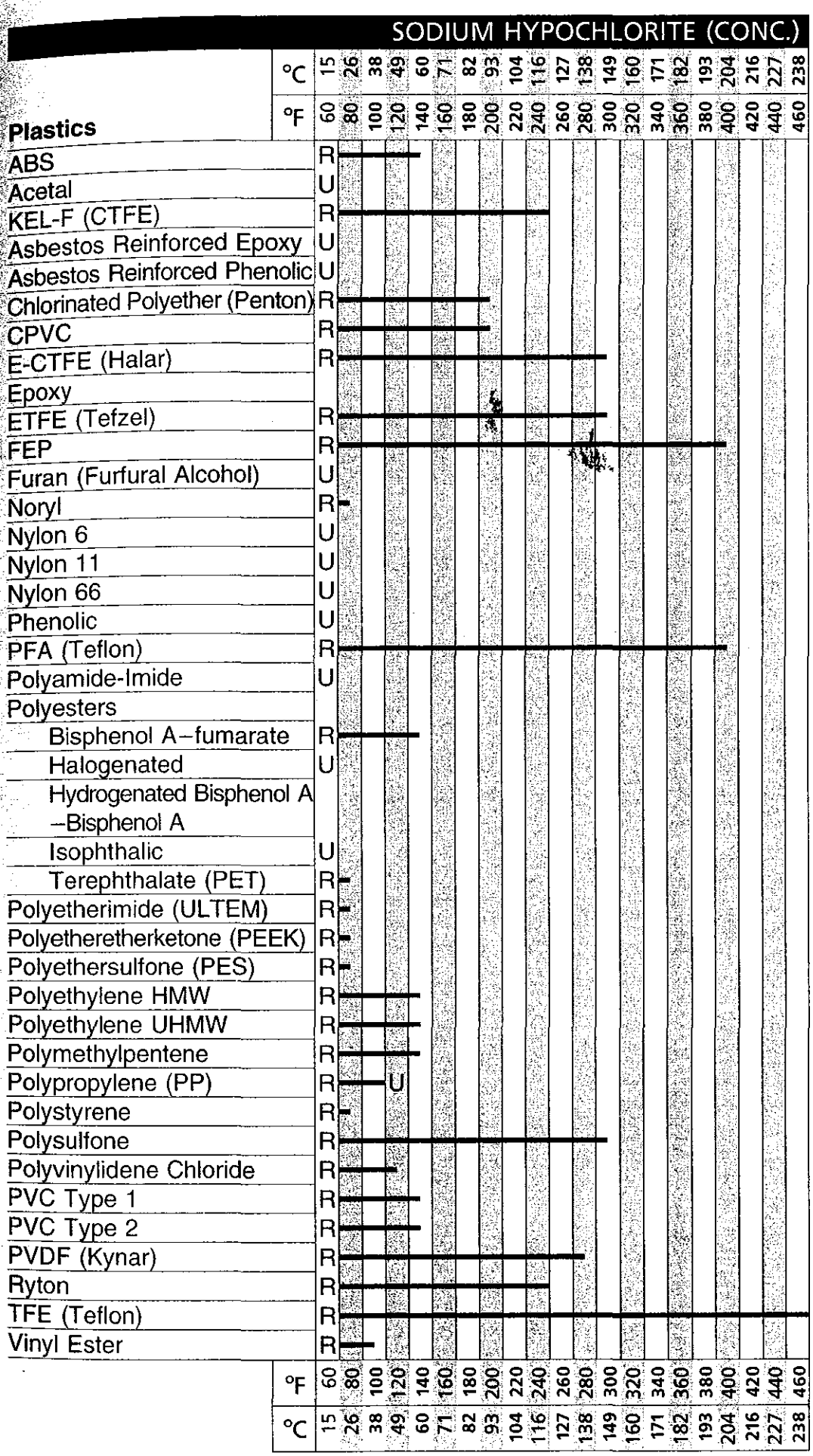

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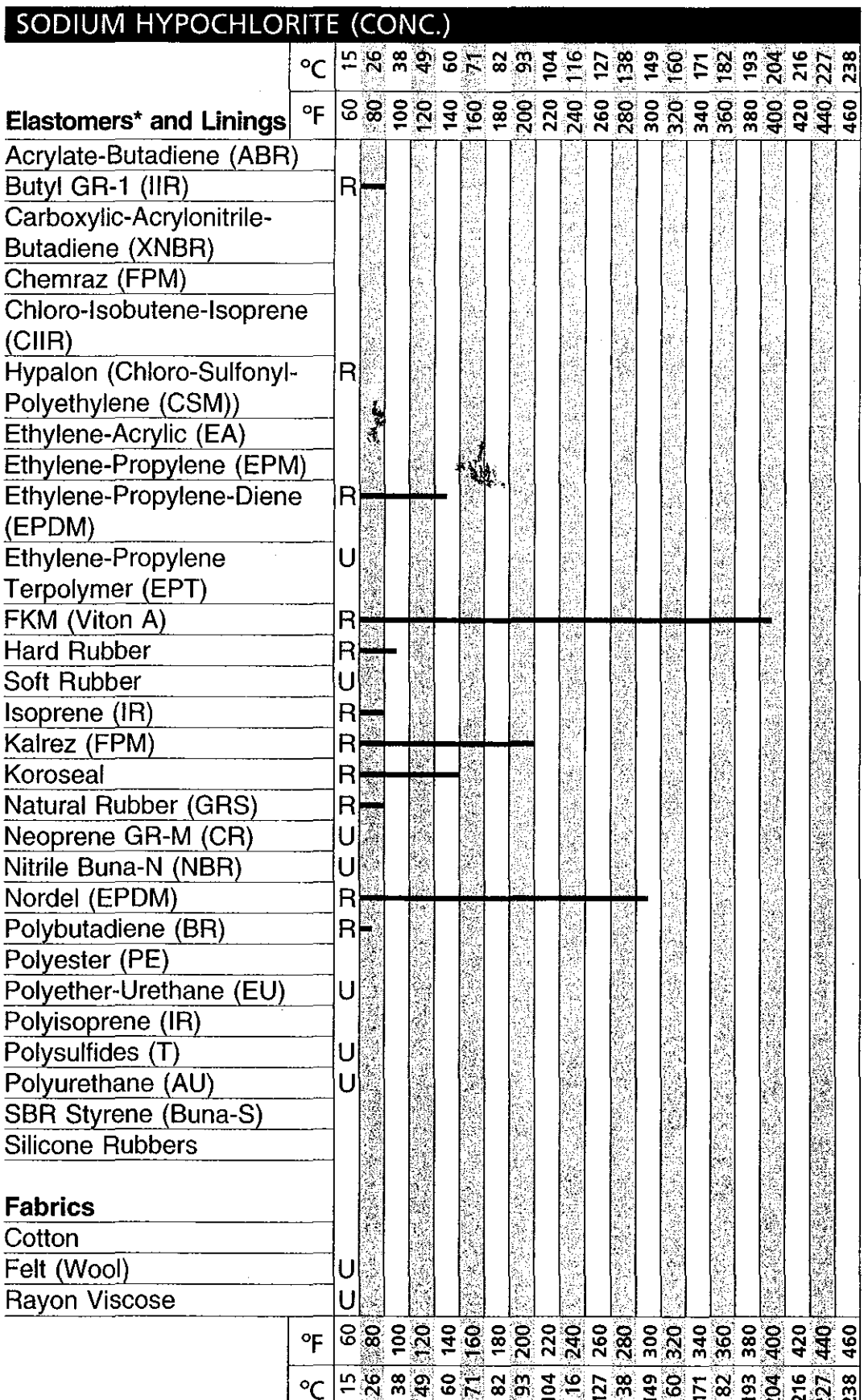
SODIUM HYPOCHLORITE (CONC.)



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SODIUM HYPOSULFITE 5%

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper	G																										
Hastelloy B/B-2	E																										
Hastelloy C/C-276	E																										
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625	E	G																									
Incolloy 800/825	G																										
Lead																											
Monel 400	E	G																									
Naval Bronze																											
Nickel 200/201	E	G																									
Ni-Resist																											
Stainless Steels																											
Type 304/347	U																										
Type 316/316 L	U																										
Type 400 series	G																										
Type 904-L																											
17-4 PH																											
20 Cb 3	E																										
E-Bright 26-1																											
Silicon Bronze	G																										
Silicon Copper																											
Stellite																											
Tantalum	E																										
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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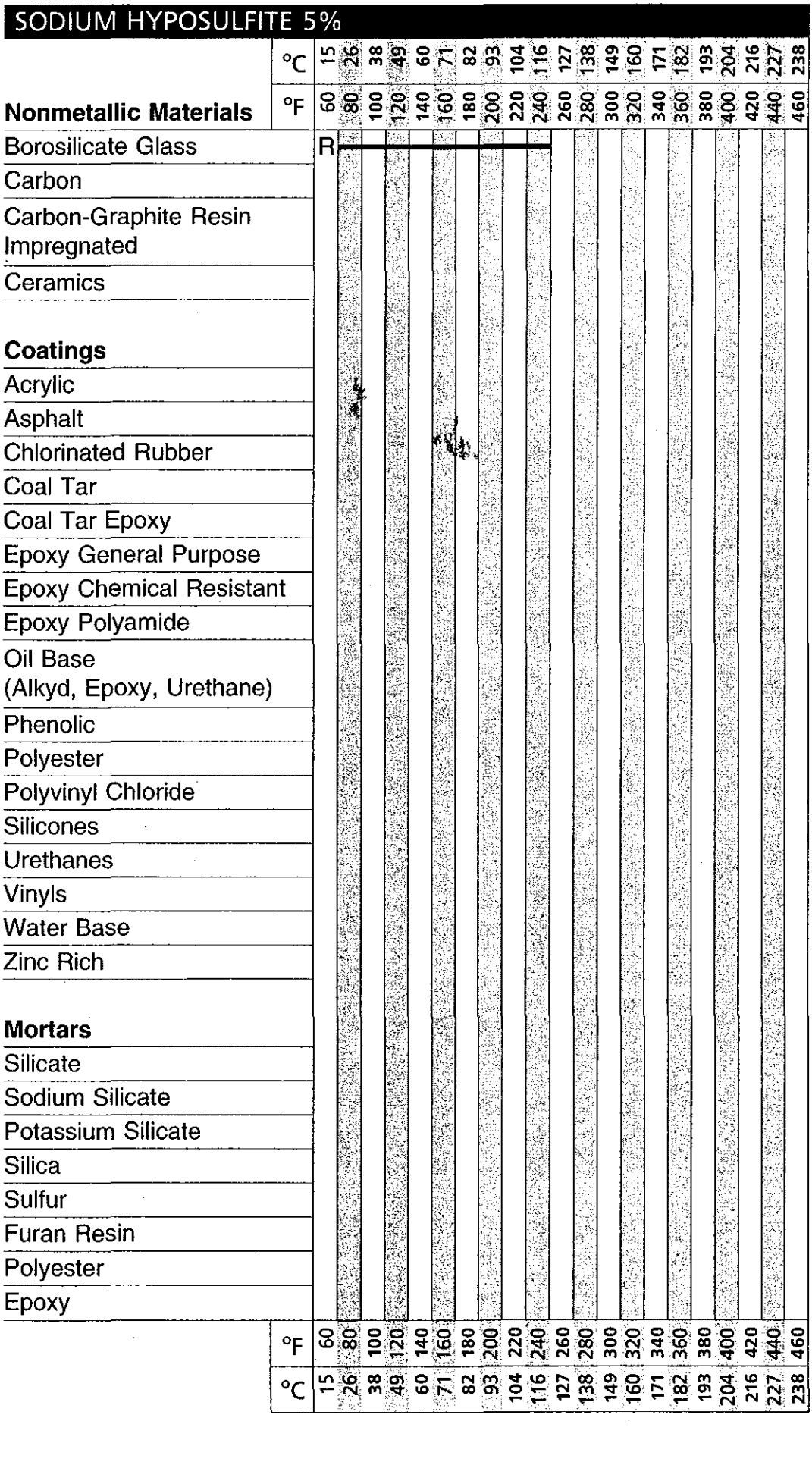
SODIUM HYPOSULFITE 5%



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SODIUM HYPOSULFITE 5%

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A--fumarate TO 20%	R	
Halogenated TO 20%	R	
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic 20%	R	
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	R	
Polyethylene UHMW	R	
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1	R	
PVC Type 2		
PVDF (Kynar)	R	
Ryton		
TFE (Teflon)	R	
Vinyl Ester 20%	R	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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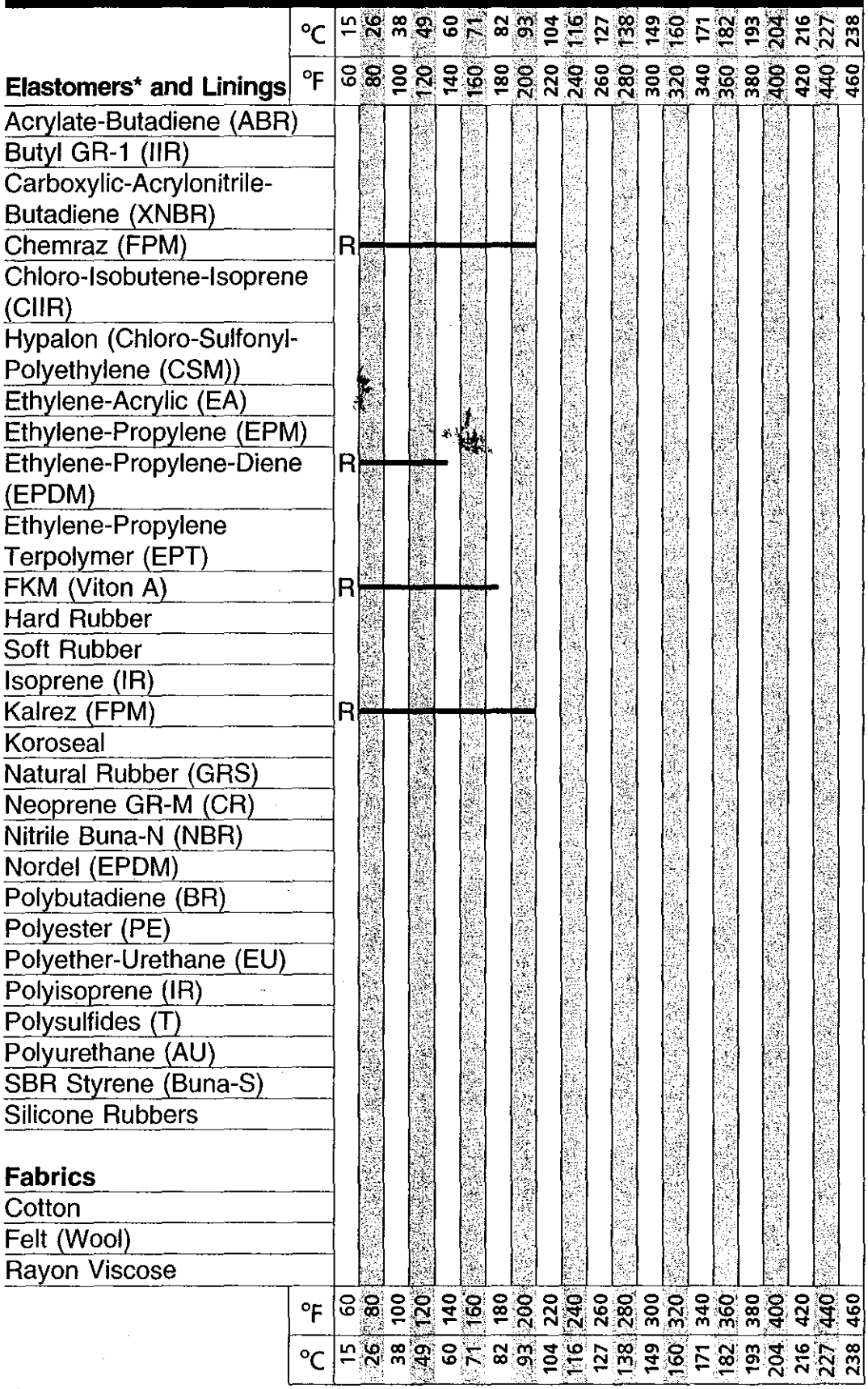
SODIUM HYPOSULFITE 5%



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SODIUM IODIDE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel		G																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum		G																									
Titanium																											
Zirconium TO 60%		E																									
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SODIUM IODIDE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon		R																				
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SODIUM IODIDE

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)	R	
CPVC		
E-CTFE (Halar)	R	
Epoxy		
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic	R	
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone		
Polyvinylidene Chloride	R	
PVC Type 1		
PVC Type 2		
PVDF (Kynar)	R	
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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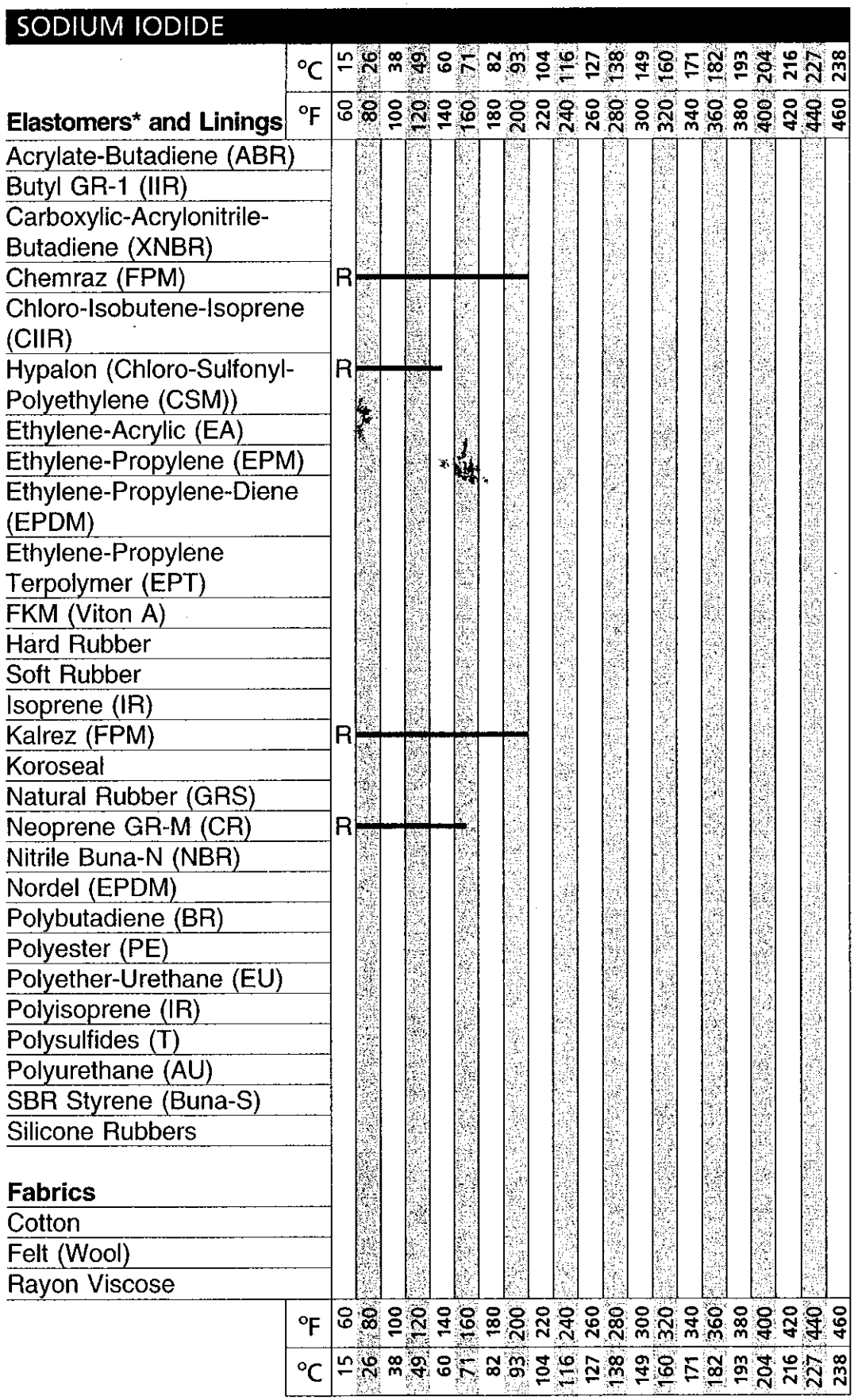
SODIUM IODIDE



*See also Nylon 11 under PLASTICS

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Metals	°C	°F
Admiralty Brass		
Aluminum	U	
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel		
Columbium (Niobium)		
Copper	G	
Hastelloy B/B-2	G	
Hastelloy C/C-276	G	
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625		
Incolloy 800/825	G	
Lead		
Monel 400	G	
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347	G	
Type 316/316 L	G	
Type 400 series		
Type 904-L		
17-4 PH		
20 Cb 3	G	
E-Bright 26-1		
Silicon Bronze	G	
Silicon Copper		
Stellite		
Tantalum	E	
Titanium		
Zirconium		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SODIUM LACTATE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SODIUM LACTATE

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1		
PVC Type 2		
PVDF (Kynar)		
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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SODIUM LACTATE

Elastomers* and Linings	°C	°F
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)	R	
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)		
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)		
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)	R	
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)		
Nitrile Buna-N (NBR)		
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

*See also Nylon 11 under PLASTICS

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SODIUM METAPHOSPHATE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		U																									
Aluminum Bronze		U																									
Brass		S																									
Bronze		G																									
Carbon Steel		U																									
Columbium (Niobium)																											
Copper		G																									
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron		G																									
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400		G																									
Naval Bronze		S																									
Nickel 200/201		G																									
Ni-Resist																											
Stainless Steels																											
Type 304/347		G																									
Type 316/316 L		G																									
Type 400 series		G																									
Type 904-L																											
17-4 PH																											
20 Cb 3		G																									
E-Bright 26-1																											
Silicon Bronze		U																									
Silicon Copper		G																									
Stellite																											
Tantalum		G																									
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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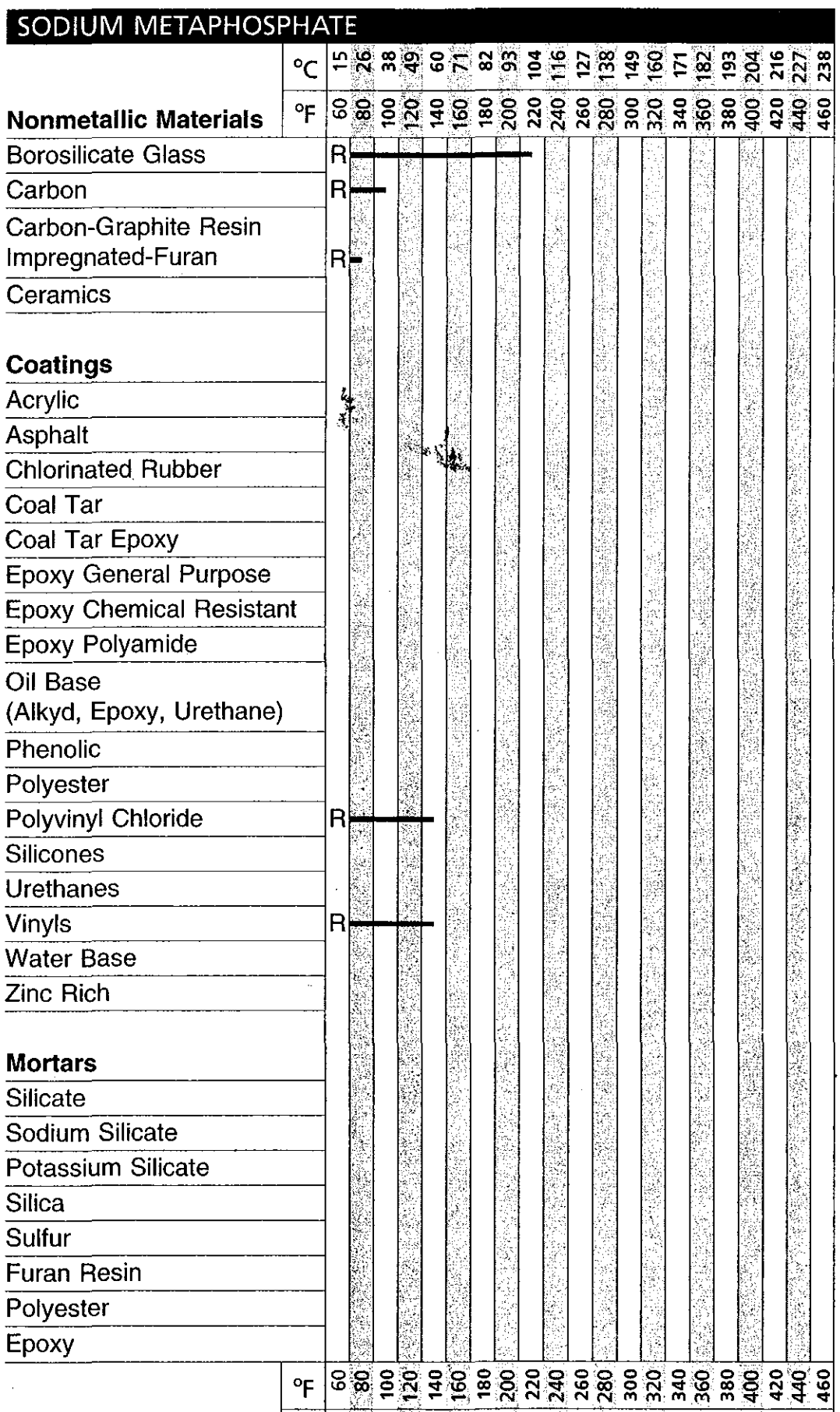

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SODIUM METAPHOSPHATE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC	R																					
E-CTFE (Halar)	R																					
Epoxy																						
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)	R																					
Noryl																						
Nylon 6	R																					
Nylon 11	R																					
Nylon 66	R																					
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic	R																					
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW	R																					
Polyethylene UHMW	R																					
Polymethylpentene																						
Polypropylene (PP)	R																					
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1	R																					
PVC Type 2																						
PVDF (Kynar)	R																					
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester	R																					
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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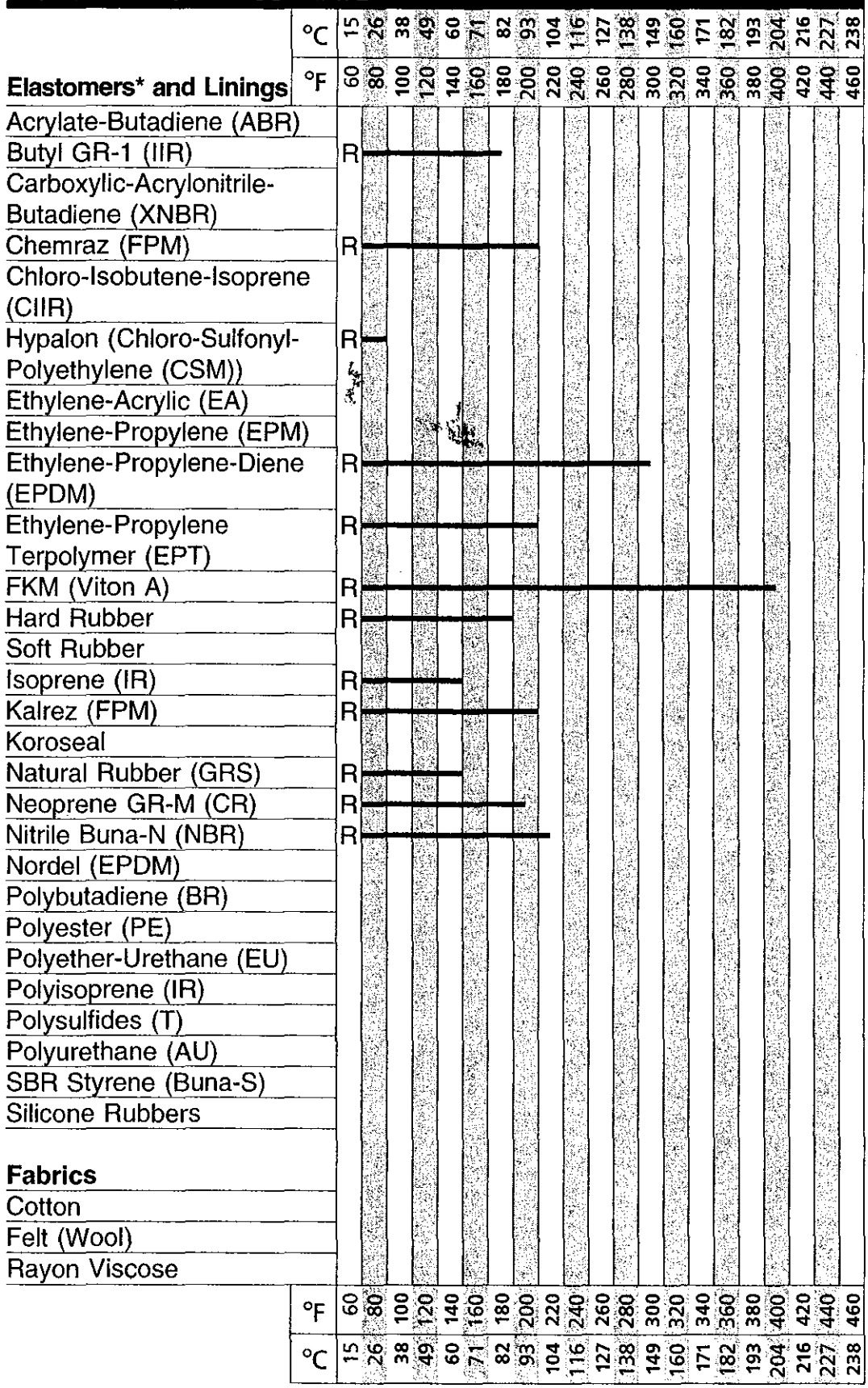

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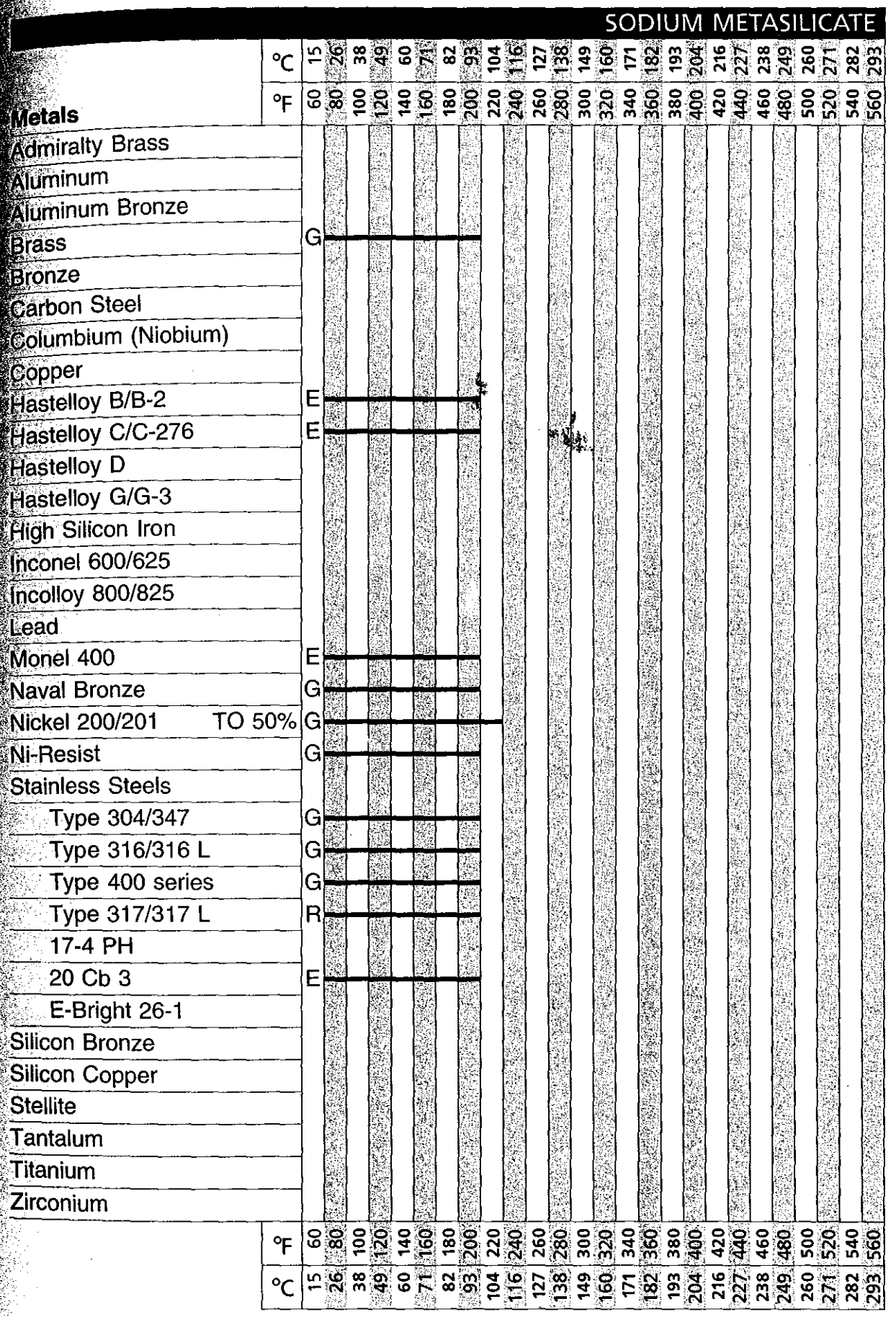
SODIUM METASILICATE



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SODIUM METASILICATE

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Nonmetallic Materials																						
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride	R																					
Silicones																						
Urethanes																						
Vinyls	R																					
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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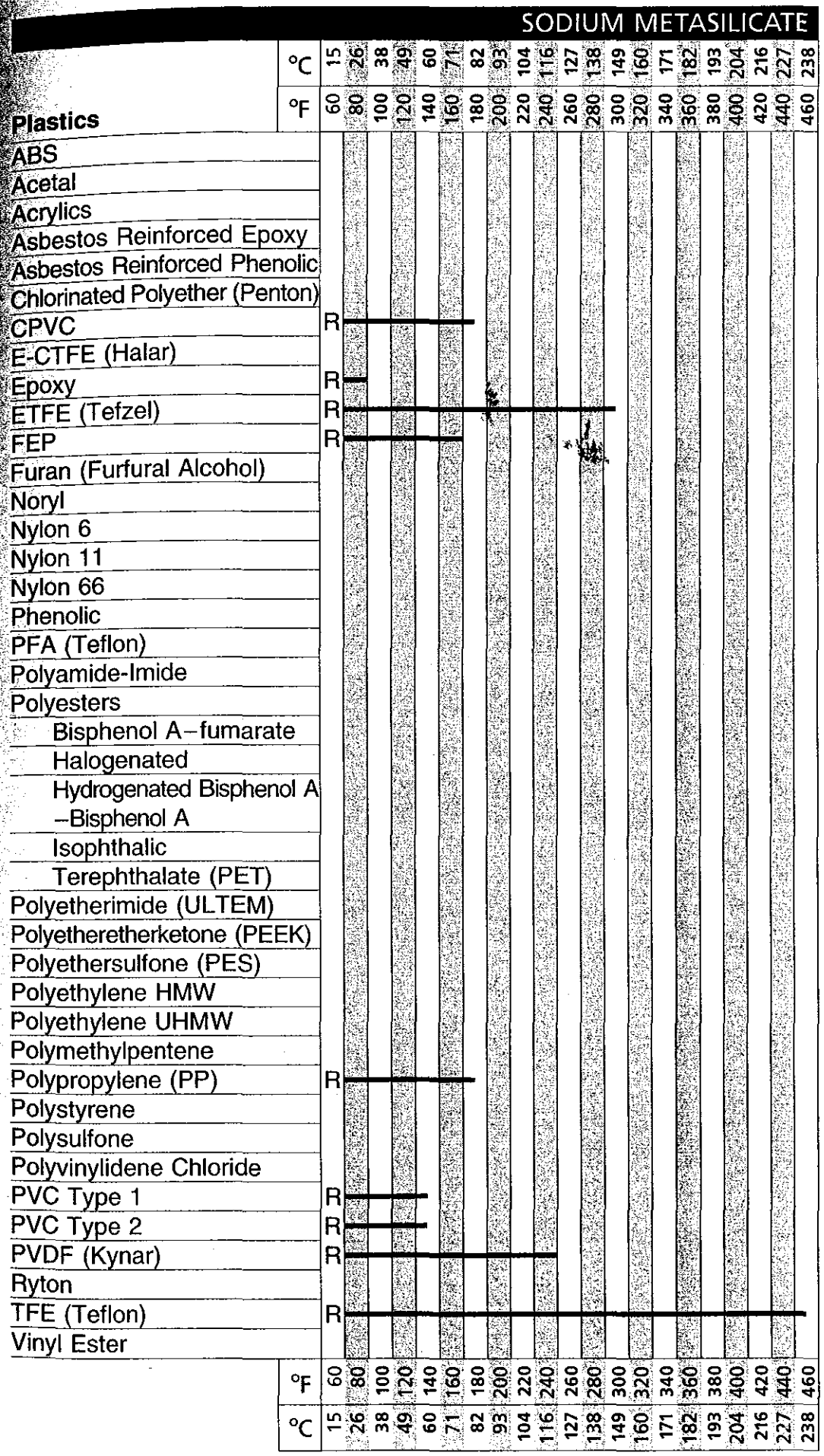

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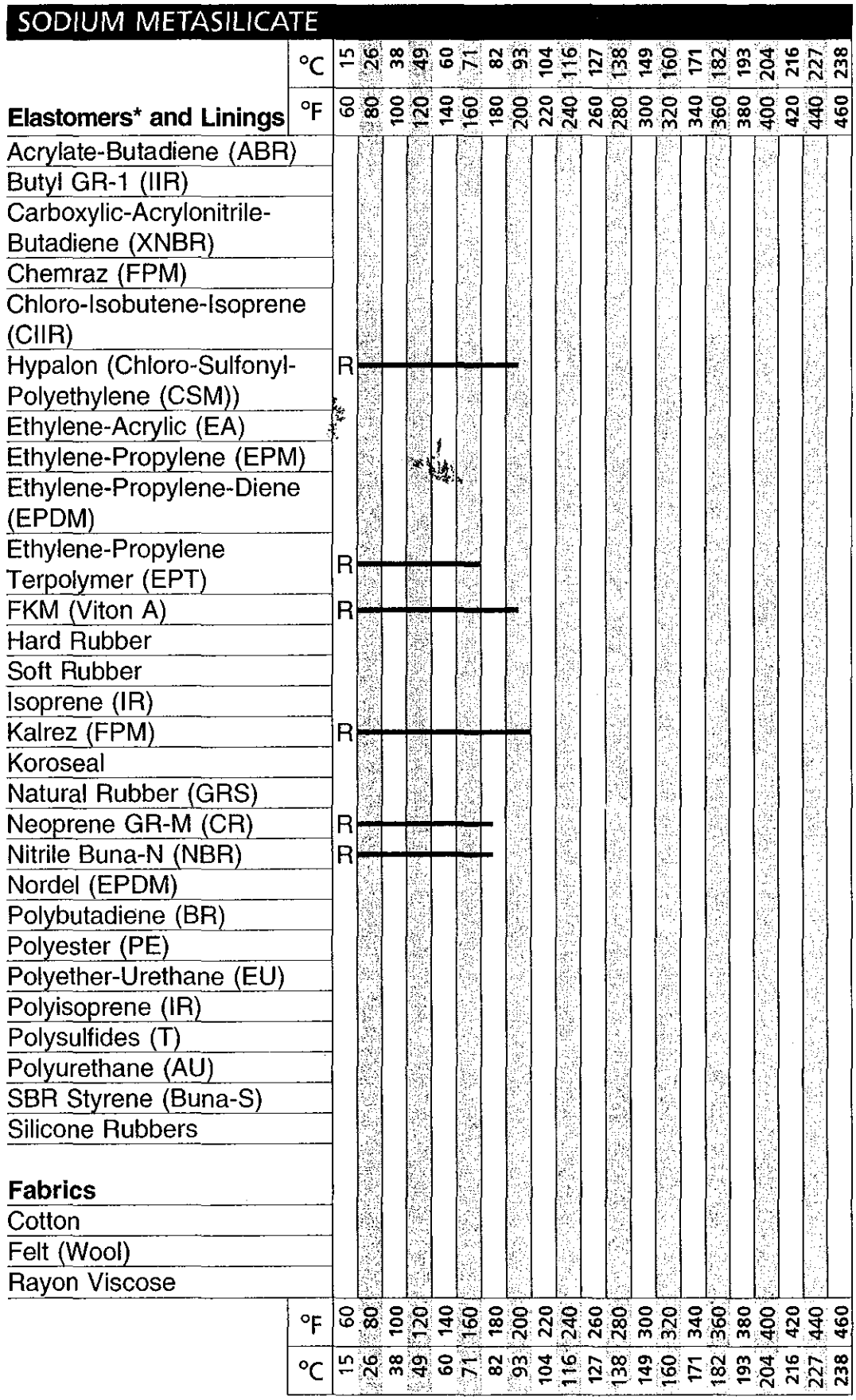
SODIUM METASILICATE



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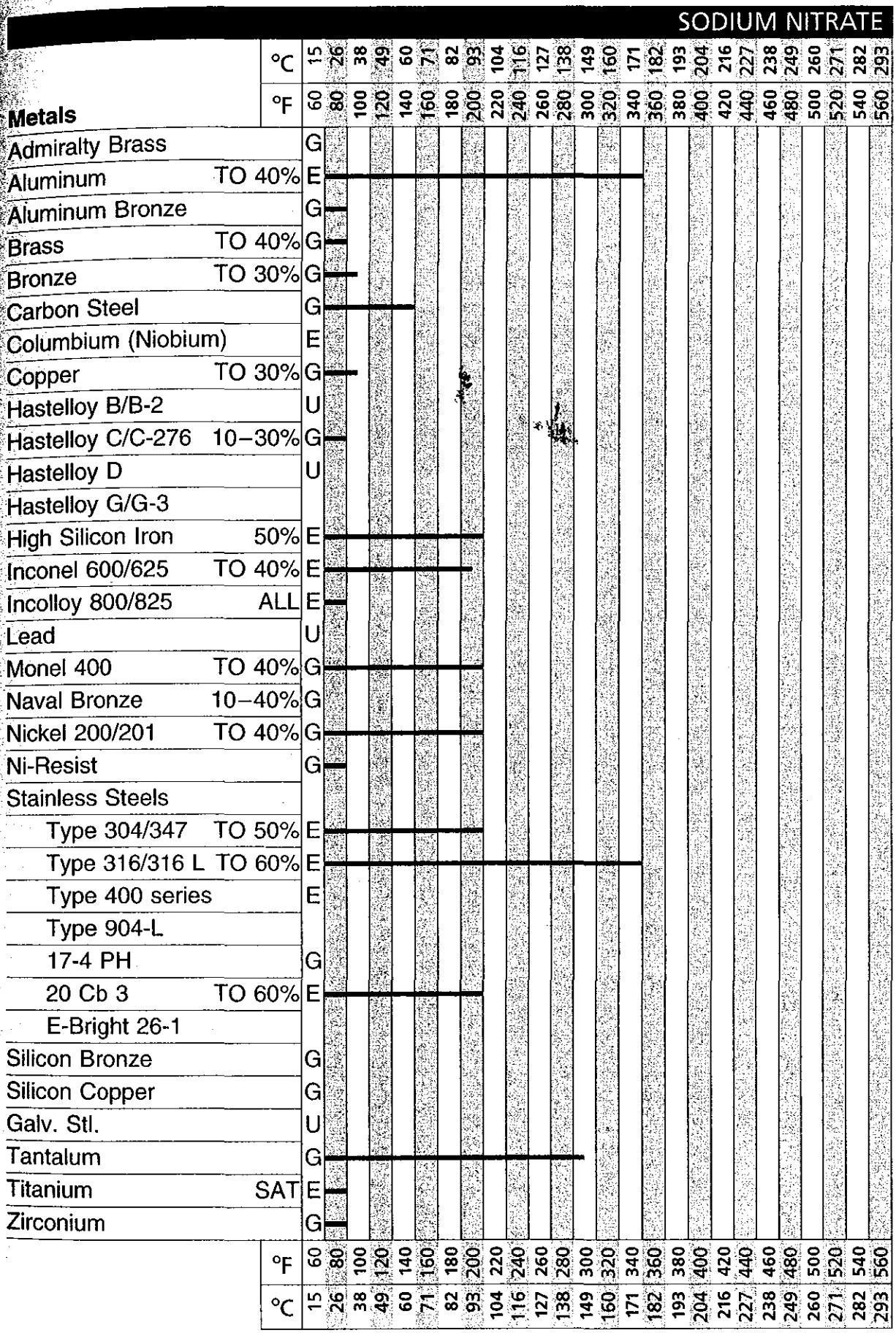

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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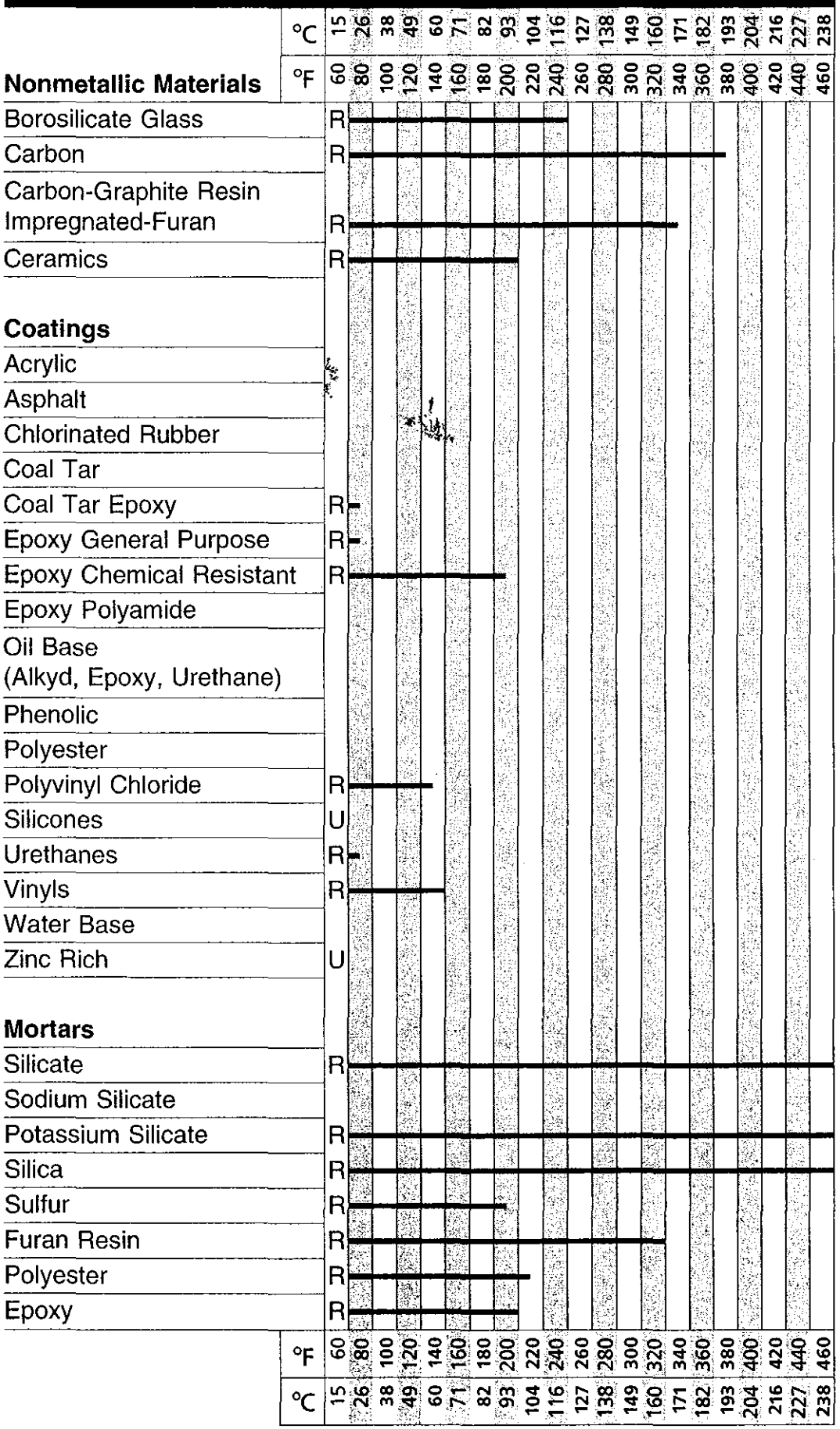

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SODIUM NITRATE

Plastics	°C	°F
ABS	R	
Acetal 50%	R	
Acrylics	R	
Asbestos Reinforced Epoxy	R	
Asbestos Reinforced Phenolic	R	
Chlorinated Polyether (Penton)	R	
CPVC	R	
E-CTFE (Halar)	R	
Epoxy	R	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)	R	
Noryl	R	
Nylon 6	R	
Nylon 11	R	
Nylon 66	R	
Phenolic	R	
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate	R	
Halogenated ALL	R	
Hydrogenated Bisphenol A –Bisphenol A	R	
Isophthalic	R	
Terephthalate (PET)	R	
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	R	
Polyethylene UHMW	R	
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene	R	
Polysulfone	R	
Polyvinylidene Chloride	R	
PVC Type 1	R	
PVC Type 2	R	
PVDF (Kynar)	R	
Ryton	R	
TFE (Teflon)	R	
Vinyl Ester	R	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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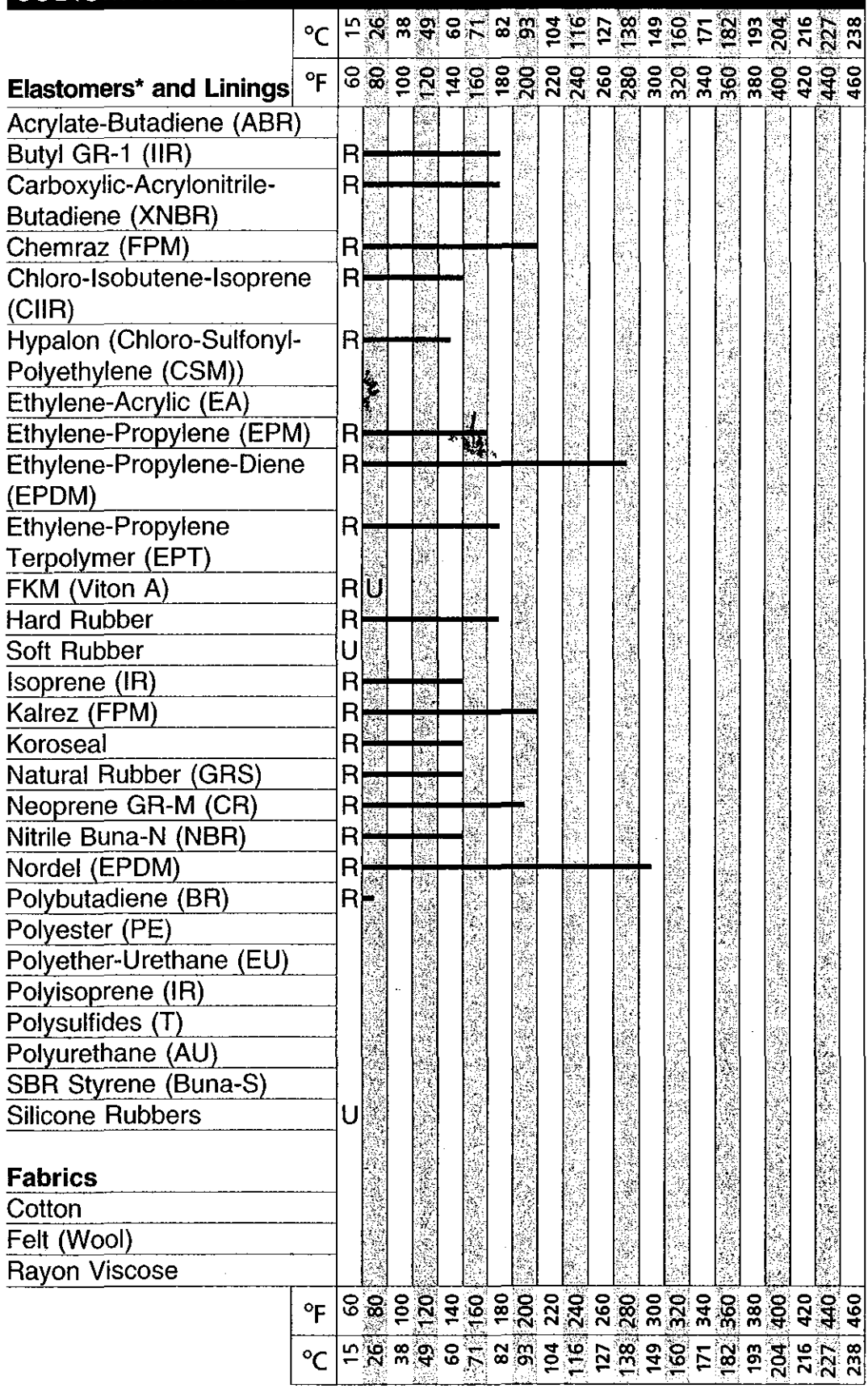
SODIUM NITRATE



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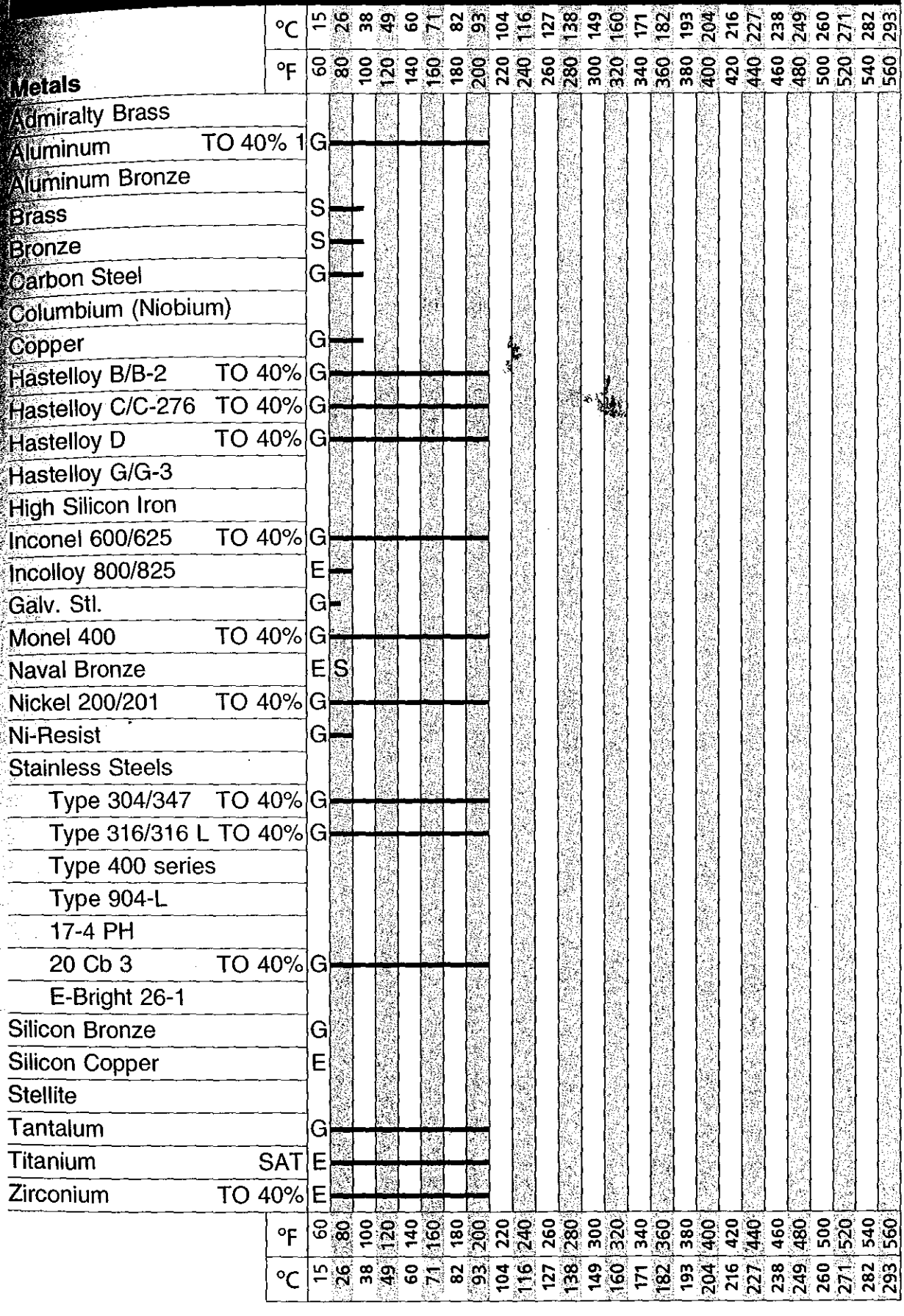

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

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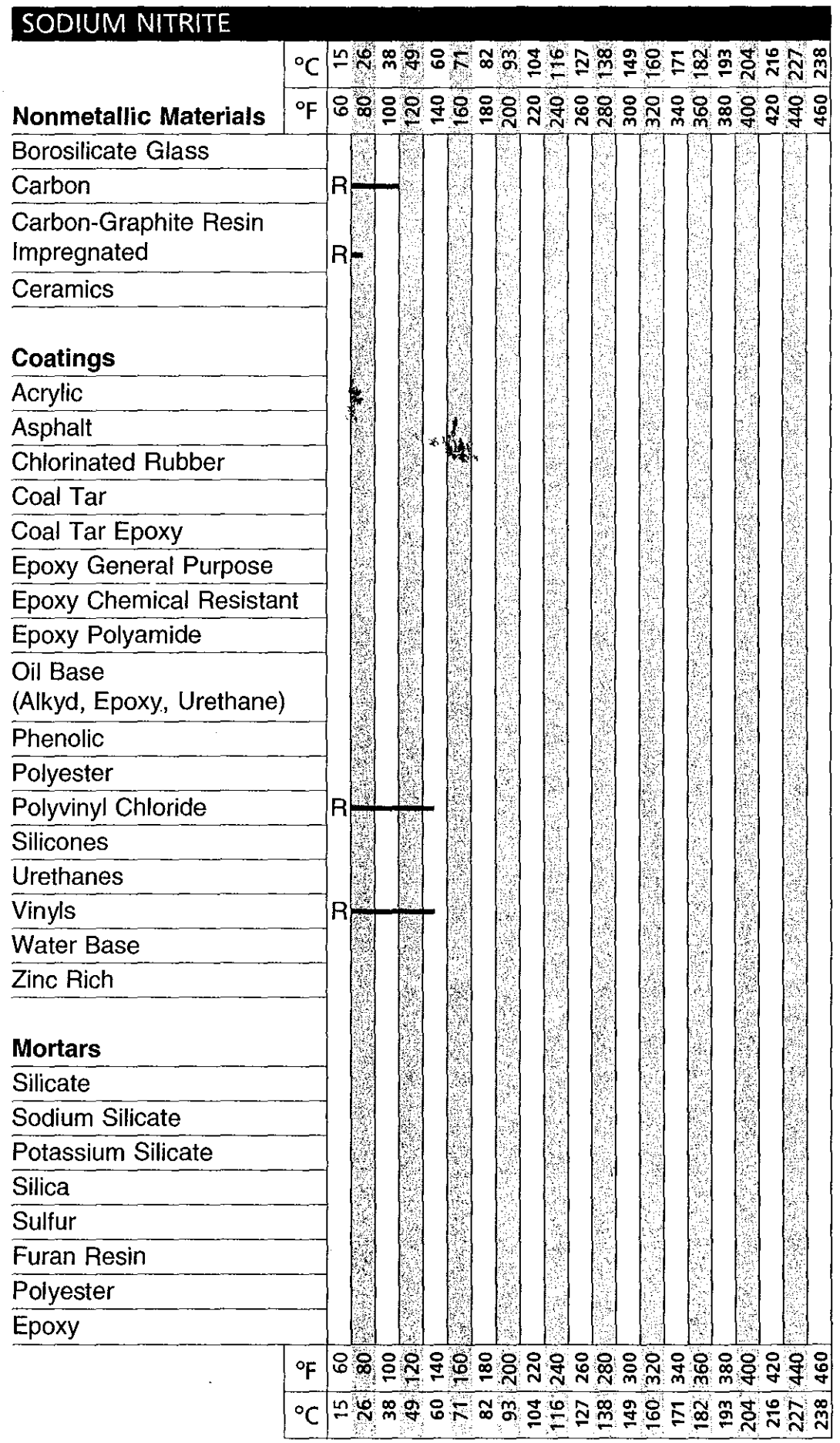
SODIUM NITRITE



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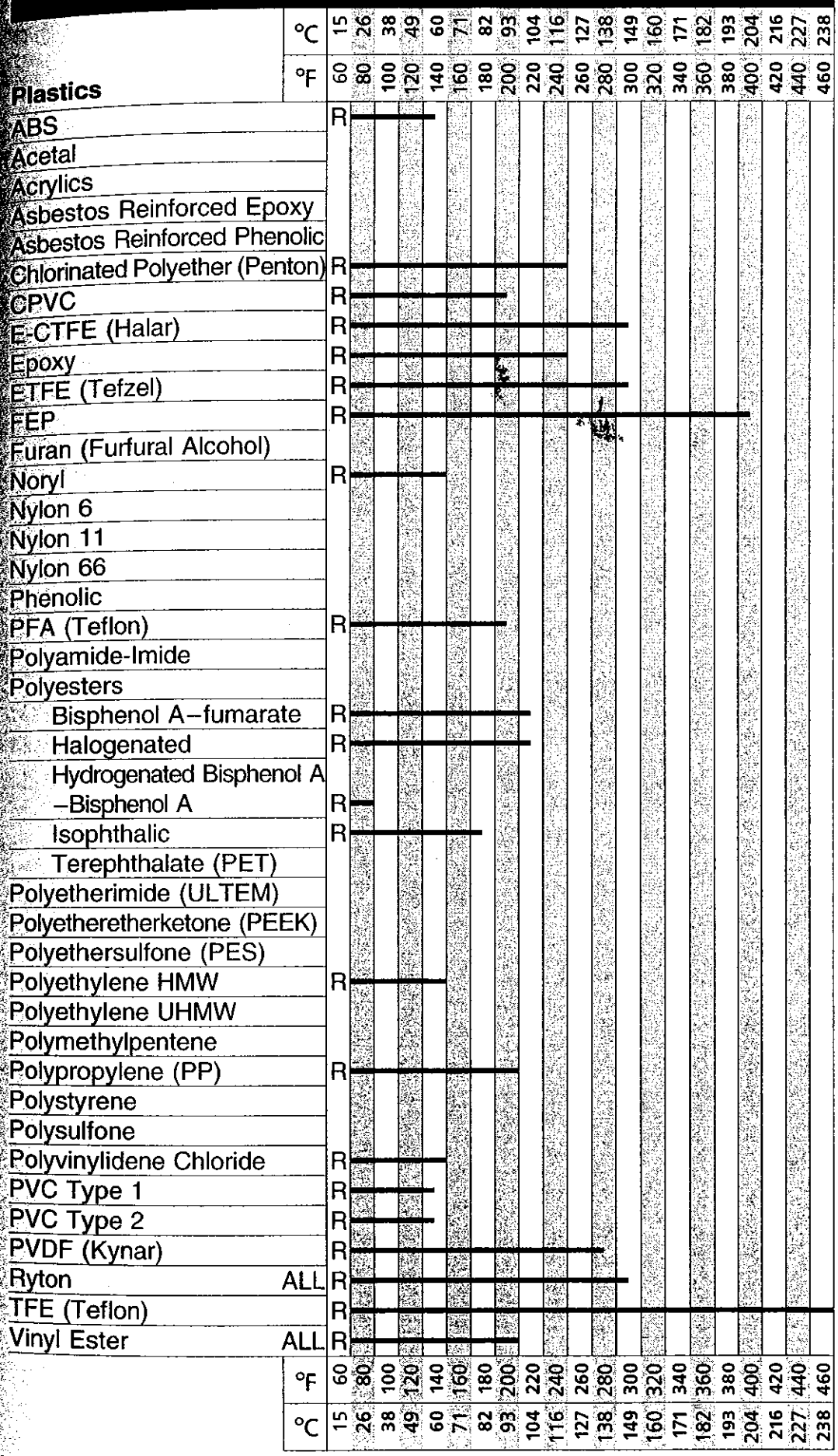
SODIUM NITRITE



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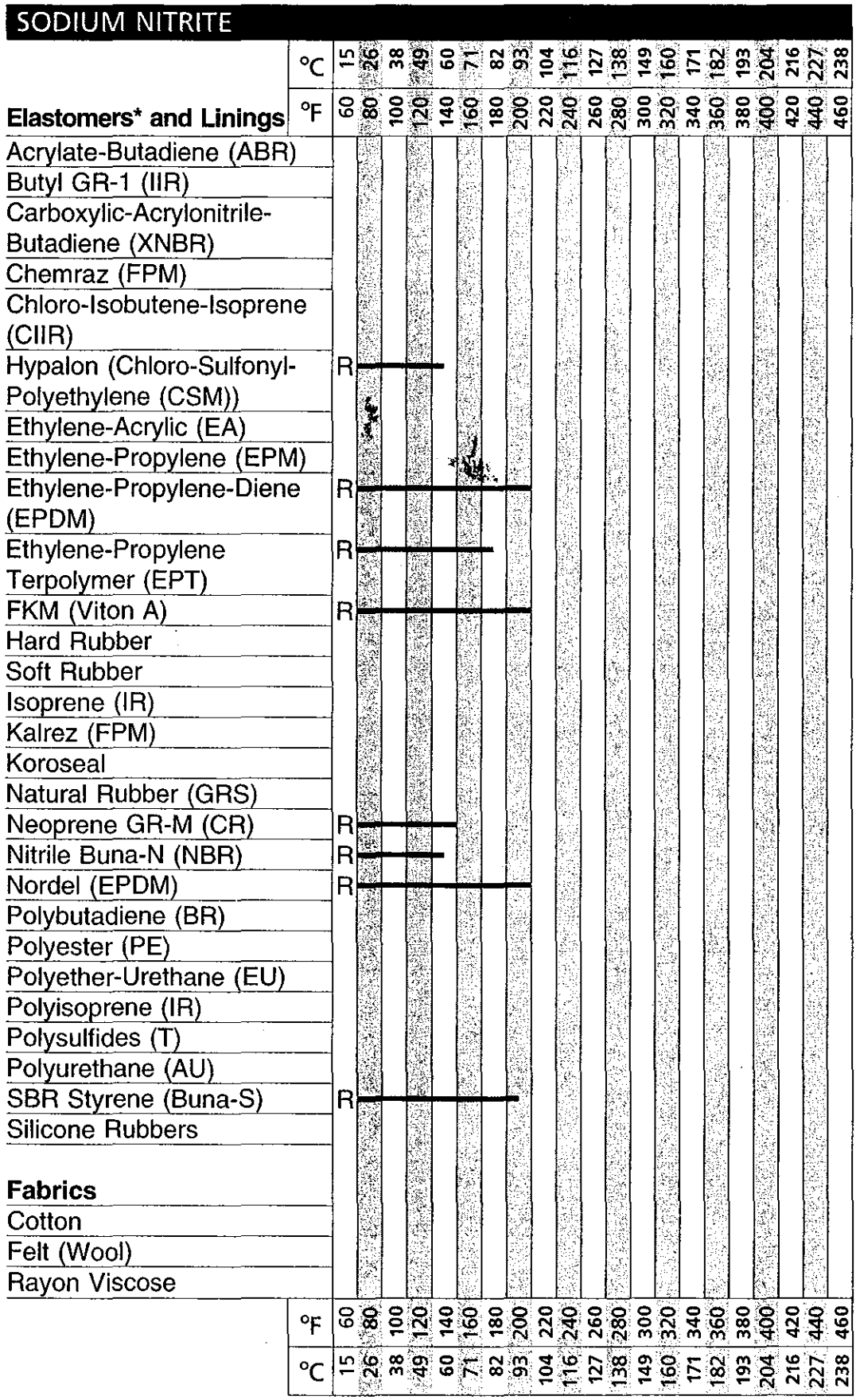
SODIUM NITRITE



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SODIUM PERBORATE 10%

Metals	°C	°F
Admiralty Brass		
Aluminum	G	
Aluminum Bronze	G	
Brass	S	
Bronze	G	
Carbon Steel	G	
Columbium (Niobium)		
Copper	G	
Hastelloy B/B-2	G	
Hastelloy C/C-276	G	
Hastelloy D	G	
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625	G	
Incolloy 800/825		
Lead	U	
Monel 400	G	
Naval Bronze	E	
Nickel 200/201	G	
Ni-Resist	G	
Stainless Steels		
Type 304/347	G	
Type 316/316 L	G	
Type 400 series	G	
Type 904-L		
17-4 PH	G	
20 Cb 3	G	
E-Bright 26-1		
Silicon Bronze	U	
Silicon Copper	G	
Galv. Stl.	G	
Tantalum		
Titanium		
Zirconium		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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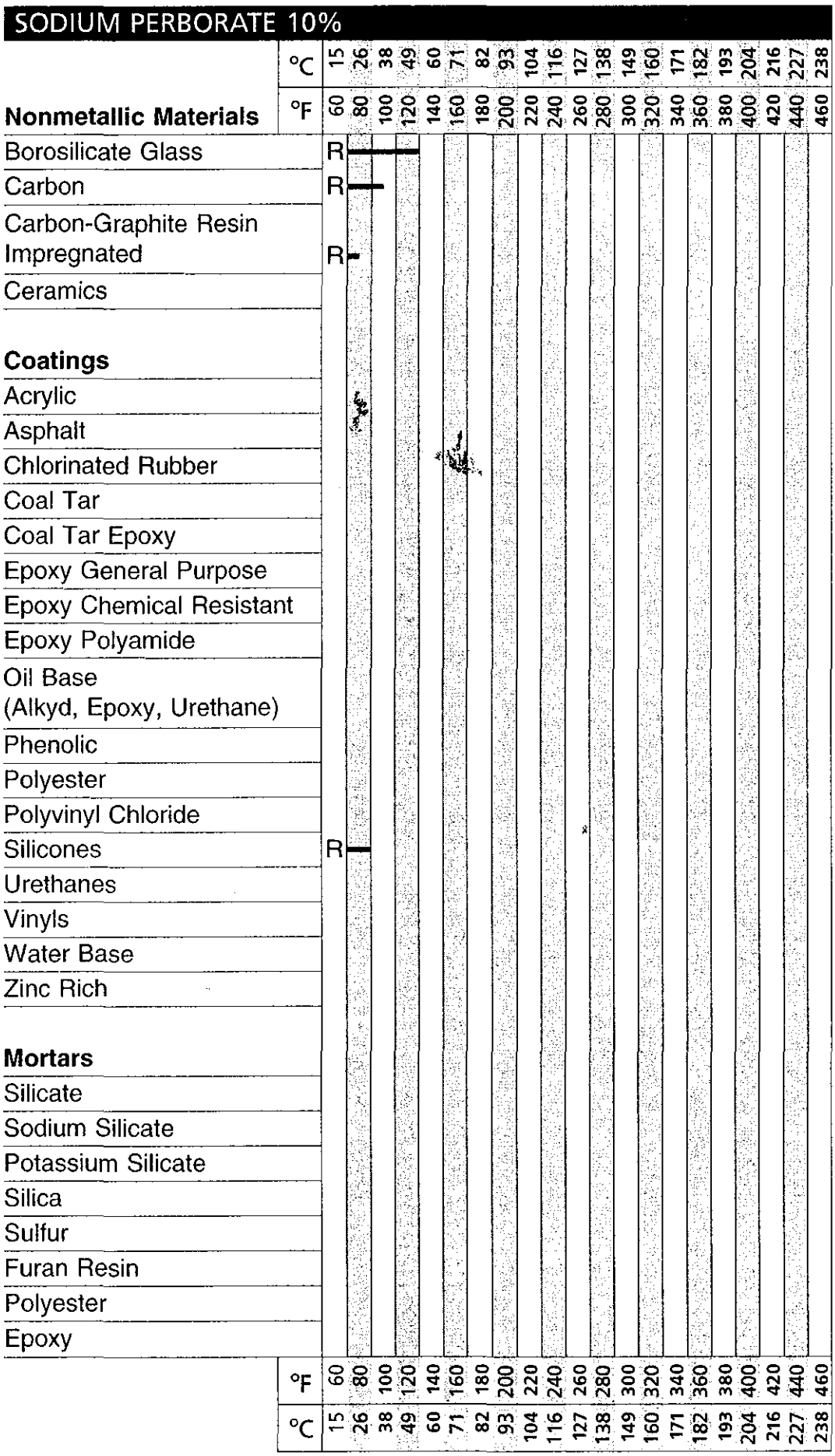
SODIUM PERBORATE 10%



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SODIUM PERBORATE 10%

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)	R	
CPVC	R	
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6	R	
Nylon 11	R	
Nylon 66	R	
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	R	
Polyethylene UHMW	R	
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1	R	
PVC Type 2		
PVDF (Kynar)	R	
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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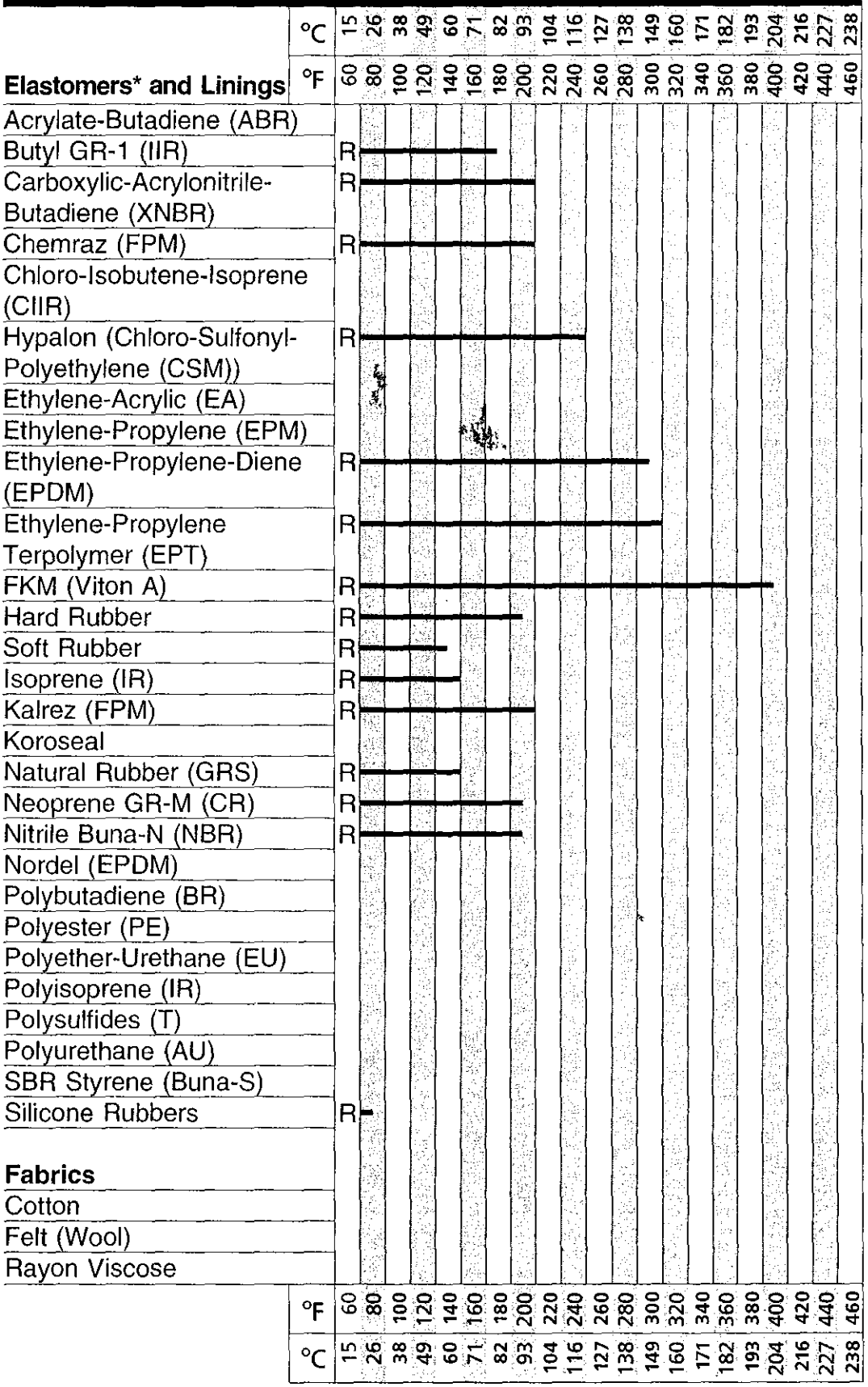
SODIUM PERBORATE 10%



*See also Nylon 11 under PLASTICS

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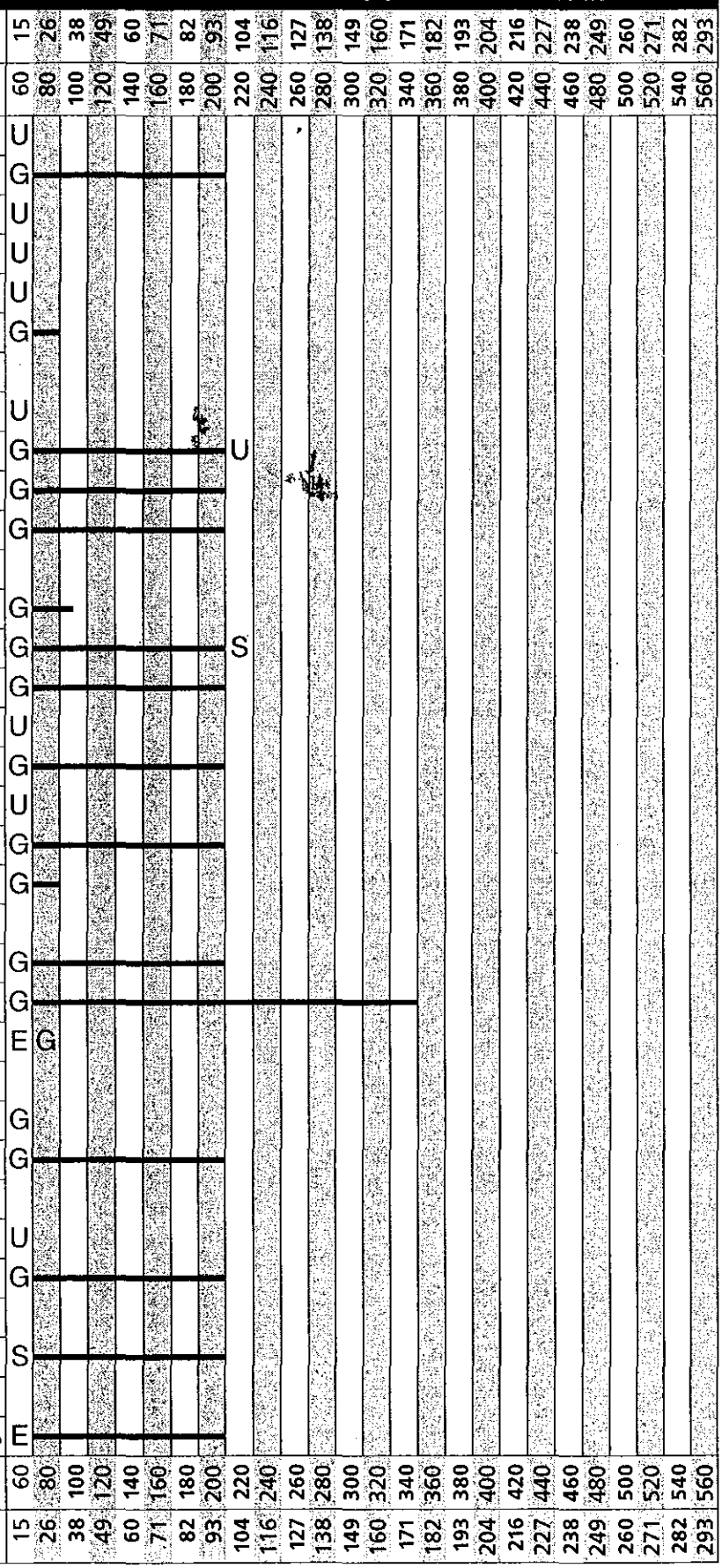
SODIUM PEROXIDE 10%

Metals	
Admiralty Brass	U
Aluminum	G
Aluminum Bronze	U
Brass	U
Bronze	U
Carbon Steel	G
Columbium (Niobium)	
Copper	U
Hastelloy B/B-2	G
Hastelloy C/C-276	G
Hastelloy D	G
Hastelloy G/G-3	
High Silicon Iron	G
Inconel 600/625	G
Incolloy 800/825	G
Lead	U
Monel 400	G
Naval Bronze	U
Nickel 200/201	G
Ni-Resist	G
Stainless Steels	
Type 304/347	G
Type 316/316 L	G
Type 400 series	E G
Type 904-L	
17-4 PH	G
20 Cb 3	G
E-Bright 26-1	
Silicon Bronze	U
Silicon Copper	G
Stellite	
Tantalum	S
Titanium	
Zirconium TO 100%	E



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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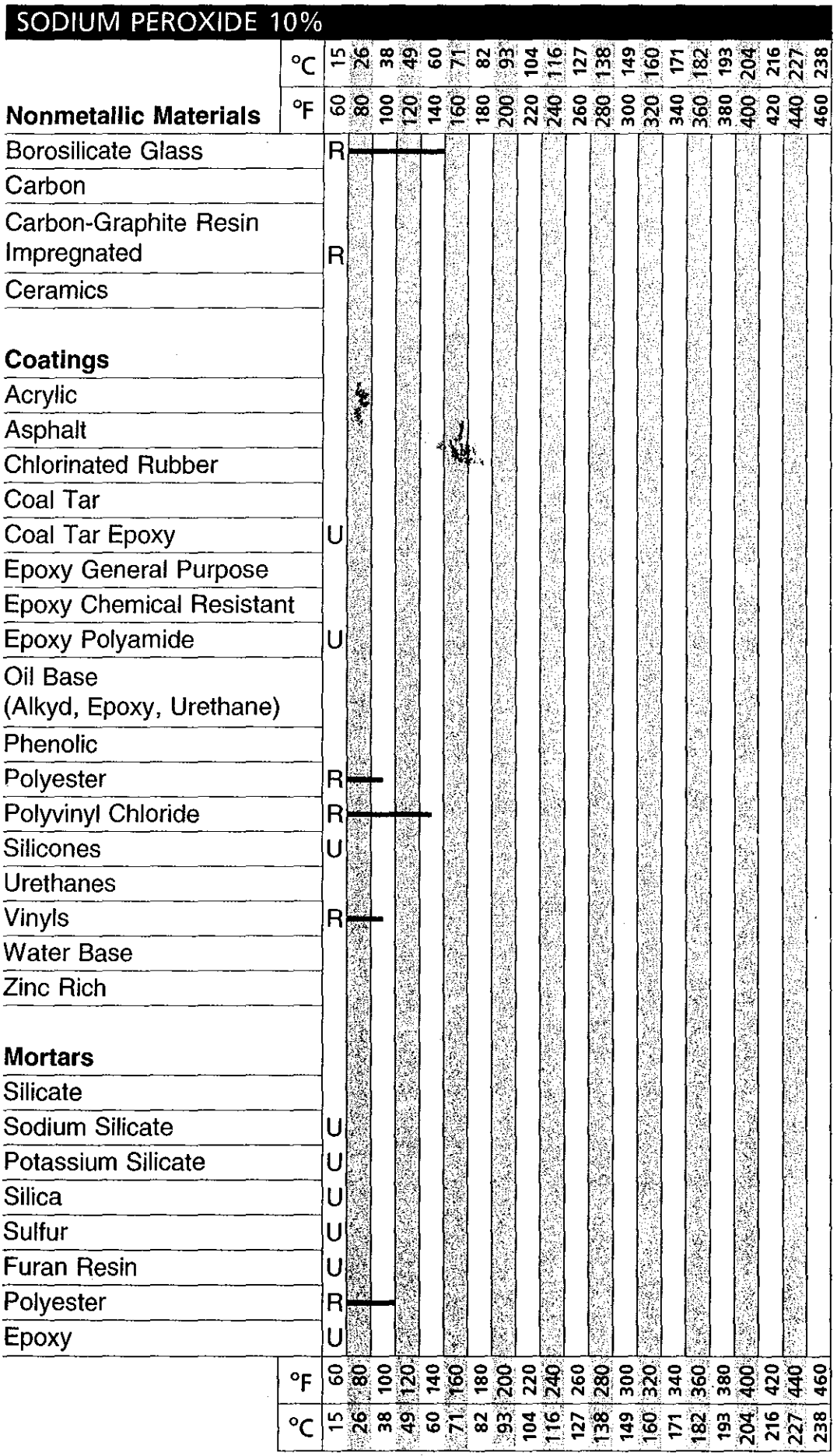
SODIUM PEROXIDE 10%



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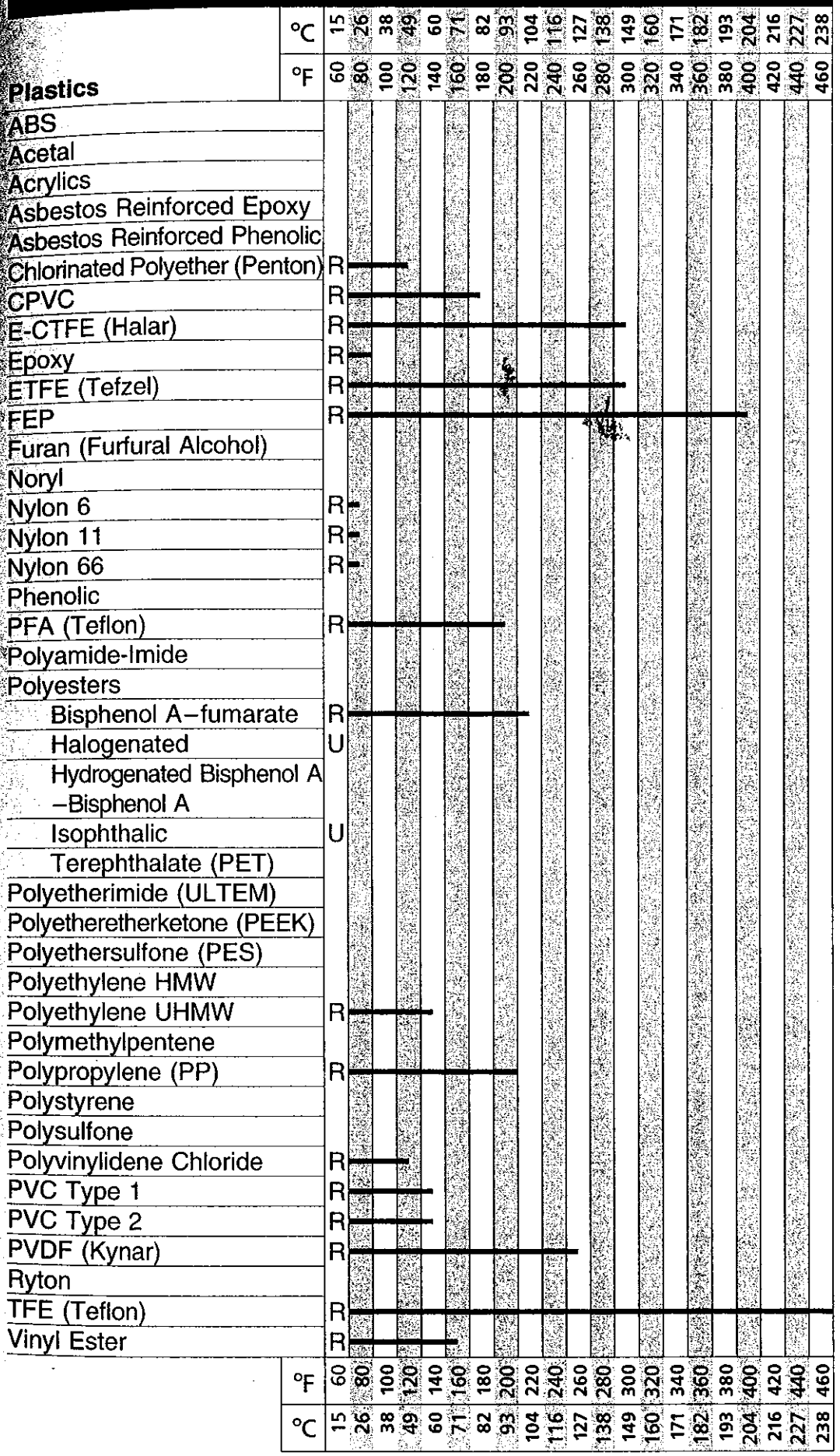
SODIUM PEROXIDE 10%



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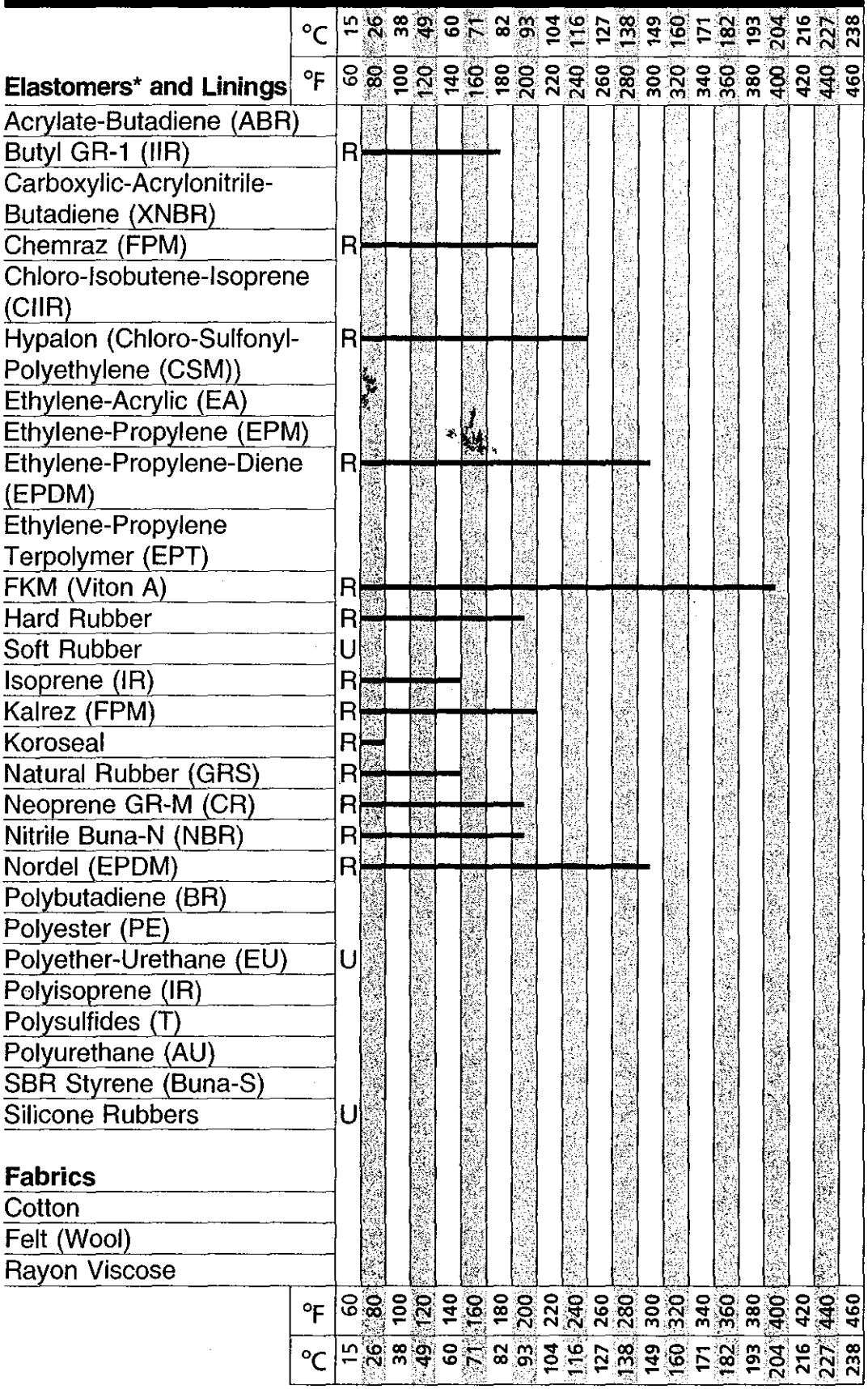
SODIUM PEROXIDE 10%



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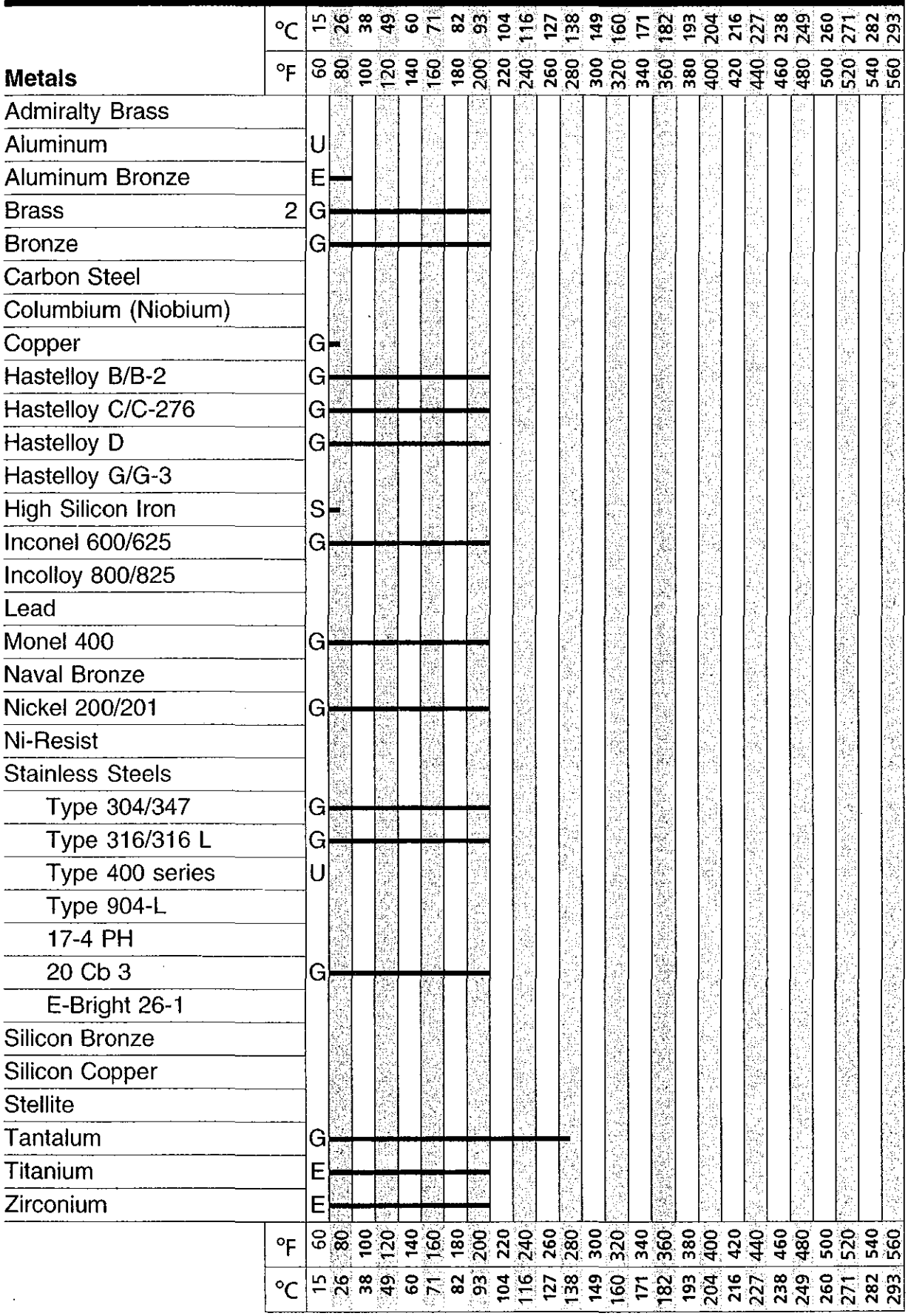
SODIUM PHOSPHATE ACID



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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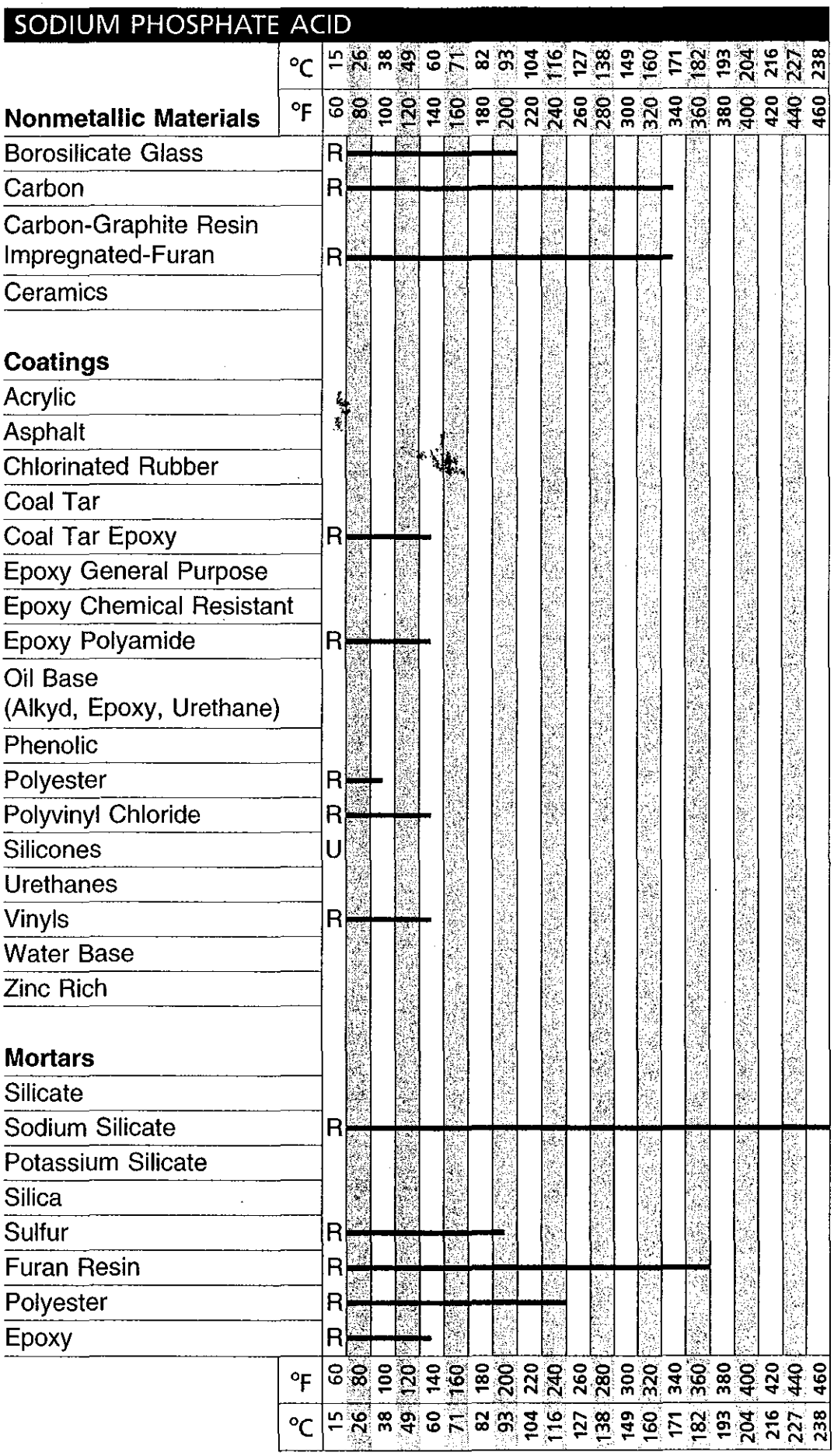

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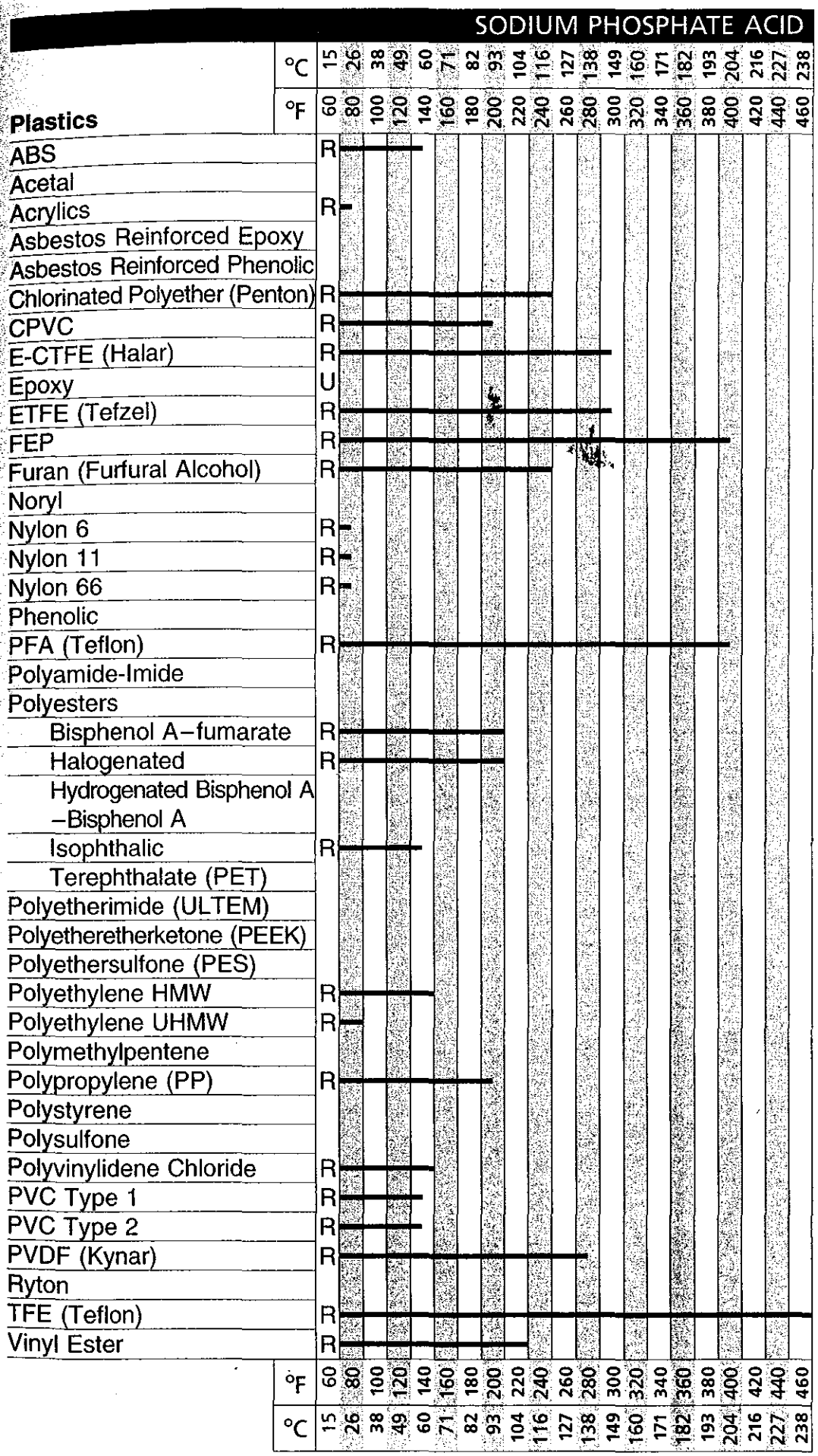
SODIUM PHOSPHATE ACID



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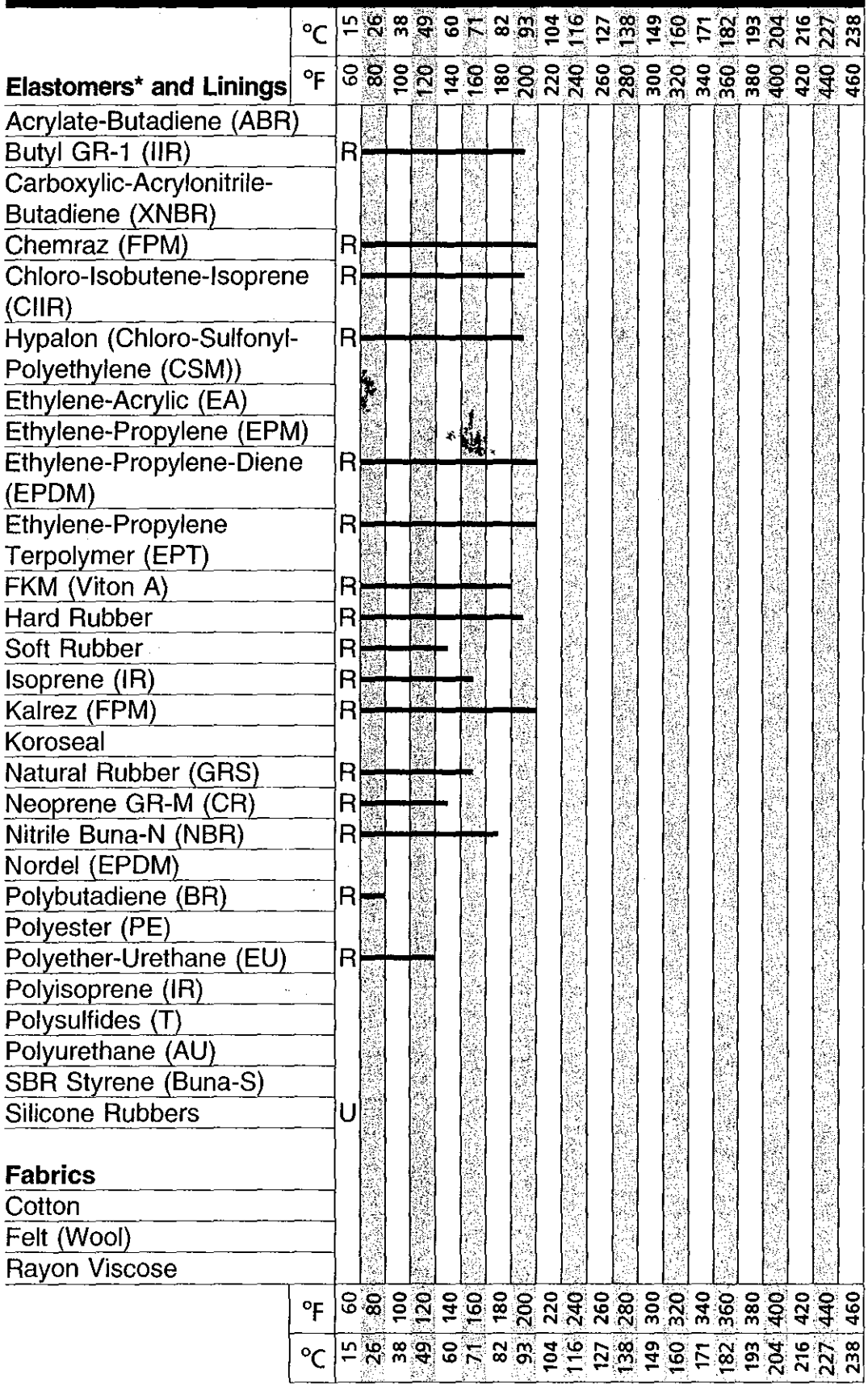
SODIUM PHOSPHATE ACID



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SODIUM PHOSPHATE ALKALINE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass			U																									
Aluminum			G																									
Aluminum Bronze			G																									
Brass	ALL		G																									
Bronze			G																									
Carbon Steel			G																									
Columbium (Niobium)																												
Copper			G																									
Hastelloy B/B-2	ALL		G																									
Hastelloy C/C-276	ALL		G																									
Hastelloy D			G																									
Hastelloy G/G-3																												
High Silicon Iron			S																									
Inconel 600/625			G																									
Incolloy 800/825																												
Lead			G																									
Monel 400	ALL		G																									
Naval Bronze			G																									
Nickel 200/201			G																									
Ni-Resist																												
Stainless Steels																												
Type 304/347			G																									
Type 316/316 L	ALL		G																									
Type 400 series			E			G																						
Type 904-L																												
17-4 PH			G																									
20 Cb 3	ALL		G																									
E-Bright 26-1																												
Silicon Bronze																												
Silicon Copper																												
Stellite																												
Tantalum			G																									
Titanium			E																									
Zirconium			E																									
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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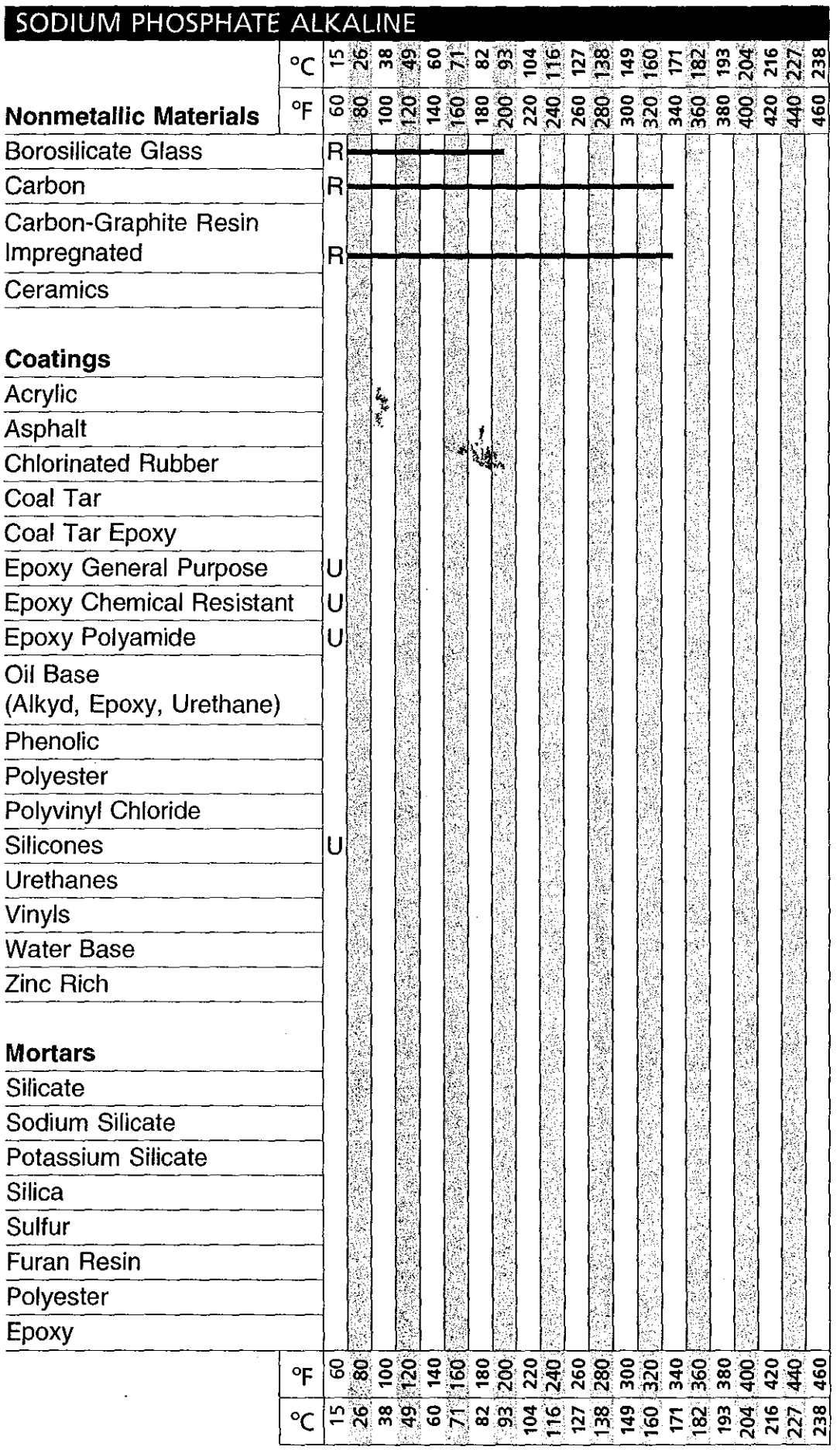
SODIUM PHOSPHATE ALKALINE



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SODIUM PHOSPHATE ALKALINE

Plastics		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																							
Acetal																							
Acrylics			R																				
Asbestos Reinforced Epoxy																							
Asbestos Reinforced Phenolic																							
Chlorinated Polyether (Penton)			R																				
CPVC			R																				
E-CTFE (Halar)			R																				
Epoxy			U																				
ETFE (Tefzel)			R																				
FEP			R																				
Furan (Furfural Alcohol)																							
Noryl																							
Nylon 6			R																				
Nylon 11			R																				
Nylon 66			R																				
Phenolic																							
PFA (Teflon)			R																				
Polyamide-Imide																							
Polyesters																							
Bisphenol A–fumarate																							
Halogenated																							
Hydrogenated Bisphenol A –Bisphenol A																							
Isophthalic																							
Terephthalate (PET)																							
Polyetherimide (ULTEM)																							
Polyetheretherketone (PEEK)																							
Polyethersulfone (PES)																							
Polyethylene HMW			R																				
Polyethylene UHMW			R																				
Polymethylpentene																							
Polypropylene (PP)			R																				
Polystyrene																							
Polysulfone																							
Polyvinylidene Chloride			R																				
PVC Type 1			R																				
PVC Type 2																							
PVDF (Kynar)			R																				
Ryton																							
TFE (Teflon)			R																				
Vinyl Ester	10%		R																				
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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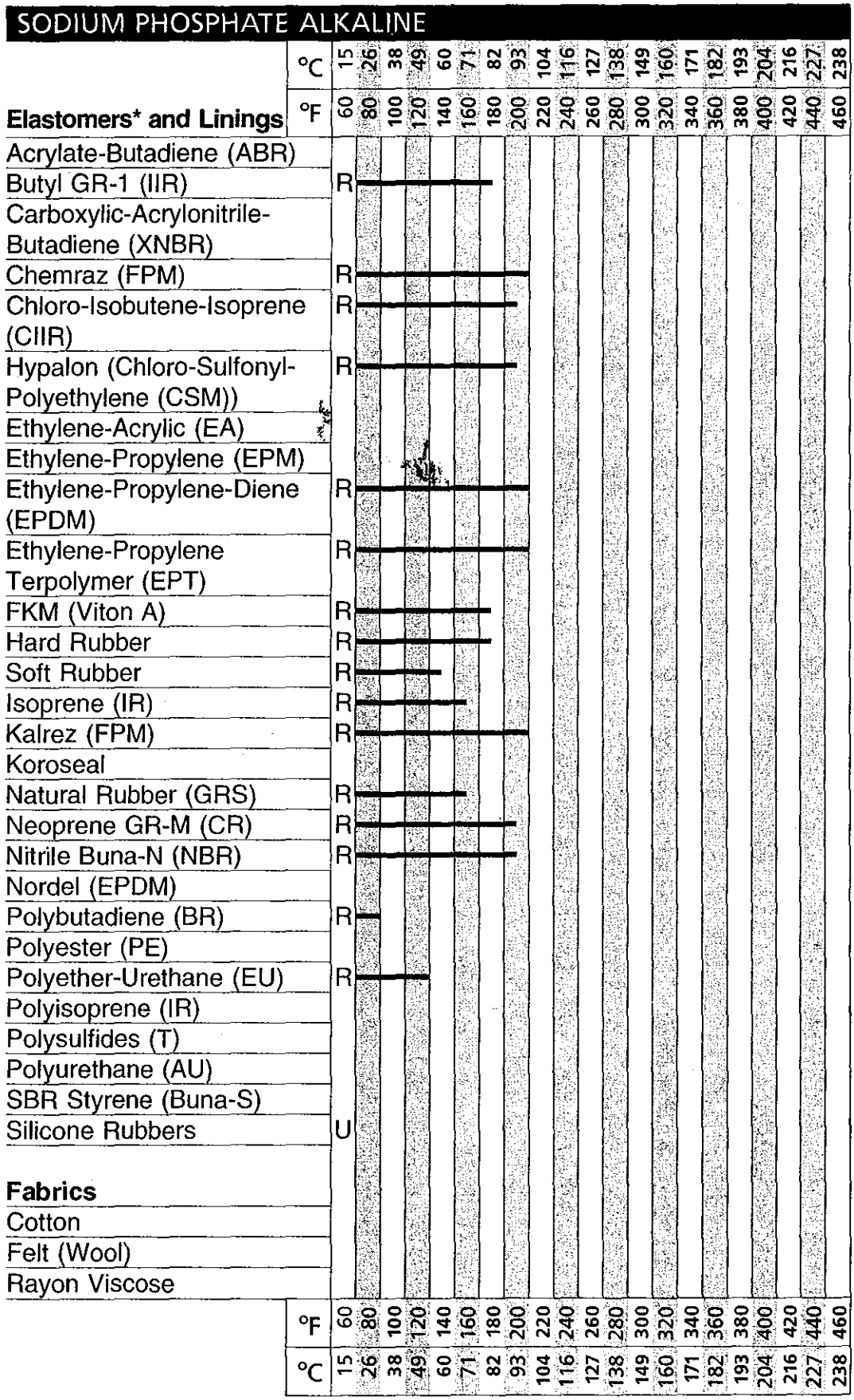
SODIUM PHOSPHATE ALKALINE



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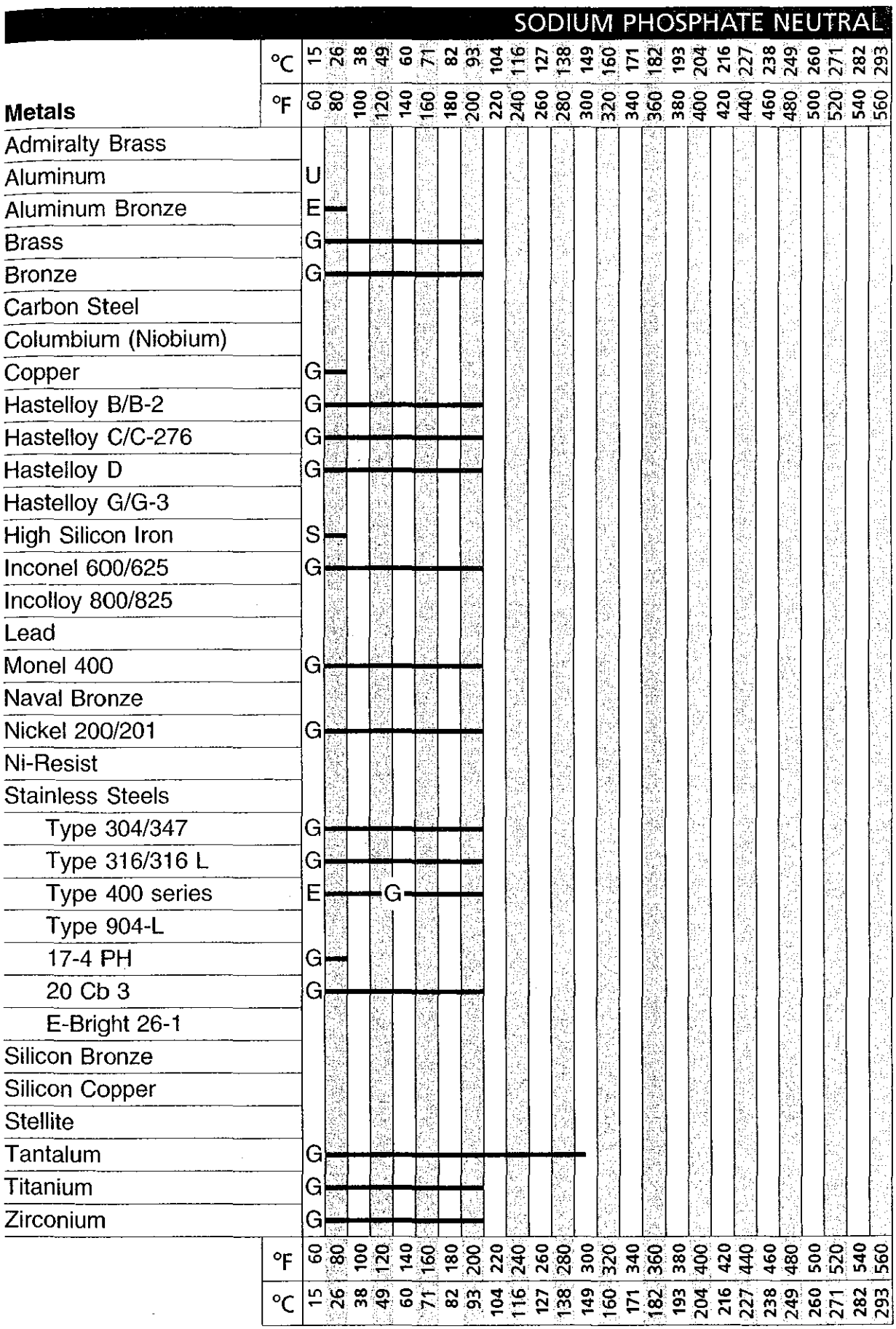
SODIUM PHOSPHATE NEUTRAL



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SODIUM PHOSPHATE NEUTRAL

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass	R																				
Carbon	R																				
Carbon-Graphite Resin Impregnated	R																				
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride																					
Silicones	U																				
Urethanes																					
Vinyls																					
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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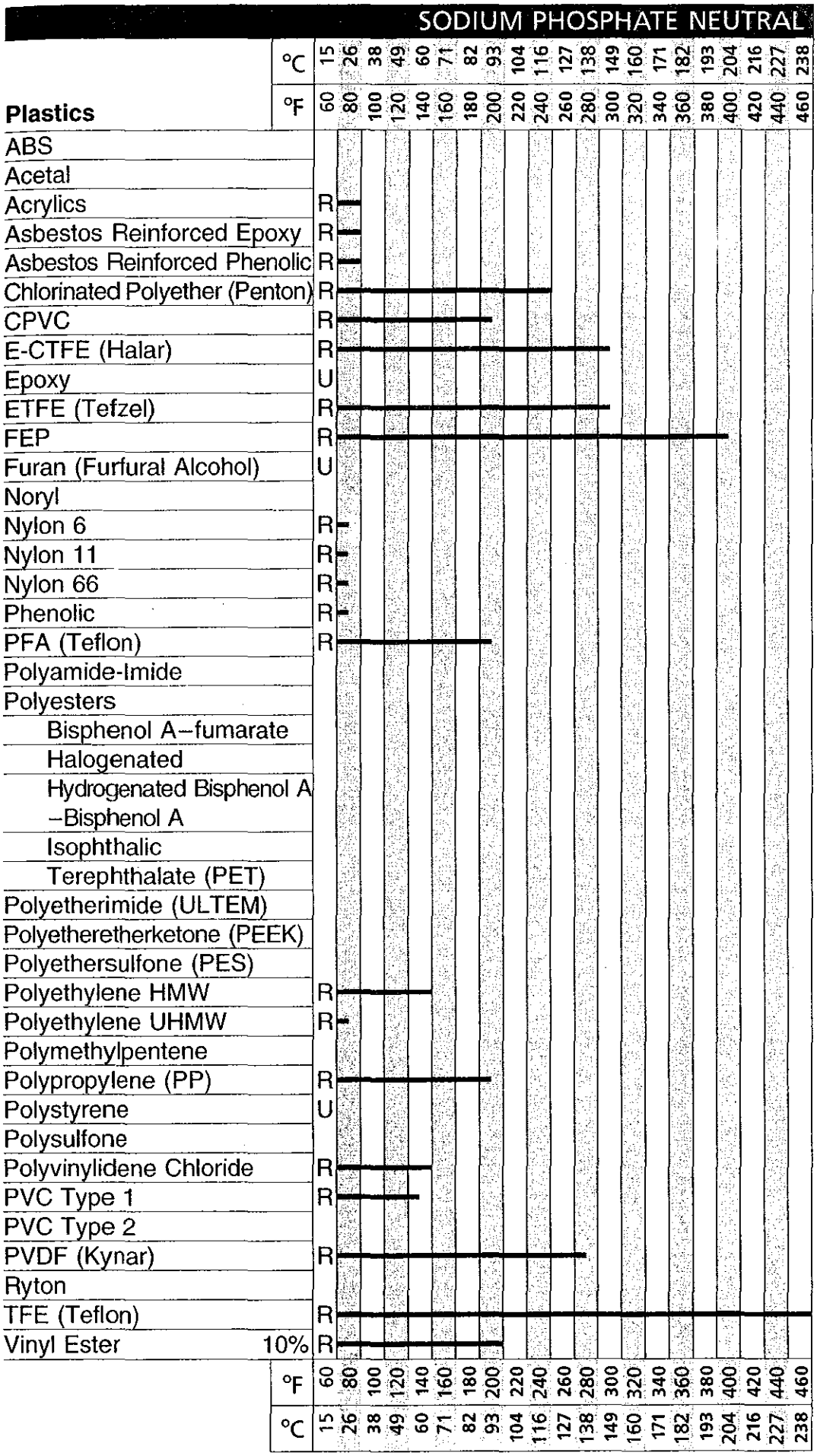

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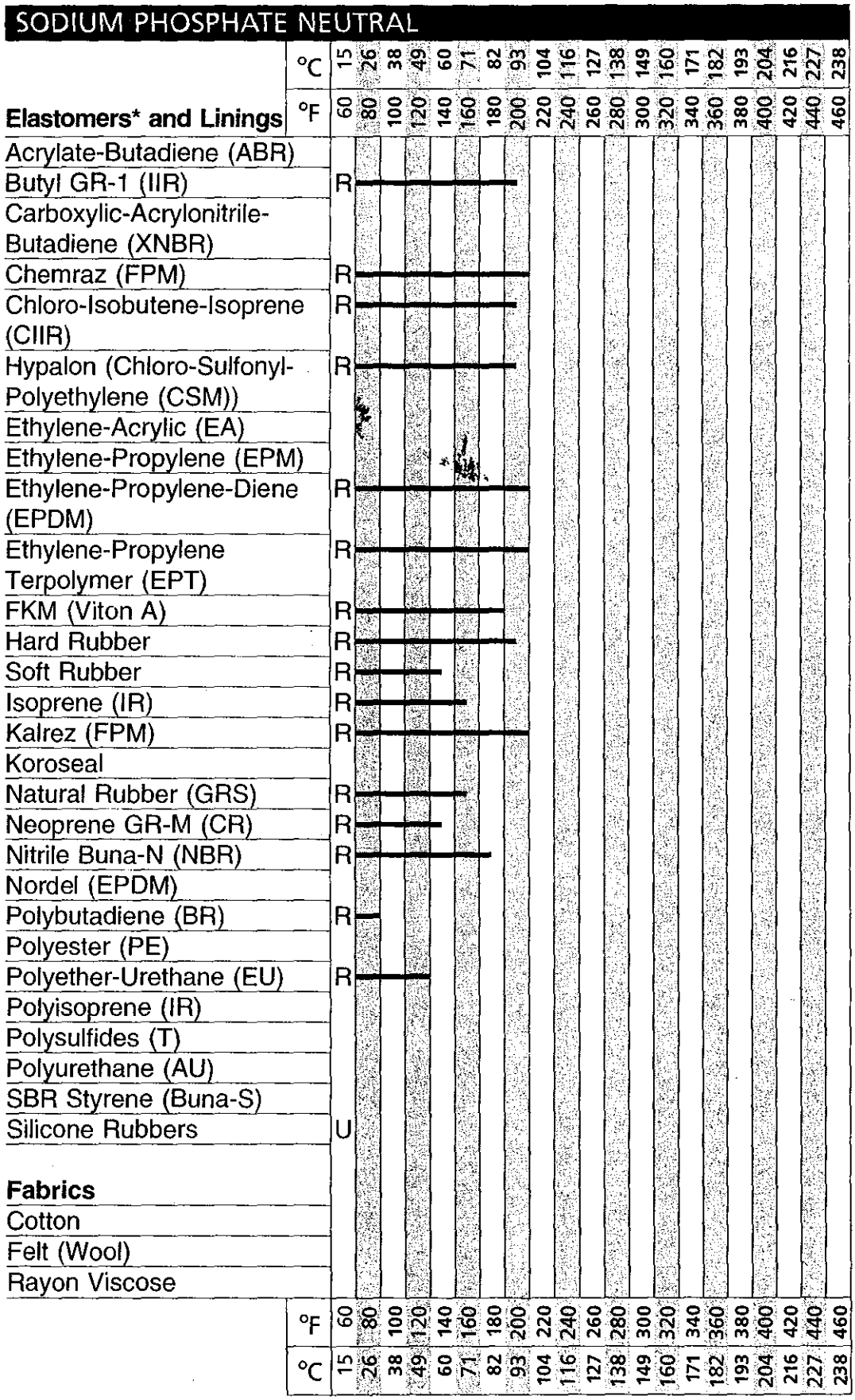
SODIUM PHOSPHATE NEUTRAL



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Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass			E																									
Aluminum			E																									
Aluminum Bronze			E																									
Brass	ALL		G																									
Bronze			G																									
Carbon Steel			G																									
Columbium (Niobium)			U																									
Copper			S																									
Hastelloy B/B-2	10%		G																									
Hastelloy C/C-276	ALL		G																									
Hastelloy D			G																									
Hastelloy G/G-3																												
High Silicon Iron			G																									
Inconel 600/625			G																									
Incolloy 800/825			E																									
Lead																												
Monel 400	ALL		G																									
Naval Bronze	10–100%		G																									
Nickel 200/201			G																									
Ni-Resist			G																									
Stainless Steels																												
Type 304/347			G																									
Type 316/316 L	ALL		G																									
Type 400 series			E	G																								
Type 904-L																												
17-4 PH			G																									
20 Cb 3	ALL		G																									
E-Bright 26-1																												
Silicon Bronze			U																									
Silicon Copper			G																									
Stellite																												
Tantalum			G																									
Titanium			E																									
Zirconium			E																									
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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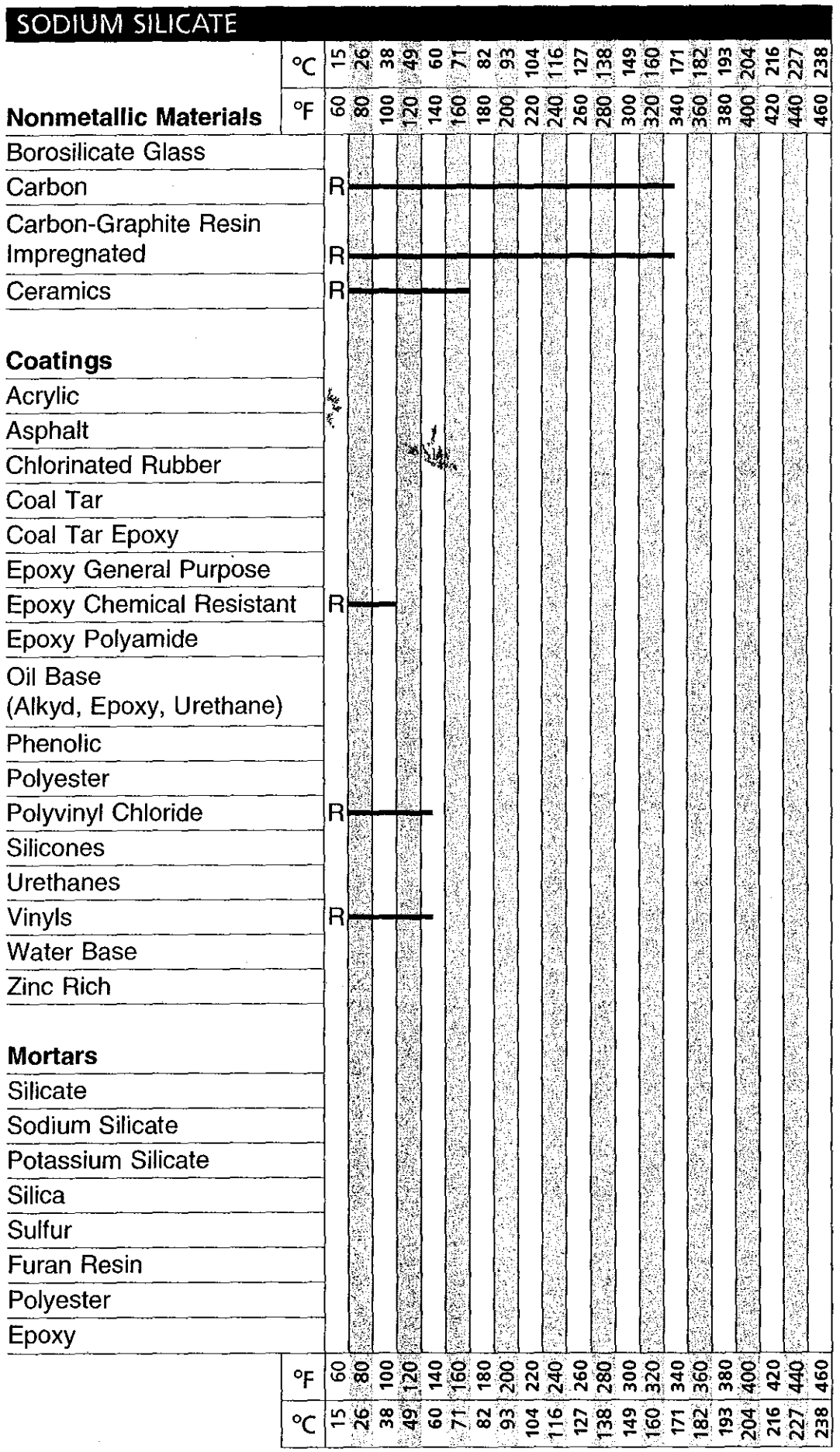
SODIUM SILICATE



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SODIUM SILICATE

Plastics	°C	°F
ABS	R	
Acetal		
Acrylics	R	
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic	R	
Chlorinated Polyether (Penton)	R	
CPVC	R	
E-CTFE (Halar)	R	
Epoxy	R	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)	R	
Noryl	R	
Nylon 6	R	
Nylon 11	R	
Nylon 66	R	
Phenolic	R	
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate	R	
Halogenated	R	
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic	U	
Terephthalate (PET)	R	
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	R	
Polyethylene UHMW	R	
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene	R	
Polysulfone	R	
Polyvinylidene Chloride	R	
PVC Type 1	R	
PVC Type 2	R	
PVDF (Kynar)	R	
Ryton ALL	R	
TFE (Teflon)	R	
Vinyl Ester ALL	R	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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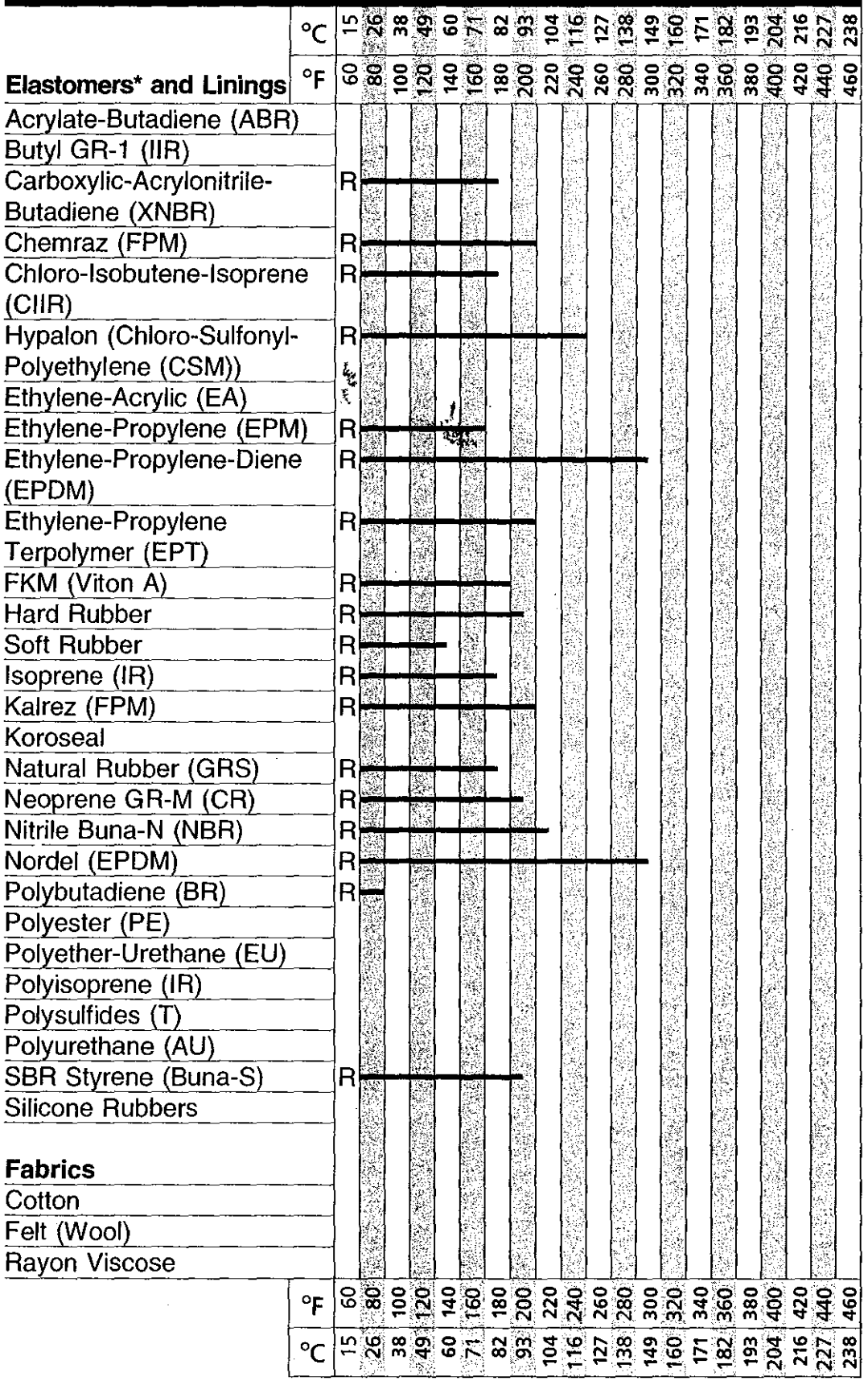
SODIUM SILICATE



*See also Nylon 11 under PLASTICS

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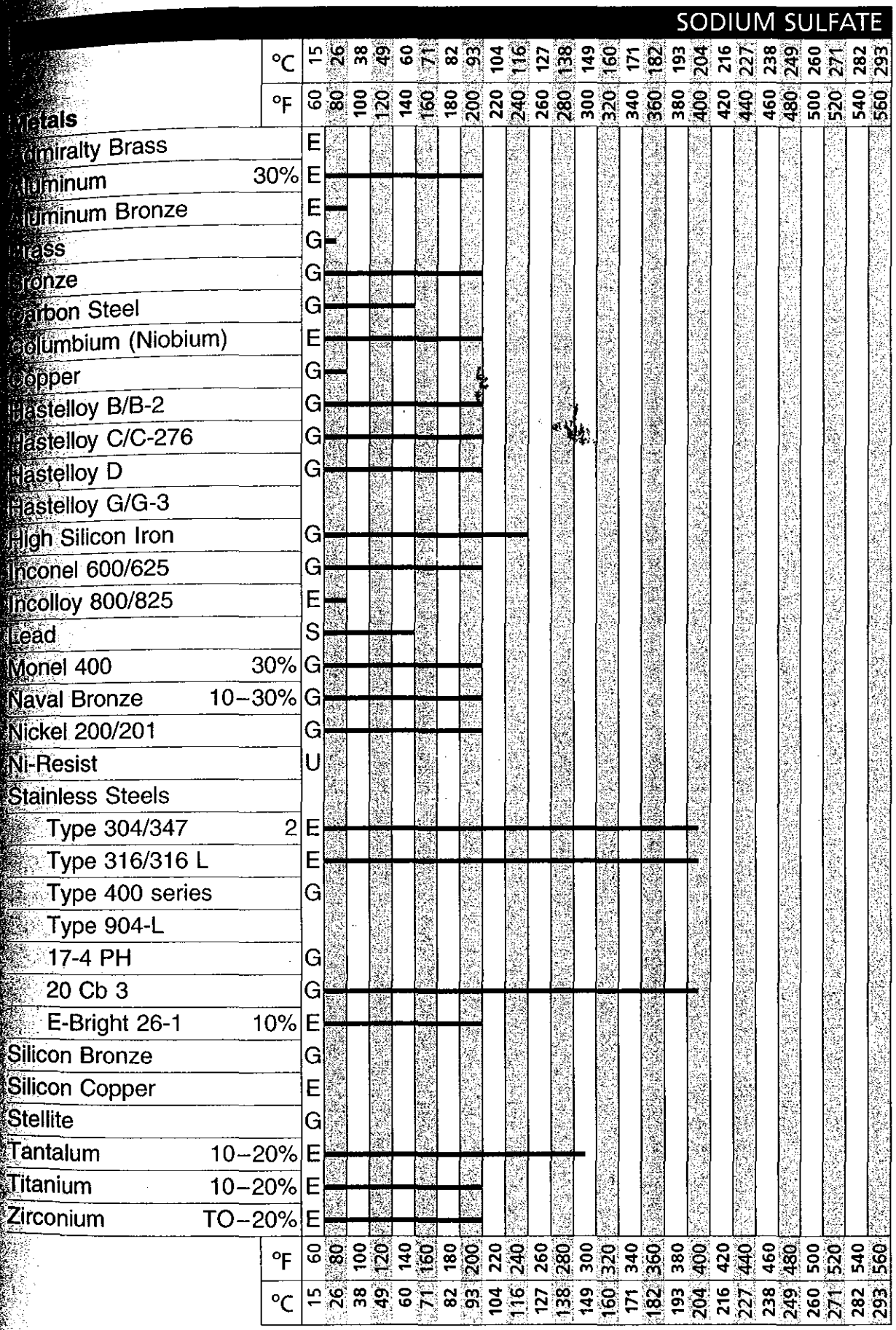

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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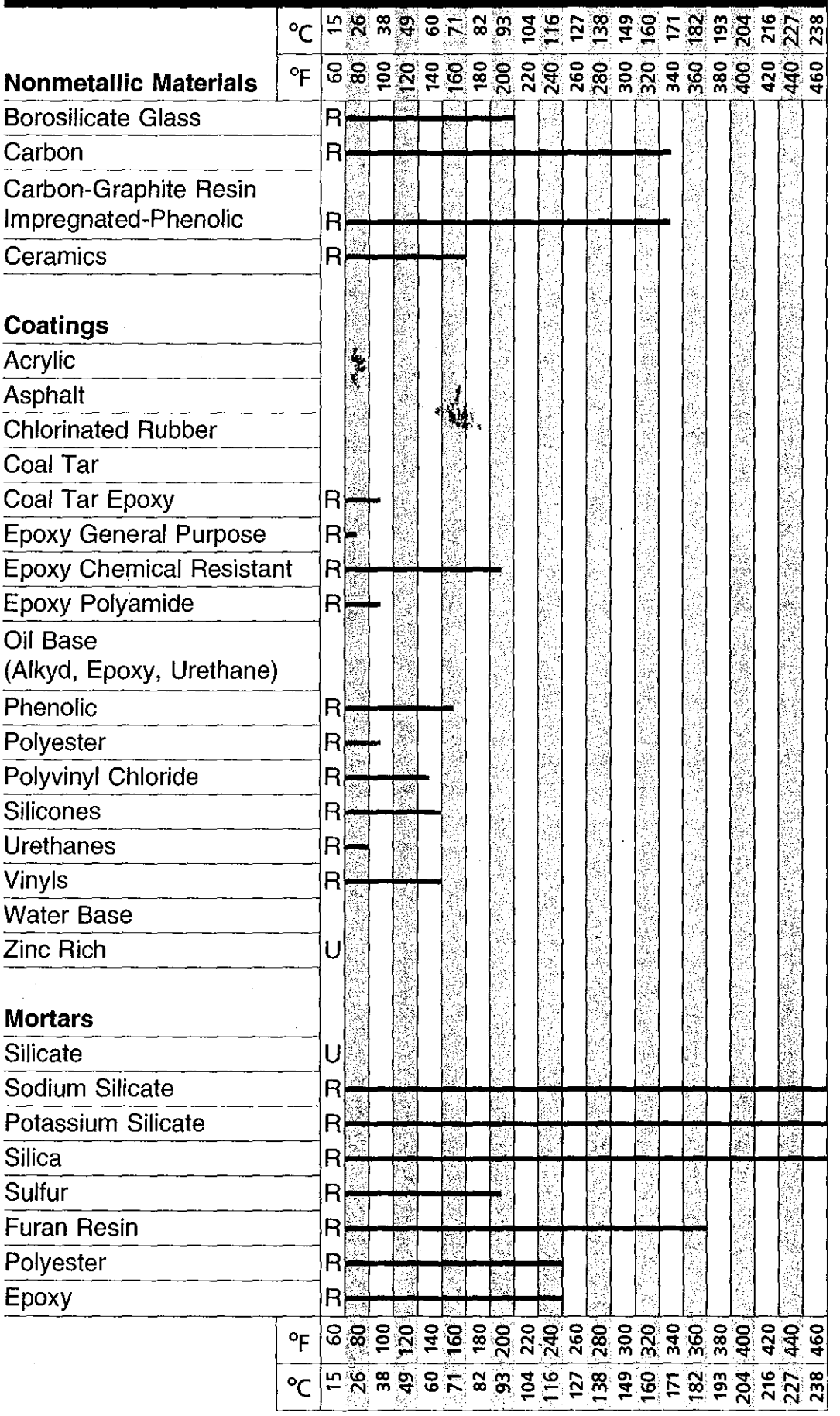
SODIUM SULFATE



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SODIUM SULFATE

Plastics		°C 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238
		°F 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460
ABS		R
KEL-F (CTFE)		R
Acrylics		R
Asbestos Reinforced Epoxy		R
Asbestos Reinforced Phenolic		R
Chlorinated Polyether (Penton)		R
CPVC		R
E-CTFE (Halar)		R
Epoxy		R
ETFE (Tefzel)		R
FEP		R
Furan (Furfural Alcohol)		R
Noryl		R
Nylon 6		R
Nylon 11		R
Nylon 66		R
Phenolic		R
PFA (Teflon)		R
Polyamide-Imide	10%	R
Polyesters		
Bisphenol A–fumarate		R
Halogenated		R
Hydrogenated Bisphenol A –Bisphenol A		R
Isophthalic		R
Terephthalate (PET)		R
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		R
Polyethylene UHMW		R
Polymethylpentene		
Polypropylene (PP)		R
Polystyrene		
Polysulfone		R
Polyvinylidene Chloride		R
PVC Type 1		R
PVC Type 2		R
PVDF (Kynar)		R
Ryton	ALL	R
TFE (Teflon)		R
Vinyl Ester	ALL	R
		°F 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460
		°C 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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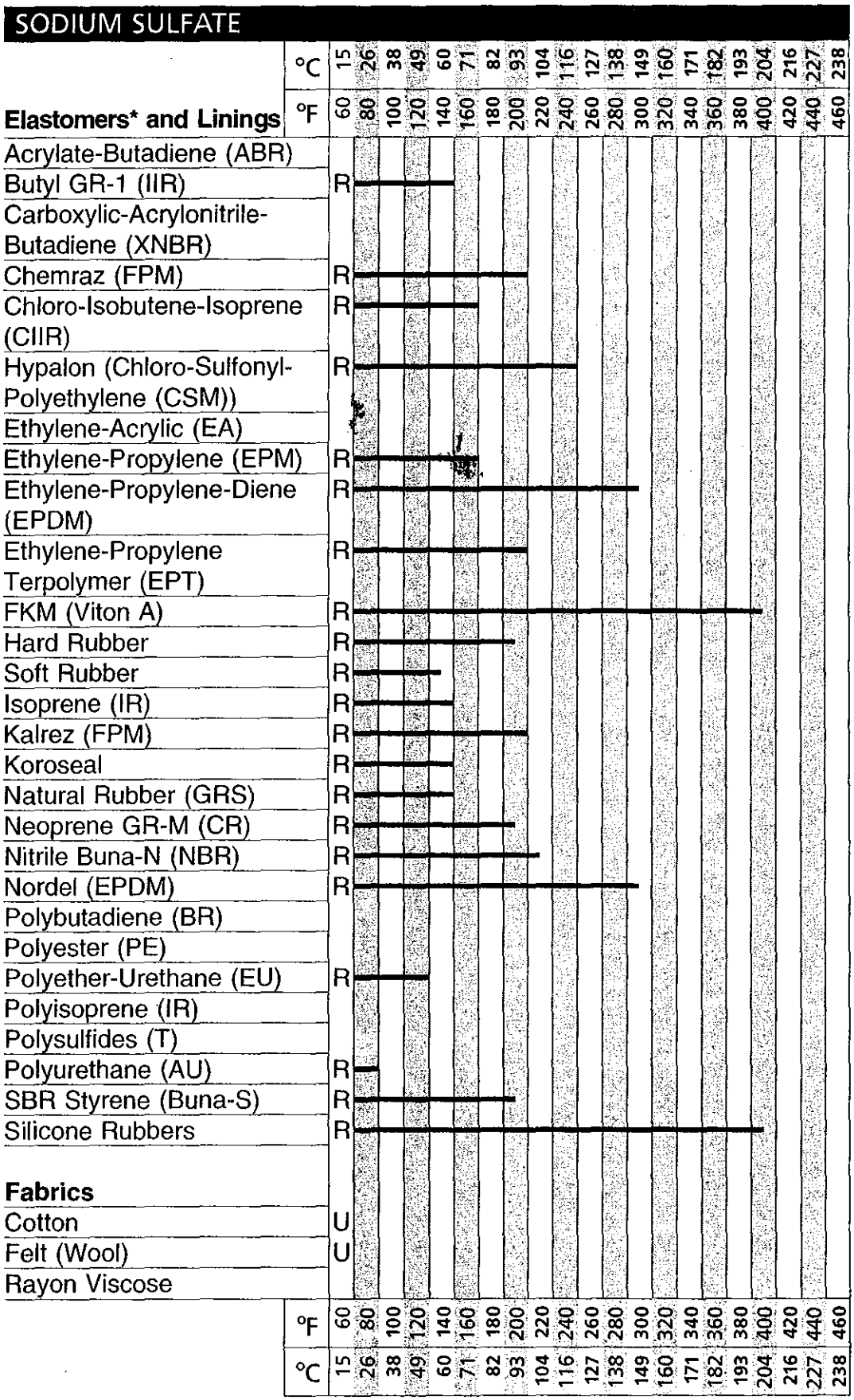
SODIUM SULFATE



*See also Nylon 11 under PLASTICS

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SODIUM SULFIDE TO 50%

Metals		°C	°F
Admiralty Brass	G	15–93	60–200
Aluminum	U		
Aluminum Bronze	U		
Brass	U		
Bronze	U		
Carbon Steel	G	15–26	60–80
Columbium (Niobium)	E	15–93	60–200
Copper	U		
Hastelloy B/B-2	G	15–93	60–200
Hastelloy C/C-276	G	15–93	60–200
Hastelloy D	G	15–93	60–200
Hastelloy G/G-3 20%	E	15–49	60–120
High Silicon Iron	G	15–26	60–80
Inconel 600/625	G	15–93	60–200
Incolloy 800/825 SAT	G	15–26	60–80
Lead	S	15–26	60–80
Monel 400	G	15–93	60–200
Naval Bronze	U		
Nickel 200/201	G	15–93	60–200
Ni-Resist	S	15–26	60–80
Stainless Steels			
Type 304/347 1	G	15–93	60–200
Type 316/316 L	G	15–93	60–200
Type 400 series	U		
Type 317/317 L	G	15–93	60–200
Type 321	G		
20 Cb 3	G	15–93	60–200
E-Bright 26-1			
Silicon Bronze	U		
Silicon Copper	U		
Stellite			
Tantalum TO 10%	G	15–93	60–200
Titanium 10%	G	15–93	60–200
Zirconium	U		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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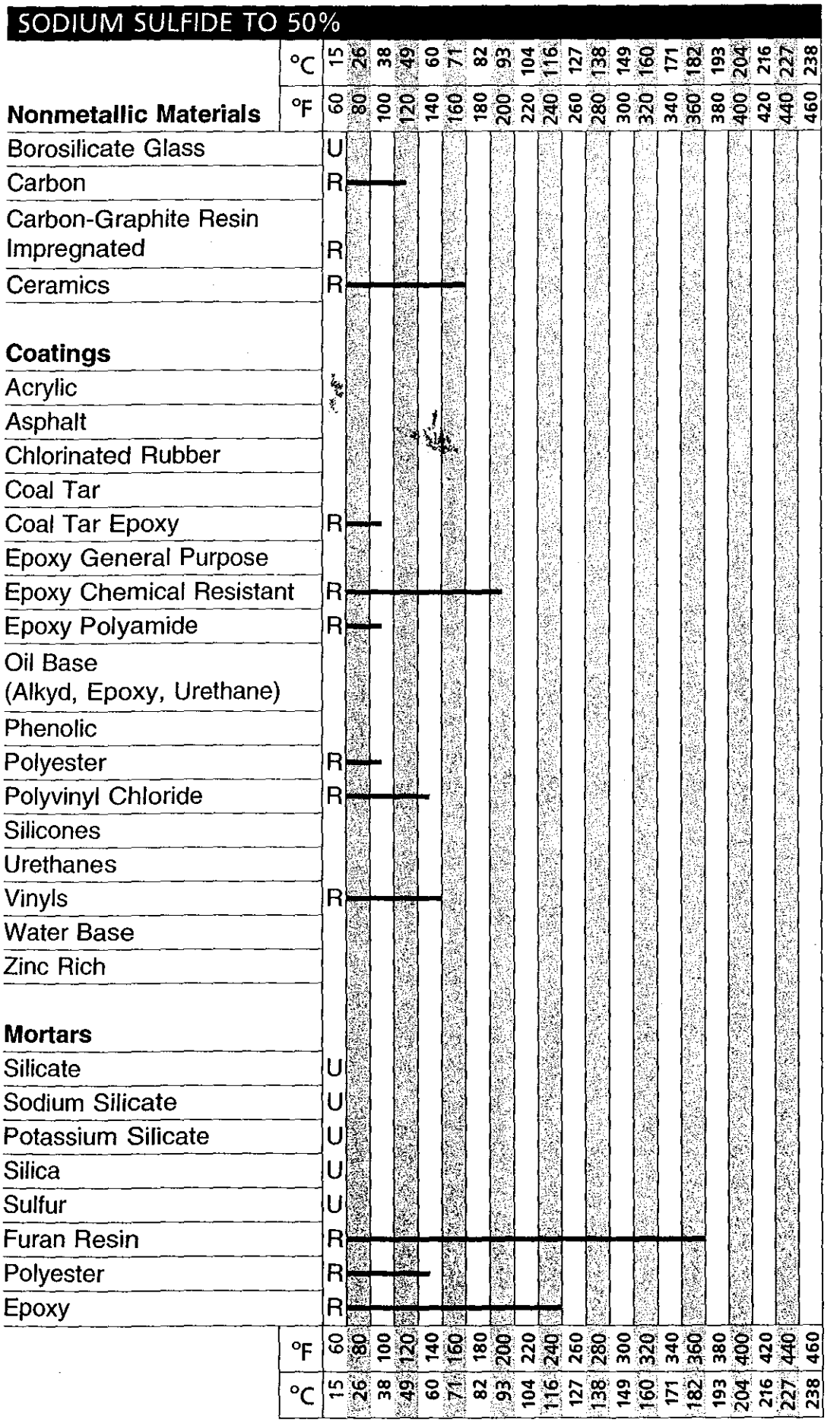
SODIUM SULFIDE TO 50%



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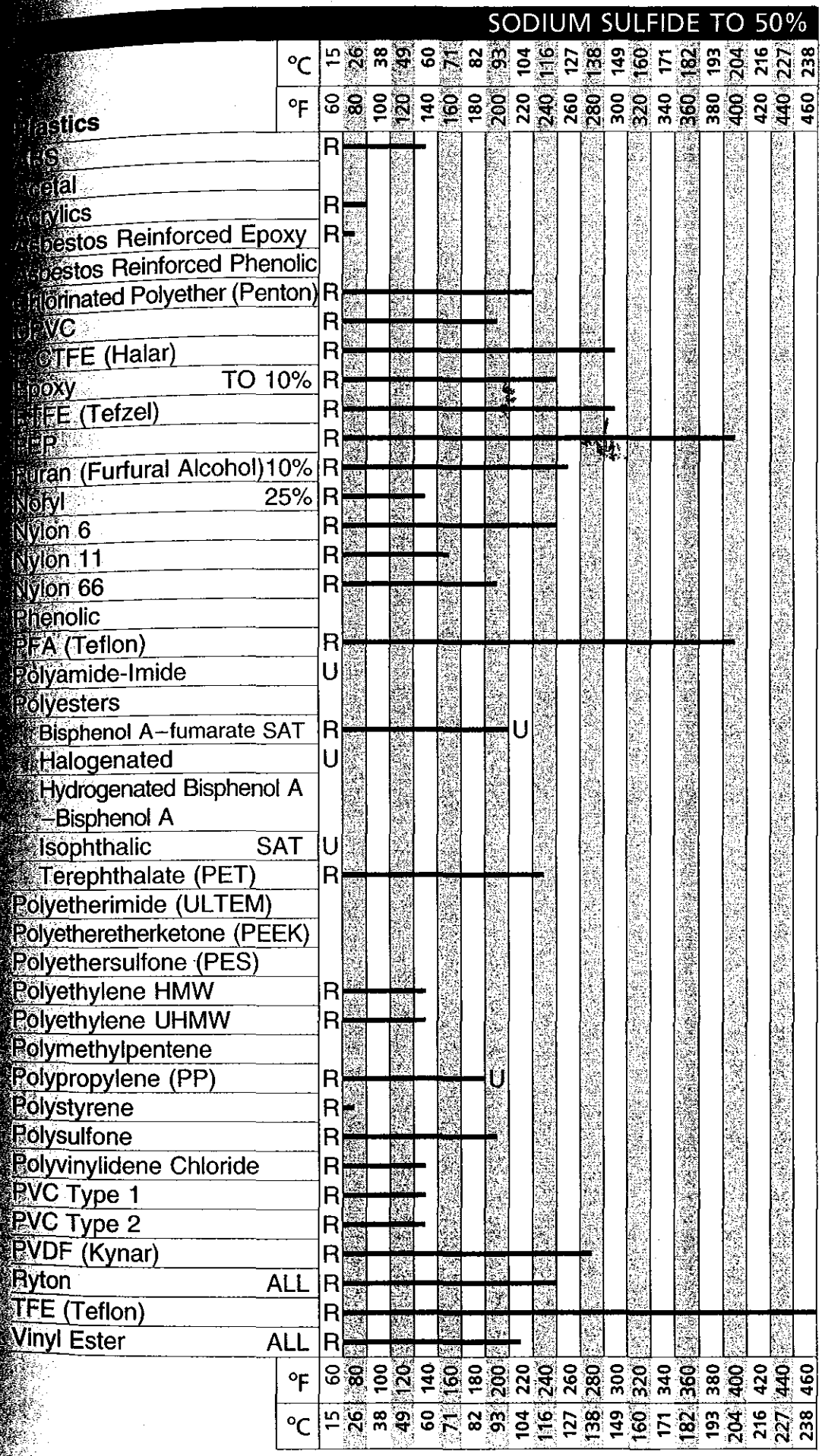

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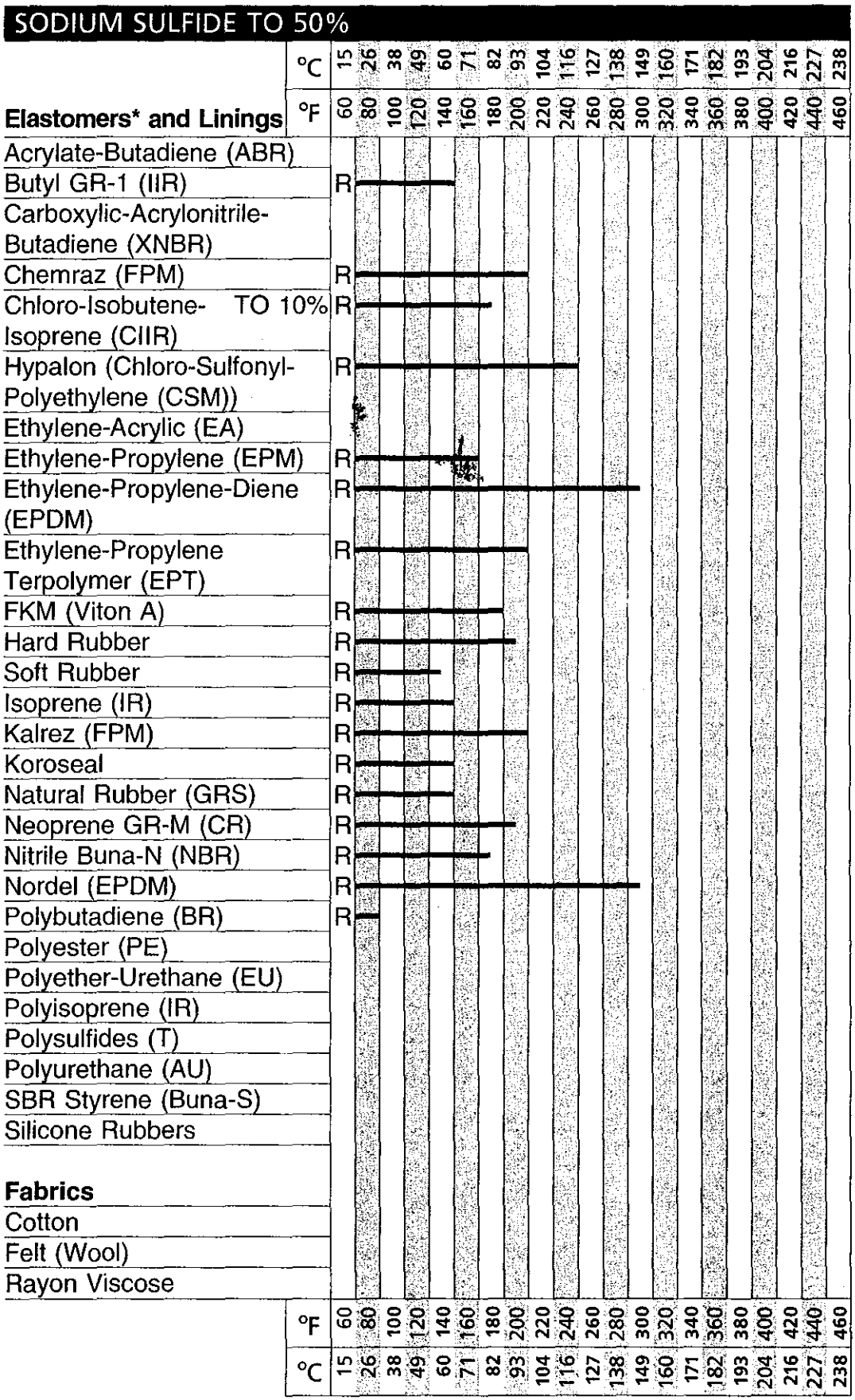
SODIUM SULFIDE TO 50%



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SODIUM SULFITE 10%

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass			G																									
Aluminum			G																									
Aluminum Bronze			U																									
Brass			G																									
Bronze			U																									
Carbon Steel			G																									
Columbium (Niobium)			E																									
Copper			S																									
Hastelloy B/B-2			U																									
Hastelloy C/C-276			G																									
Hastelloy D			U																									
Hastelloy G/G-3																												
High Silicon Iron			U																									
Inconel 600/625			G																									
Incolloy 800/825	5%		E																									
Lead			G																									
Monel 400			G																									
Naval Bronze			G																									
Nickel 200/201			G																									
Ni-Resist			E																									
Stainless Steels																												
Type 304/347			E																									
Type 316/316 L			E																									
Type 400 series			G																									
Type 904-L																												
17-4 PH																												
20 Cb 3			E																									
E-Bright 26-1																												
Silicon Bronze	5%		G																									
Silicon Copper			G																									
Stellite																												
Tantalum	TO SAT		G																									
Titanium	SAT		E																									
Zirconium	TO 33%		E																									
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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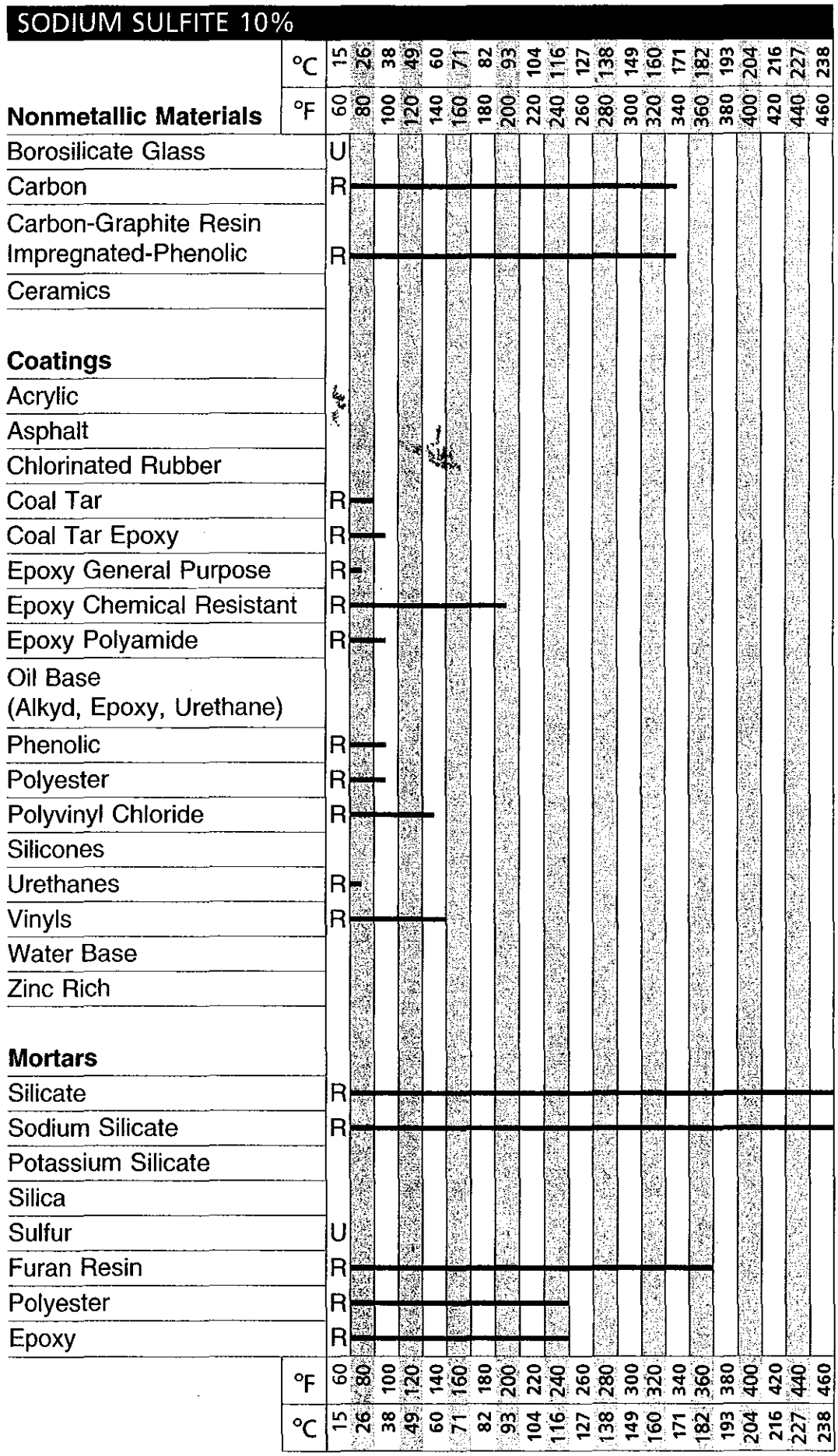
SODIUM SULFITE 10%



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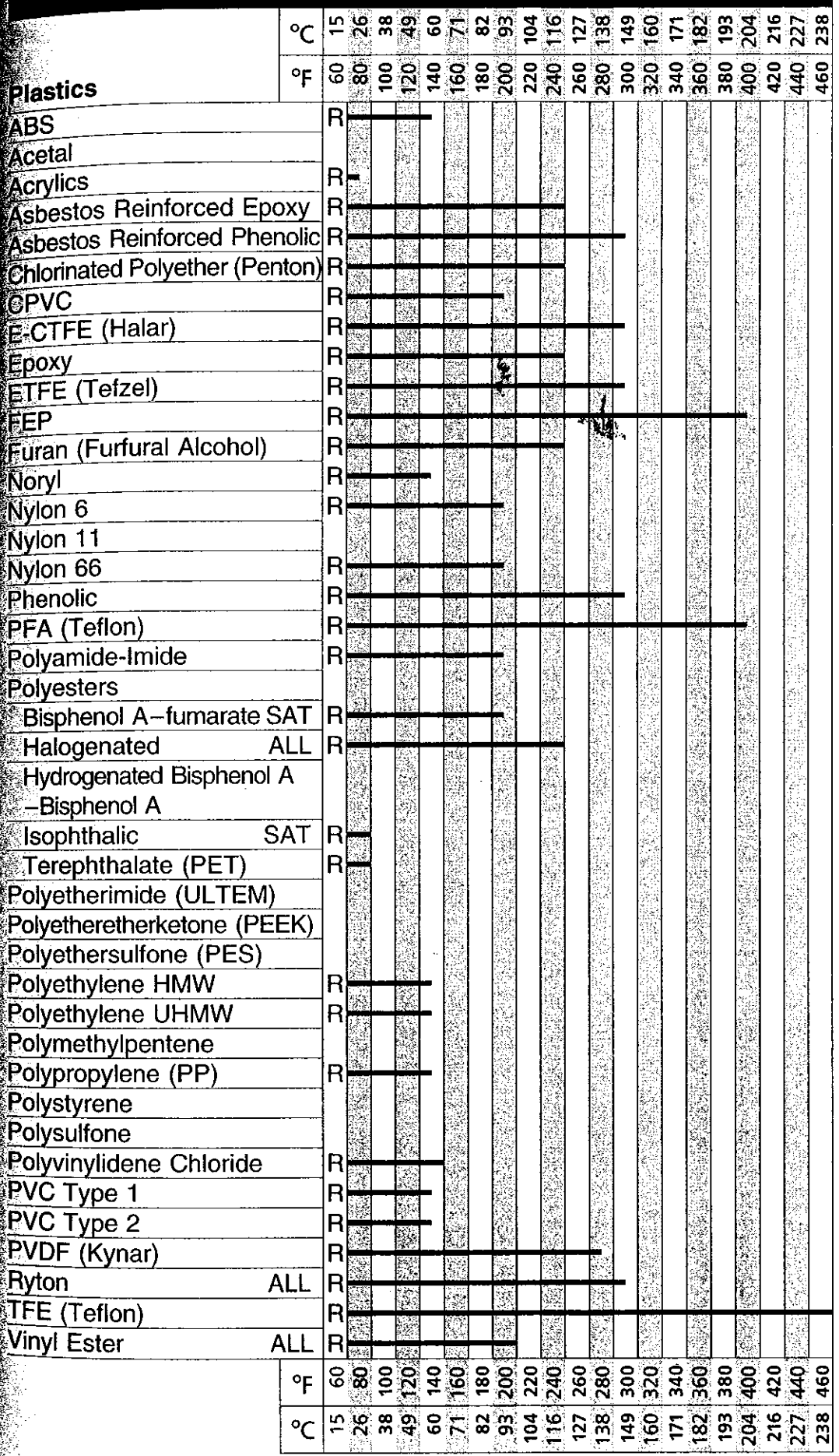

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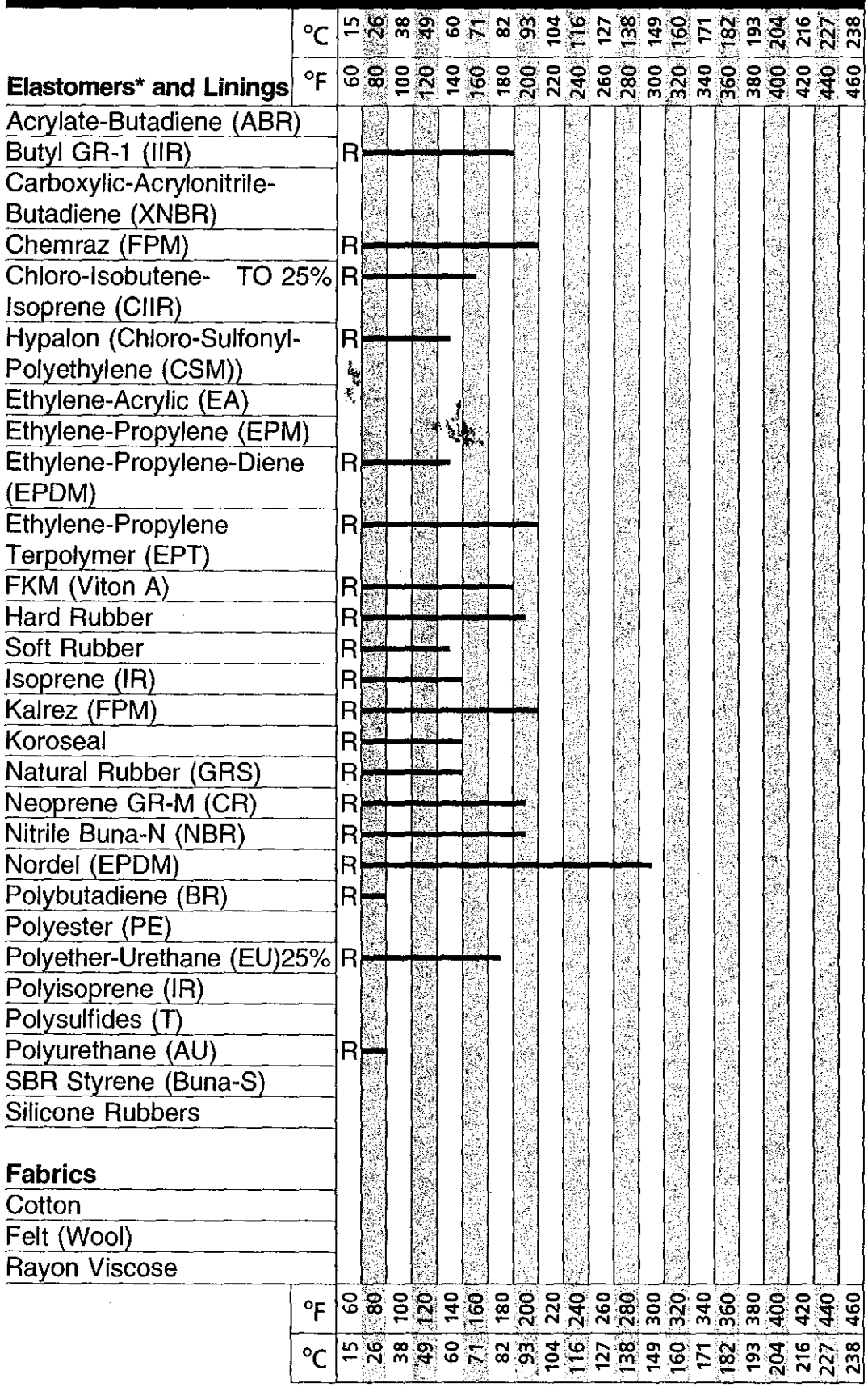
SODIUM SULFITE 10%



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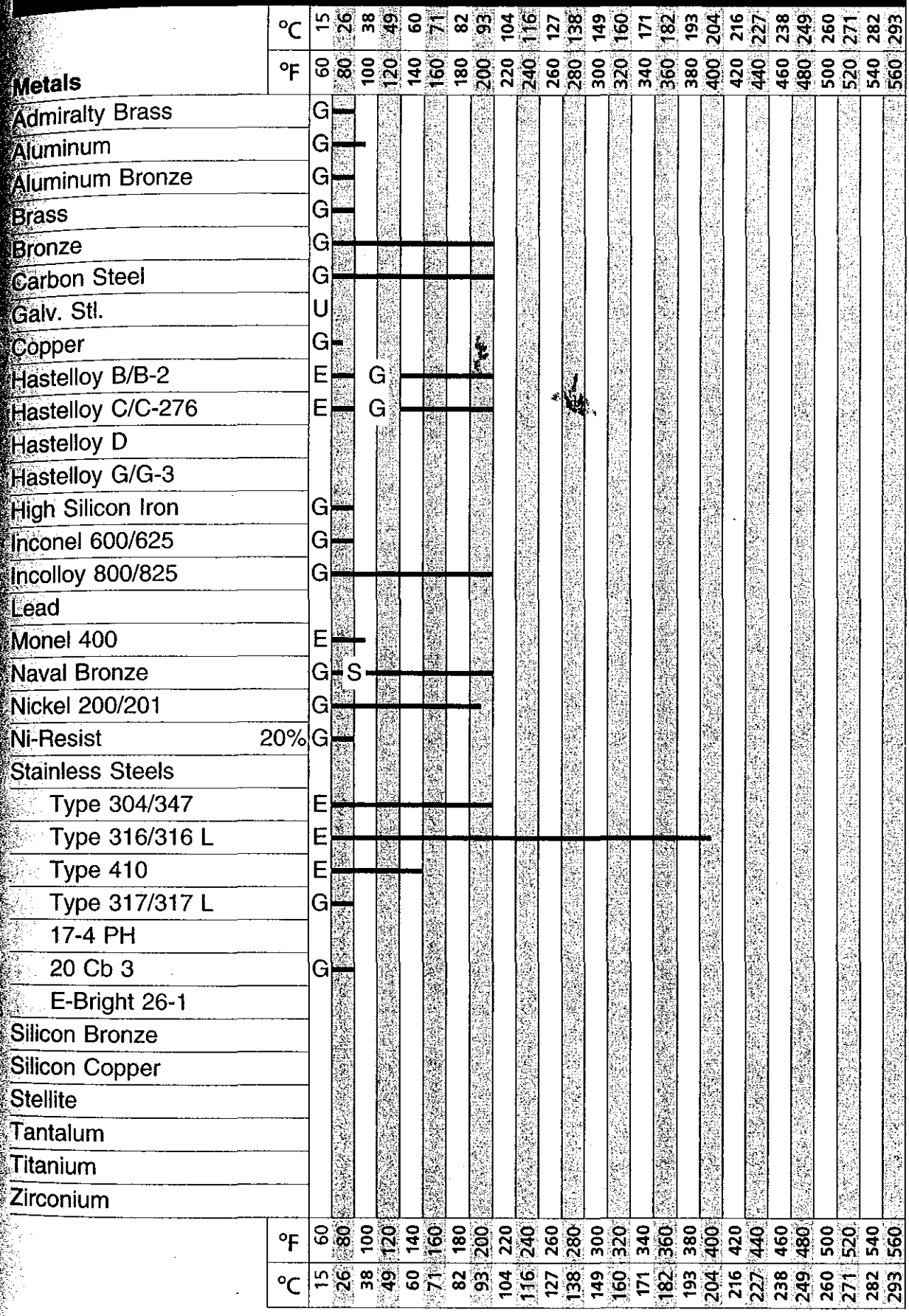
SODIUM TETRABORATE



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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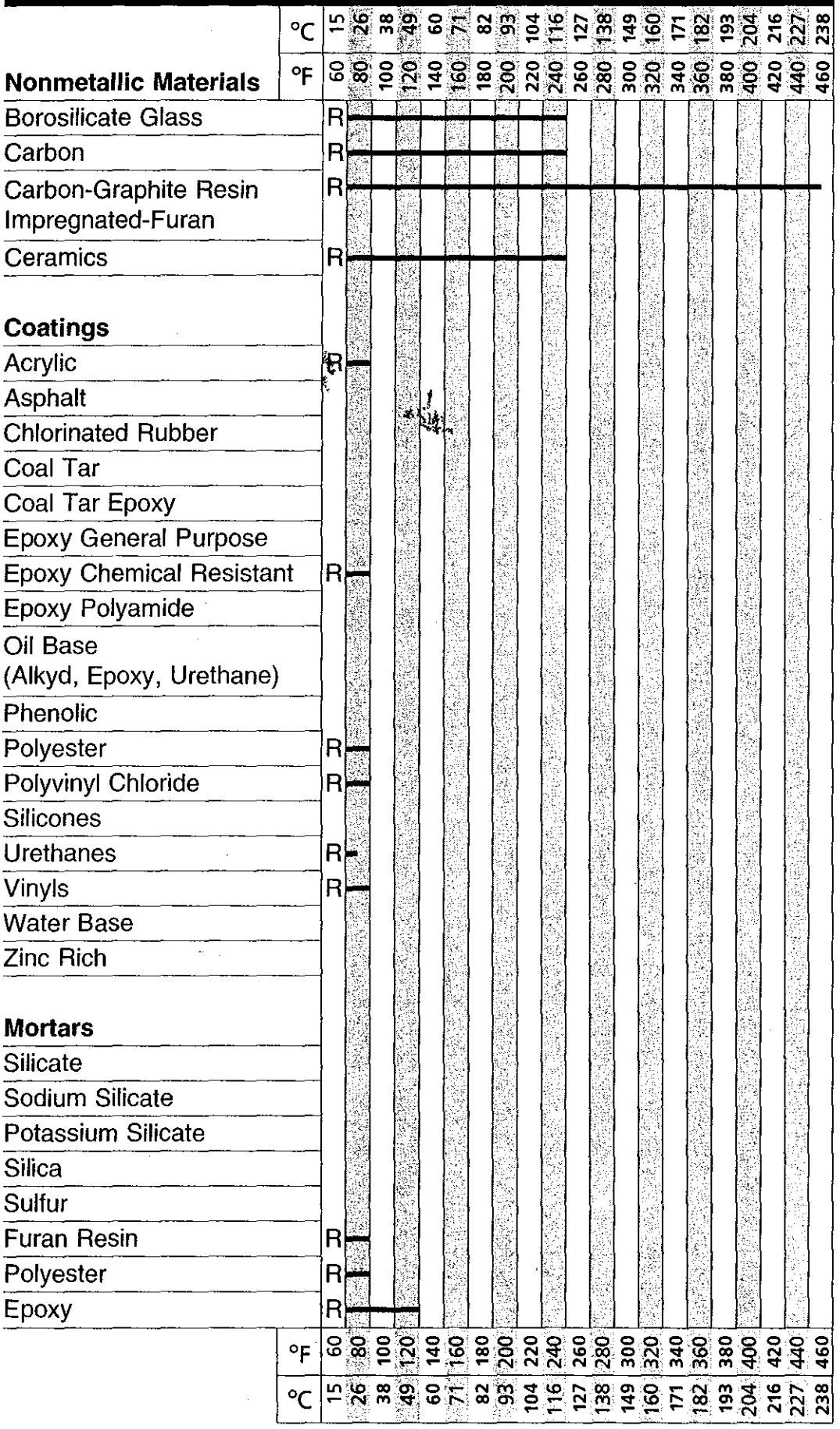

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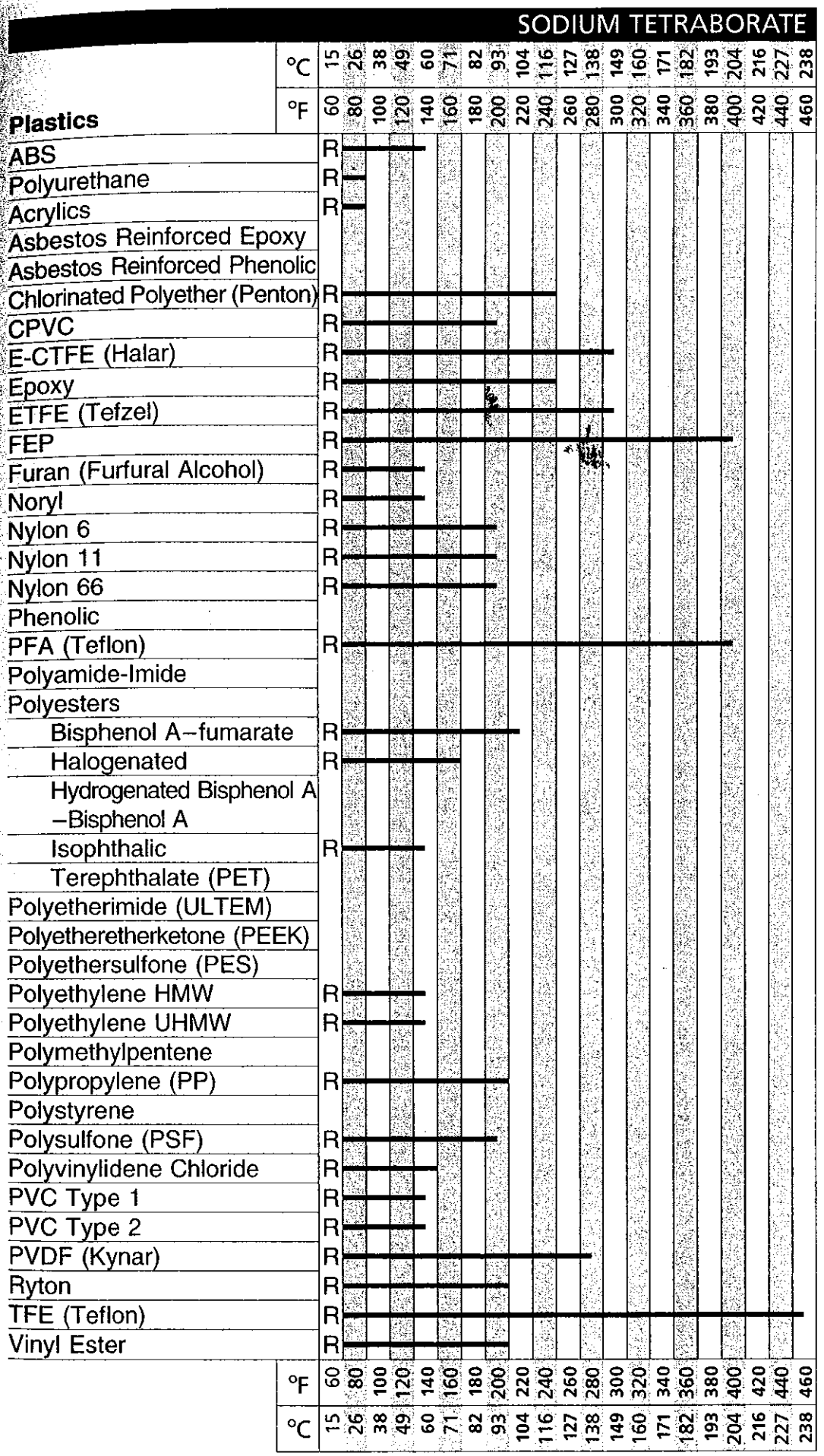

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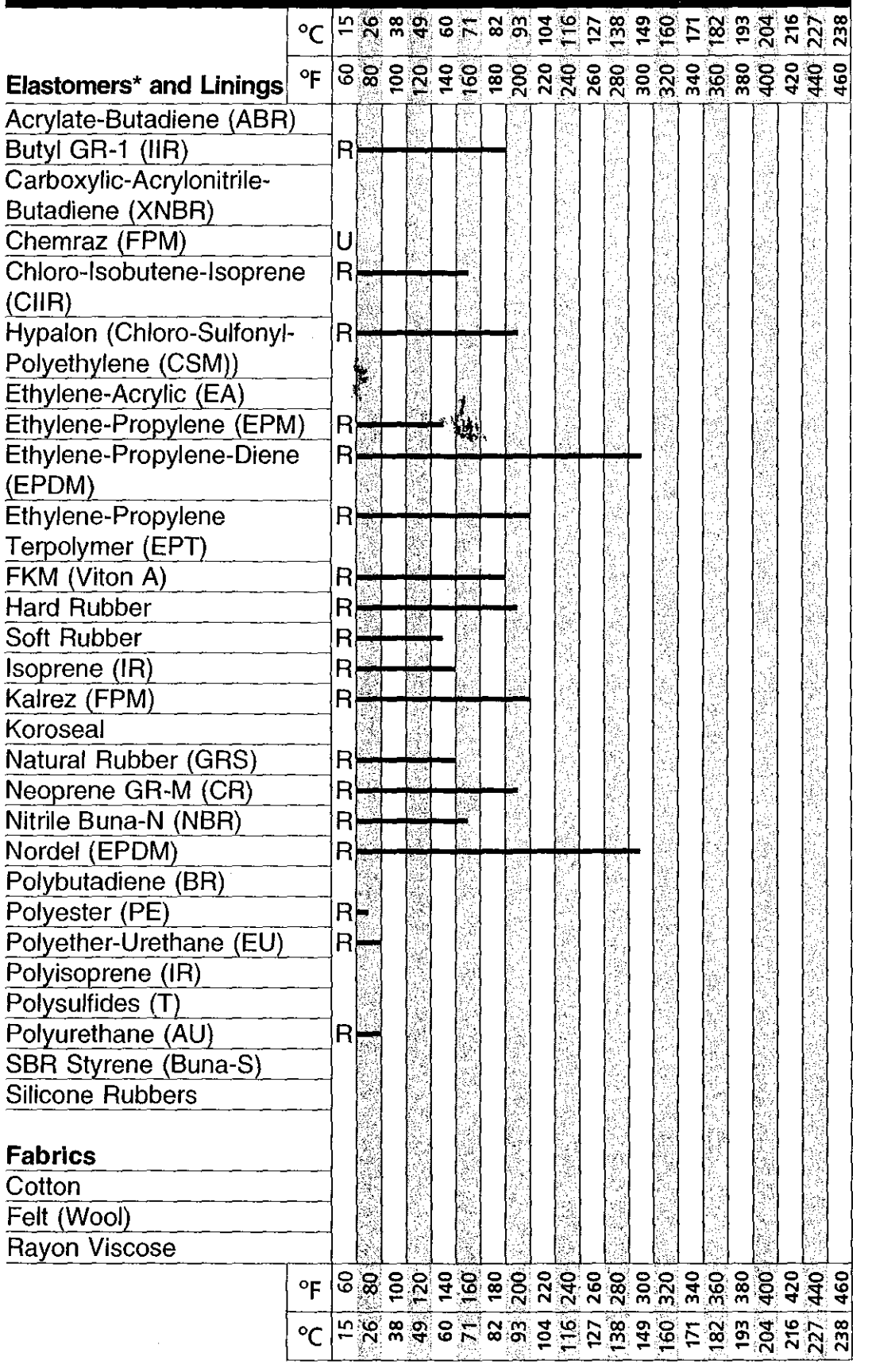

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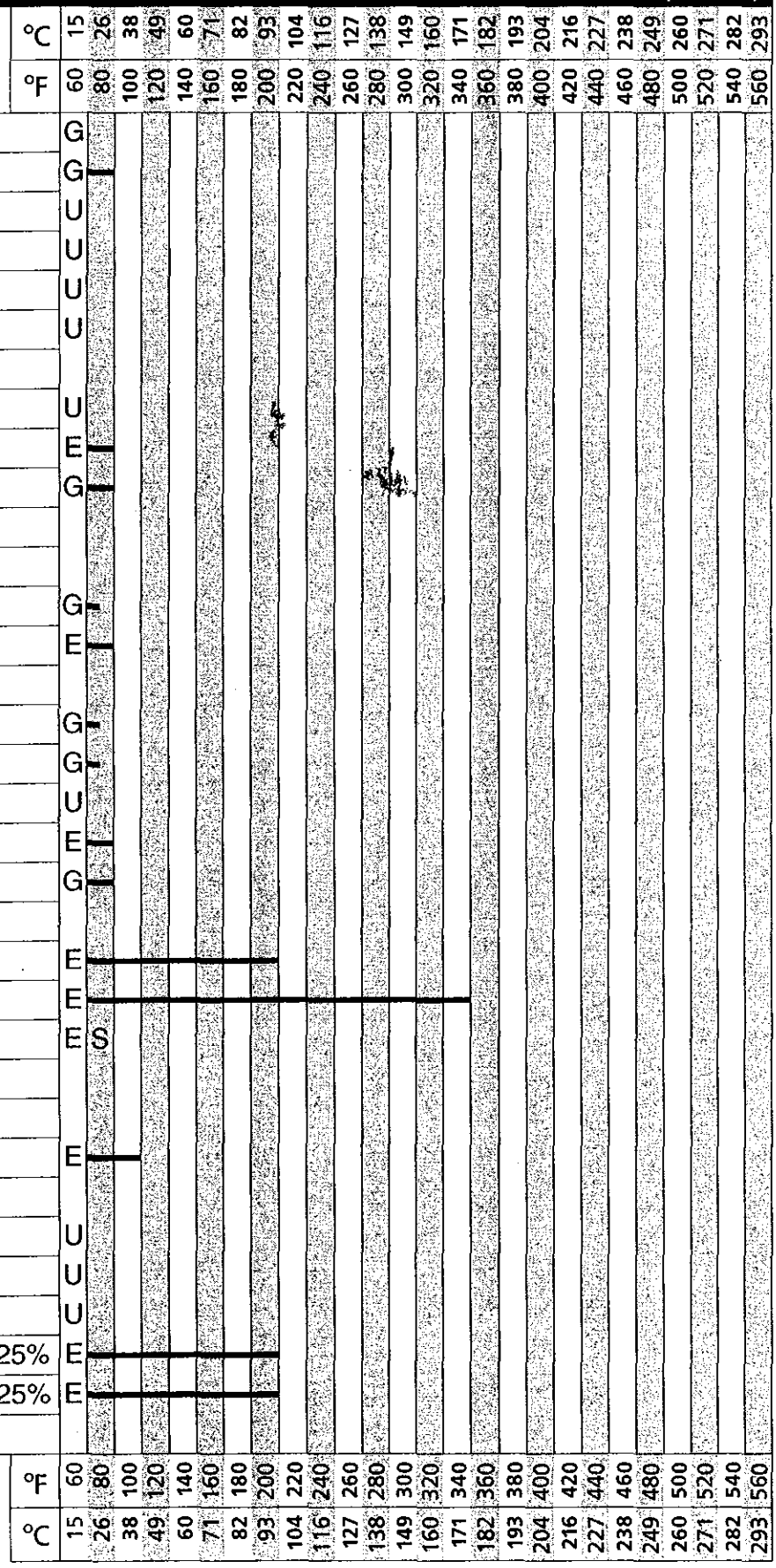
SODIUM THIOSULFATE (HYPO)

Metals	
Admiralty Brass	G
Aluminum	G
Aluminum Bronze	U
Brass	U
Bronze	U
Carbon Steel	U
Columbium (Niobium)	
Copper	U
Hastelloy B/B-2	E
Hastelloy C/C-276	G
Hastelloy D	
Hastelloy G/G-3	
High Silicon Iron	G
Inconel 600/625	E
Incolloy 800/825	
Lead	G
Monel 400	G
Naval Bronze	U
Nickel 200/201	E
Ni-Resist	G
Stainless Steels	
Type 304/347	E
Type 316/316 L	E
Type 400 series	E S
Type 904-L	
17-4 PH	
20 Cb 3	E
E-Bright 26-1	
Silicon Bronze	U
Silicon Copper	U
Galv. Stl.	U
Tantalum TO 25%	E
Titanium 25%	E
Zirconium	



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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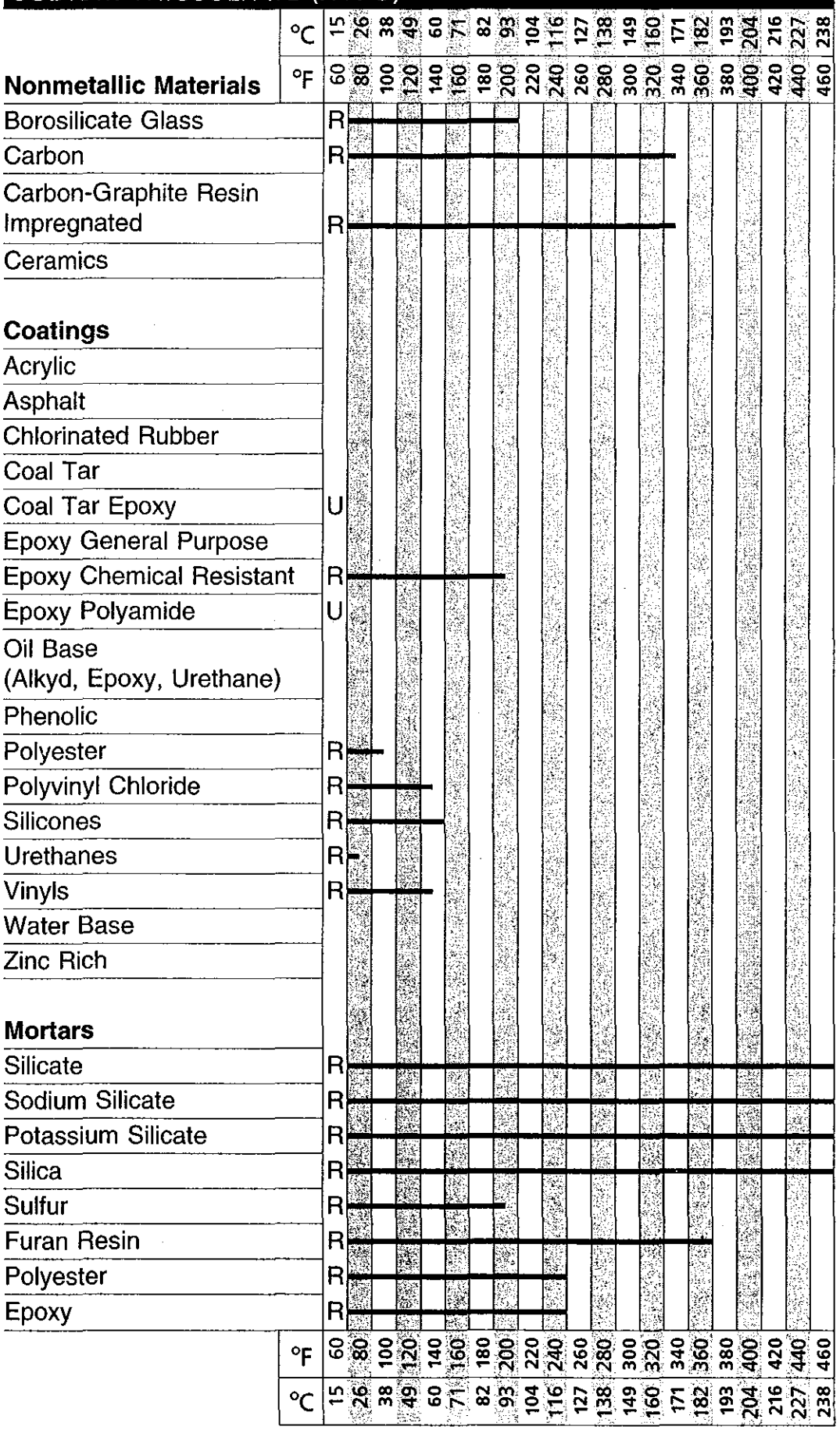

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SODIUM THIOSULFATE (HYPO)

Plastics		°C 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238
		°F 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460
ABS		R
Acetal		R
Acrylics		R
KEL-F (CTFE)		R
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		R
CPVC		R
E-CTFE (Halar)		R
Epoxy		R
ETFE (Tefzel)		R
FEP		R
Furan (Furfural Alcohol)		R
Noryl		R
Nylon 6		R
Nylon 11	TO 15%	R
Nylon 66		R
Phenolic		R
PFA (Teflon)		R
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		R
Halogenated		R
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		R
Terephthalate (PET)		R
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		R
Polyethylene UHMW		R
Polymethylpentene		
Polypropylene (PP)		R
Polystyrene		
Polysulfone		R
Polyvinylidene Chloride		R
PVC Type 1		R
PVC Type 2		R
PVDF (Kynar)		R
Ryton	ALL	R
TFE (Teflon)		R
Vinyl Ester	ALL	R U
		°F 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460
		°C 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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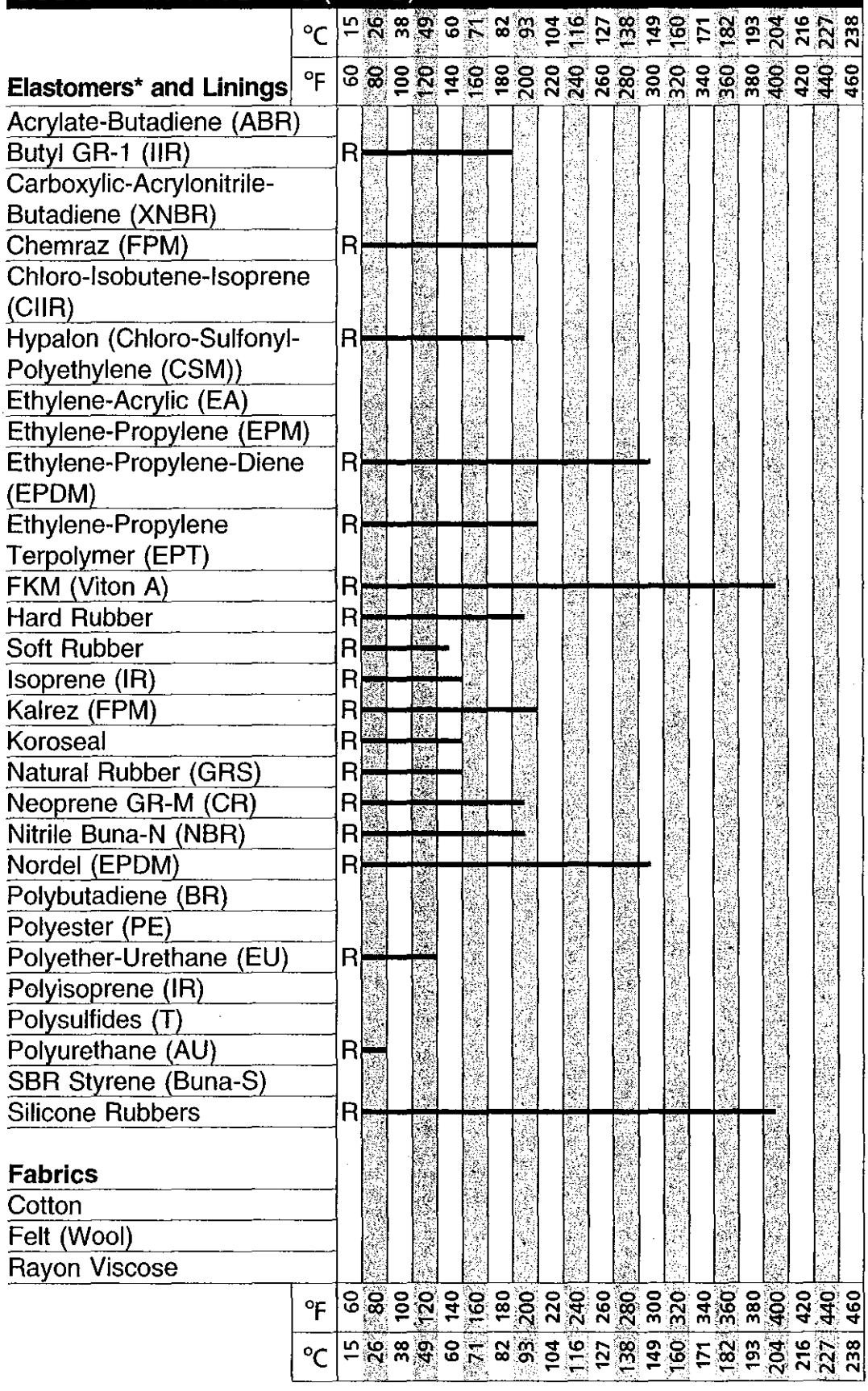
SODIUM THIOSULFATE (HYPO)



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SOUR CRUDE OIL

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum																												
Aluminum Bronze			G																									
Brass																												
Bronze			E																									
Carbon Steel			G																									
Columbium (Niobium)																												
Copper																												
Hastelloy B/B-2			E																									
Hastelloy C/C-276			E																									
Hastelloy D	58%		G																									
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625																												
Incolloy 800/825																												
Lead																												
Monel 400			E																									
Naval Bronze			S																									
Nickel 200/201																												
Ni-Resist																												
Stainless Steels																												
Type 304/347																												
Type 316/316 L			E																									
Type 400 series			G																									
Type 904-L																												
17-4 PH			G																									
20 Cb 3			E																									
E-Bright 26-1																												
Silicon Bronze			G																									
Silicon Copper																												
Stellite			E																									
Tantalum																												
Titanium																												
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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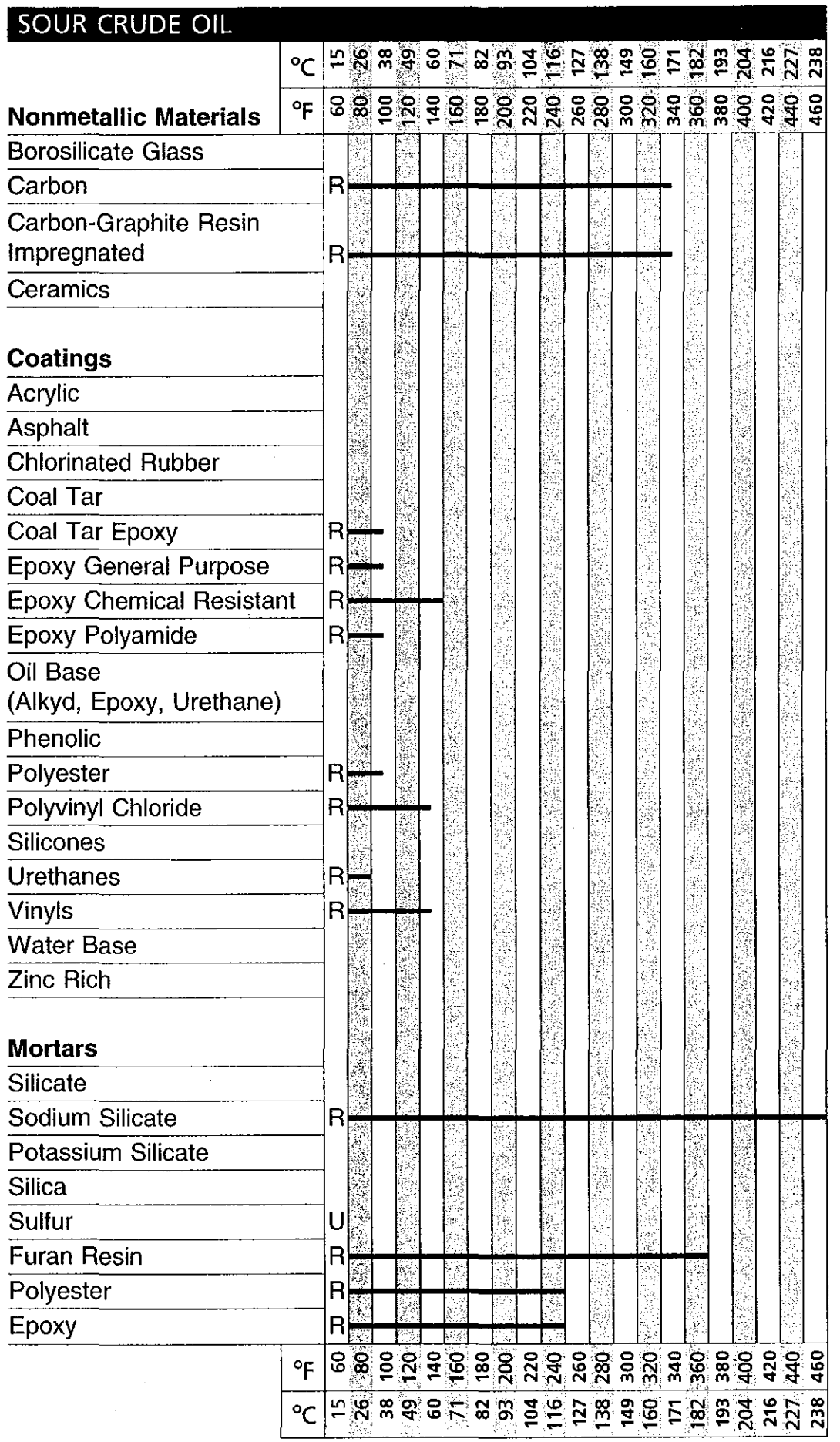
SOUR CRUDE OIL



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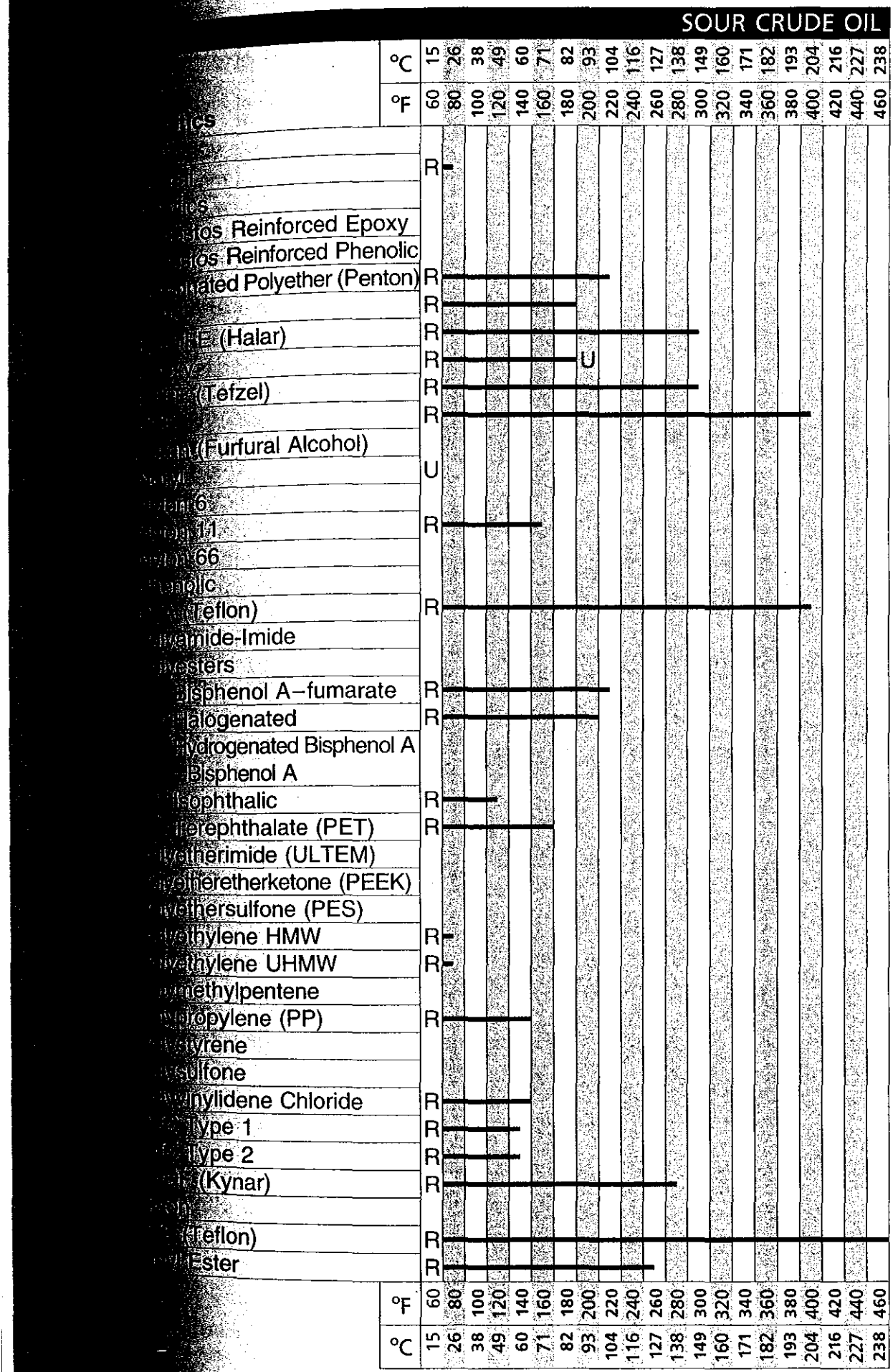

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SOUR CRUDE OIL

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)		U																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)		R																				
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		U																				
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)		U																				
Ethylene-Propylene Terpolymer (EPT)		U																				
FKM (Viton A)		R																				
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)		U																				
Kalrez (FPM)		R																				
Koroseal																						
Natural Rubber (GRS)		U																				
Neoprene GR-M (CR)		U																				
Nitrile Buna-N (NBR)		R																				
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)		U																				
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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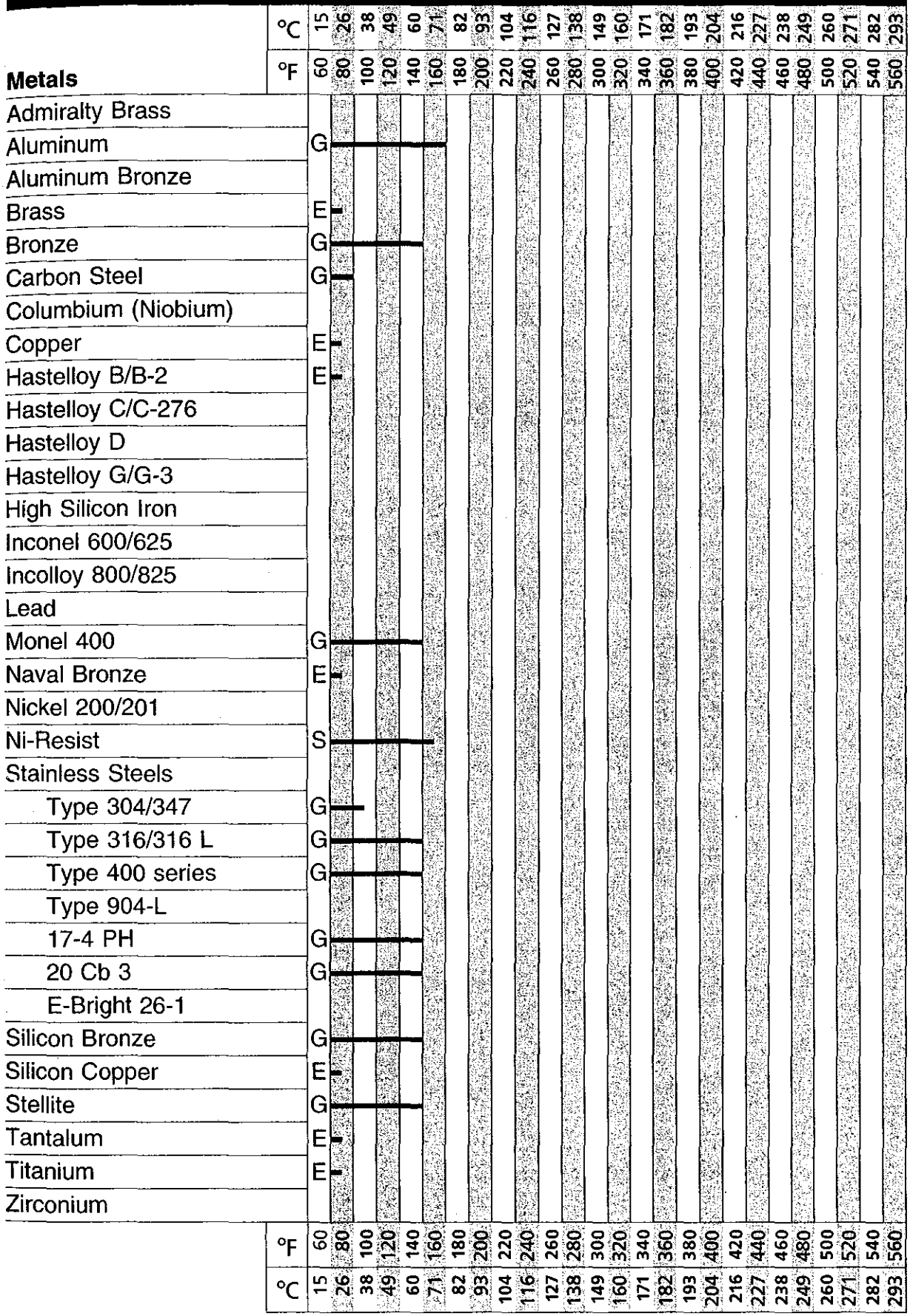
SOYBEAN OIL



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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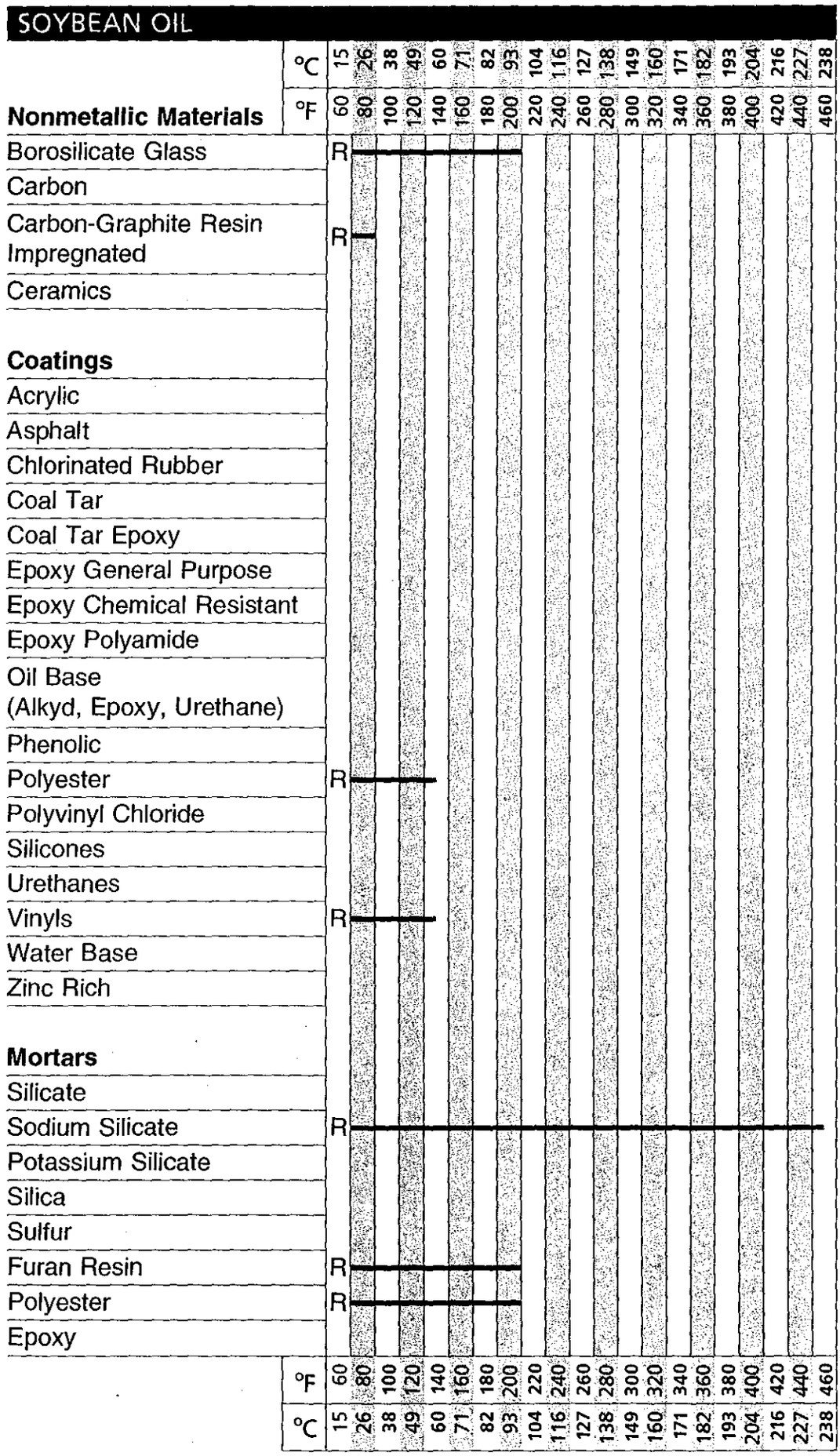
SOYBEAN OIL



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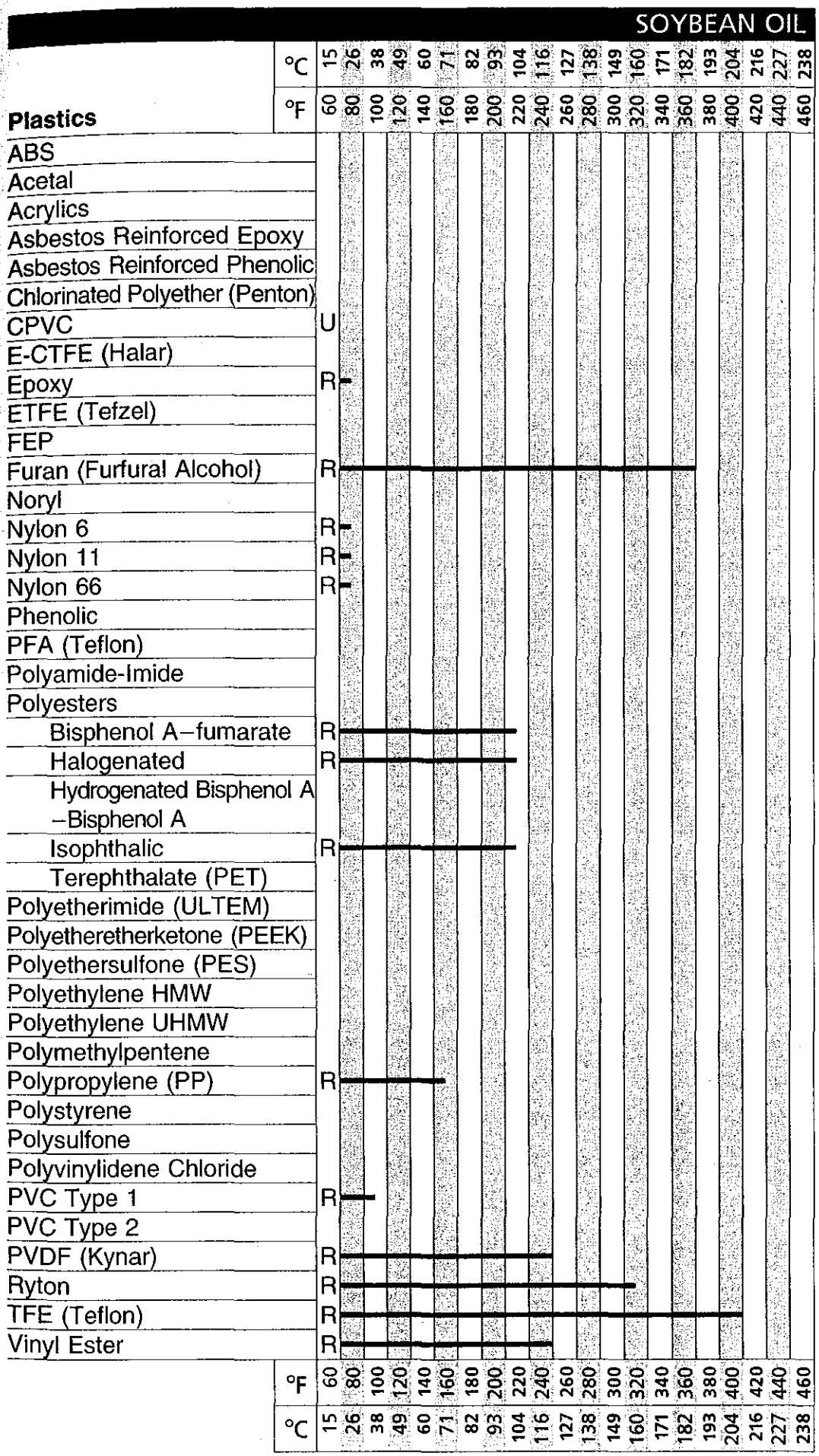

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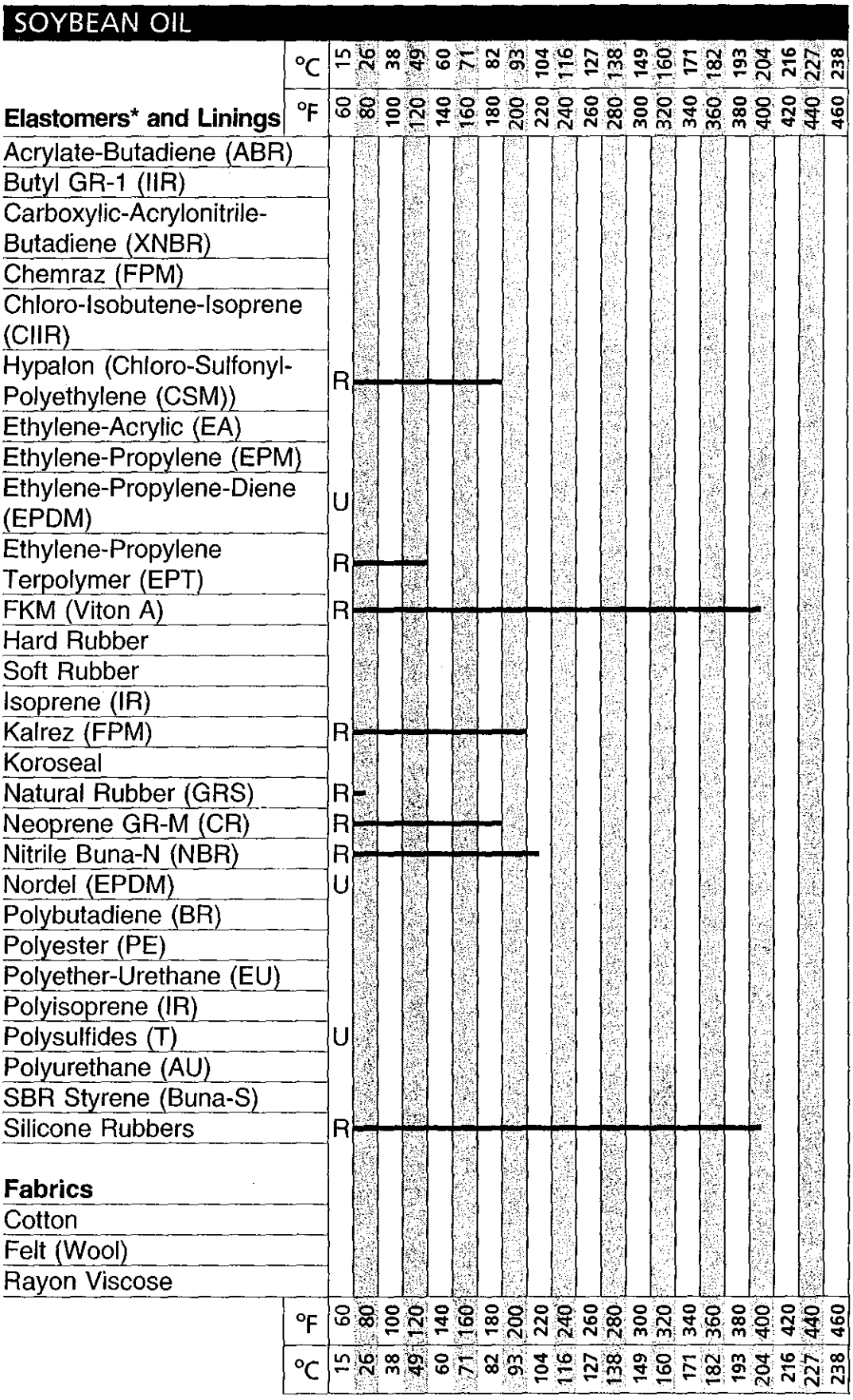
SOYBEAN OIL



*See also Nylon 11 under PLASTICS

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SPECULUM PLATING SOLUTION

Metals	°C	°F
Admiralty Brass		
Aluminum		
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel		
Columbium (Niobium)		
Copper		
Hastelloy B/B-2		
Hastelloy C/C-276		
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625		
Incolloy 800/825		
Lead		
Monel 400		
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347		
Type 316/316 L		
Type 400 series		
Type 904-L		
17-4 PH		
20 Cb 3		
E-Bright 26-1		
Silicon Bronze		
Silicon Copper		
Stellite		
Tantalum		
Titanium		
Zirconium		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SPECULUM PLATING SOLUTION

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																					
Carbon																					
Carbon-Graphite Resin Impregnated																					
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride																					
Silicones																					
Urethanes																					
Vinyls																					
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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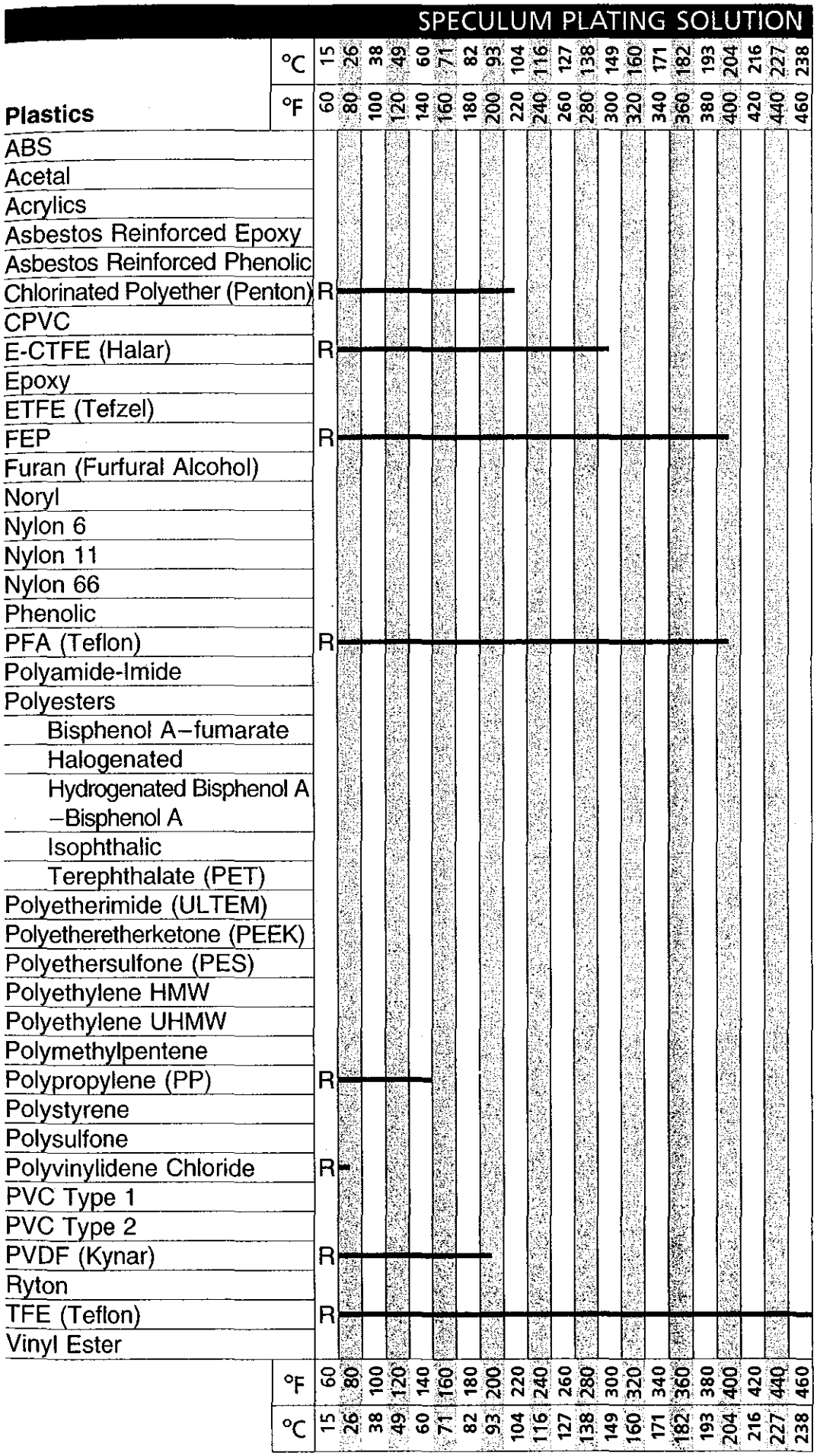

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SPECULUM PLATING SOLUTION

Elastomers* and Linings	°F	°C
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)		
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)		
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)		
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)		
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)		
Nitrile Buna-N (NBR)		
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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STANNIC CHLORIDE

Metals		°C	°F
Admiralty Brass			
Aluminum		U	
Aluminum Bronze		U	
Brass		U	
Bronze		U	
Carbon Steel		U	
Columbium (Niobium)			
Copper		U	
Hastelloy B/B-2	10–50%	G	
Hastelloy C/C-276	TO 50%	G	
Hastelloy D			
Hastelloy G/G-3			
High Silicon Iron		U	
Inconel 600/625		U	
Incolloy 800/825		U	
Lead		U	
Monel 400		U	
Naval Bronze		U	
Nickel 200/201		U	
Ni-Resist			
Stainless Steels			
Type 304/347		U	
Type 316/316 L		U	
Type 400 series		U	
Type 317/317 L		U	
17-4 PH		U	
20 Cb 3		U	
E-Bright 26-1			
Silicon Bronze		U	
Silicon Copper		U	
Stellite			
Tantalum		G	
Titanium	20%	E	
Zirconium	24%	E	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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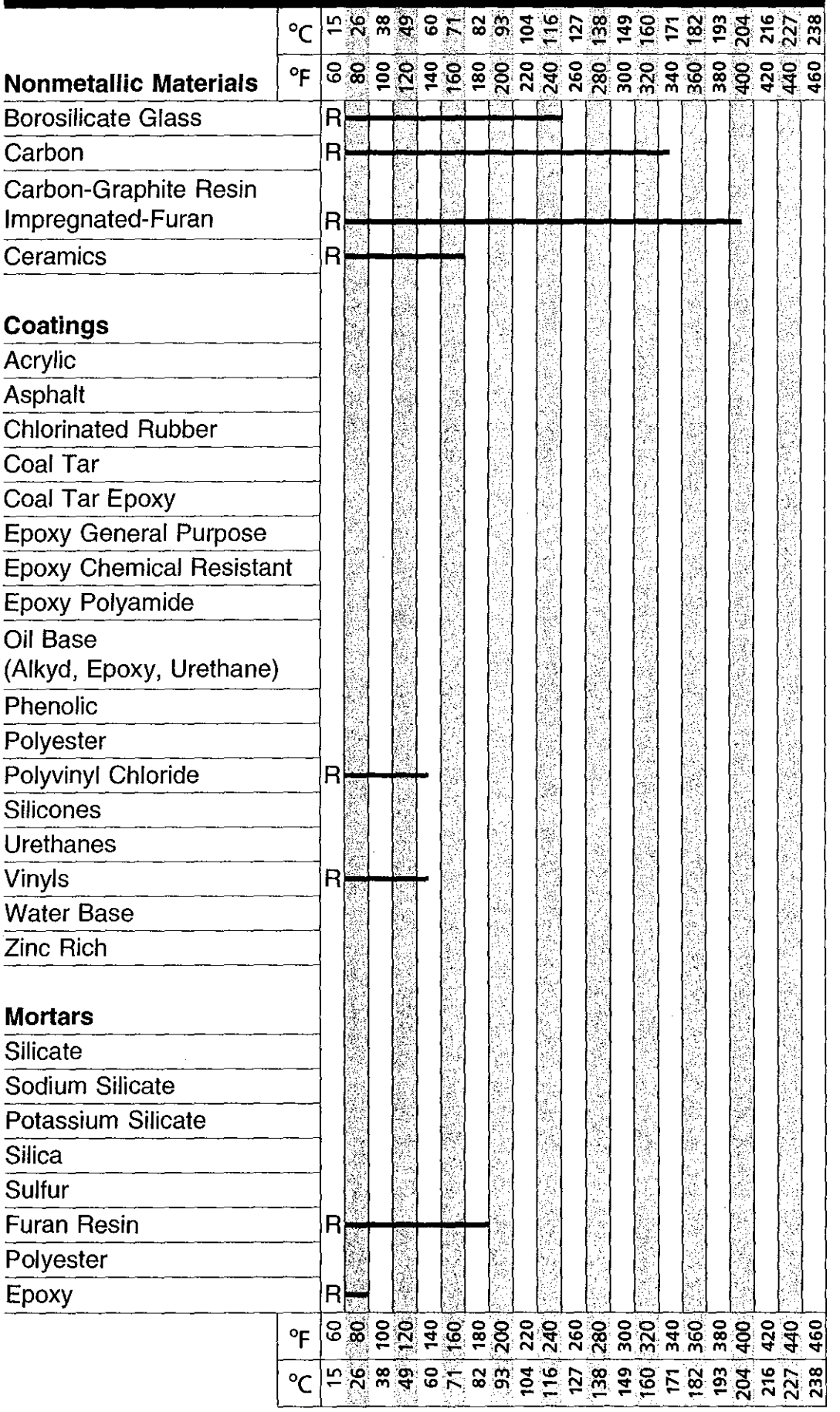
STANNIC CHLORIDE



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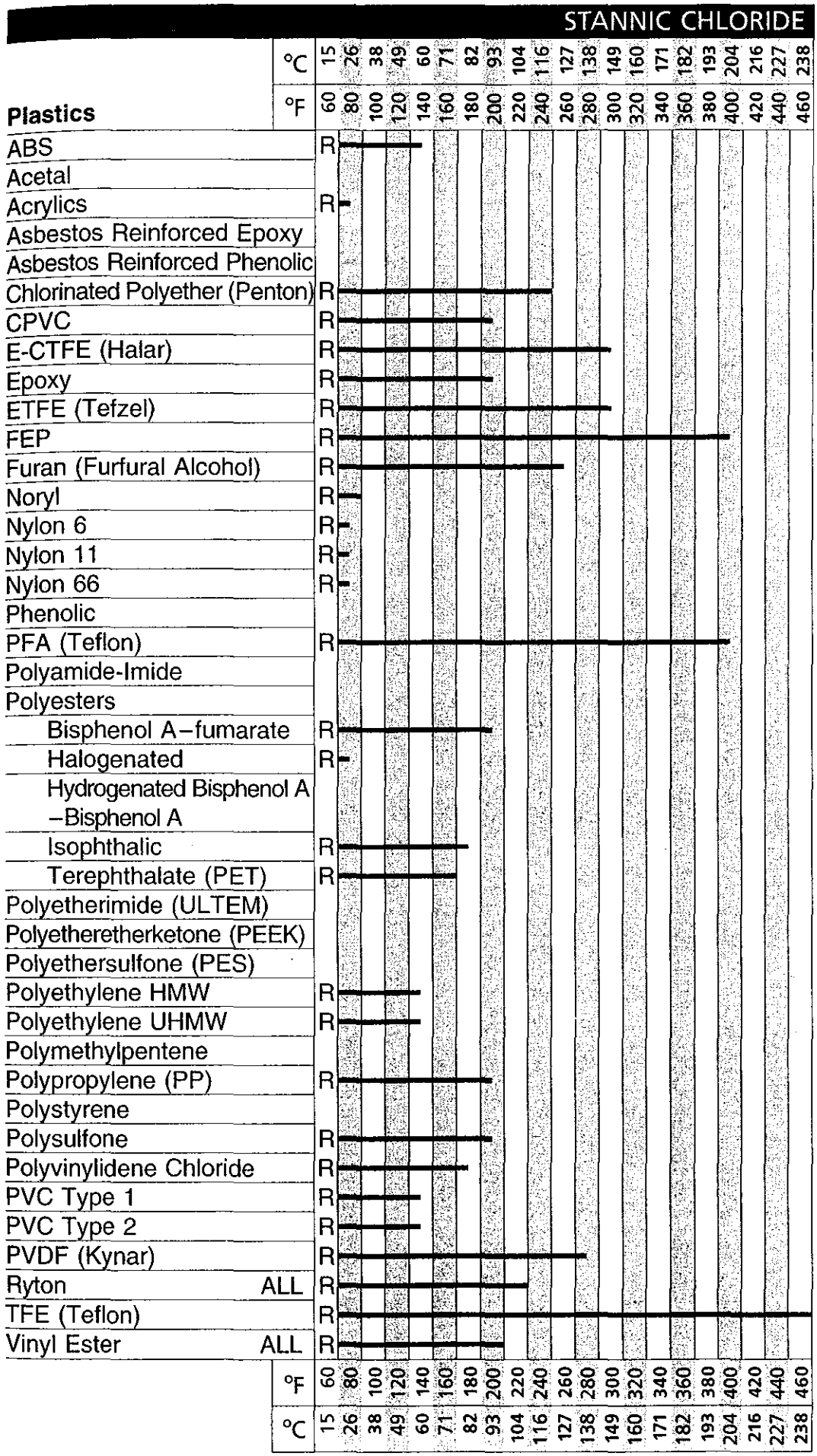

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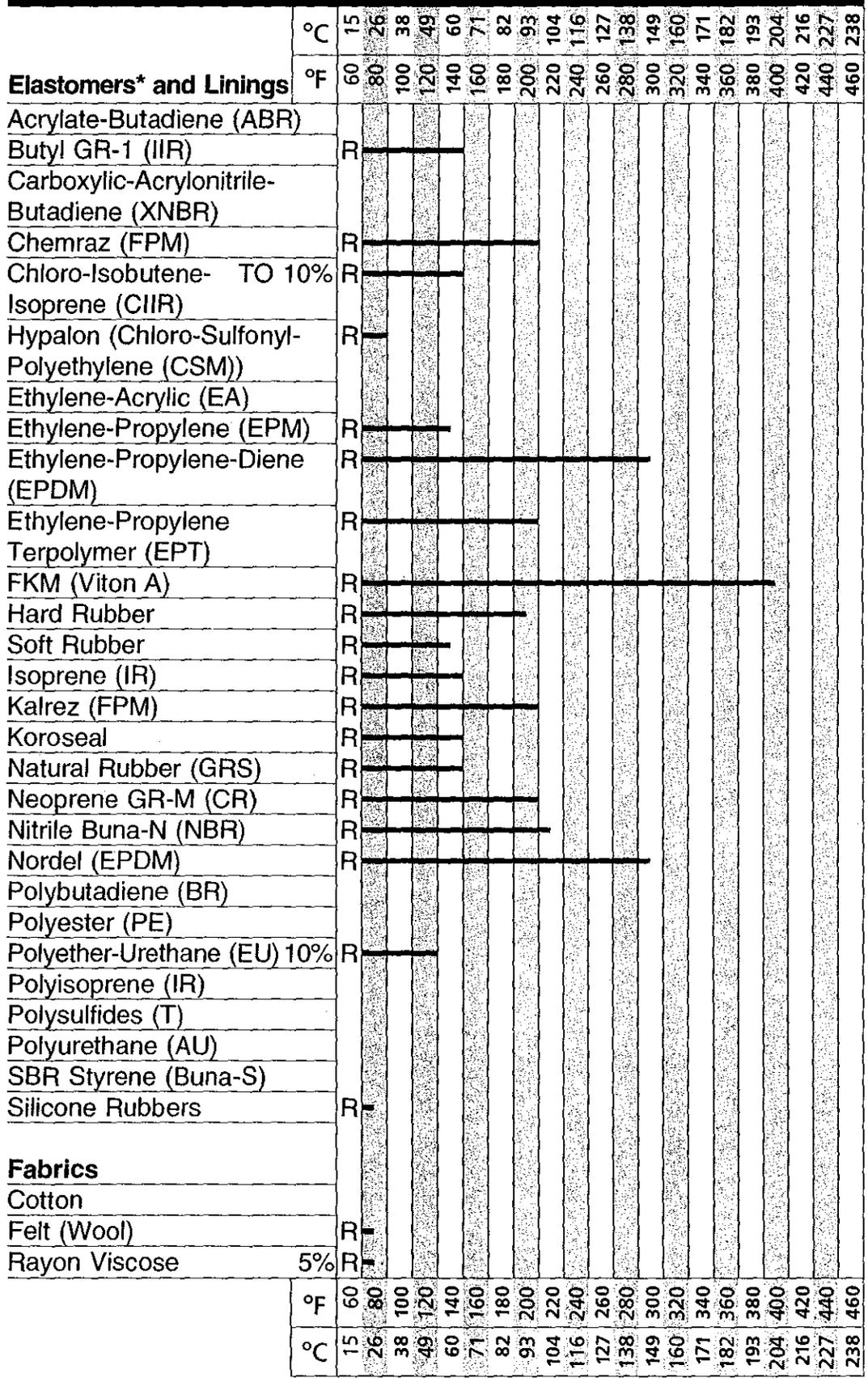
STANNIC CHLORIDE



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STANNOUS CHLORIDE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum		U																										
Aluminum Bronze		U																										
Brass		U																										
Bronze		U																										
Carbon Steel		U																										
Columbium (Niobium)																												
Copper		U																										
Hastelloy B/B-2	1	G																										
Hastelloy C/C-276		G																										
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron		S																										
Inconel 600/625	DRY	G																										
Incolloy 800/825	5%	E																										
Lead		U																										
Monel 400	DRY	G																										
Naval Bronze		U																										
Nickel 200/201	DRY	G																										
Ni-Resist																												
Stainless Steels																												
Type 304/347		U																										
Type 316/316 L	10%	E																										
Type 400 series		U																										
Type 904-L																												
17-4 PH																												
20 Cb 3	10%	E																										
E-Bright 26-1	10%	G																										
Silicon Bronze		U																										
Silicon Copper	5%	G																										
Stellite																												
Tantalum		G																										
Titanium	SAT	E																										
Zirconium	TO 70%	G																										
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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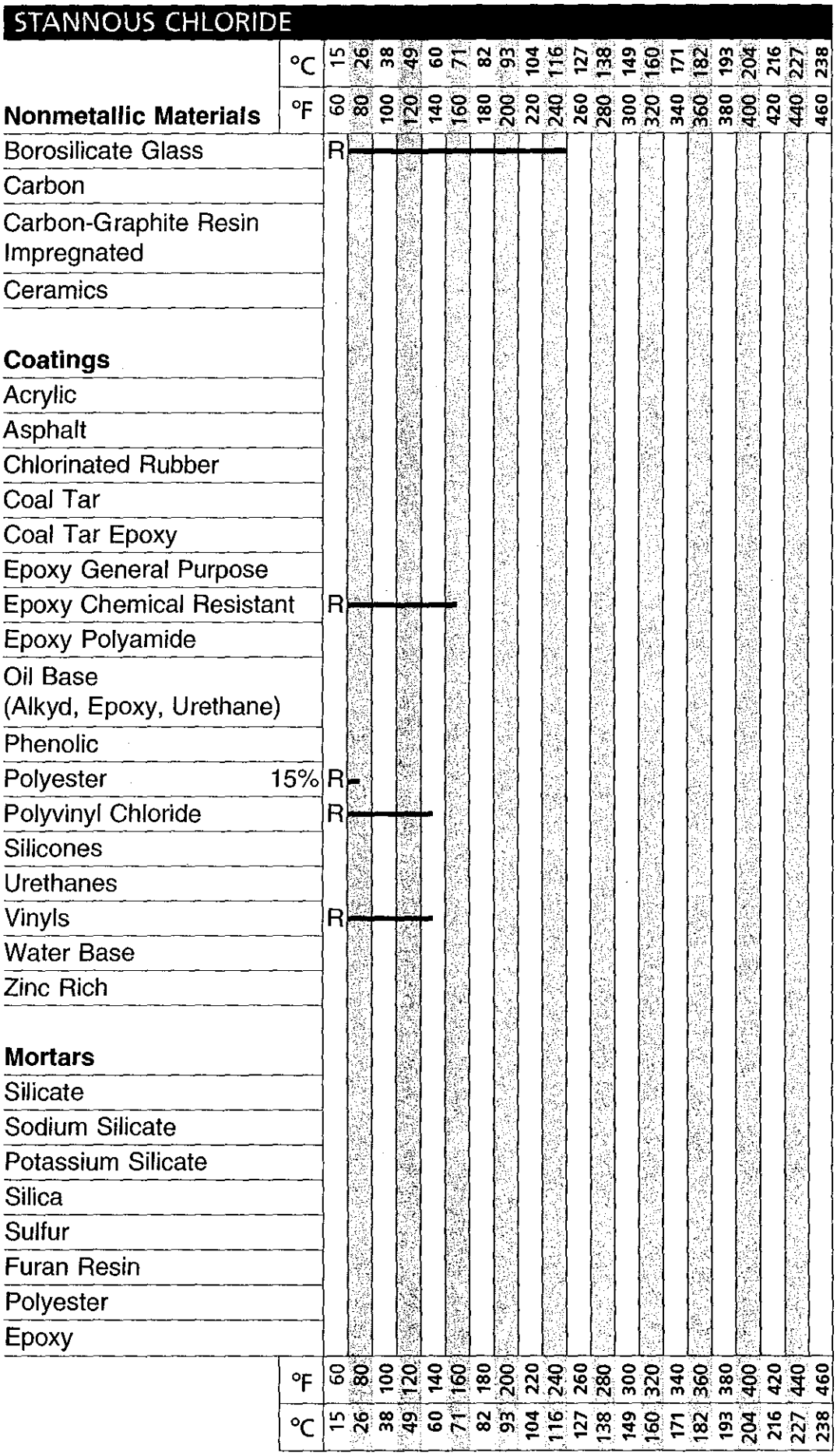
STANNOUS CHLORIDE



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STANNOUS CHLORIDE

Plastics		°C	°F
ABS	R	15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238	60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460
KEL-F (CTFE)	R		
Acrylics	R		
Asbestos Reinforced Epoxy			
Asbestos Reinforced Phenolic			
Chlorinated Polyether (Penton)	R		
CPVC	R		
E-CTFE (Halar)	R		
Epoxy	R		
ETFE (Tefzel)	R		
FEP	R		
Furan (Furfural Alcohol)	R		
Noryl	R		
Nylon 6	U		
Nylon 11 DRY	R		
Nylon 66	U		
Phenolic			
PFA (Teflon)	R		
Polyamide-Imide			
Polyesters			
Bisphenol A–fumarate	R		
Halogenated	R		
Hydrogenated Bisphenol A –Bisphenol A			
Isophthalic	R		
Terephthalate (PET)	R		
Polyetherimide (ULTEM)			
Polyetheretherketone (PEEK)			
Polyethersulfone (PES)			
Polyethylene HMW	R		
Polyethylene UHMW	R		
Polymethylpentene			
Polypropylene (PP)	R		
Polystyrene			
Polysulfone			
Polyvinylidene Chloride	R		
PVC Type 1	R		
PVC Type 2	R		
PVDF (Kynar)	R		
Ryton ALL	R		
TFE (Teflon)	R		
Vinyl Ester ALL	R		
	°F	60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460	
	°C	15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238	

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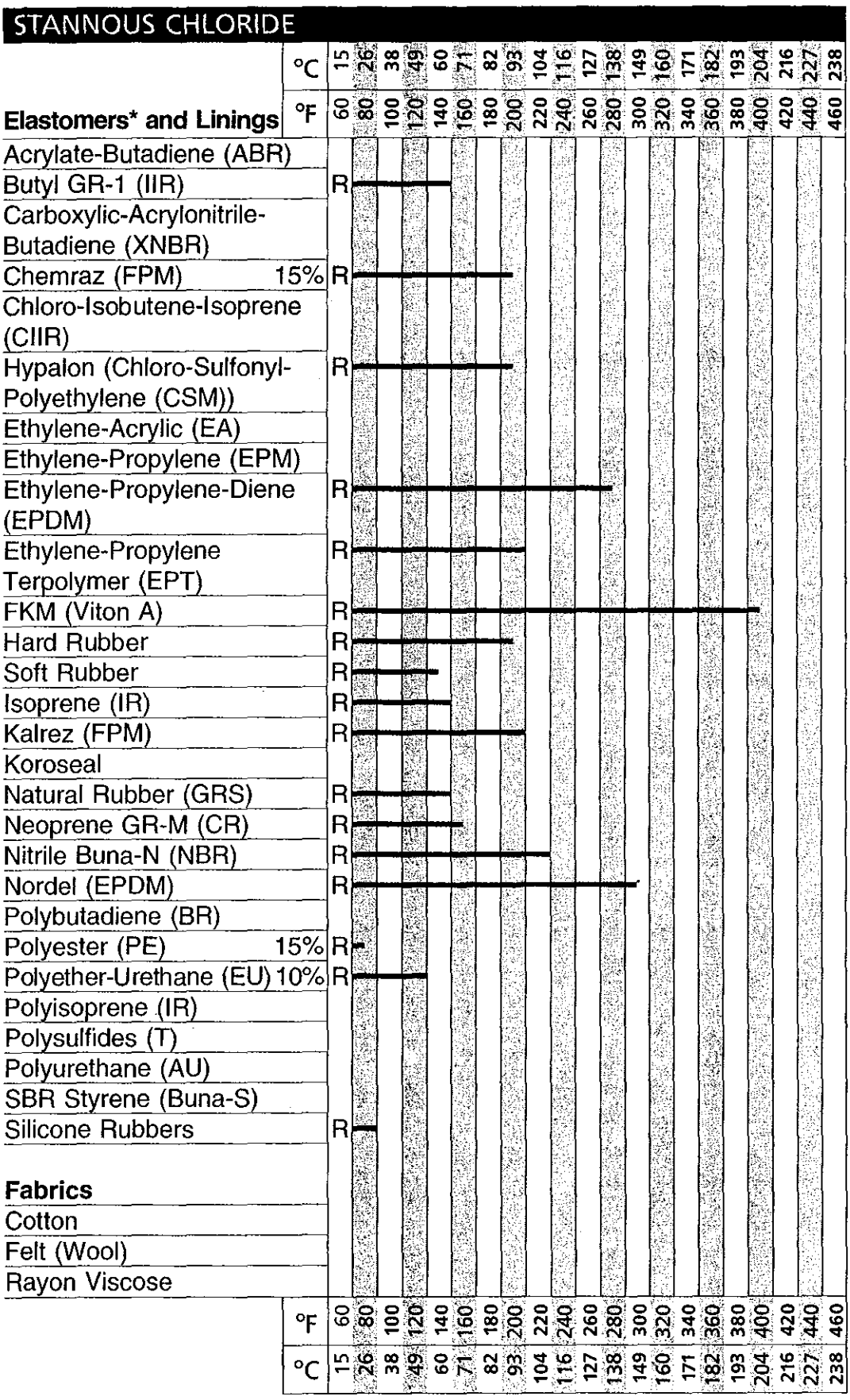
STANNOUS CHLORIDE



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STANNOUS FLUORIDE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L TO 50%	G																										
Type 400 series																											
Type 317/317 L	G																										
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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STANNOUS FLUORIDE

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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STANNOUS FLUORIDE

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)	R	
FEP		
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1		
PVC Type 2		
PVDF (Kynar)		
Ryton		
TFE (Teflon)		
Vinyl Ester		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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STANNOUS FLUORIDE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)		R	R	R	R	R	R	R	R													
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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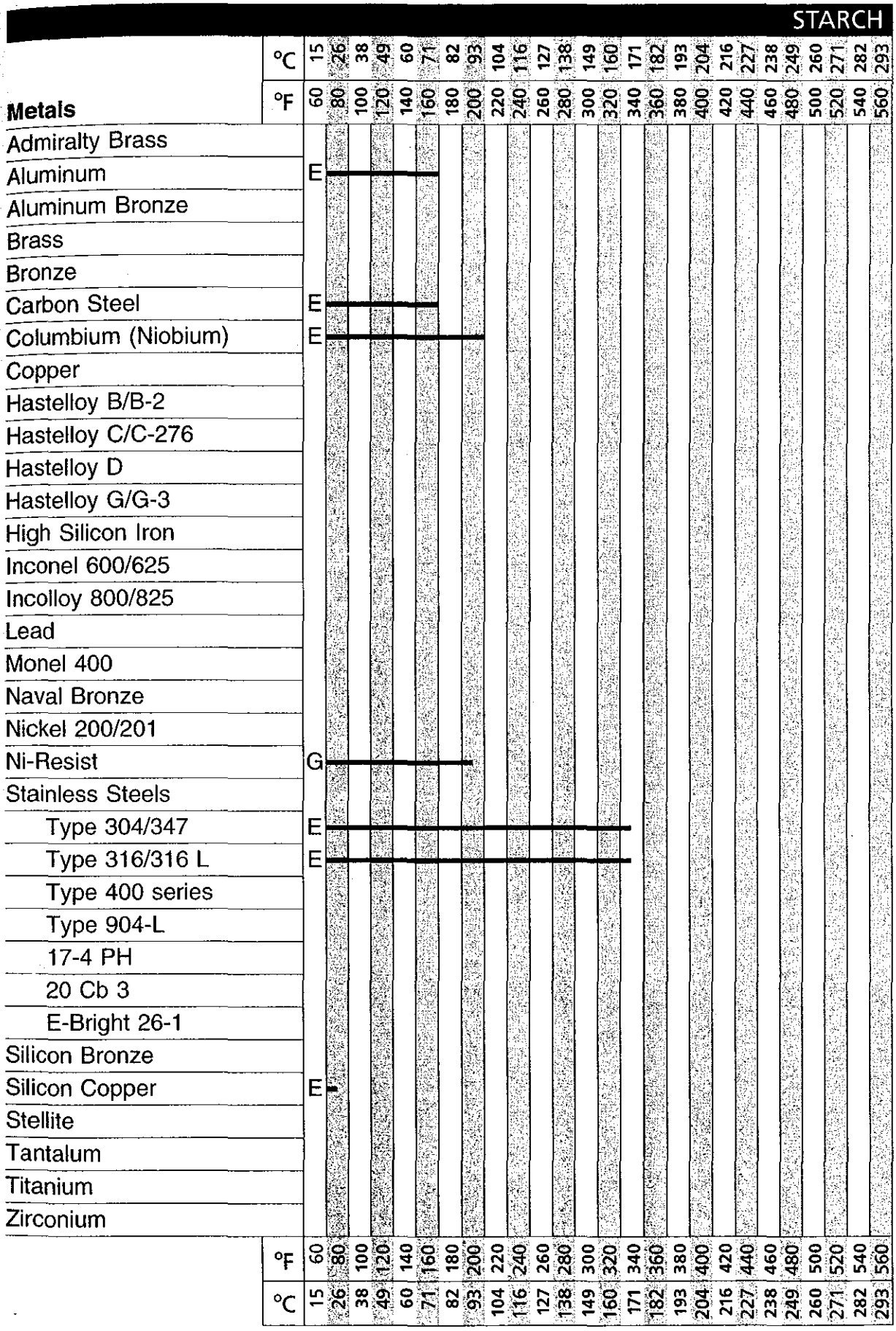

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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STARCH

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
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Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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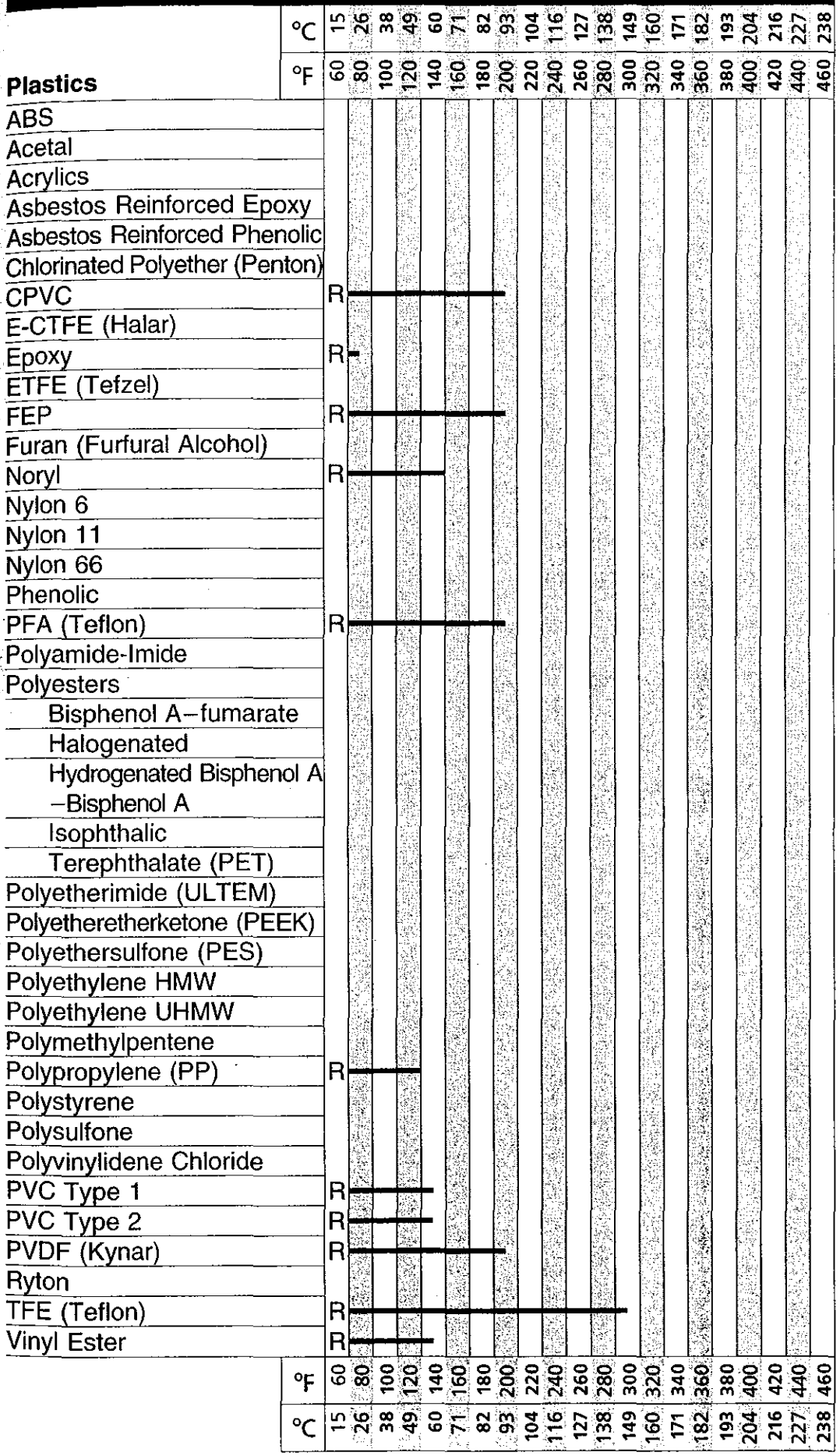

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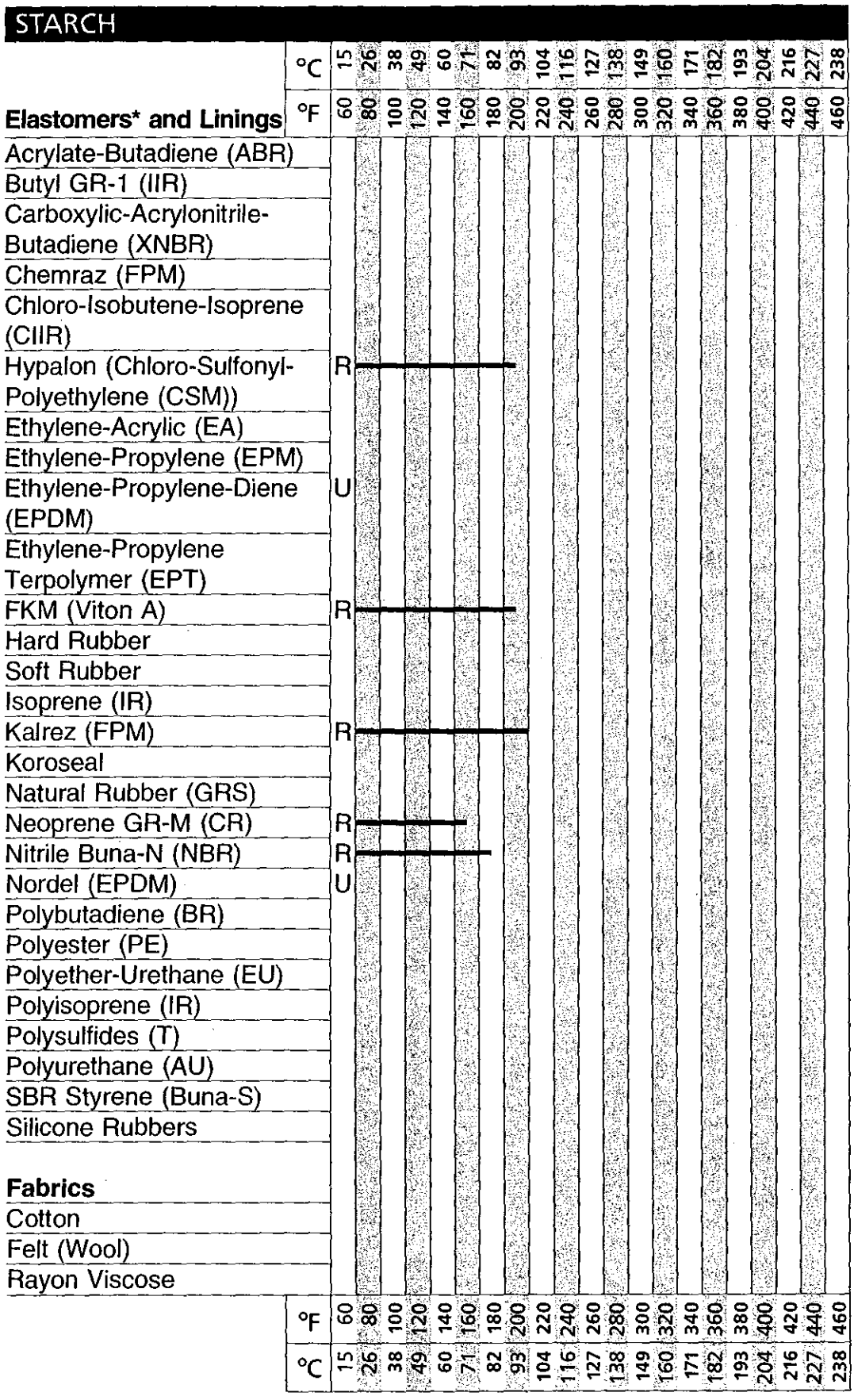
STARCH



*See also Nylon 11 under PLASTICS

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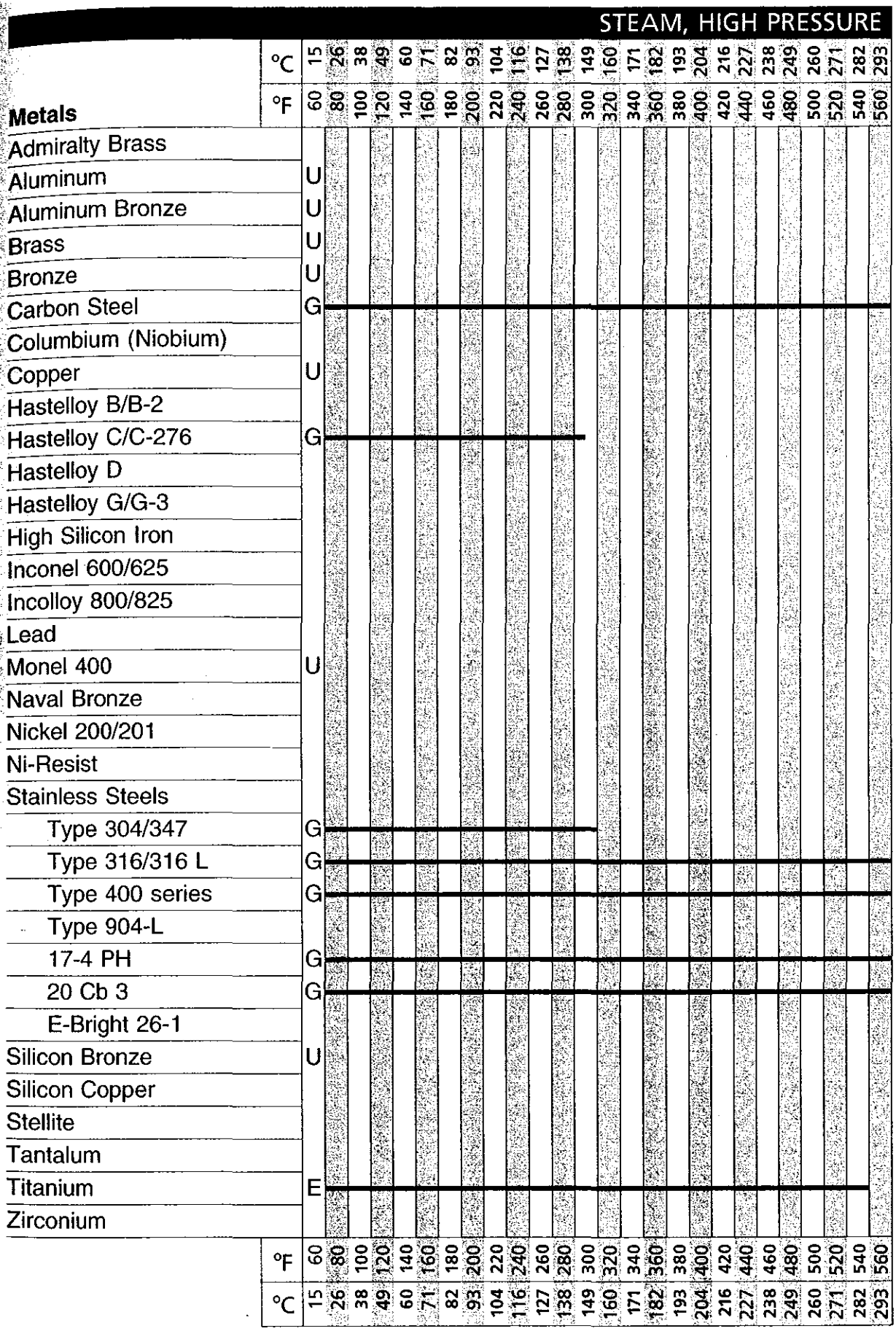
STEAM, HIGH PRESSURE



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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STEAM, HIGH PRESSURE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
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Polyester																						
Polyvinyl Chloride		U																				
Silicones		U																				
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STEAM, HIGH PRESSURE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
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Asbestos Reinforced Epoxy																						
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Chlorinated Polyether (Penton)																						
CPVC	U																					
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Epoxy																						
ETFE (Tefzel)																						
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Furan (Furfural Alcohol)																						
Noryl																						
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Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
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Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)	U																					
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride	U																					
PVC Type 1	U																					
PVC Type 2	U																					
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	U																					
Vinyl Ester	U																					
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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STEAM, HIGH PRESSURE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																					
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)	U																					
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)	U																					
Nitrile Buna-N (NBR)	U																					
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)	U																					
SBR Styrene (Buna-S)																						
Silicone Rubbers	U																					
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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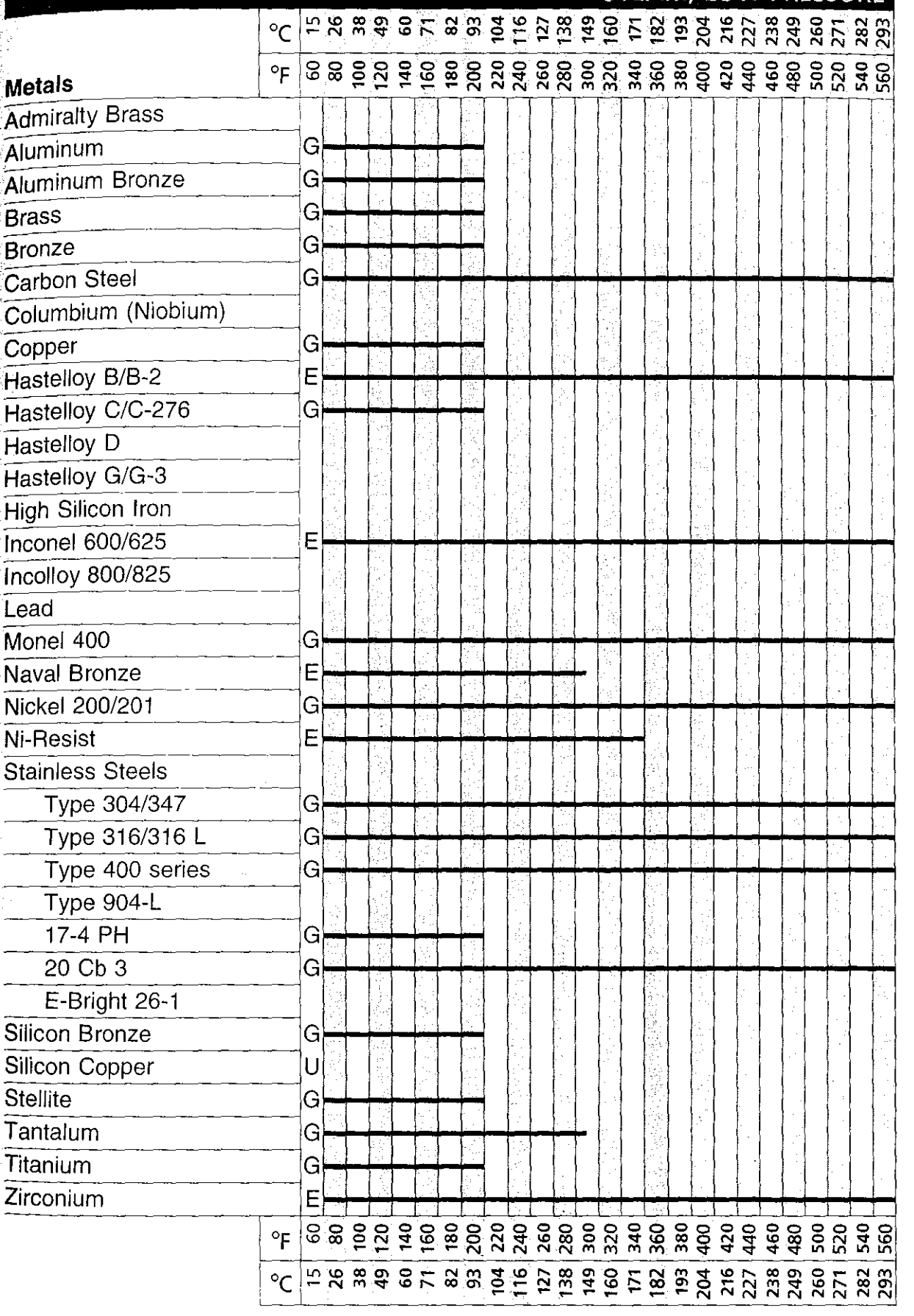
STEAM, LOW PRESSURE



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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STEAM, LOW PRESSURE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated		R																				
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride		U																				
Silicones		U																				
Urethanes																						
Vinyls		U																				
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Mortars																						
Silicate																						
Sodium Silicate																						
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Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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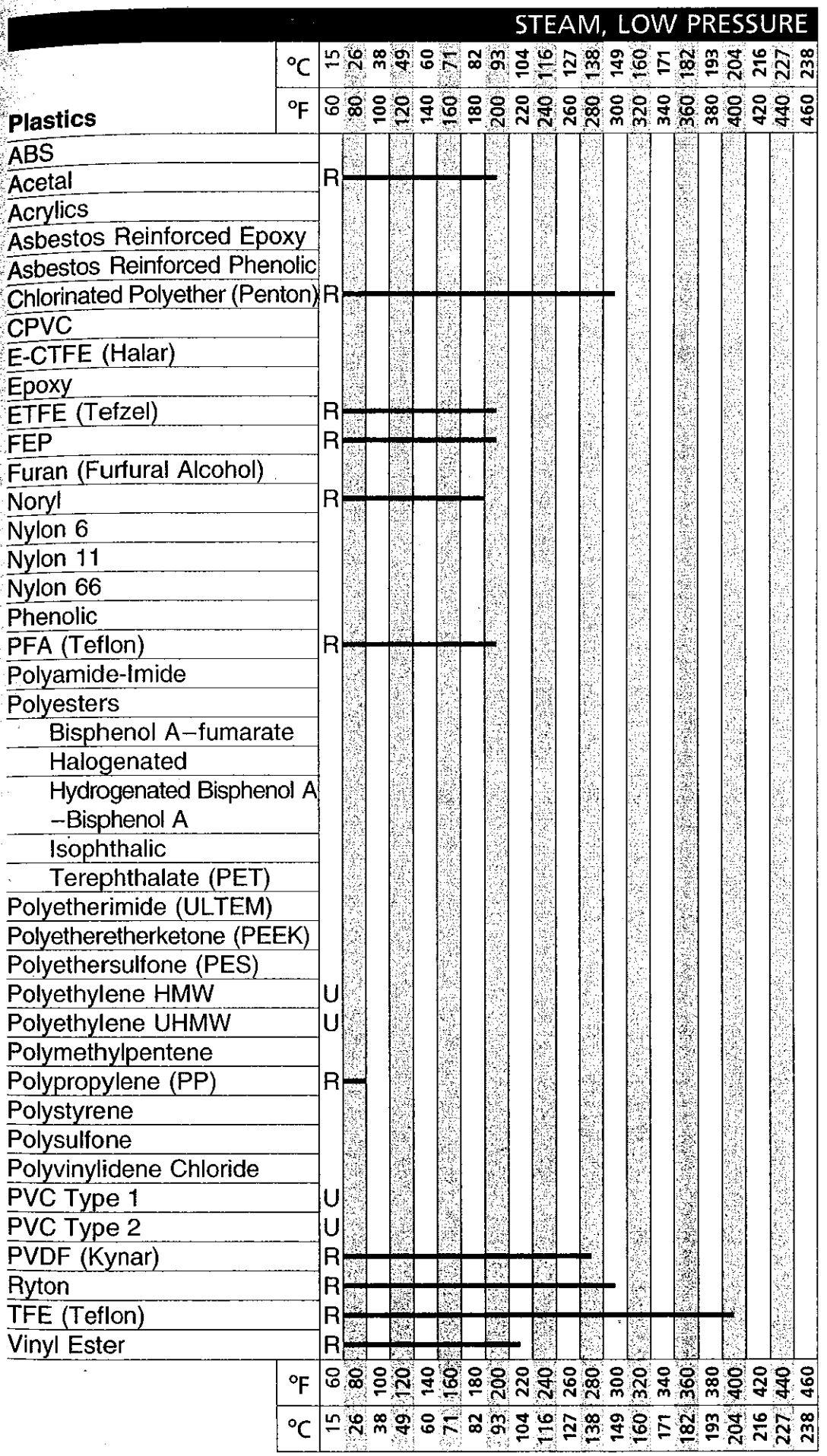
STEAM, LOW PRESSURE



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STEAM, LOW PRESSURE

Elastomers* and Linings	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																					
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)	U																					
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)	U																					
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)	U																					
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)	U																					
Neoprene GR-M (CR)	U																					
Nitrile Buna-N (NBR)	U																					
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)	U																					
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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STEAM, MEDIUM PRESSURE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze	G																										
Brass	G																										
Bronze	G																										
Carbon Steel	G																										
Columbium (Niobium)																											
Copper	G																										
Hastelloy B/B-2																											
Hastelloy C/C-276	G																										
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625	E																										
Incolloy 800/825																											
Lead																											
Monel 400	E																										
Naval Bronze	E																										
Nickel 200/201	E																										
Ni-Resist																											
Stainless Steels																											
Type 304/347	G																										
Type 316/316 L	G																										
Type 400 series	G																										
Type 904-L																											
17-4 PH	G																										
20 Cb 3	G																										
E-Bright 26-1																											
Silicon Bronze	G																										
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium	E																										
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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STEAM, MEDIUM PRESSURE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
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Epoxy Polyamide																						
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Phenolic																						
Polyester																						
Polyvinyl Chloride		U																				
Silicones		U																				
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Vinyls		U																				
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Sodium Silicate																						
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Sulfur																						
Furan Resin																						
Polyester																						
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	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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STEAM, MEDIUM PRESSURE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
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ETFE (Tefzel)	R																					
FEP	R																					
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Polypropylene (PP)	U																					
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Polysulfone	U																					
Polyvinylidene Chloride	U																					
PVC Type 1	U																					
PVC Type 2	U																					
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester																						
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	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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STEAM, MEDIUM PRESSURE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
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*See also Nylon 11 under PLASTICS

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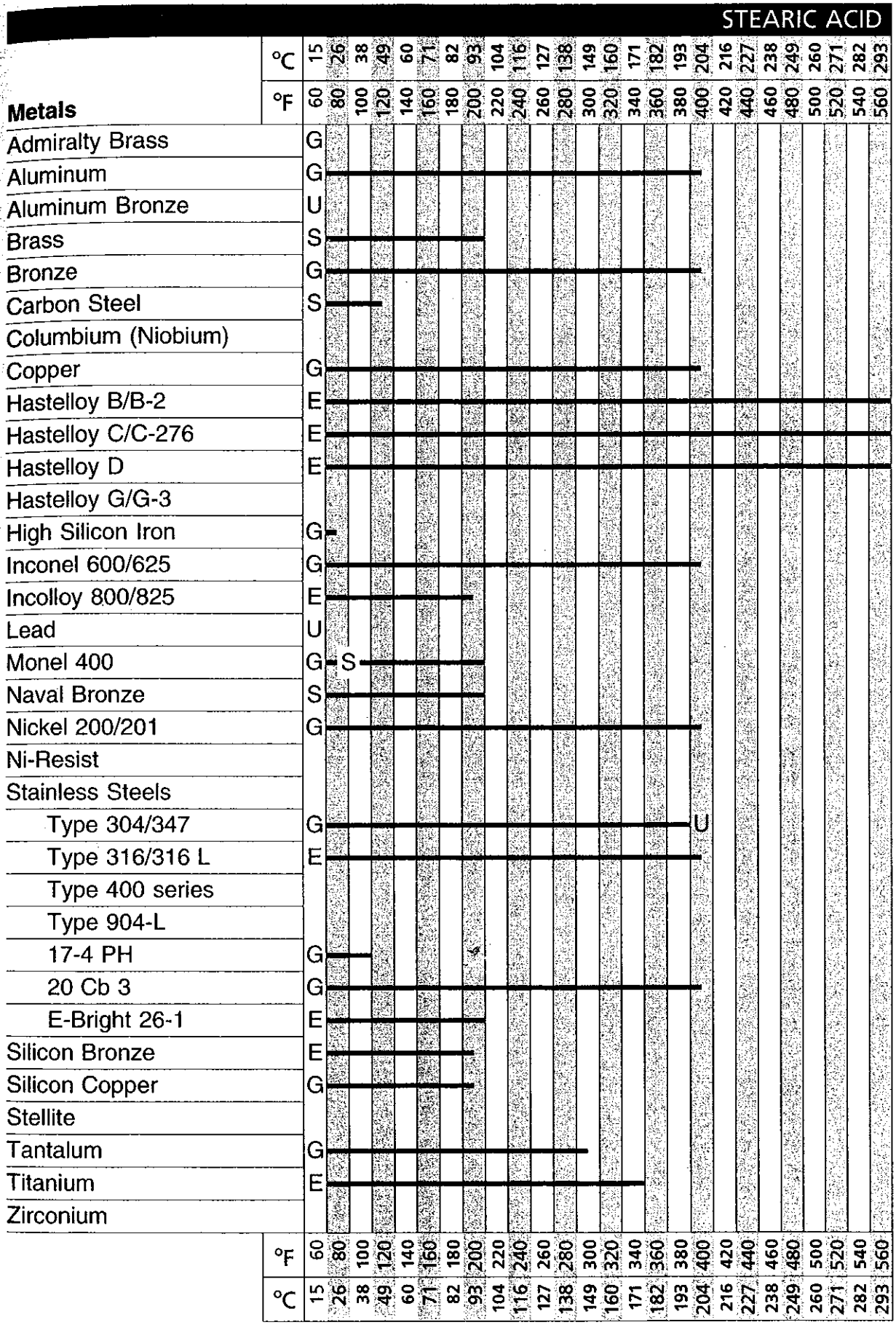

FOR METALS

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S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

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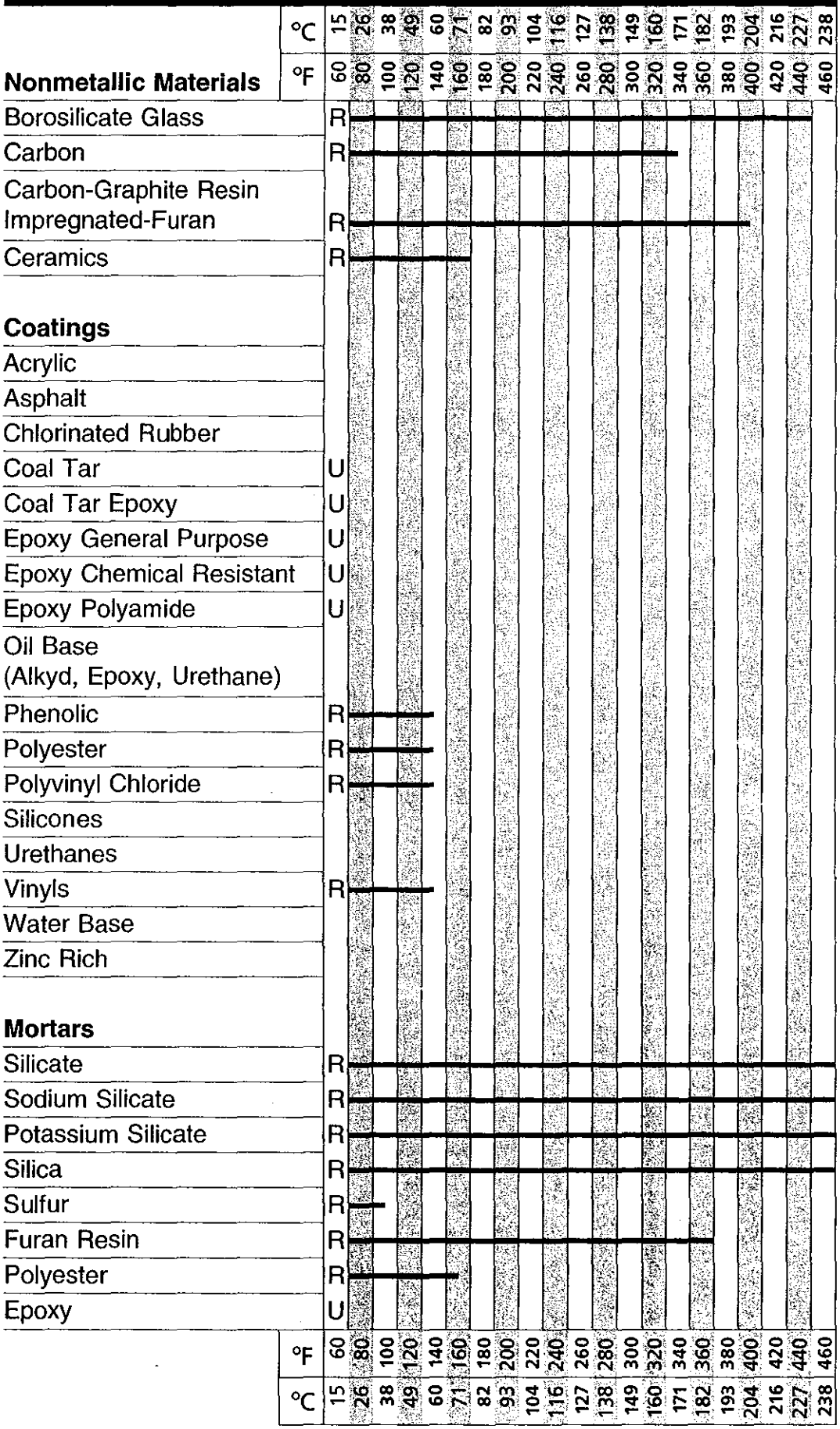
STEARIC ACID



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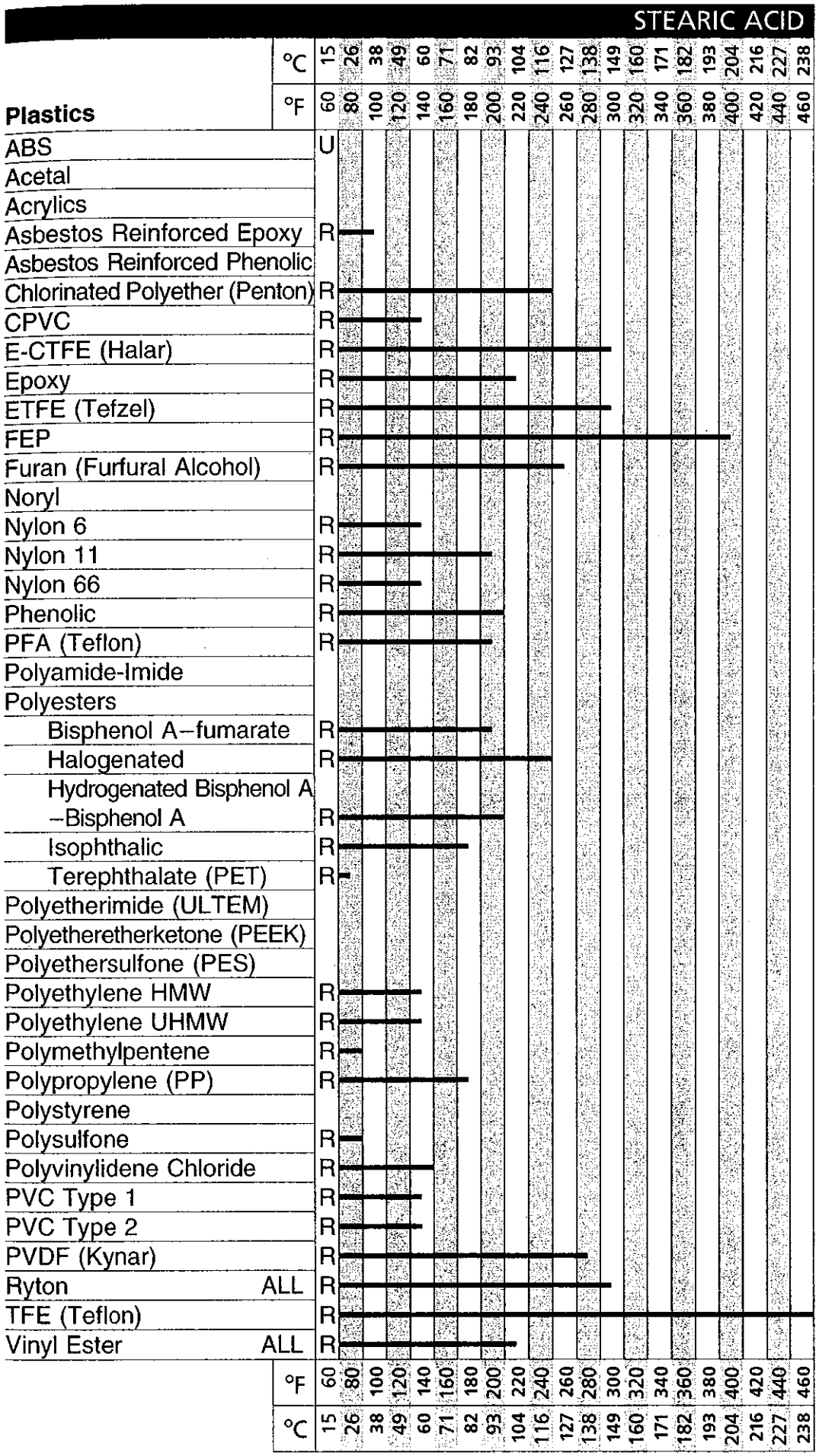

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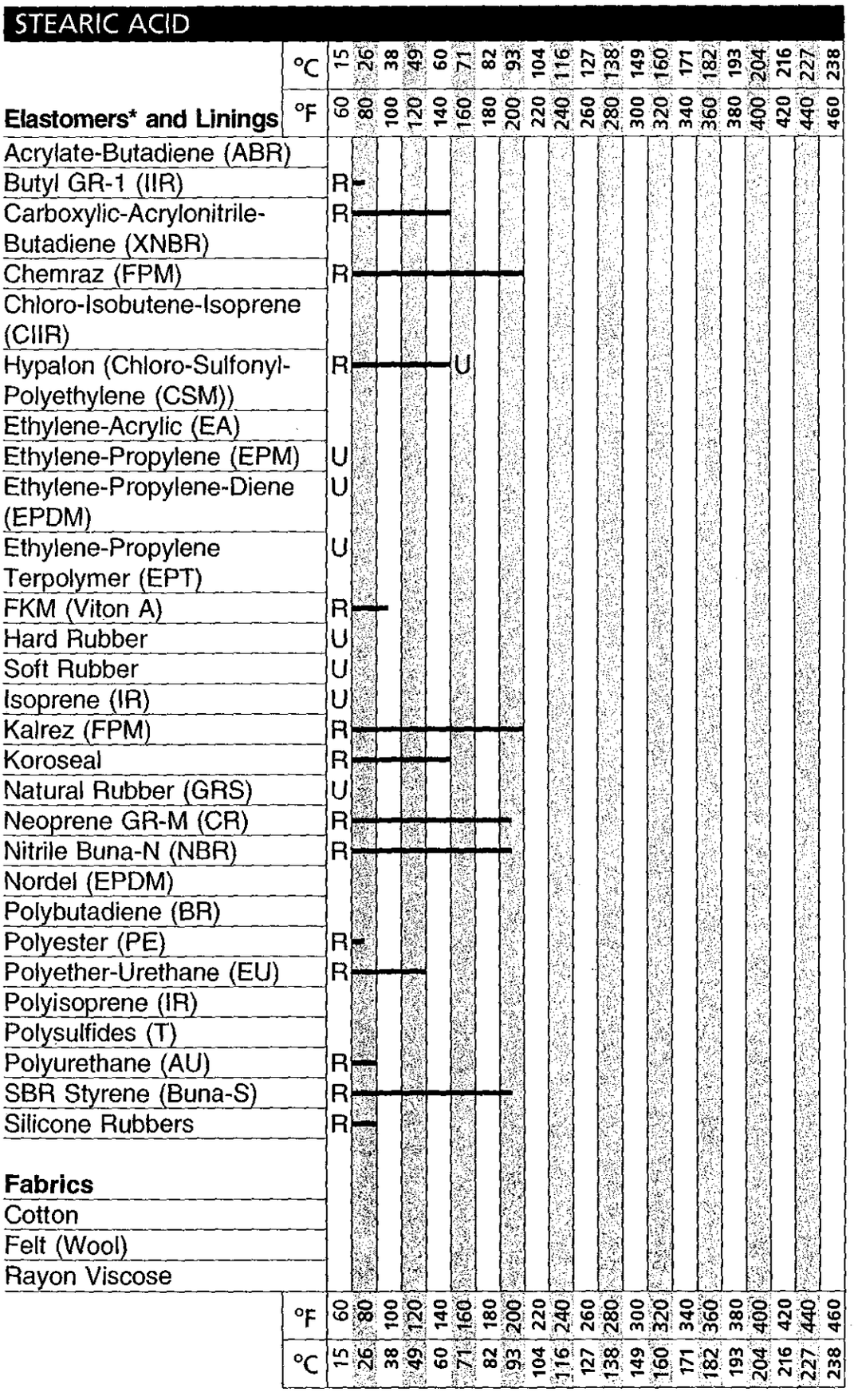
STEARIC ACID



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STODDARD'S SOLVENT

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G																									
Aluminum Bronze																											
Brass		G																									
Bronze		G																									
Carbon Steel		G																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276		E																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400		G																									
Naval Bronze		E	G																								
Nickel 200/201		G																									
Ni-Resist		E																									
Stainless Steels																											
Type 304/347		G																									
Type 316/316 L		G																									
Type 400 series																											
Type 904-L																											
17-4 PH		G																									
20 Cb 3		G																									
E-Bright 26-1																											
Silicon Bronze		G																									
Silicon Copper																											
Stellite		G																									
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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STODDARD'S SOLVENT

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass		R																				
Carbon		R																				
Carbon-Graphite Resin Impregnated		R																				
Ceramics		R																				
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones		U																				
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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STODDARD'S SOLVENT

Plastics	°C	°F
ABS	R	
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC	U	
E-CTFE (Halar)	R	
Epoxy	R	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)		
Noryl	U	
Nylon 6	R	
Nylon 11	R	
Nylon 66	R	
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide	R	
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic	R	
Terephthalate (PET)	R	
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	U	
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone	R	
Polyvinylidene Chloride	R	
PVC Type 1	R	
PVC Type 2	U	
PVDF (Kynar)	R	
Ryton		
TFE (Teflon)	R	
Vinyl Ester	R	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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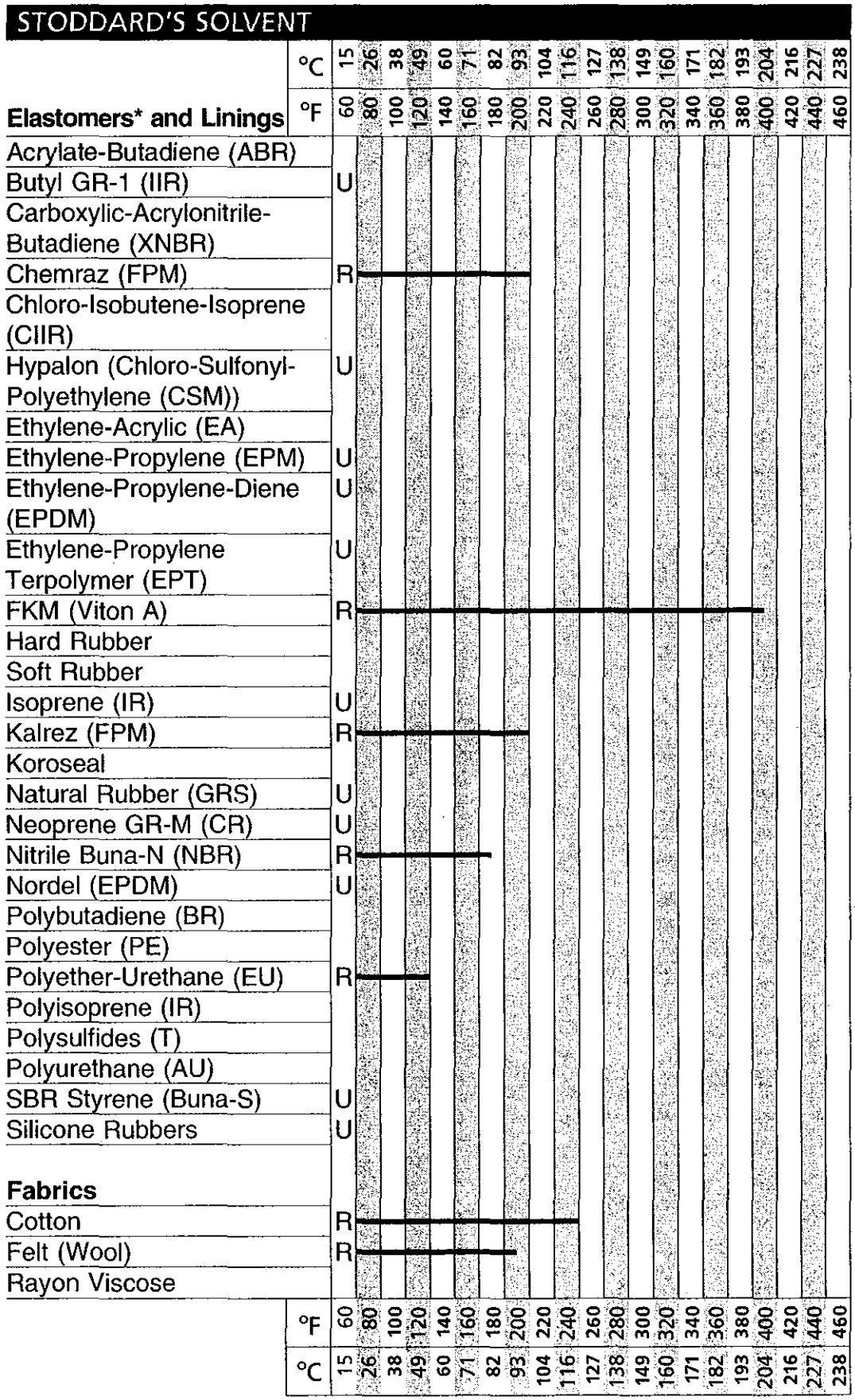
STODDARD'S SOLVENT



*See also Nylon 11 under PLASTICS

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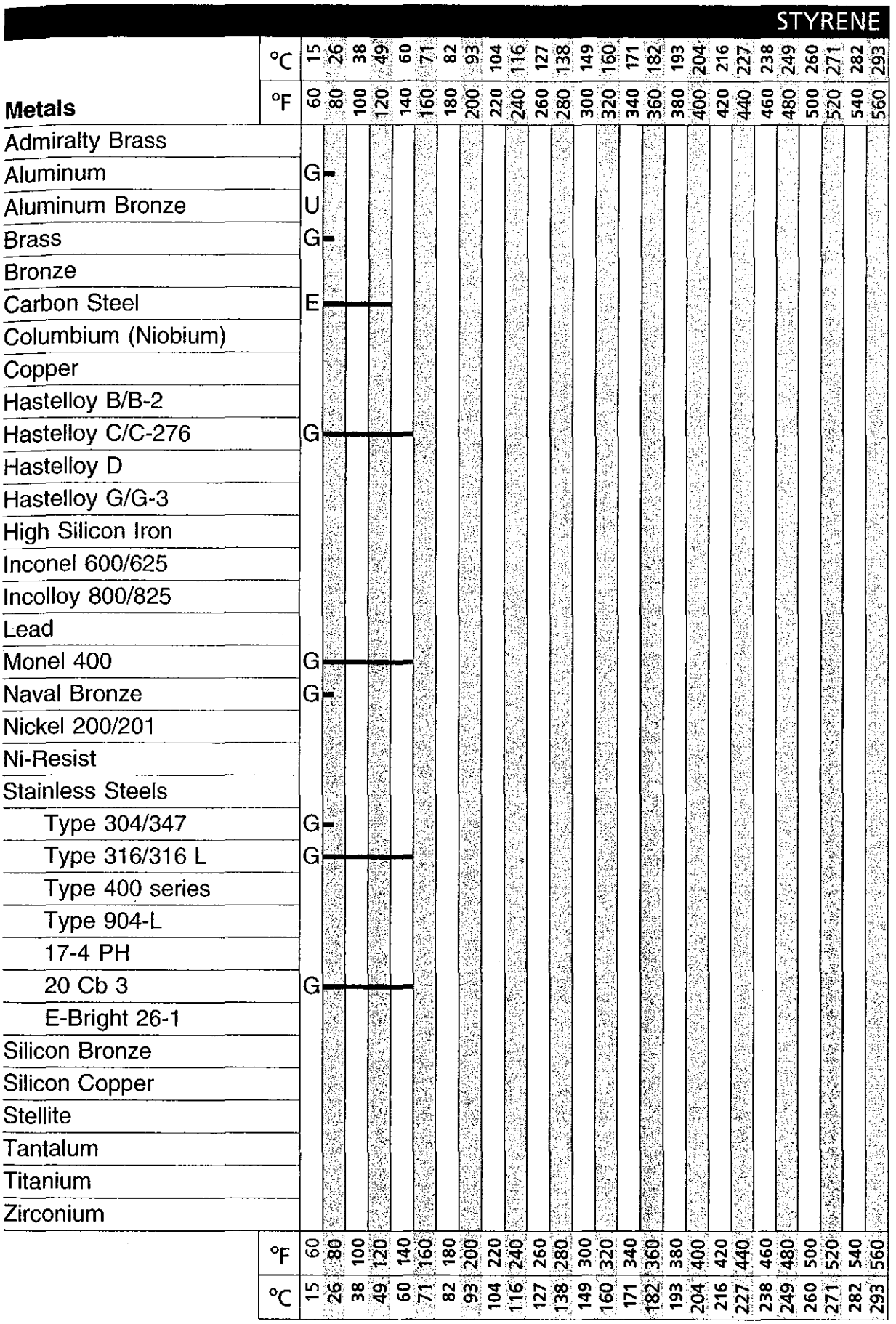

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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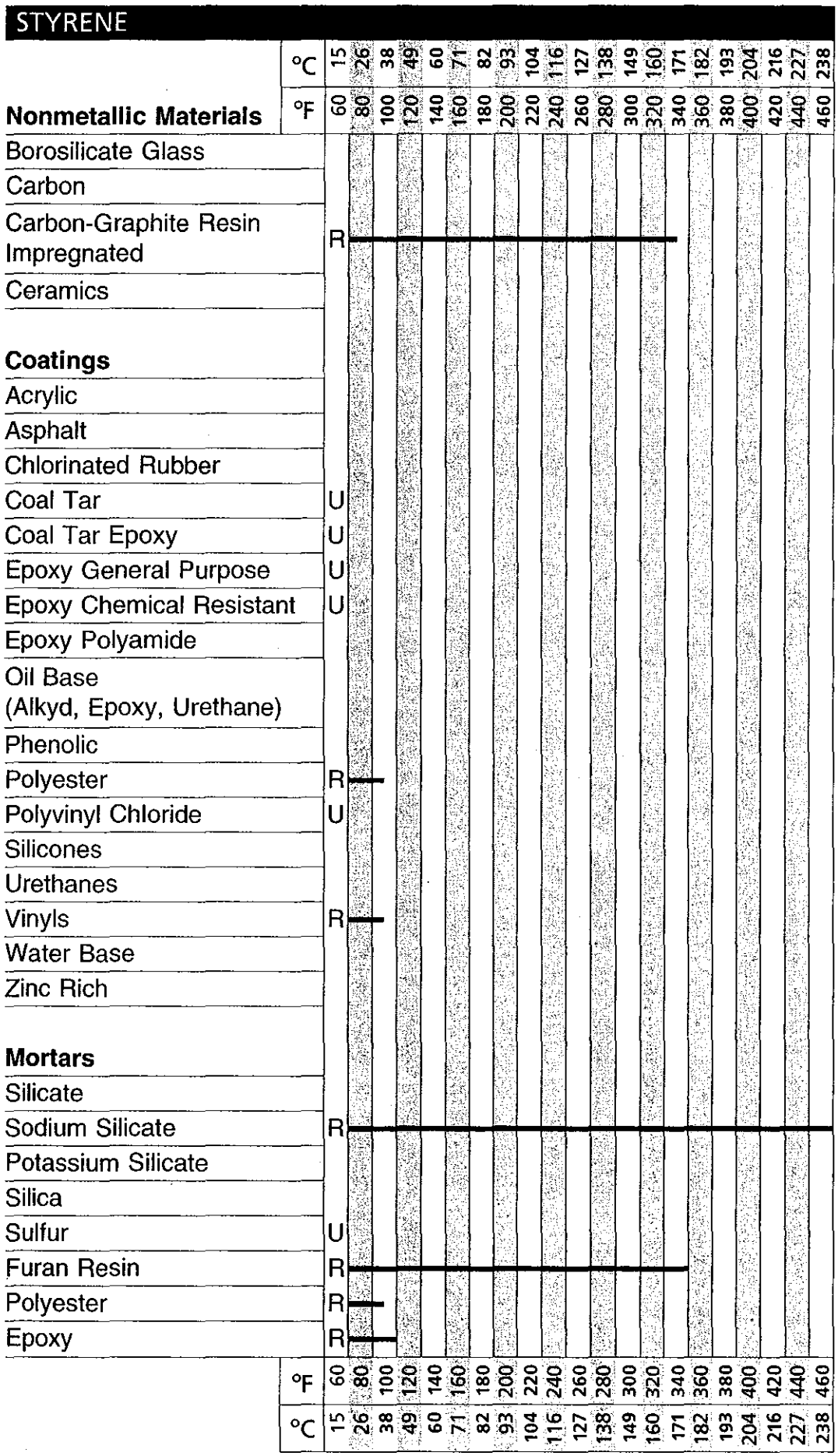
STYRENE



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STYRENE

Plastics	°C	°F
Polyphenylene Oxide	U	
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC	U	
E-CTFE (Halar)		
Epoxy	R	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)	R	
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate	R	
Halogenated	U	
Hydrogenated Bisphenol A –Bisphenol A	R	
Isophthalic	U	
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)	R	
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride	R	
PVC Type 1	U	
PVC Type 2	U	
PVDF (Kynar)	R	
Ryton	R	
TFE (Teflon)	R	
Vinyl Ester	R	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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STYRENE

Elastomers* and Linings	°C	°F
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)		
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U	
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)	U	
Ethylene-Propylene Terpolymer (EPT)	U	
FKM (Viton A)	R	
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)	R	
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)	U	
Nitrile Buna-N (NBR)	U	
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers	U	
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

*See also Nylon 11 under PLASTICS

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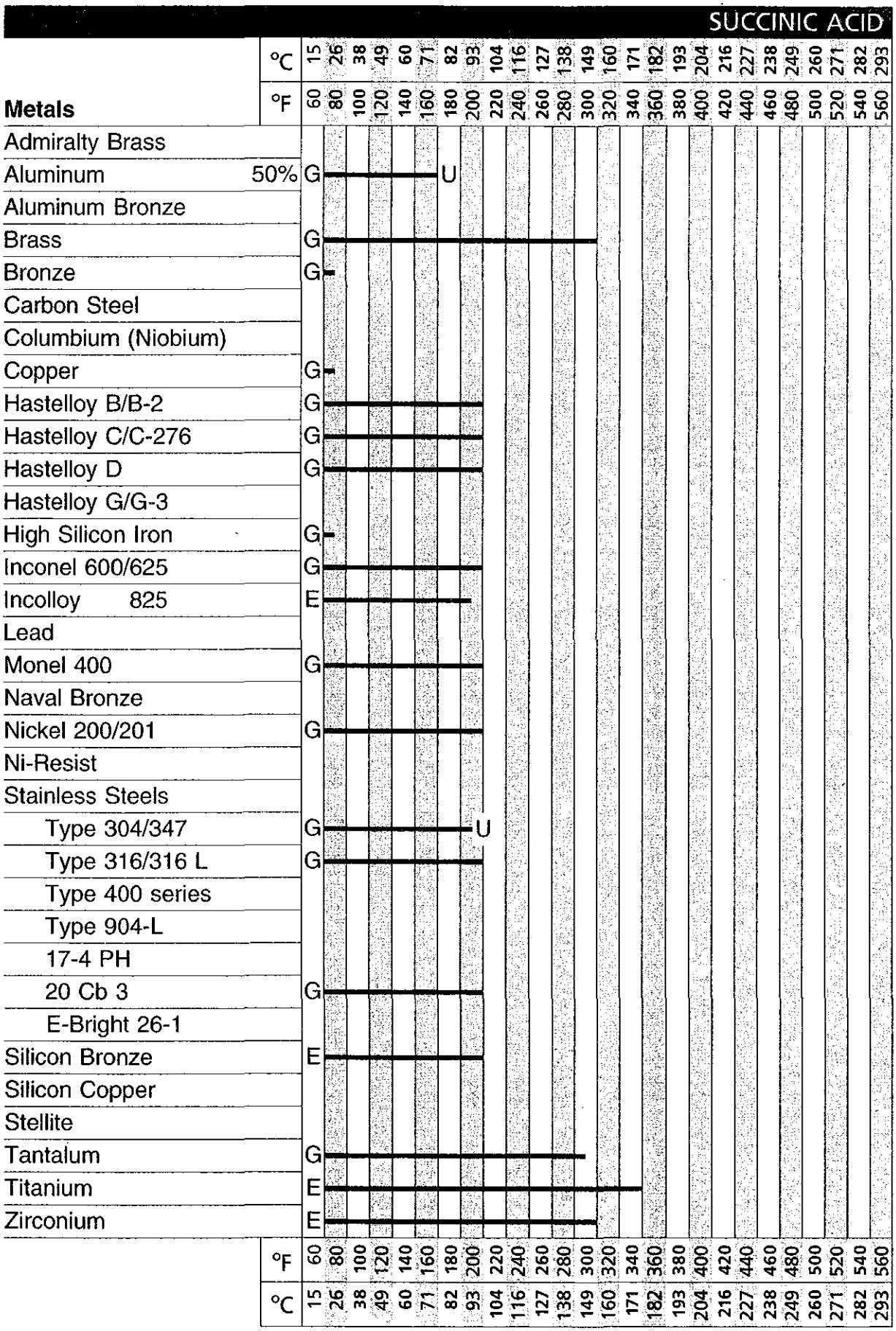

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SUCCINIC ACID

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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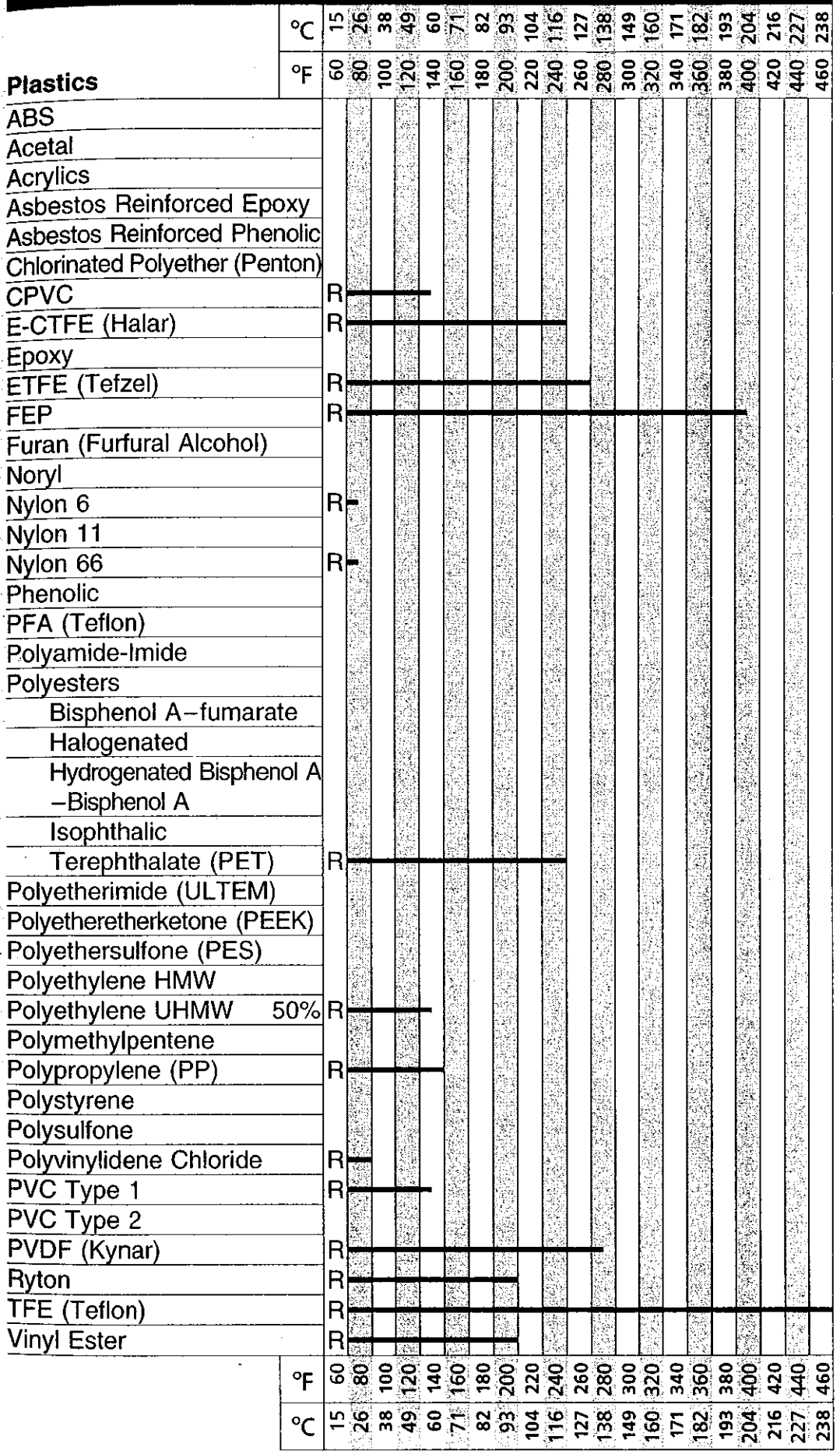

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SUCCINIC ACID

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	R																				
Ethylene-Propylene Terpolymer (EPT)	R																				
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)	R																				
Nordel (EPDM)	R																				
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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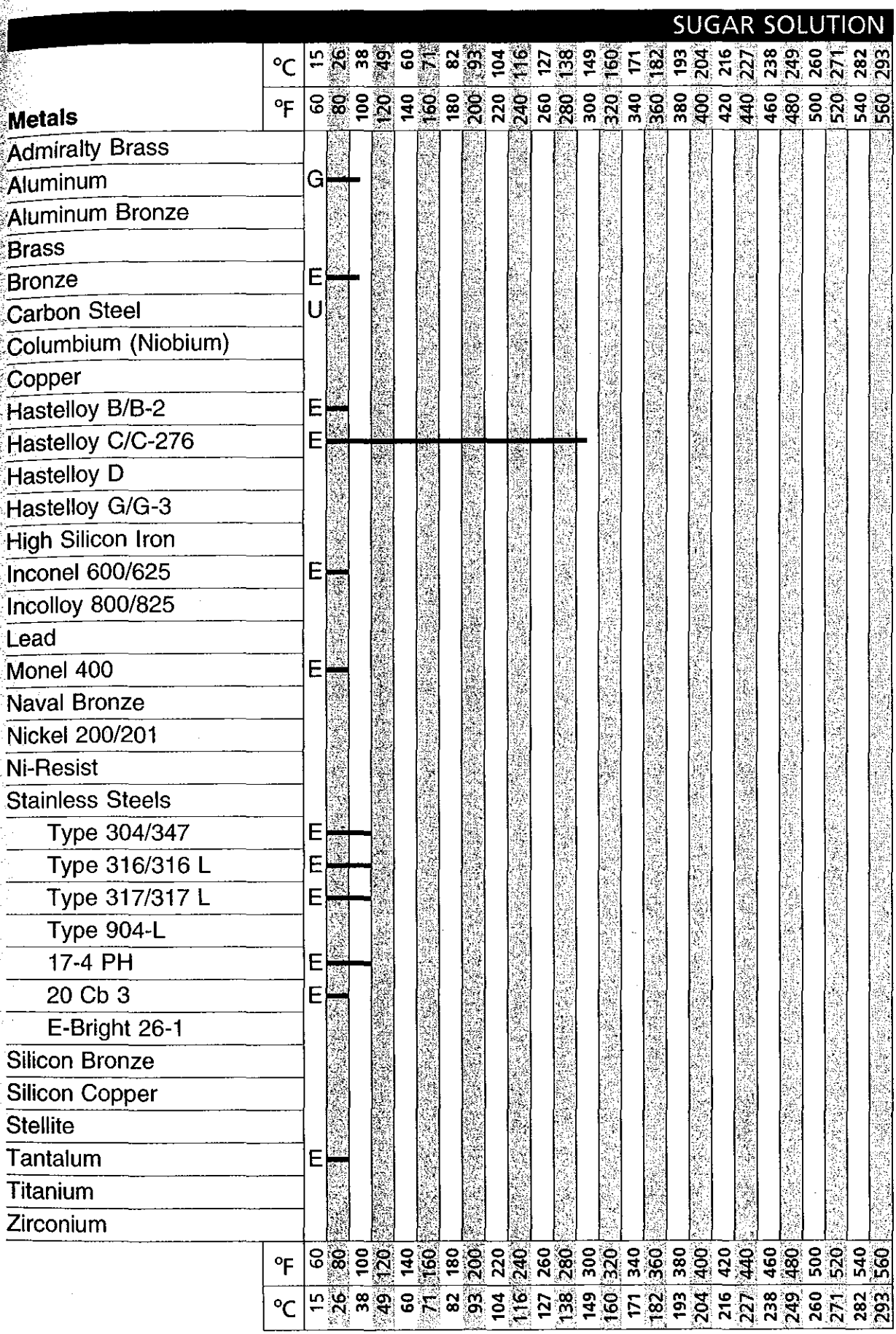
SUGAR SOLUTION



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SUGAR SOLUTION

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass		R																				
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride		R																				
Silicones																						
Urethanes		U																				
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SUGAR SOLUTION

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC	R																					
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP																						
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)	R																					
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1	R																					
PVC Type 2	R																					
PVDF (Kynar)	R																					
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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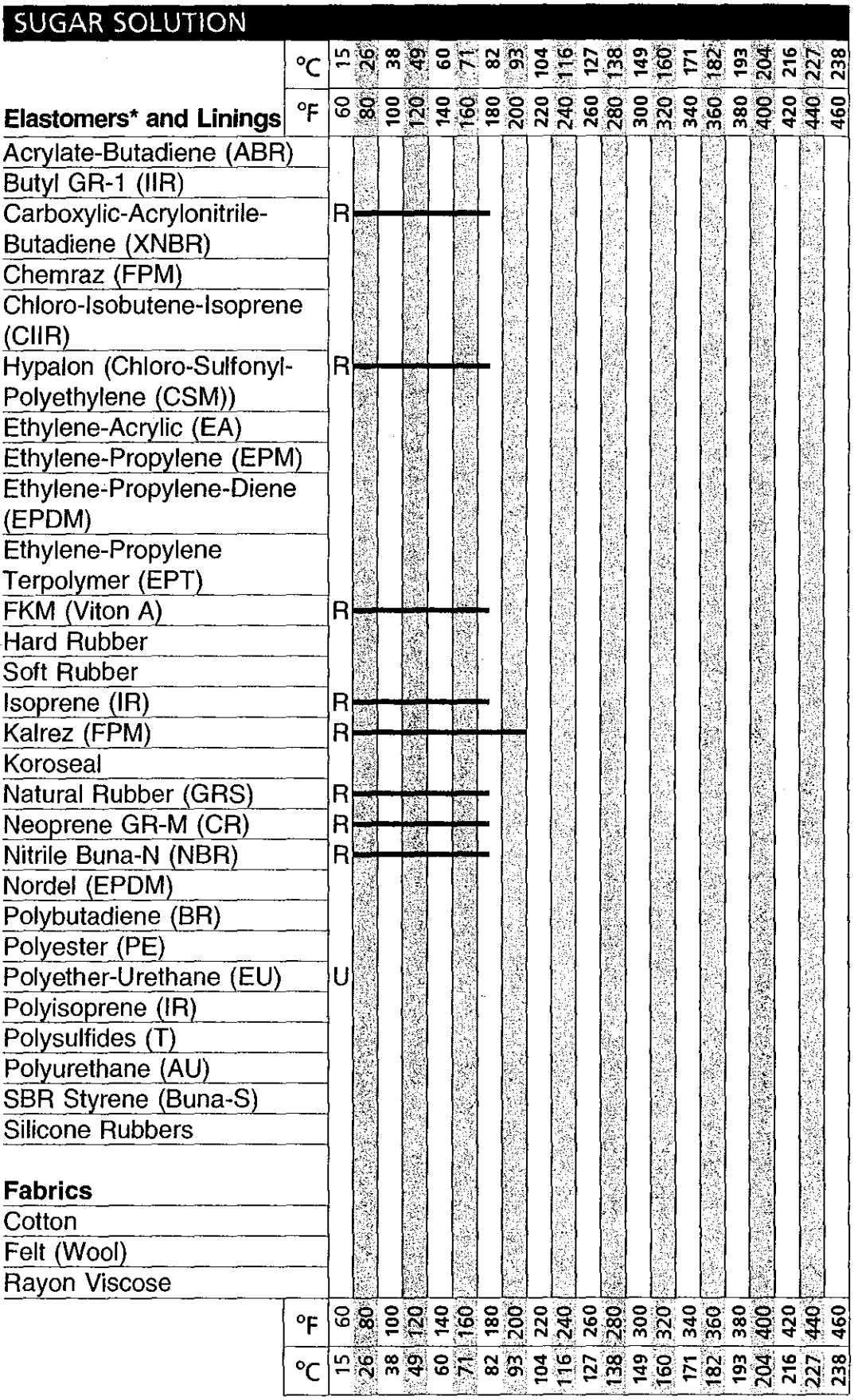
SUGAR SOLUTION



*See also Nylon 11 under PLASTICS

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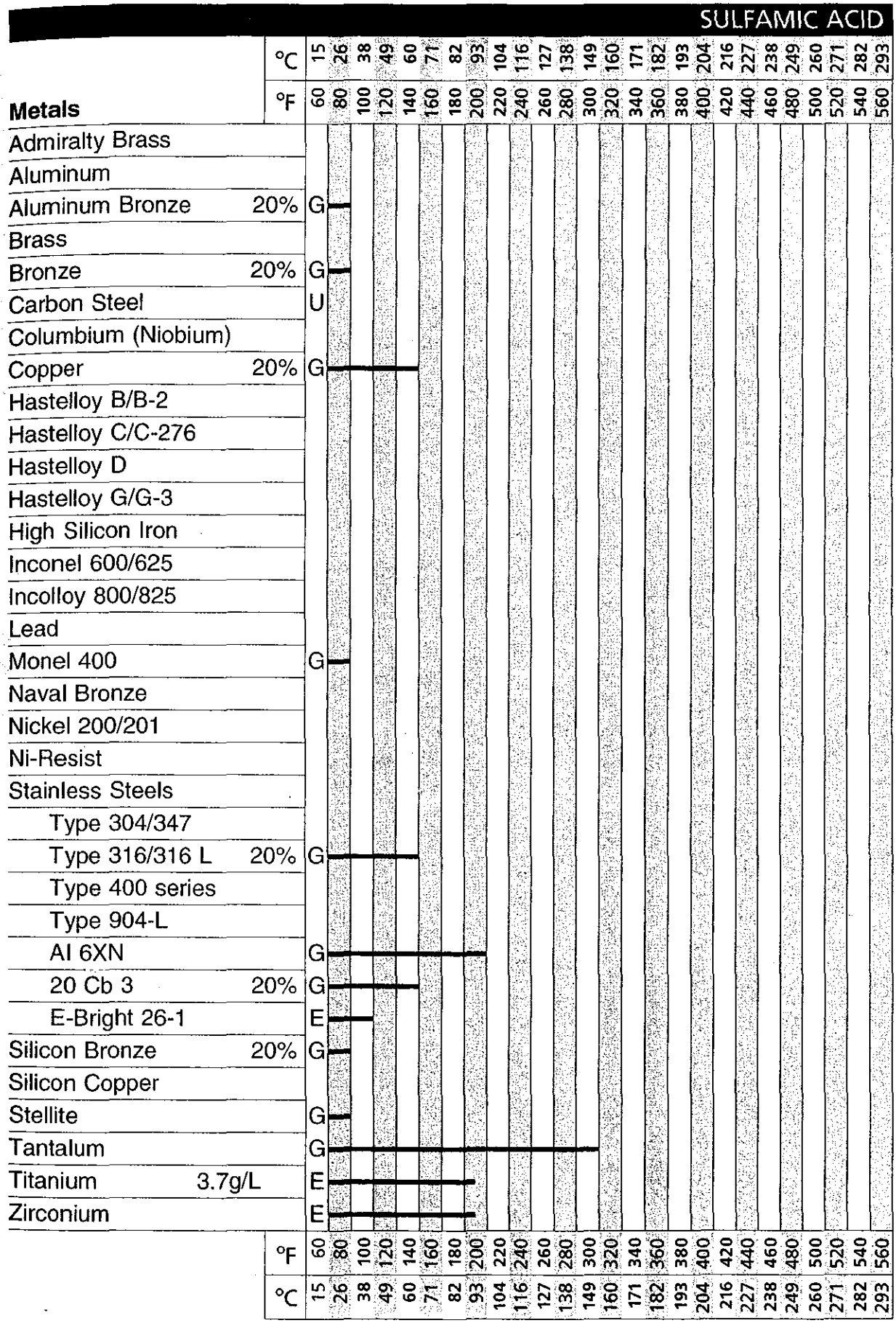

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SULFAMIC ACID

Nonmetallic Materials		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																							
Carbon																							
Carbon-Graphite Resin Impregnated																							
Ceramics																							
Coatings																							
Acrylic																							
Asphalt																							
Chlorinated Rubber																							
Coal Tar																							
Coal Tar Epoxy			U																				
Epoxy General Purpose																							
Epoxy Chemical Resistant																							
Epoxy Polyamide			U																				
Oil Base (Alkyd, Epoxy, Urethane)																							
Phenolic																							
Polyester	25%		R																				
Polyvinyl Chloride																							
Silicones																							
Urethanes																							
Vinyls	25%		R																				
Water Base																							
Zinc Rich																							
Mortars																							
Silicate																							
Sodium Silicate	25%		R																				
Potassium Silicate																							
Silica																							
Sulfur	25%		U																				
Furan Resin	25%		R																				
Polyester	25%		R																				
Epoxy	25%		U																				
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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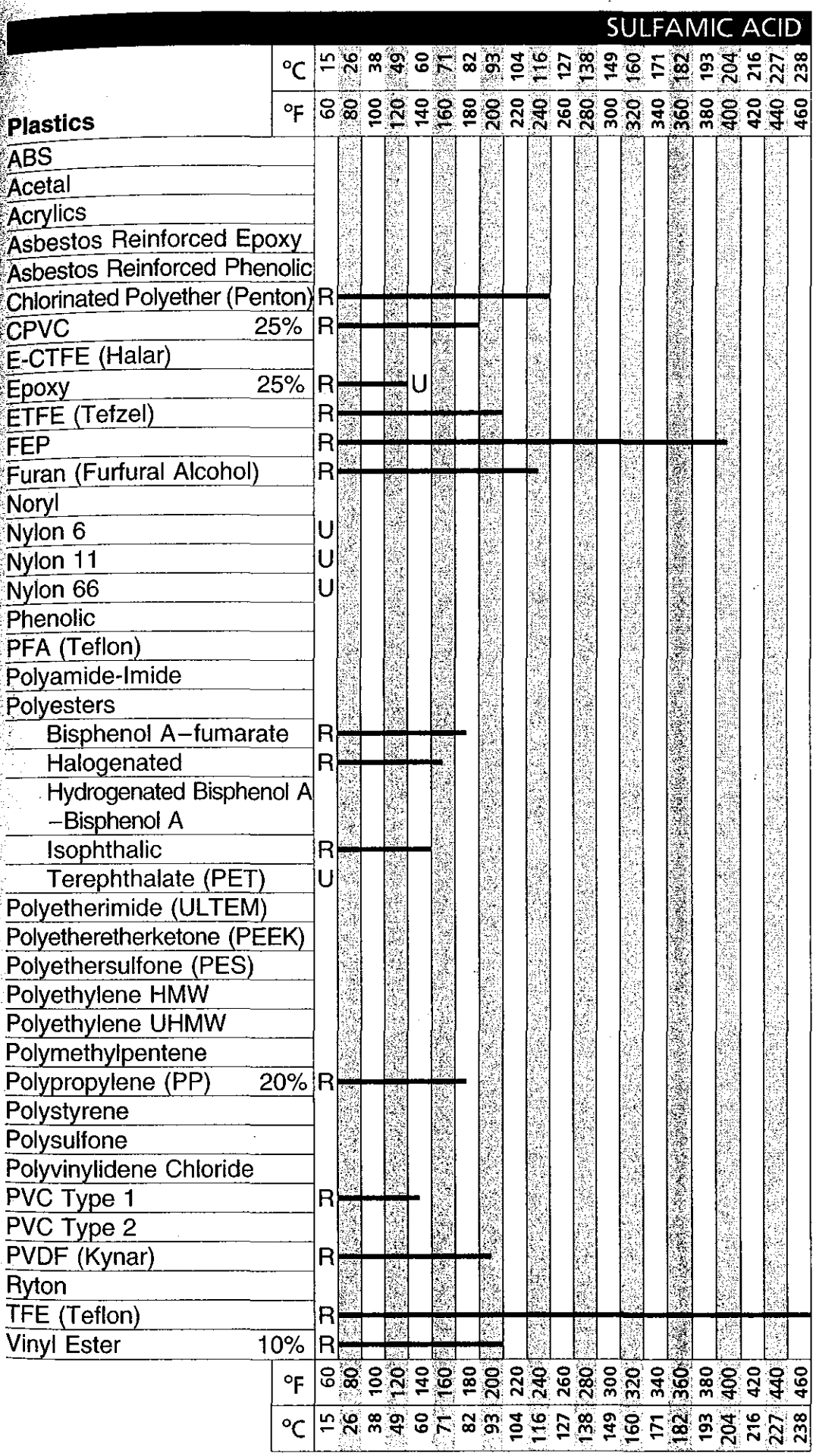

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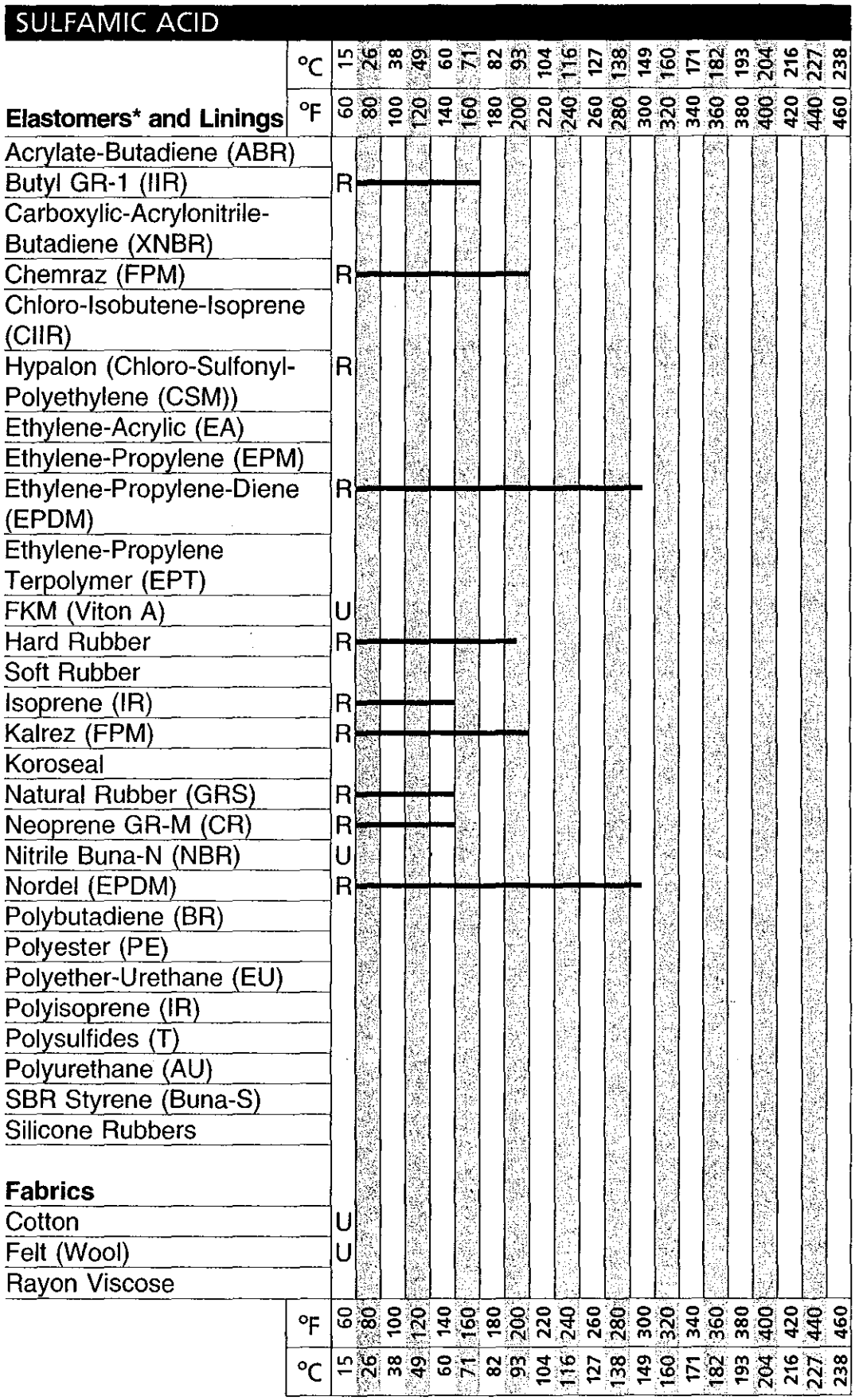
SULFAMIC ACID



*See also Nylon 11 under PLASTICS

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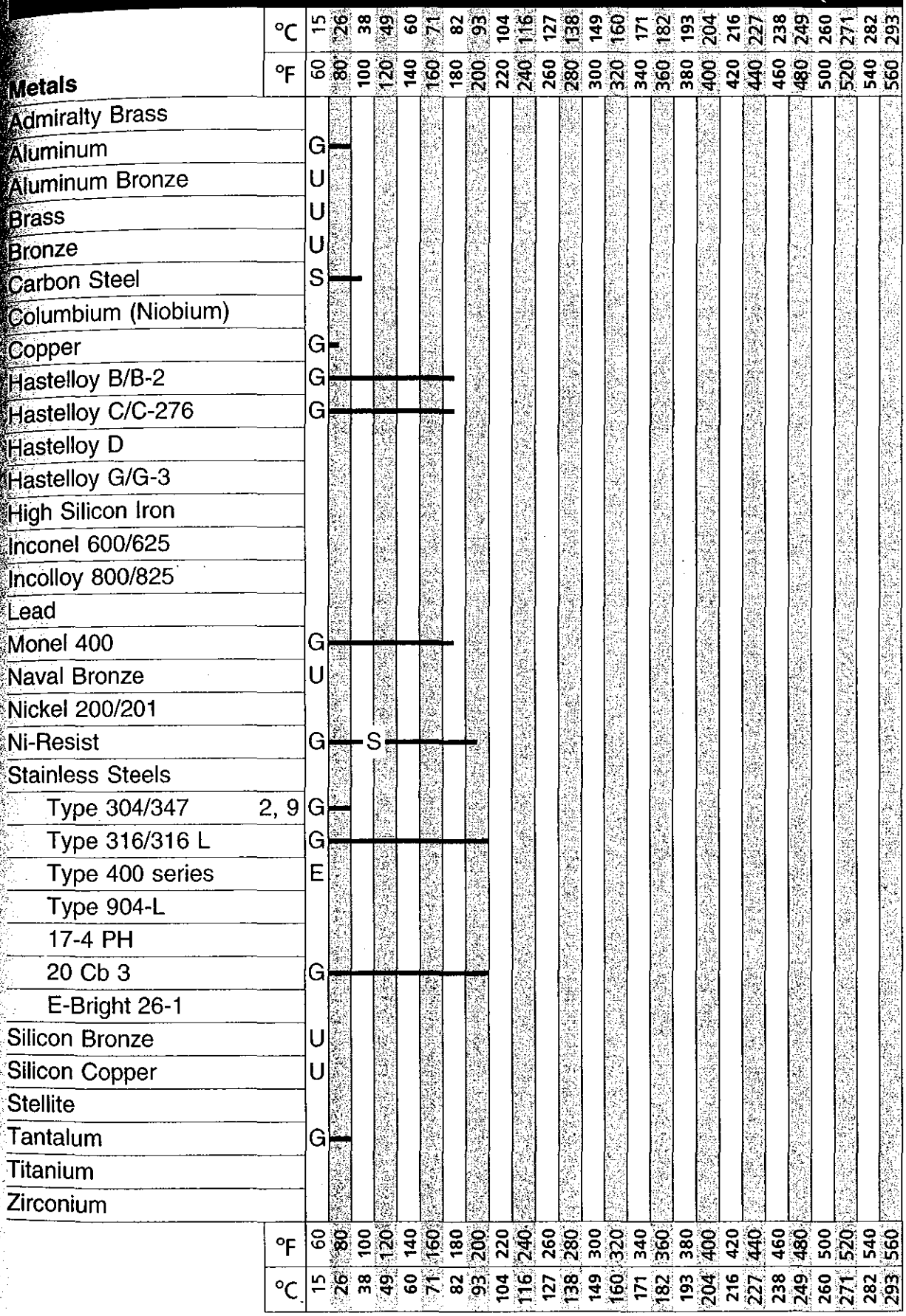

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SULFATE LIQUORS

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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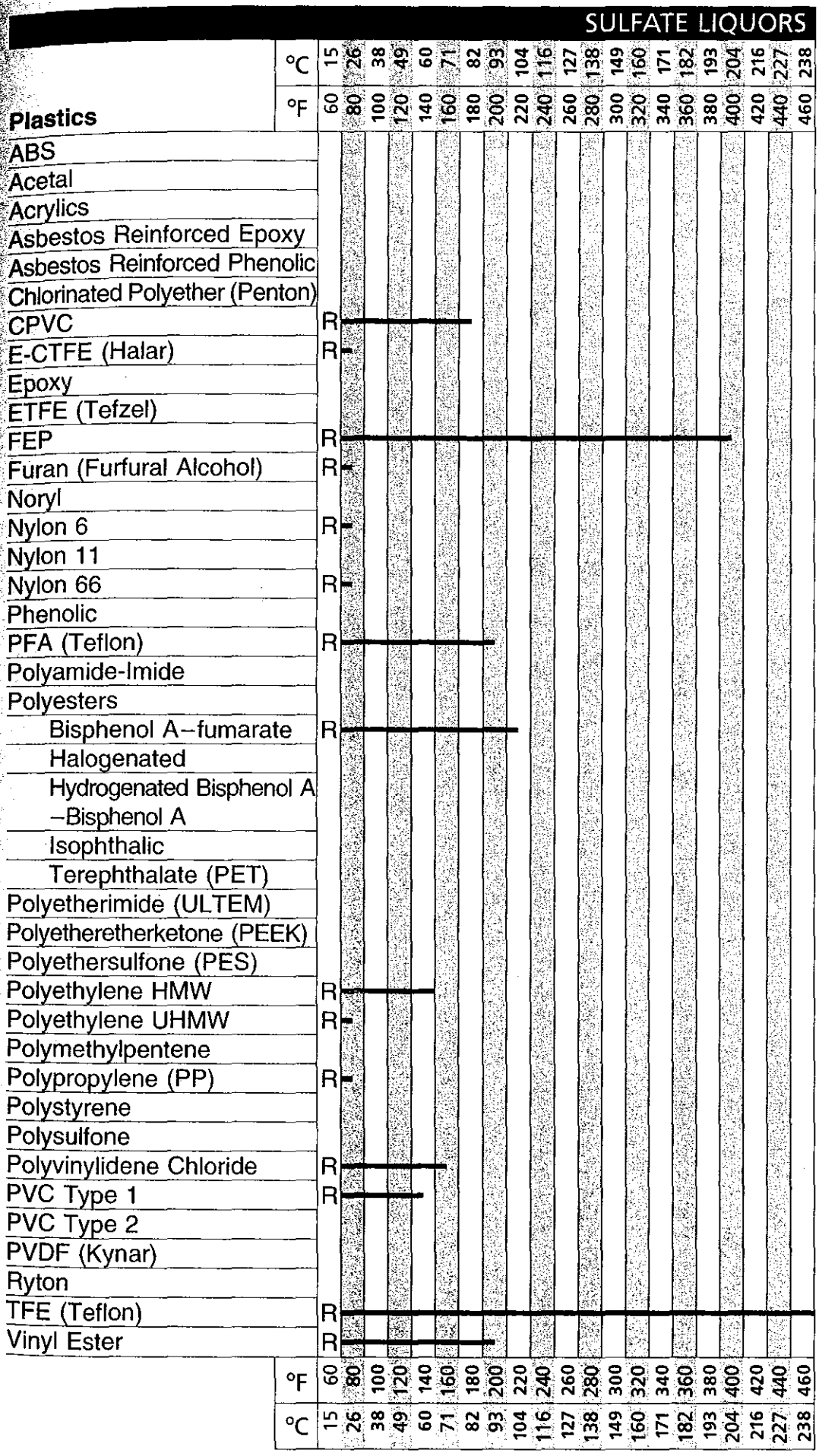
SULFATE LIQUORS



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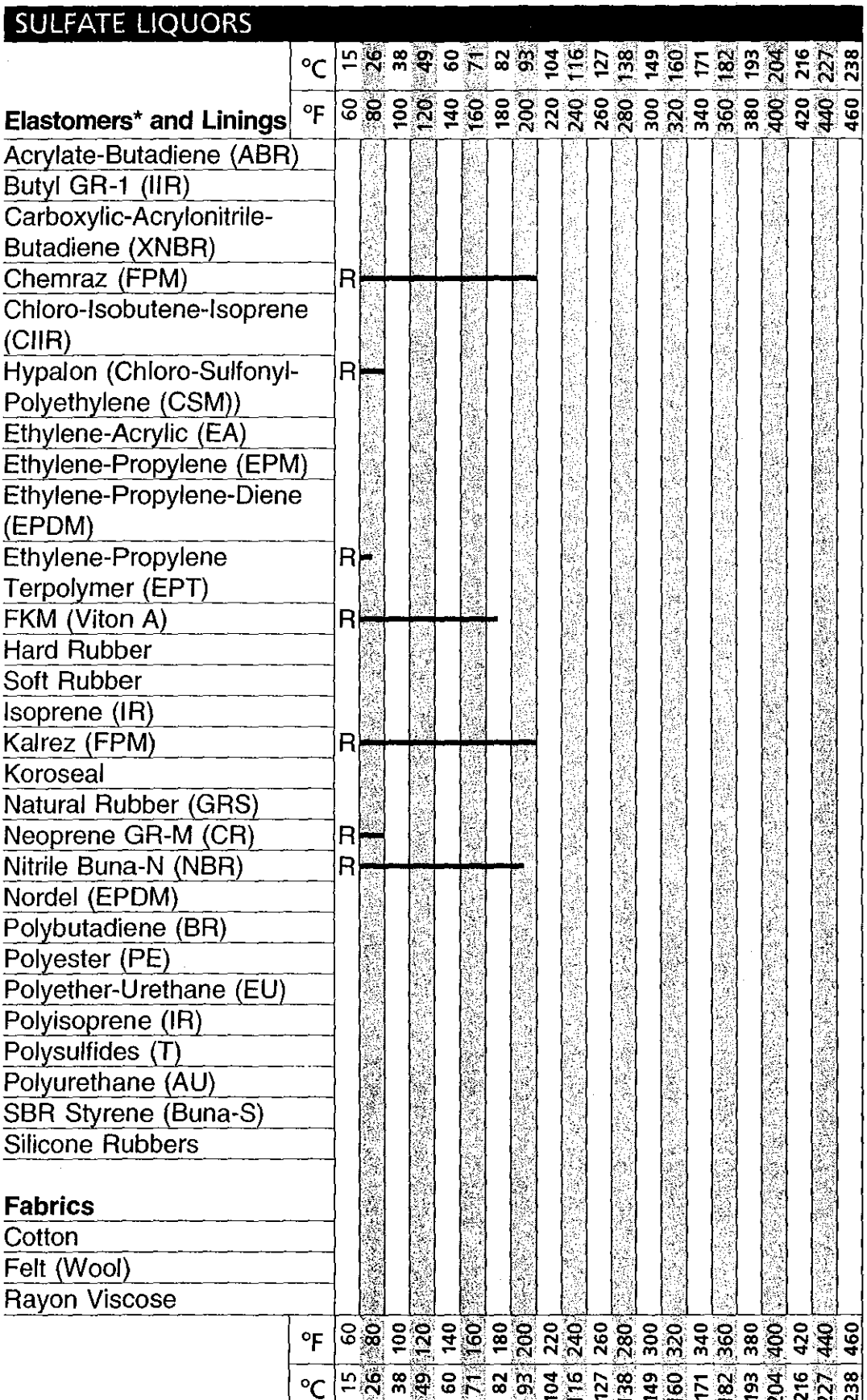
SULFATE LIQUORS



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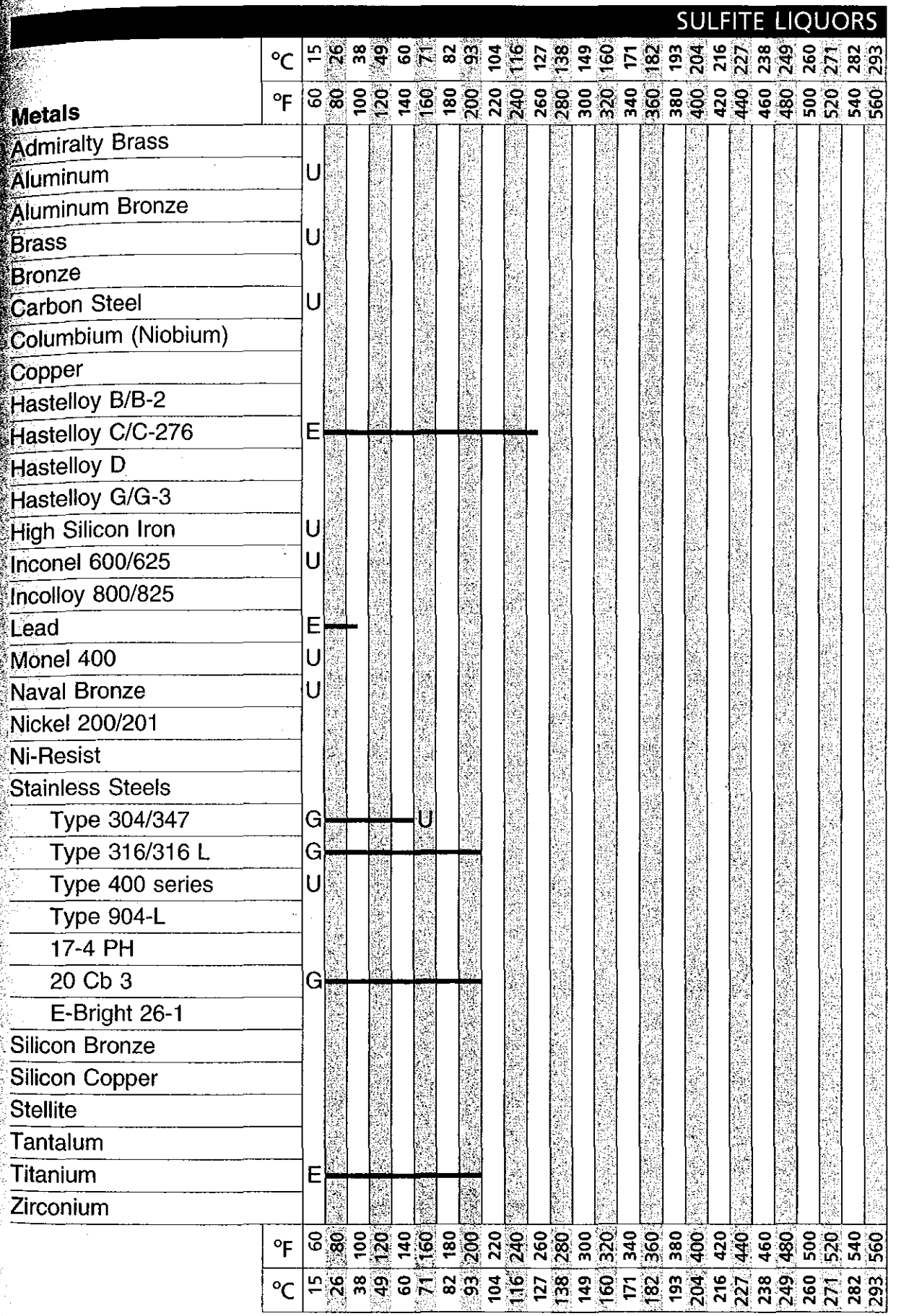

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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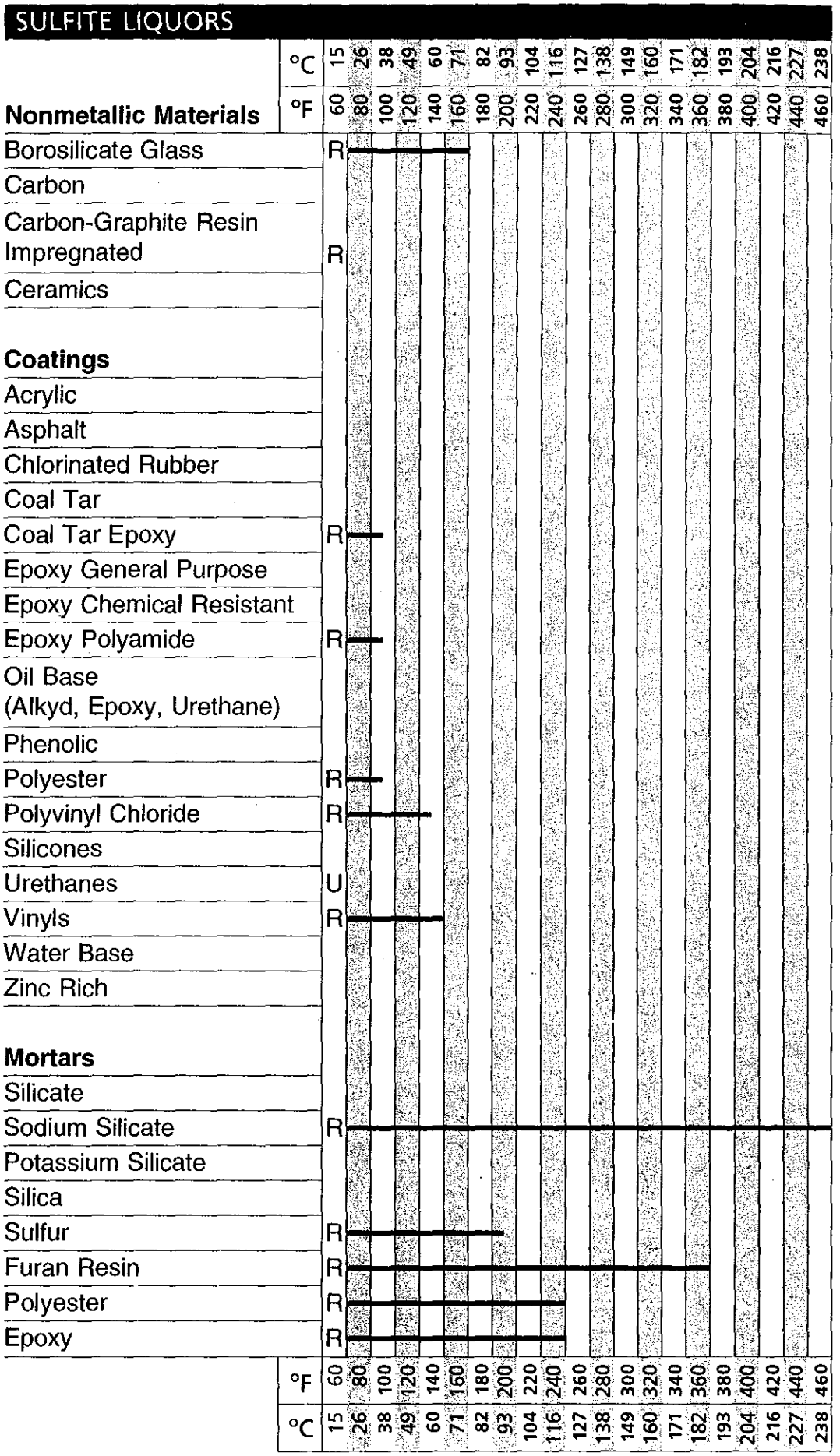
SULFITE LIQUORS



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SULFITE LIQUORS

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)	R	
CPVC	R	
E-CTFE (Halar)	R	
Epoxy	R	
ETFE (Tefzel)		
FEP	R	
Furan (Furfural Alcohol)	R	
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate	R	
Halogenated	R	
Hydrogenated Bisphenol A –Bisphenol A	R	
Isophthalic	R	
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1	R	
PVC Type 2	R	
PVDF (Kynar)	R	
Ryton		
TFE (Teflon)	R	
Vinyl Ester	R	U

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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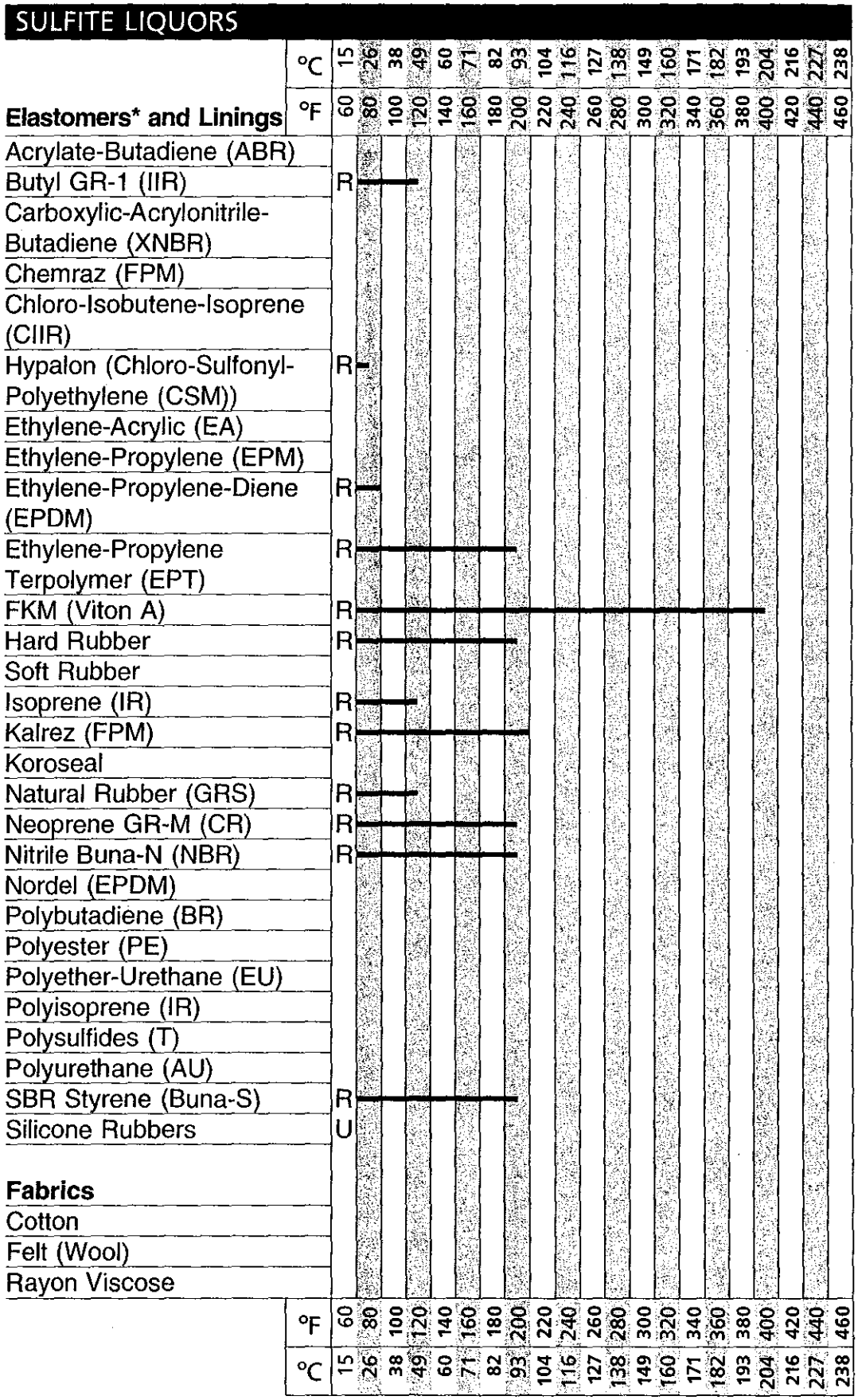
SULFITE LIQUORS



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Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum																												
Aluminum Bronze																												
Brass																												
Bronze																												
Carbon Steel																												
Columbium (Niobium)																												
Copper																												
Hastelloy B/B-2																												
Hastelloy C/C-276	50%	E	E	E	E	E	E																					
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625																												
Incolloy 800/825																												
Lead																												
Monel 400																												
Naval Bronze																												
Nickel 200/201																												
Ni-Resist																												
Stainless Steels																												
Type 304/347																												
Type 316/316 L																												
Type 400 series																												
Type 904-L																												
17-4 PH																												
20 Cb 3																												
E-Bright 26-1																												
Silicon Bronze																												
Silicon Copper																												
Stellite																												
Tantalum																												
Titanium																												
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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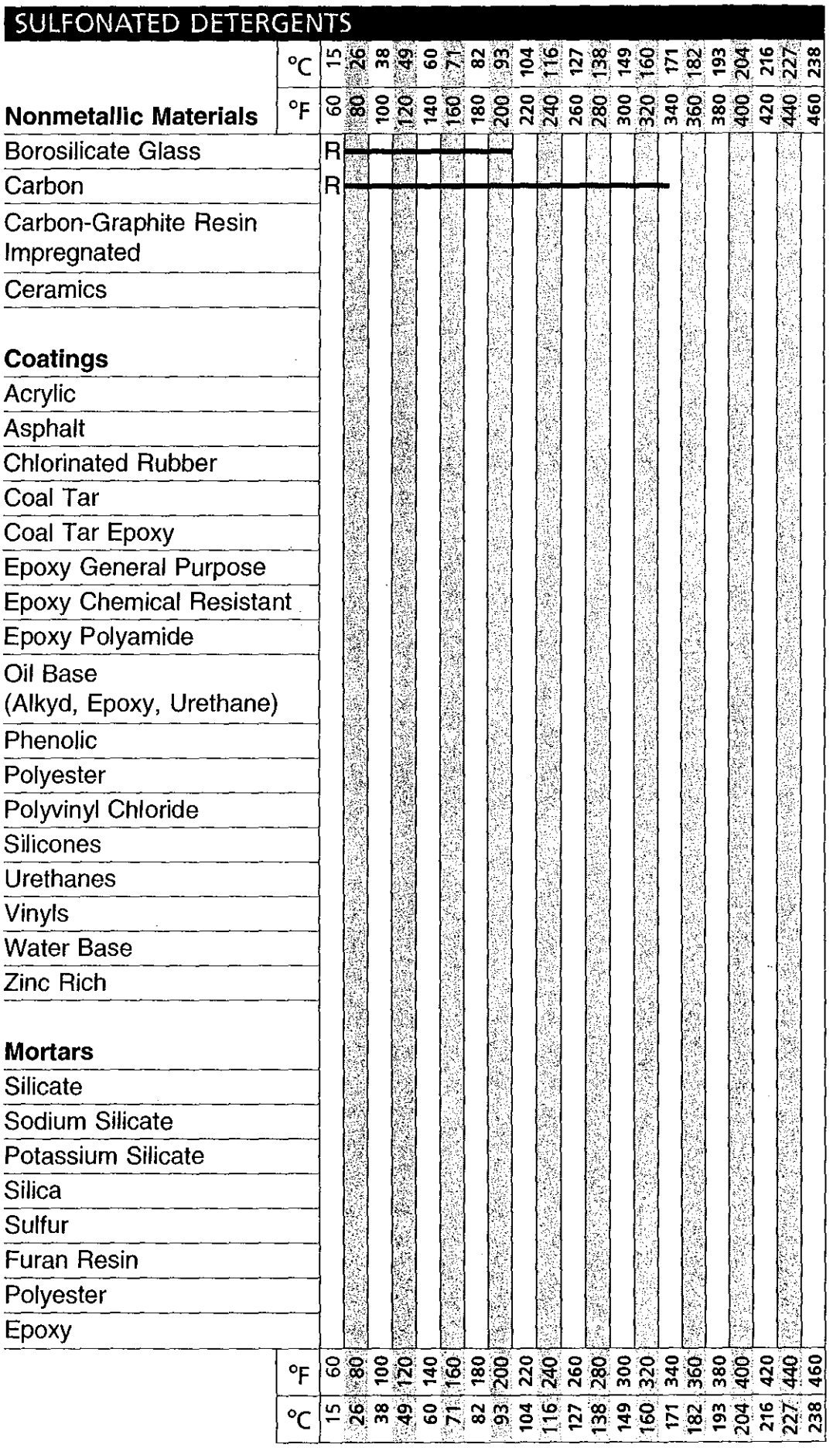
SULFONATED DETERGENTS



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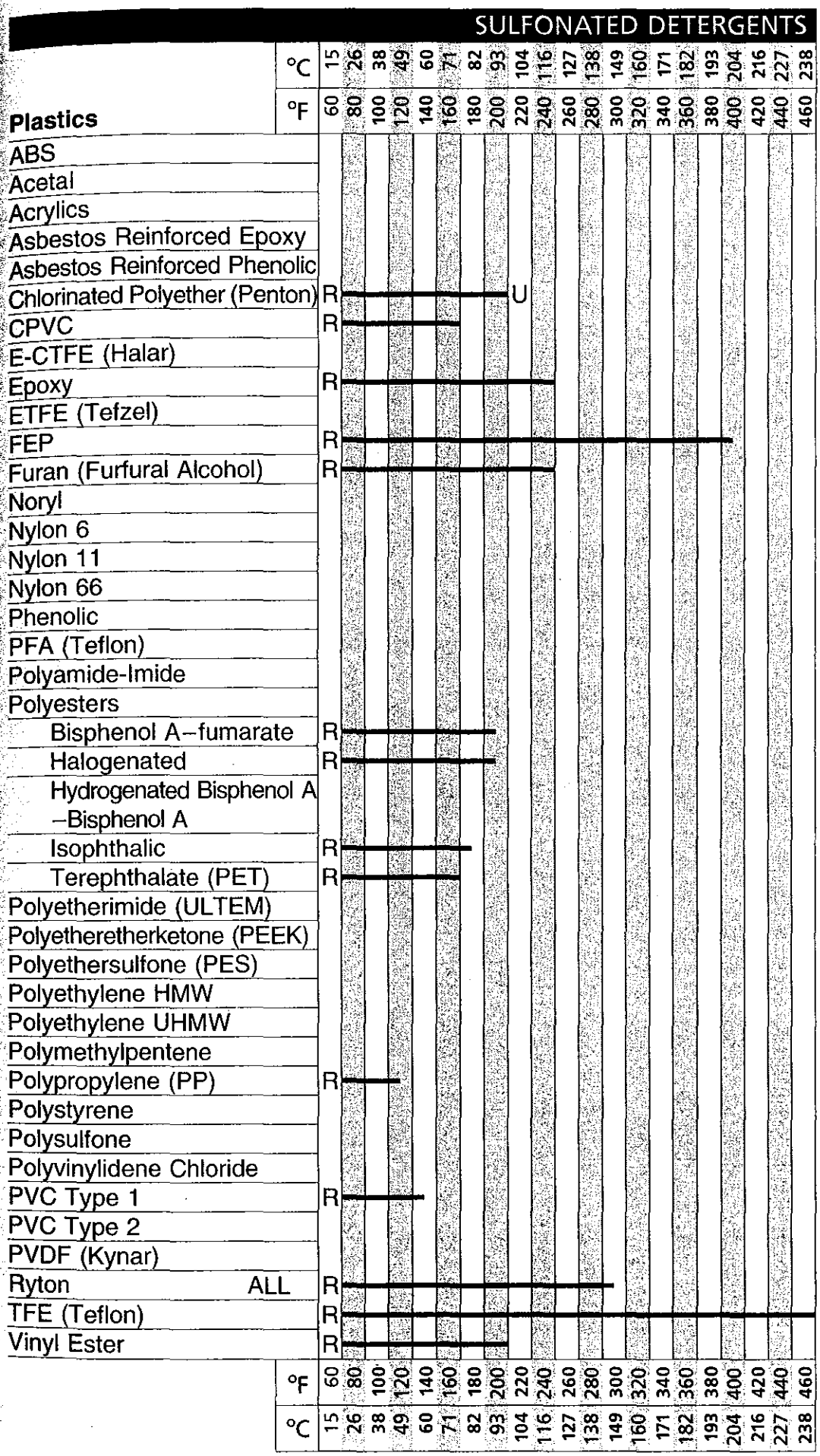
SULFONATED DETERGENTS



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SULFONATED DETERGENTS

Elastomers* and Linings	°F	°C
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)		
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)		
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)		
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)		
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)		
Nitrile Buna-N (NBR)		
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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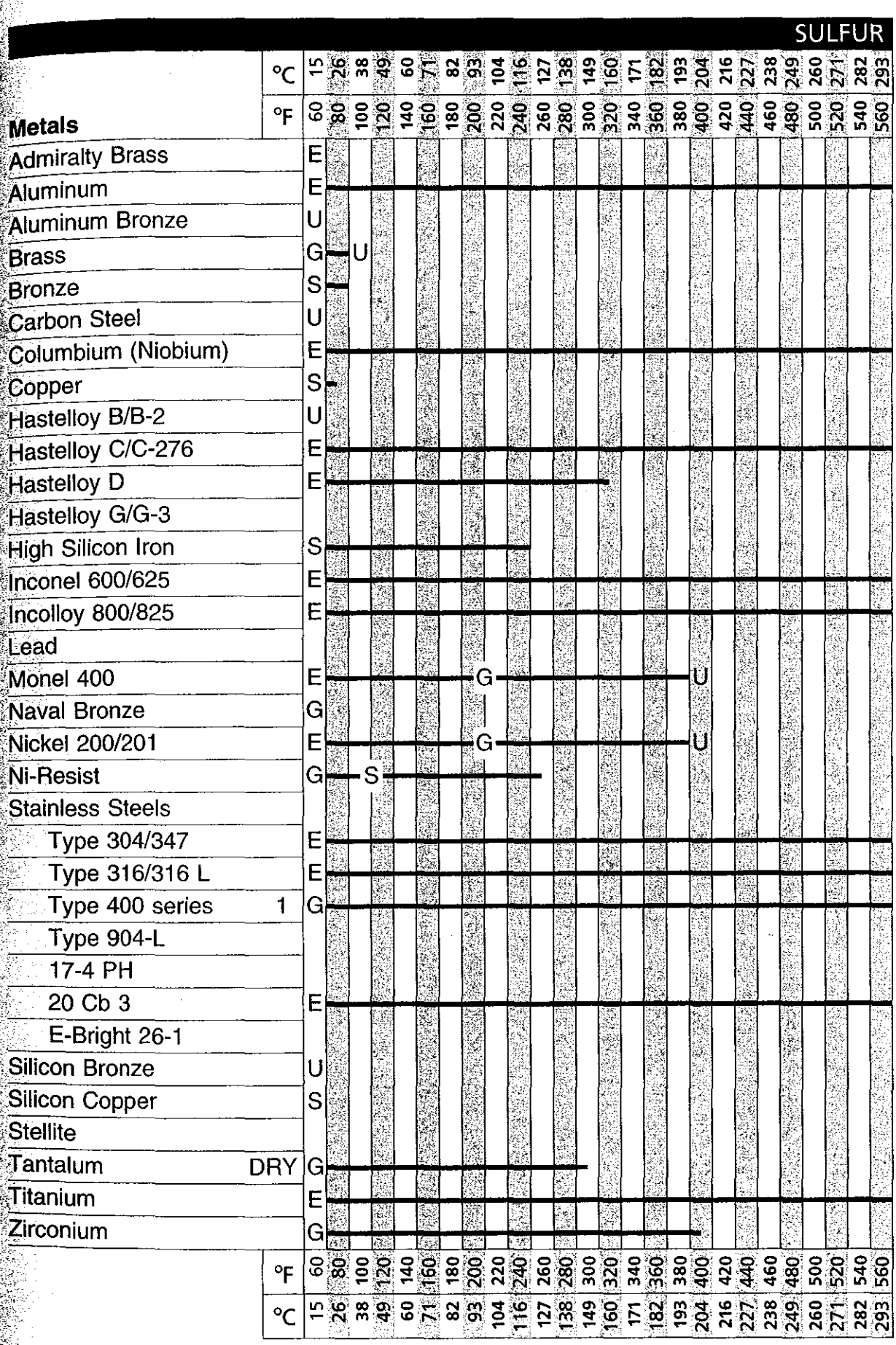

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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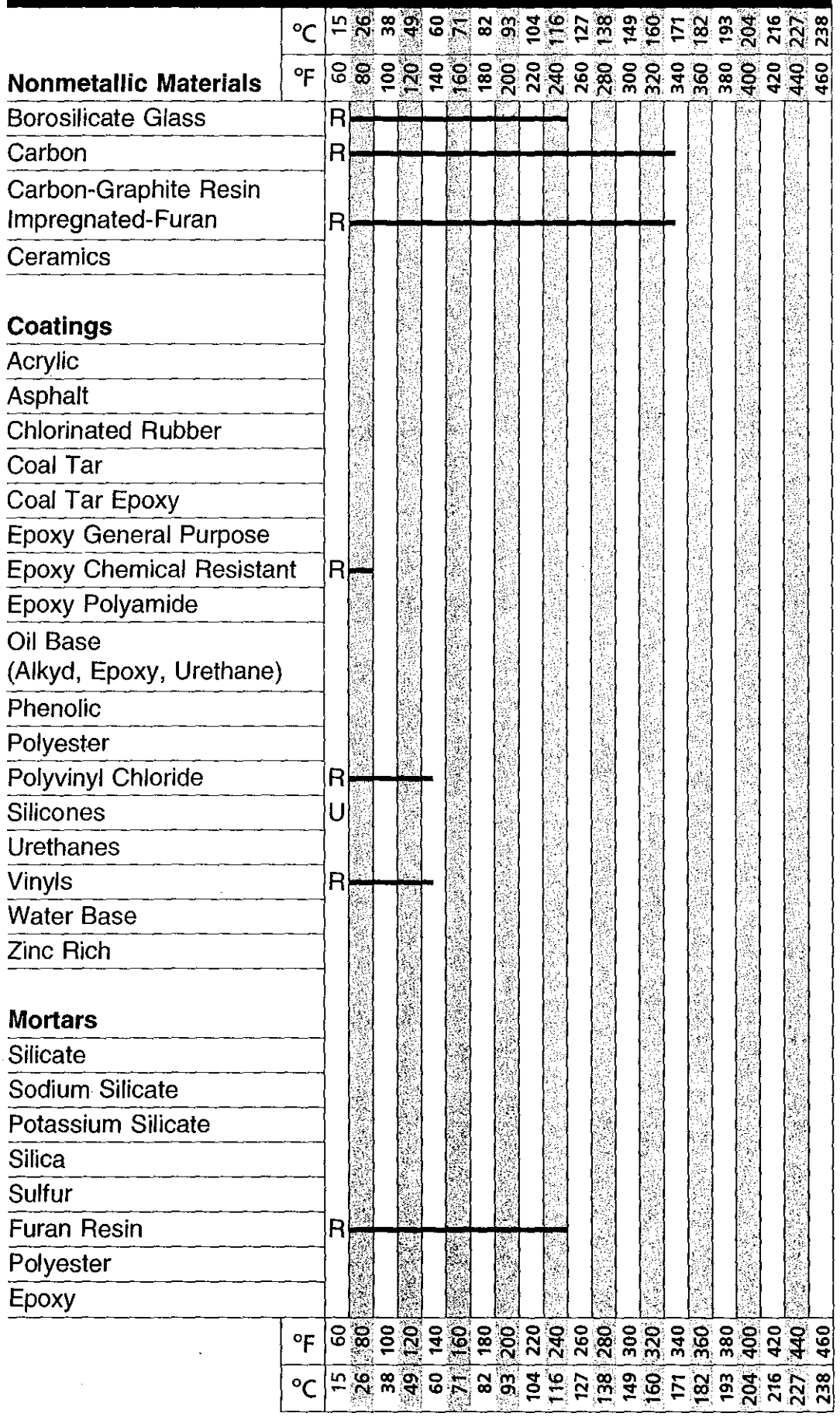
SULFUR



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Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS		U																				
Acetal		U																				
KEL-F (CTFE)		R																				
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)		R																				
CPVC		R																				
E-CTFE (Halar)		R																				
Epoxy		R																				
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)		R																				
Noryl		R																				
Nylon 6		R																				
Nylon 11		R																				
Nylon 66		R																				
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated		R																				
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic		R																				
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		R																				
Polyethylene UHMW		R																				
Polymethylpentene																						
Polypropylene (PP)		R																				
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride		R																				
PVC Type 1		R																				
PVC Type 2		R																				
PVDF (Kynar)		R																				
Ryton		R																				
TFE (Teflon)		R																				
Vinyl Ester		R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SULFUR

Elastomers* and Linings	°C	°F
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)	R	
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	R	
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)	R	
Ethylene-Propylene Terpolymer (EPT)	U	
FKM (Viton A)	U	
Hard Rubber		
Soft Rubber		
Isoprene (IR)	U	
Kalrez (FPM)	R	
Koroseal		
Natural Rubber (GRS)	U	
Neoprene GR-M (CR)	R	
Nitrile Buna-N (NBR)	U	
Nordel (EPDM)	R	
Polybutadiene (BR)		
Polyester (PE)	R	
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers	U	
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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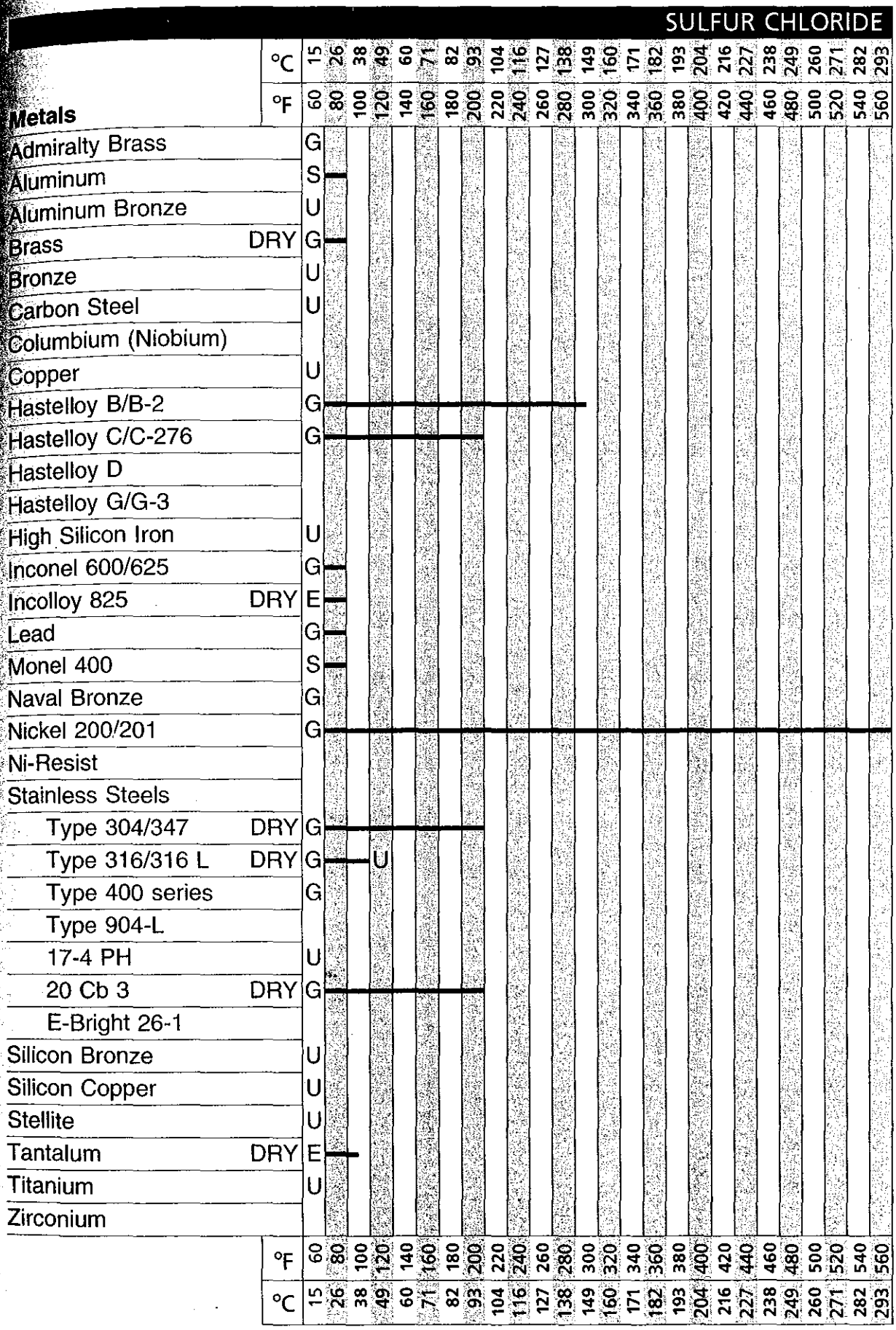

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S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

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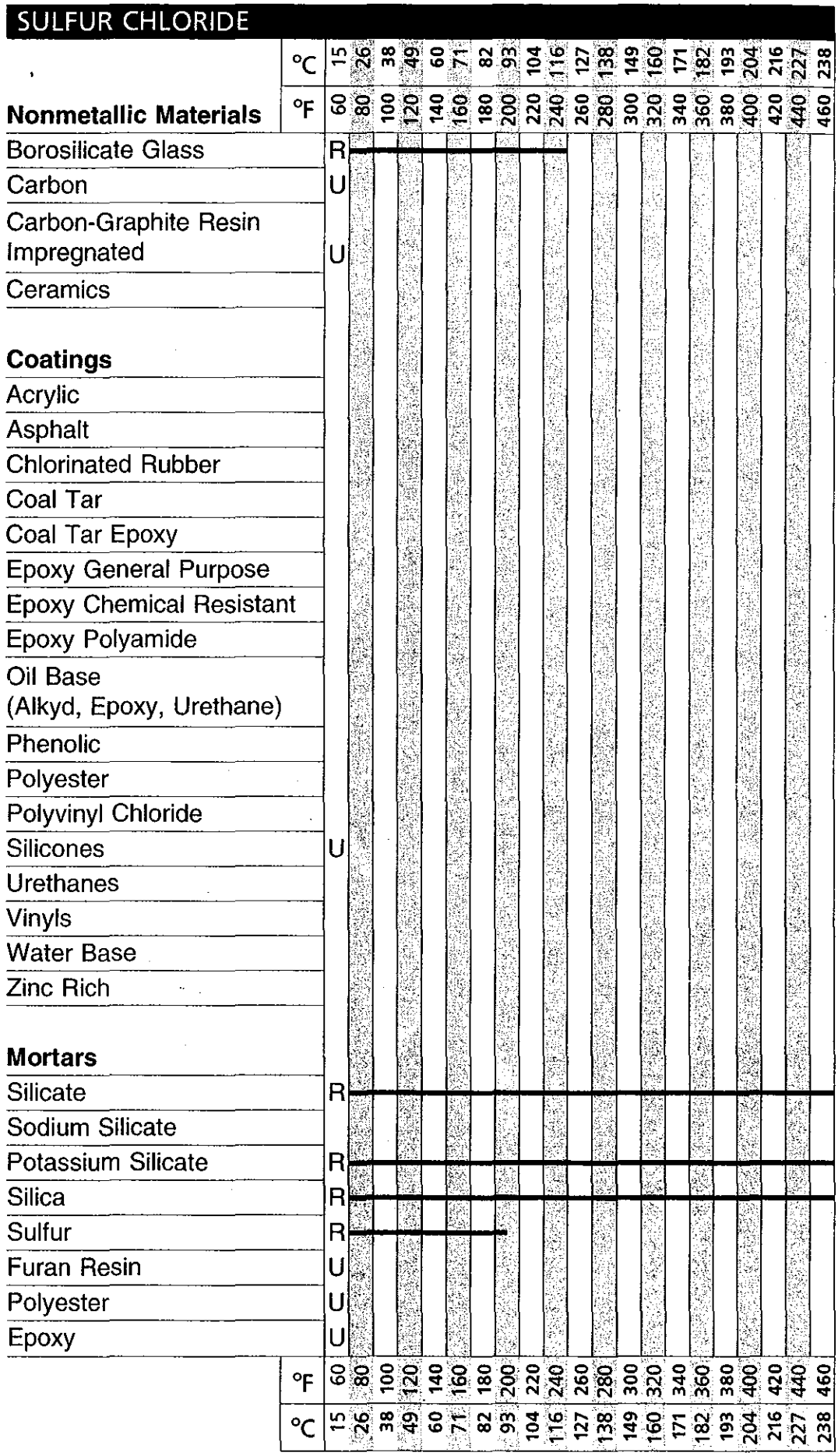
SULFUR CHLORIDE



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SULFUR CHLORIDE

Plastics	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
ABS																						
Acetal																						
Acrylics		U																				
Asbestos Reinforced Epoxy																						
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CPVC		R																				
E-CTFE (Halar)		R																				
Epoxy		U																				
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)		R																				
Noryl																						
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PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate		R																				
Halogenated		U																				
Hydrogenated Bisphenol A																						
–Bisphenol A VAPOR		U																				
Isophthalic		U																				
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		U																				
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)		U																				
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride		U																				
PVC Type 1		R				U																
PVC Type 2																						
PVDF (Kynar)		R																				
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester VAPOR		U																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SULFUR CHLORIDE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)	U																				
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Kalrez (FPM)	R																				
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Polyisoprene (IR)																					
Polysulfides (T)																					
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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum		G	—																								
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SULFUR DICHLORIDE

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																					
Carbon																					
Carbon-Graphite Resin Impregnated																					
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride																					
Silicones																					
Urethanes																					
Vinyls																					
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SULFUR DICHLORIDE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate	U																					
Halogenated	U																					
Hydrogenated Bisphenol A																						
–Bisphenol A VAPOR	U																					
Isophthalic VAPOR	U																					
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)	U																					
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride	U																					
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)	R																					
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester VAPOR	U																					
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SULFUR DICHLORIDE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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SULFUR DIOXIDE DRY

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass		G																									
Aluminum		G																									
Aluminum Bronze		G																									
Brass		G																									
Bronze		G																									
Carbon Steel		E				G																					
Columbium (Niobium)		E																									
Copper		G																									
Hastelloy B/B-2		U																									
Hastelloy C/C-276		G																									
Hastelloy D		U																									
Hastelloy G/G-3																											
High Silicon Iron		G																									
Inconel 600/625		G																									
Incolloy 800/825		E																									
Lead		G																									
Monel 400		G																									
Naval Bronze		S																									
Nickel 200/201		G																									
Ni-Resist		G																									
Stainless Steels																											
Type 304/347	9	G																									
Type 316/316 L		G																									
Type 400 series		G																									
Type 904-L																											
17-4 PH		G																									
20 Cb 3		G																									
E-Bright 26-1																											
Silicon Bronze		G																									
Silicon Copper		G																									
Stellite		G																									
Tantalum		G																									
Titanium		E																									
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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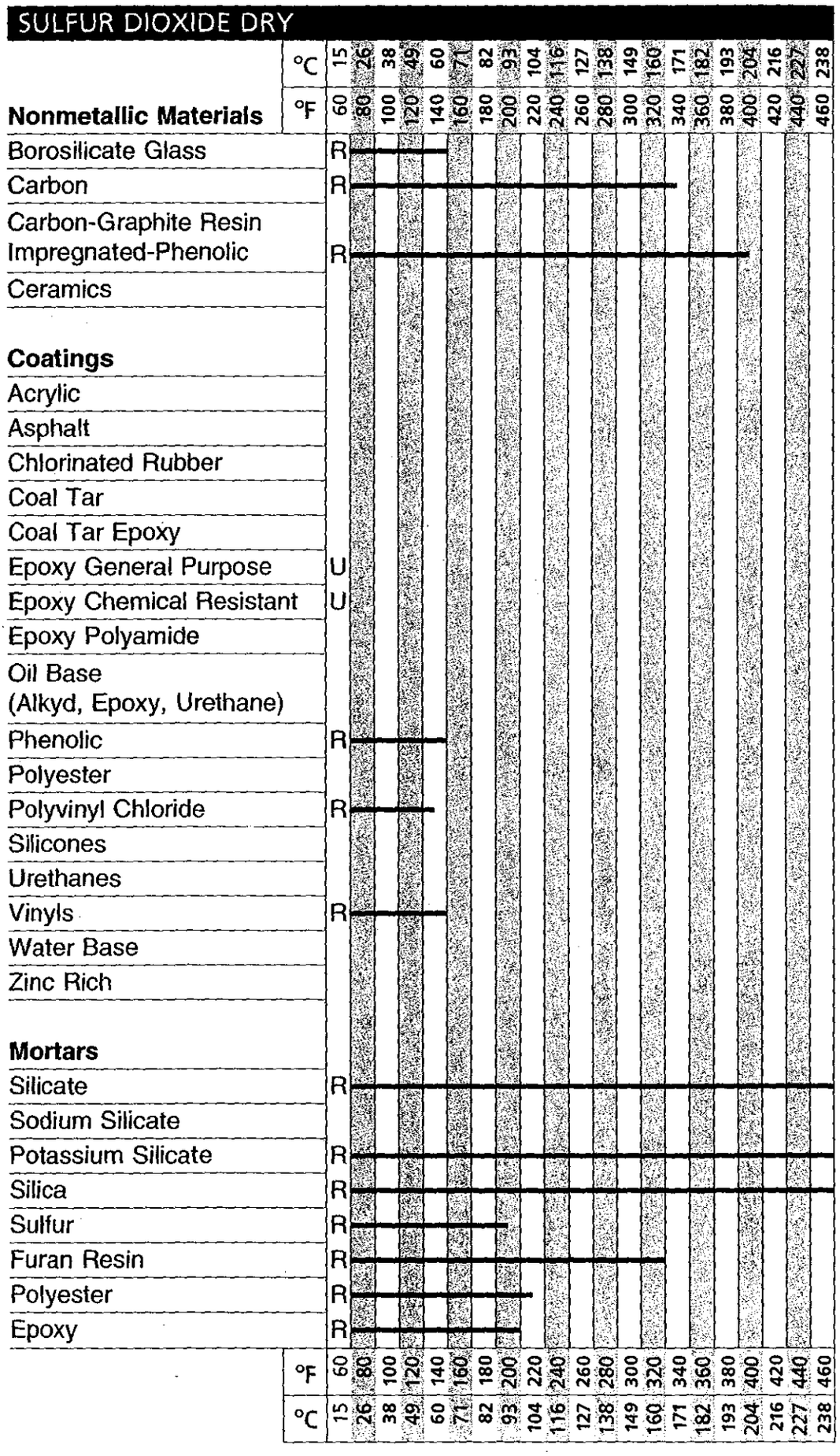
SULFUR DIOXIDE DRY



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SULFUR DIOXIDE DRY

Plastics	
ABS	R
Acetal	U
Acrylics	R
Asbestos Reinforced Epoxy	R
Asbestos Reinforced Phenolic	R
Chlorinated Polyether (Penton)	R
CPVC	R
E-CTFE (Halar)	R
Epoxy	R
ETFE (Tefzel)	R
FEP	R
Furan (Furfural Alcohol)	R
KEL-F (CTFE)	R
Nylon 6	U
Nylon 11	R
Nylon 66	U
Phenolic	R
PFA (Teflon)	R
Polyamide-Imide	
Polyesters	
Bisphenol A–fumarate	R
Halogenated	R
Hydrogenated Bisphenol A –Bisphenol A	R
Isophthalic	R
Terephthalate (PET)	R
Polyetherimide (ULTEM)	
Polyetheretherketone (PEEK)	R
Polyethersulfone (PES)	U
Polyethylene HMW	R
Polyethylene UHMW	R
Polymethylpentene	
Polypropylene (PP)	R U
Polystyrene	
Polysulfone	
Polyvinylidene Chloride	R
PVC Type 1	R
PVC Type 2	R
PVDF (Kynar)	R
Ryton	R
TFE (Teflon)	R
Vinyl Ester	R

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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SULFUR DIOXIDE DRY

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	R																				
Ethylene-Propylene Terpolymer (EPT)	R																				
FKM (Viton A)	U																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal	R																				
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)	U																				
Polyester (PE)	R																				
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)	U																				
Silicone Rubbers	R																				
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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SULFUR DIOXIDE WET

Metals		°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass		U																									
Aluminum		U																									
Aluminum Bronze		U																									
Brass		U																									
Bronze		U																									
Carbon Steel		U																									
Columbium (Niobium)		E																									
Copper		U																									
Hastelloy B/B-2		U																									
Hastelloy C/C-276		E							G																		
Hastelloy D		U																									
Hastelloy G/G-3		E																									
High Silicon Iron		S																									
Inconel 600/625		U																									
Incolloy 800/825		G																									
Lead		G																									
Monel 400		U																									
Naval Bronze		G																									
Nickel 200/201		U																									
Ni-Resist																											
Stainless Steels																											
Type 304/347		U																									
Type 316/316 L		G																									
Type 410	1	U																									
Type 904-L																											
17-4 PH		U																									
20 Cb 3		G																									
E-Bright 26-1		E																									
Silicon Bronze		G																									
Silicon Copper		G																									
Stellite																											
Tantalum		G																									
Titanium		U																									
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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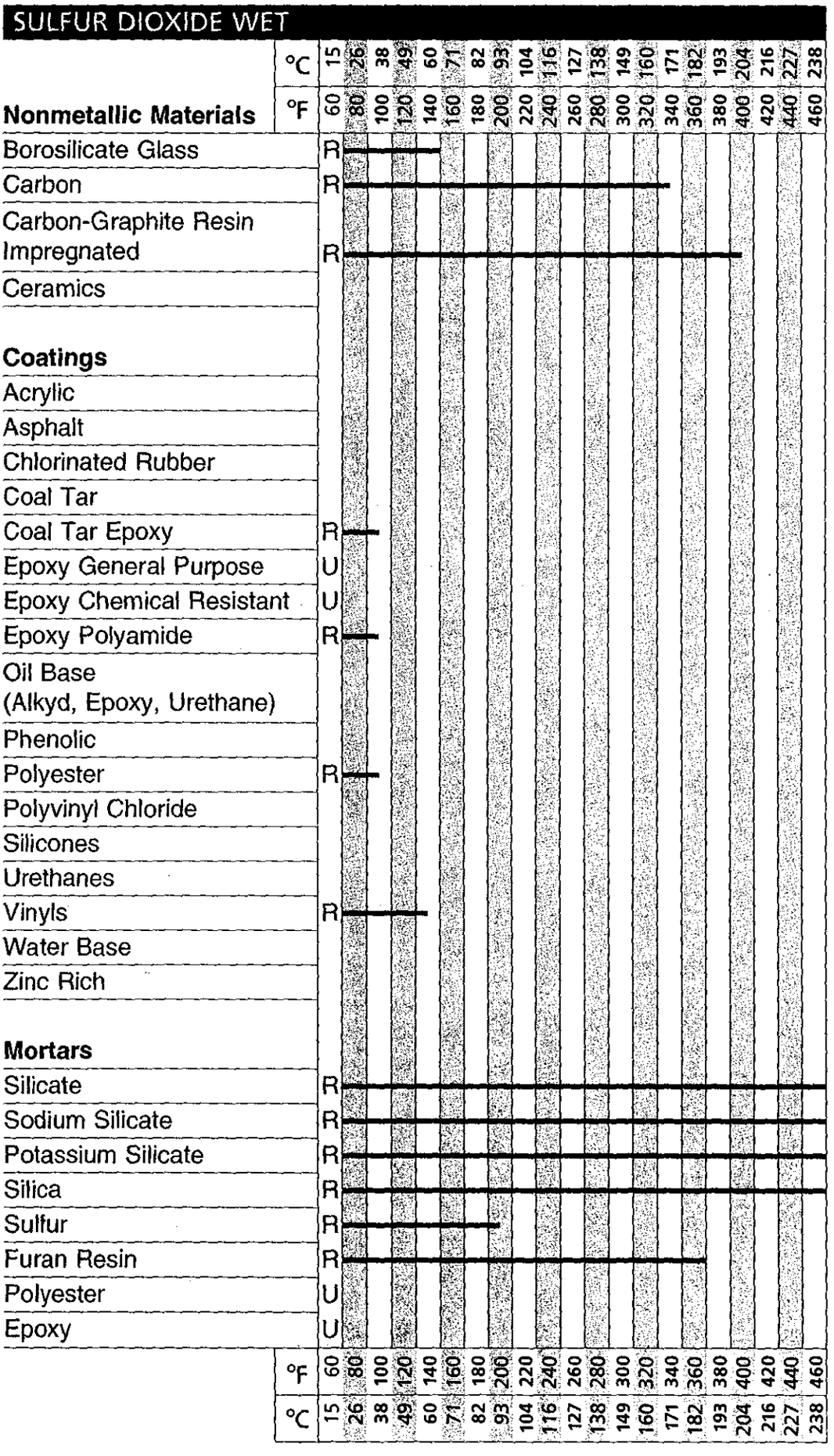
SULFUR DIOXIDE WET



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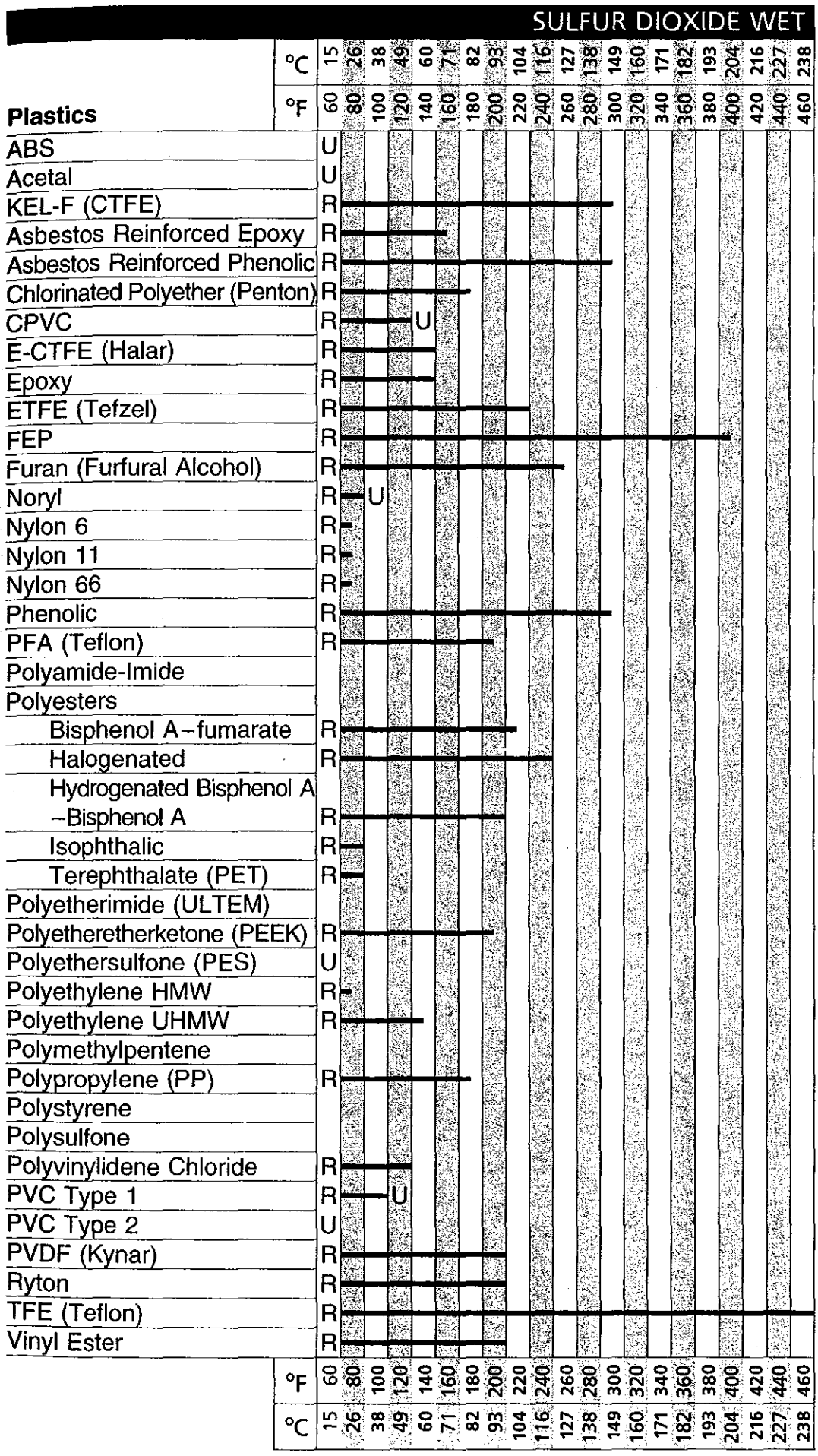

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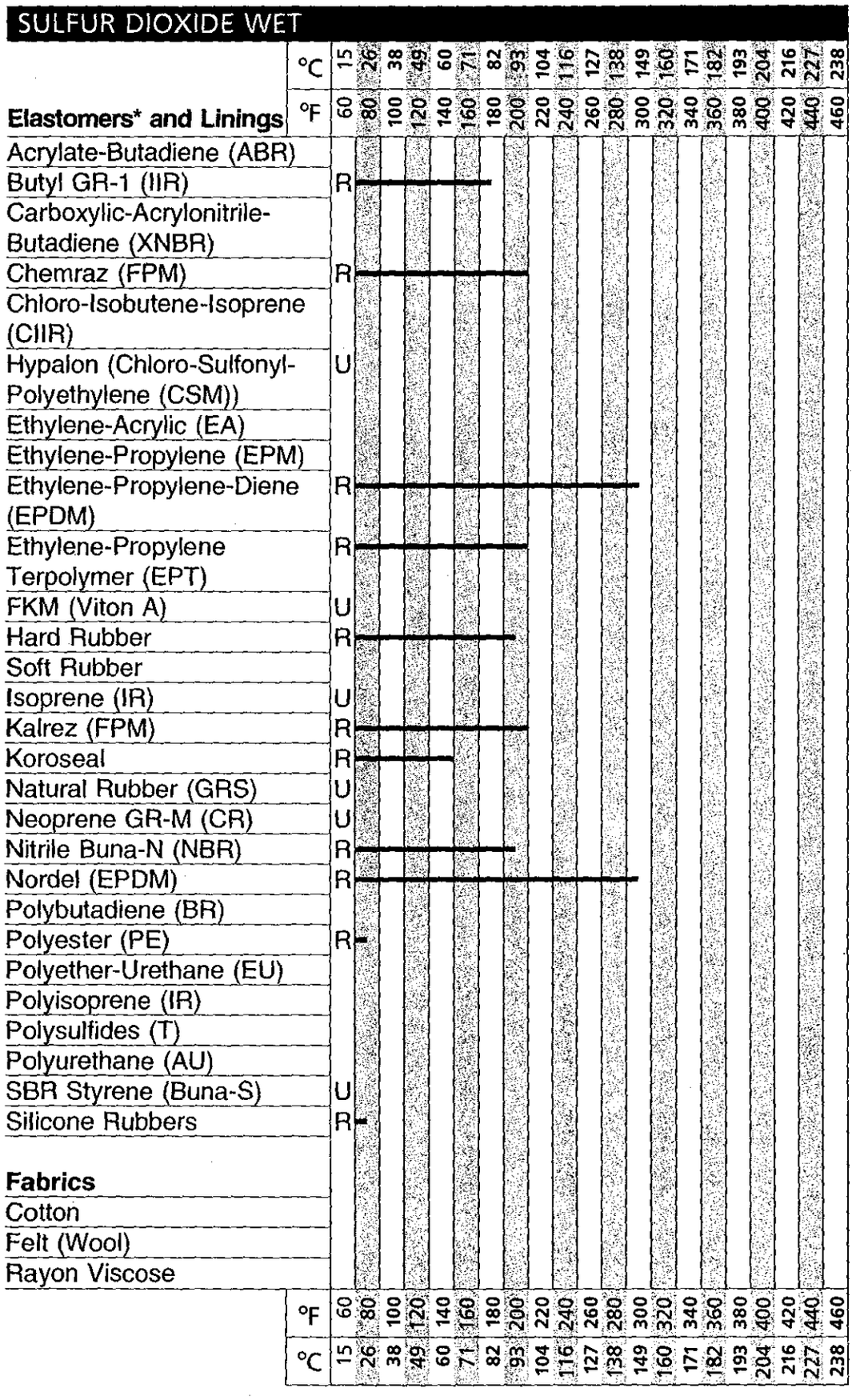
SULFUR DIOXIDE WET



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SULFUR OXYCHLORIDE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347	G																										
Type 316/316 L	G																										
Type 400 series																											
Type 317/317 L	G																										
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SULFUR OXYCHLORIDE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SULFUR OXYCHLORIDE

Plastics	°F	°C
ABS	60–460	15–238
Acetal	60–460	15–238
Acrylics	60–460	15–238
Asbestos Reinforced Epoxy	60–460	15–238
Asbestos Reinforced Phenolic	60–460	15–238
Chlorinated Polyether (Penton)	60–460	15–238
CPVC	60–460	15–238
E-CTFE (Halar)	60–460	15–238
Epoxy	60–460	15–238
ETFE (Tefzel)	60–460	15–238
FEP	60–460	15–238
Furan (Furfural Alcohol)	60–460	15–238
Noryl	60–460	15–238
Nylon 6	60–460	15–238
Nylon 11	60–460	15–238
Nylon 66	60–460	15–238
Phenolic	60–460	15–238
PFA (Teflon)	60–460	15–238
Polyamide-Imide	60–460	15–238
Polyesters	60–460	15–238
Bisphenol A–fumarate	60–460	15–238
Halogenated	60–460	15–238
Hydrogenated Bisphenol A –Bisphenol A	60–460	15–238
Isophthalic	60–460	15–238
Terephthalate (PET)	60–460	15–238
Polyetherimide (ULTEM)	60–460	15–238
Polyetheretherketone (PEEK)	60–460	15–238
Polyethersulfone (PES)	60–460	15–238
Polyethylene HMW	60–460	15–238
Polyethylene UHMW	60–460	15–238
Polymethylpentene	60–460	15–238
Polypropylene (PP)	60–460	15–238
Polystyrene	60–460	15–238
Polysulfone	60–460	15–238
Polyvinylidene Chloride	60–460	15–238
PVC Type 1	60–460	15–238
PVC Type 2	60–460	15–238
PVDF (Kynar)	60–460	15–238
Ryton	60–460	15–238
TFE (Teflon)	60–460	15–238
Vinyl Ester	60–460	15–238

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SULFUR OXYCHLORIDE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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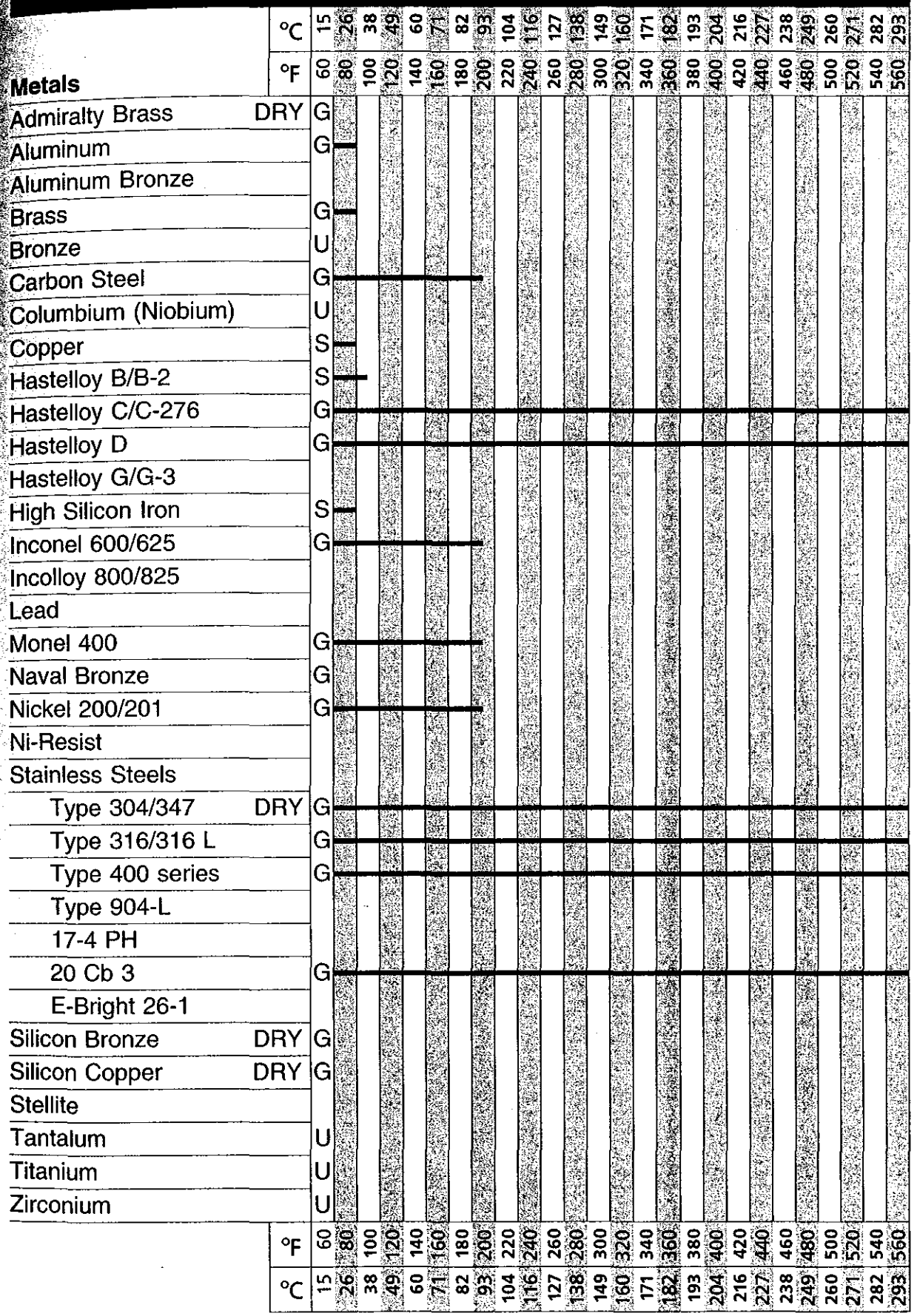

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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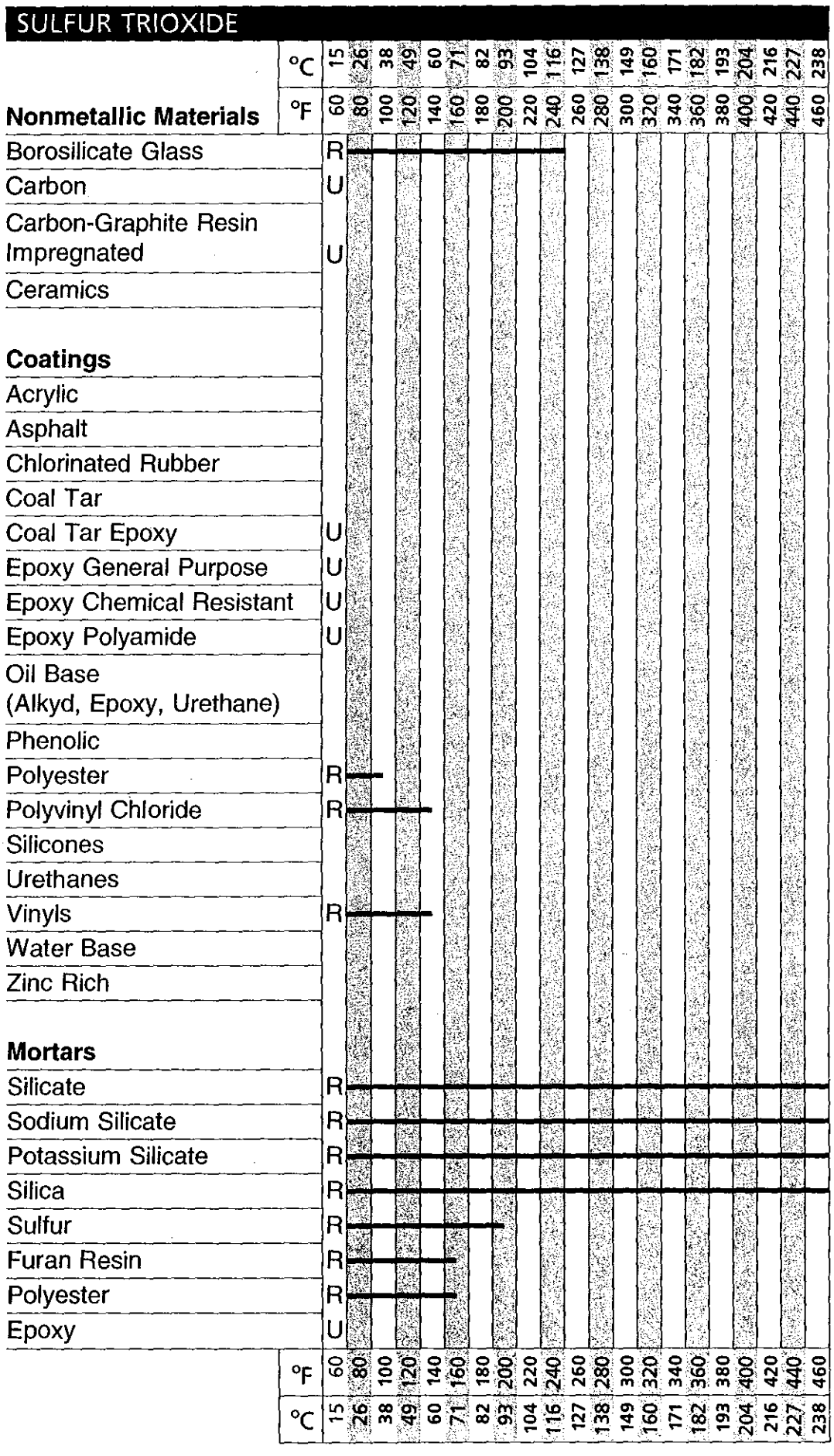
SULFUR TRIOXIDE



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SULFUR TRIOXIDE

Plastics		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS			U																				
Acetal																							
Acrylics																							
Asbestos Reinforced Epoxy			R																				
Asbestos Reinforced Phenolic																							
Chlorinated Polyether (Penton)			R																				
CPVC			R																				
E-CTFE (Halar)			R																				
Epoxy			U																				
ETFE (Tefzel)			R																				
FEP	14		R																				
Furan (Furfural Alcohol)			U																				
Noryl																							
Nylon 6			U																				
Nylon 11			U																				
Nylon 66			U																				
Phenolic			R																				
PFA (Teflon)	14		R																				
Polyamide-Imide																							
Polyesters																							
Bisphenol A–fumarate			R																				
Halogenated			R				U																
Hydrogenated Bisphenol A –Bisphenol A																							
Isophthalic			R																				
Terephthalate (PET)			R																				
Polyetherimide (ULTEM)																							
Polyetheretherketone (PEEK)																							
Polyethersulfone (PES)																							
Polyethylene HMW			U																				
Polyethylene UHMW																							
Polymethylpentene																							
Polypropylene (PP)			U																				
Polystyrene																							
Polysulfone																							
Polyvinylidene Chloride			R																				
PVC Type 1			R																				
PVC Type 2			R																				
PVDF (Kynar)			U																				
Ryton																							
TFE (Teflon)	14		R																				
Vinyl Ester			R																				
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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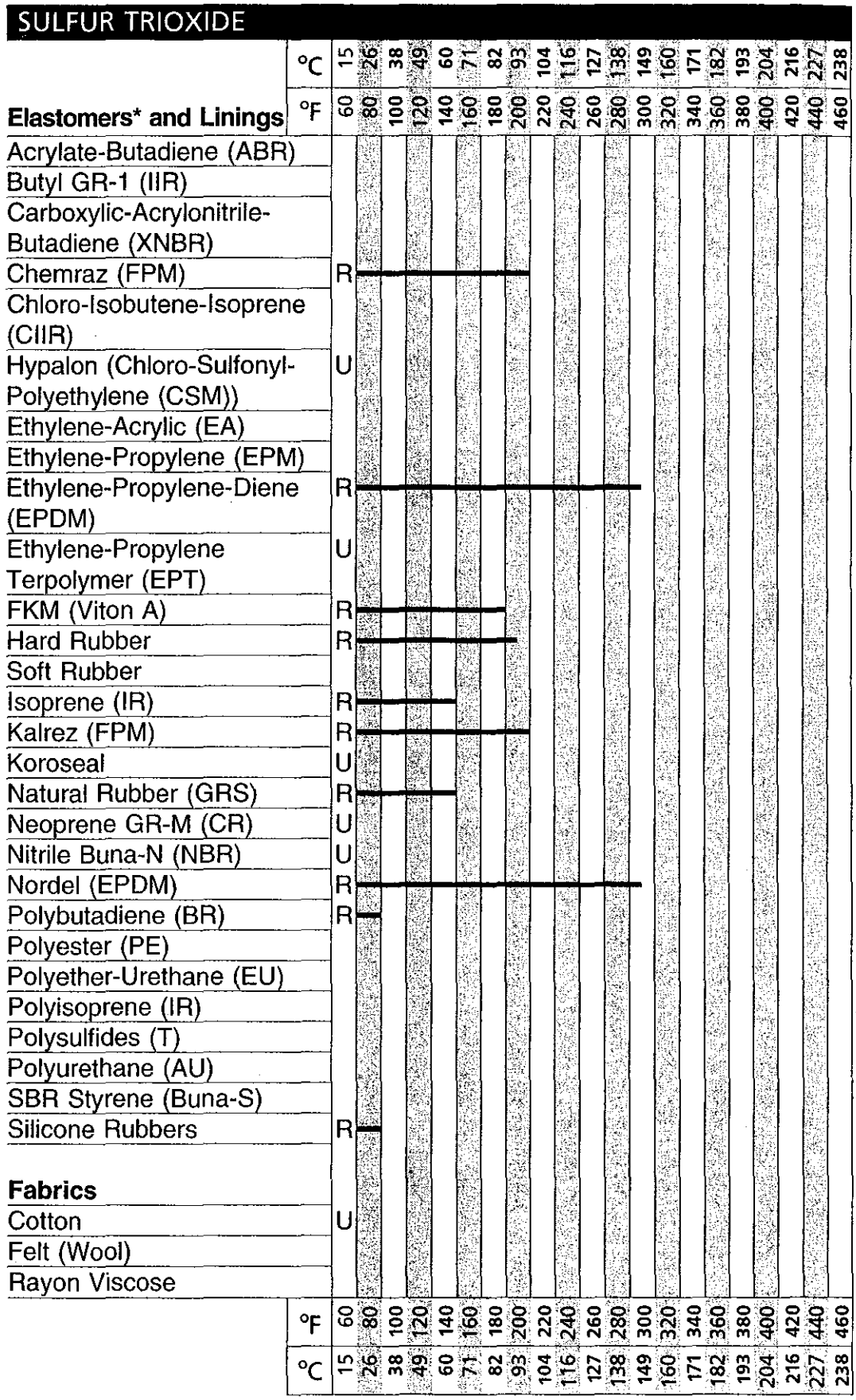
SULFUR TRIOXIDE



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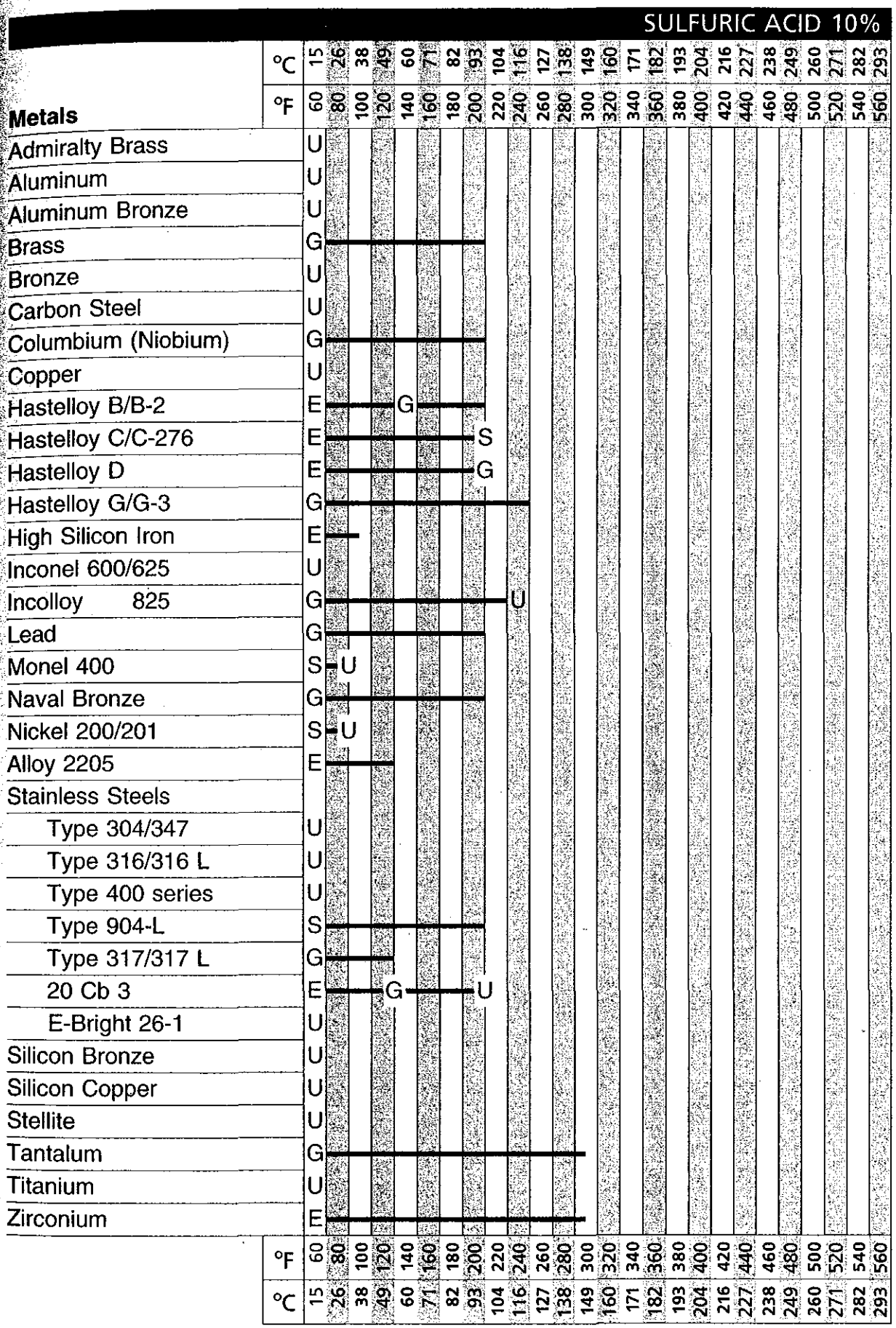

FOR METALS

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S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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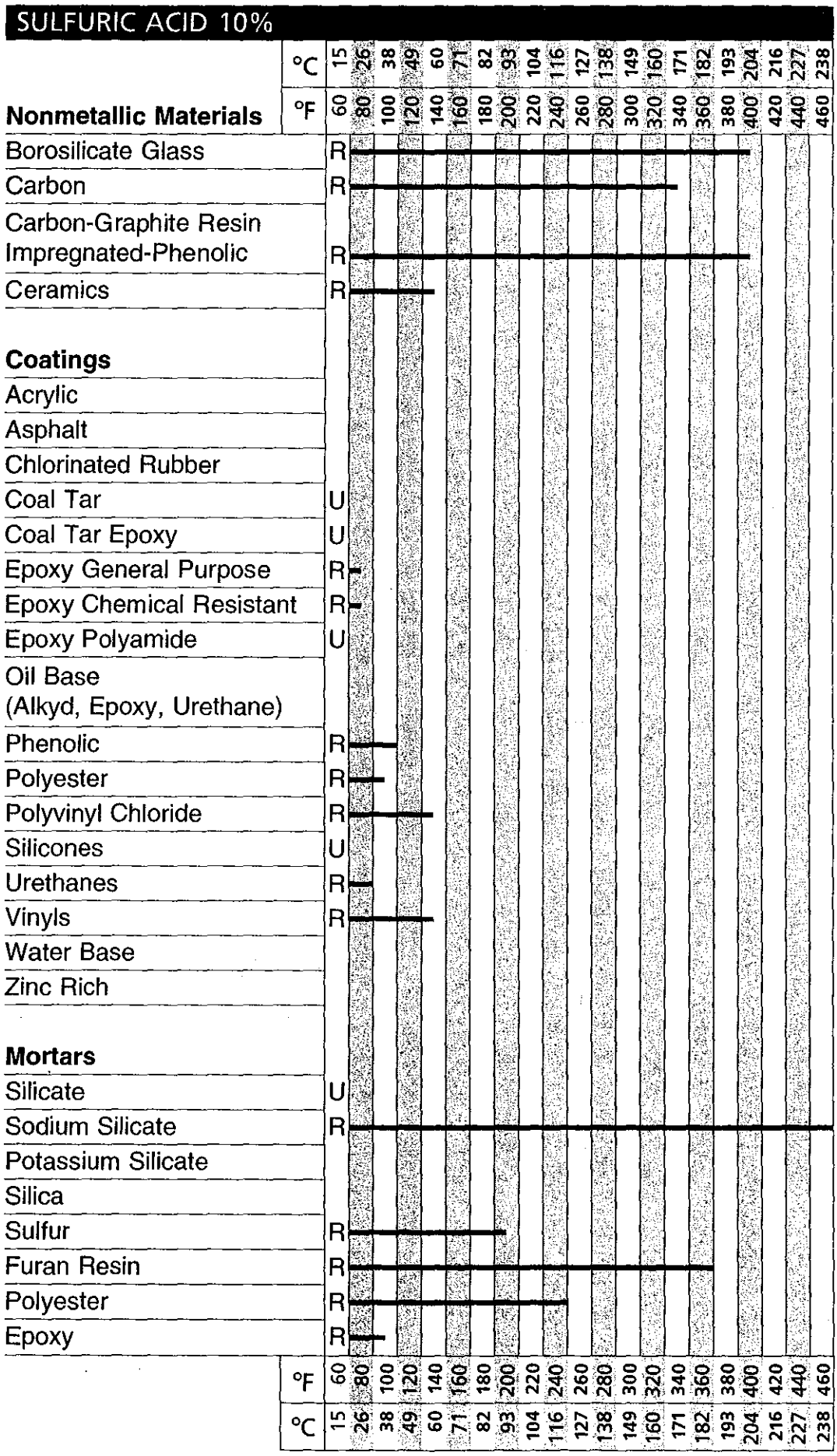

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SULFURIC ACID 10%

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS		R																				
Acetal		U																				
Acrylics		R																				
Asbestos Reinforced Epoxy		R																				
Asbestos Reinforced Phenolic		R																				
Chlorinated Polyether (Penton)		R																				
CPVC		R																				
E-CTFE (Halar)		R																				
Epoxy		R				U																
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)		R																				
Noryl		R																				
Nylon 6		U																				
Nylon 11		R																				
Nylon 66		U																				
Phenolic		R																				
PFA (Teflon)		R																				
Polyamide-Imide		R																				
Polyesters																						
Bisphenol A–fumarate		R																				
Halogenated		R																				
Hydrogenated Bisphenol A –Bisphenol A		R																				
Isophthalic		R																				
Terephthalate (PET)		R																				
Polyetherimide (ULTEM)		R																				
Polyetheretherketone (PEEK)		R																				
Polyethersulfone (PES)		R																				
Polyethylene HMW		R																				
Polyethylene UHMW		R																				
Polymethylpentene		R																				
Polypropylene (PP)		R																				
Polystyrene		R																				
Polysulfone		R																				
Polyvinylidene Chloride		R																				
PVC Type 1		R																				
PVC Type 2		R																				
PVDF (Kynar)		R																				
Ryton		R																				
TFE (Teflon)		R																				
Vinyl Ester		R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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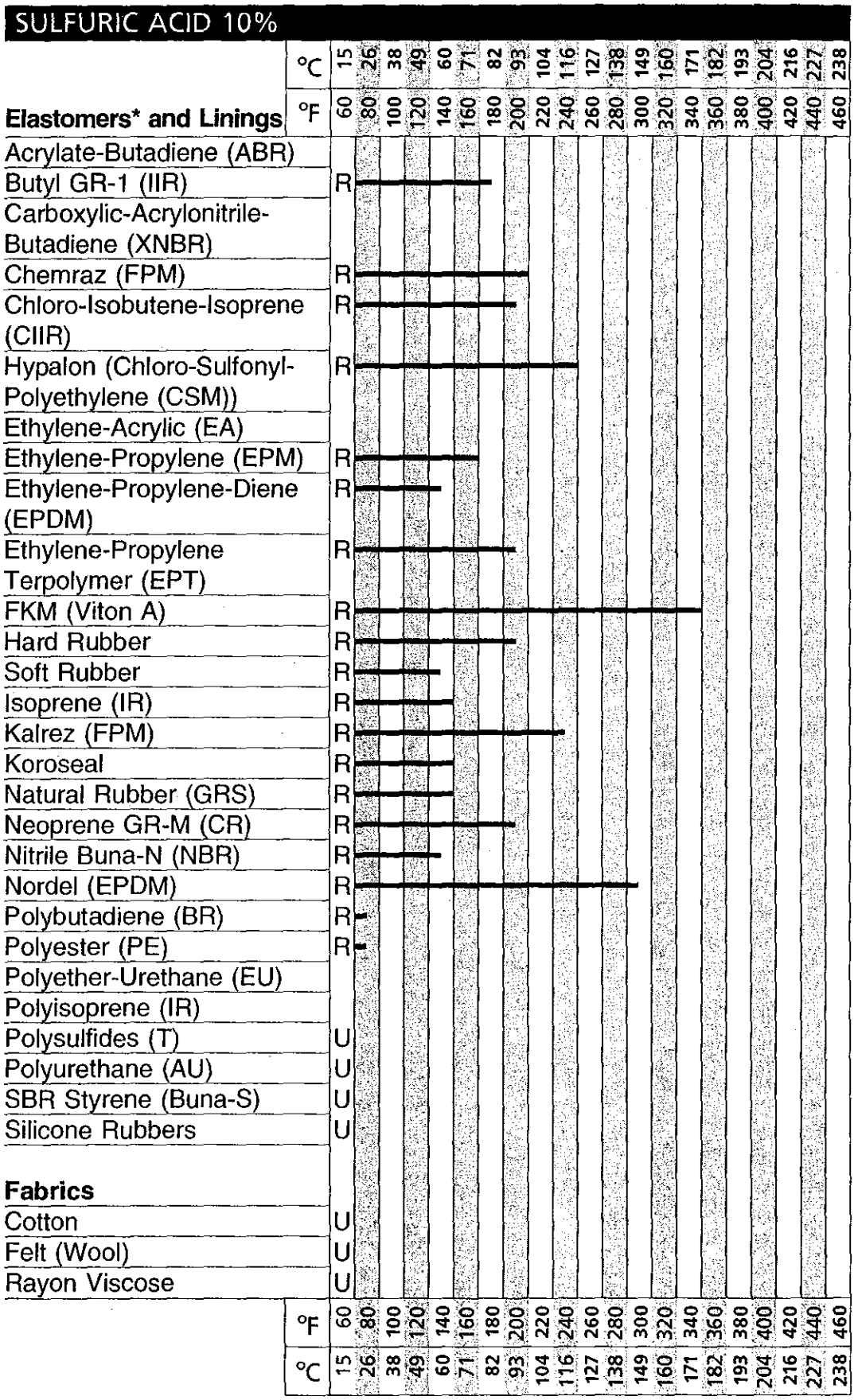

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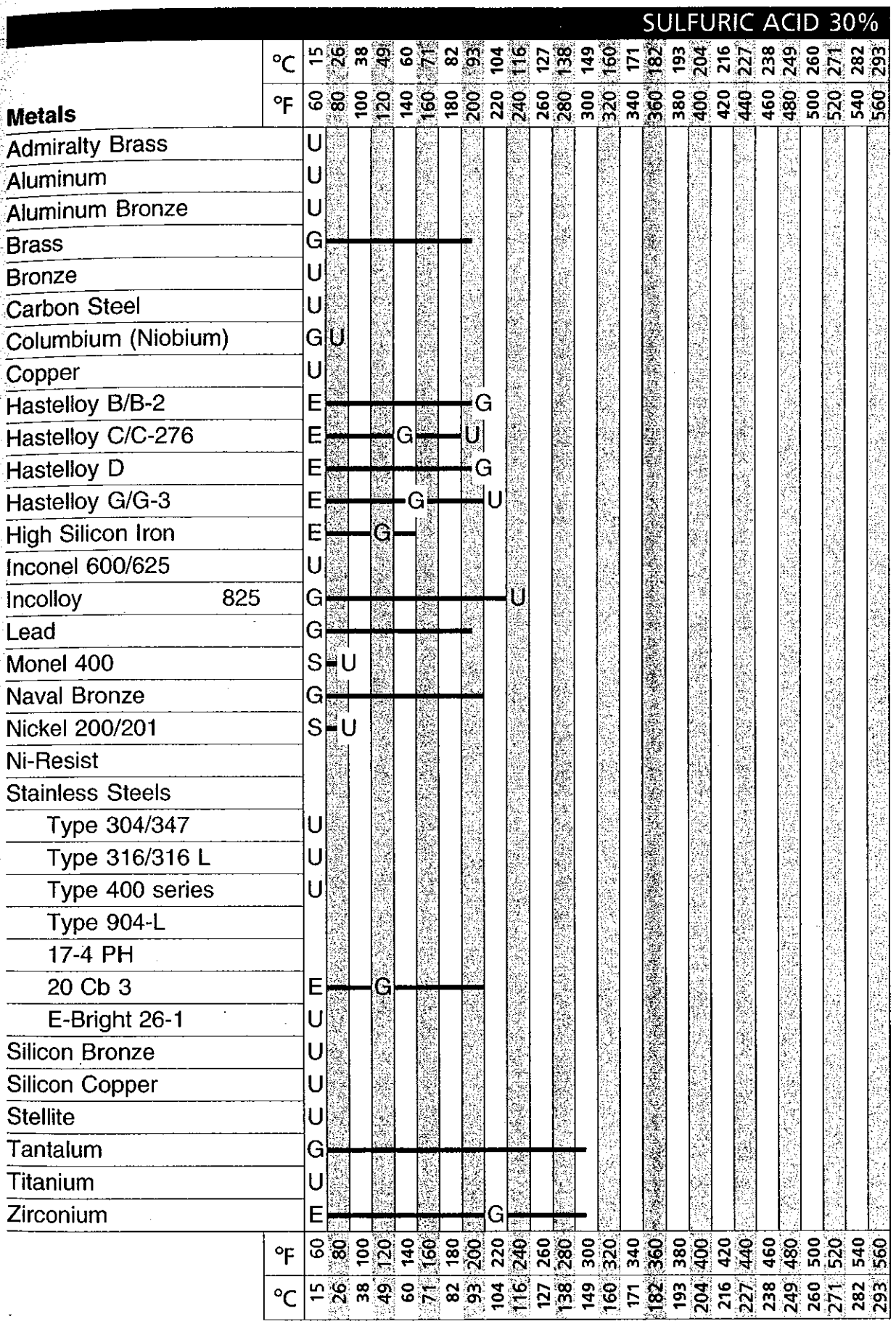

FOR METALS

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FOR NONMETALLICS

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U = Unsatisfactory

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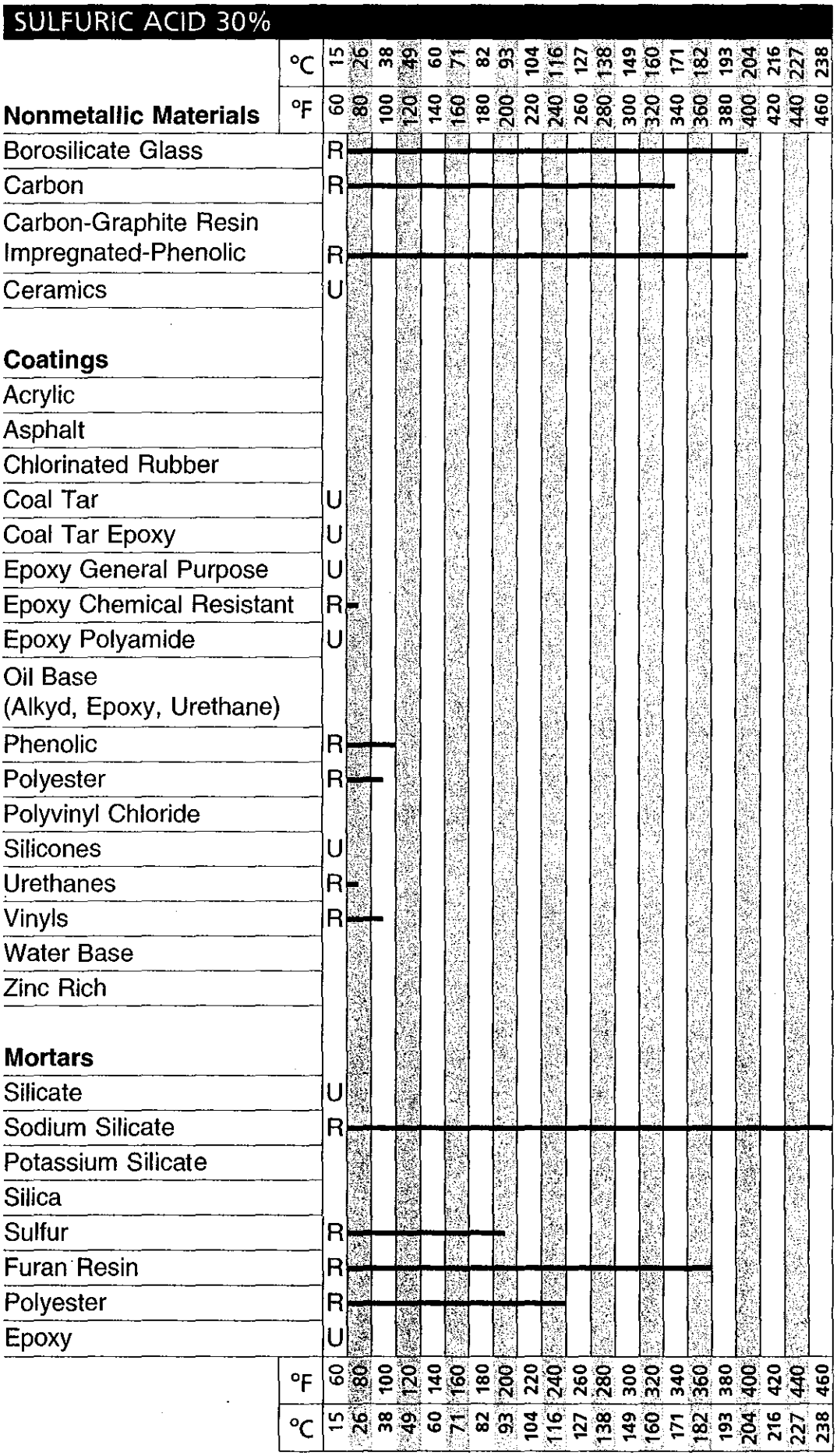

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SULFURIC ACID 30%

Plastics		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS	R																						
Acetal	U																						
Acrylics	R																						
Asbestos Reinforced Epoxy	U																						
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Epoxy	R																						
ETFE (Tefzel)	R																						
FEP	R																						
Furan (Furfural Alcohol)	R																						
Noryl	R																						
Nylon 6	U																						
Nylon 11	U																						
Nylon 66	U																						
Phenolic	R																						
PFA (Teflon)	R																						
Polyamide-Imide	R																						
Polyesters																							
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Halogenated	R																						
Hydrogenated Bisphenol A –Bisphenol A	R																						
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Polyethylene HMW	R																						
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		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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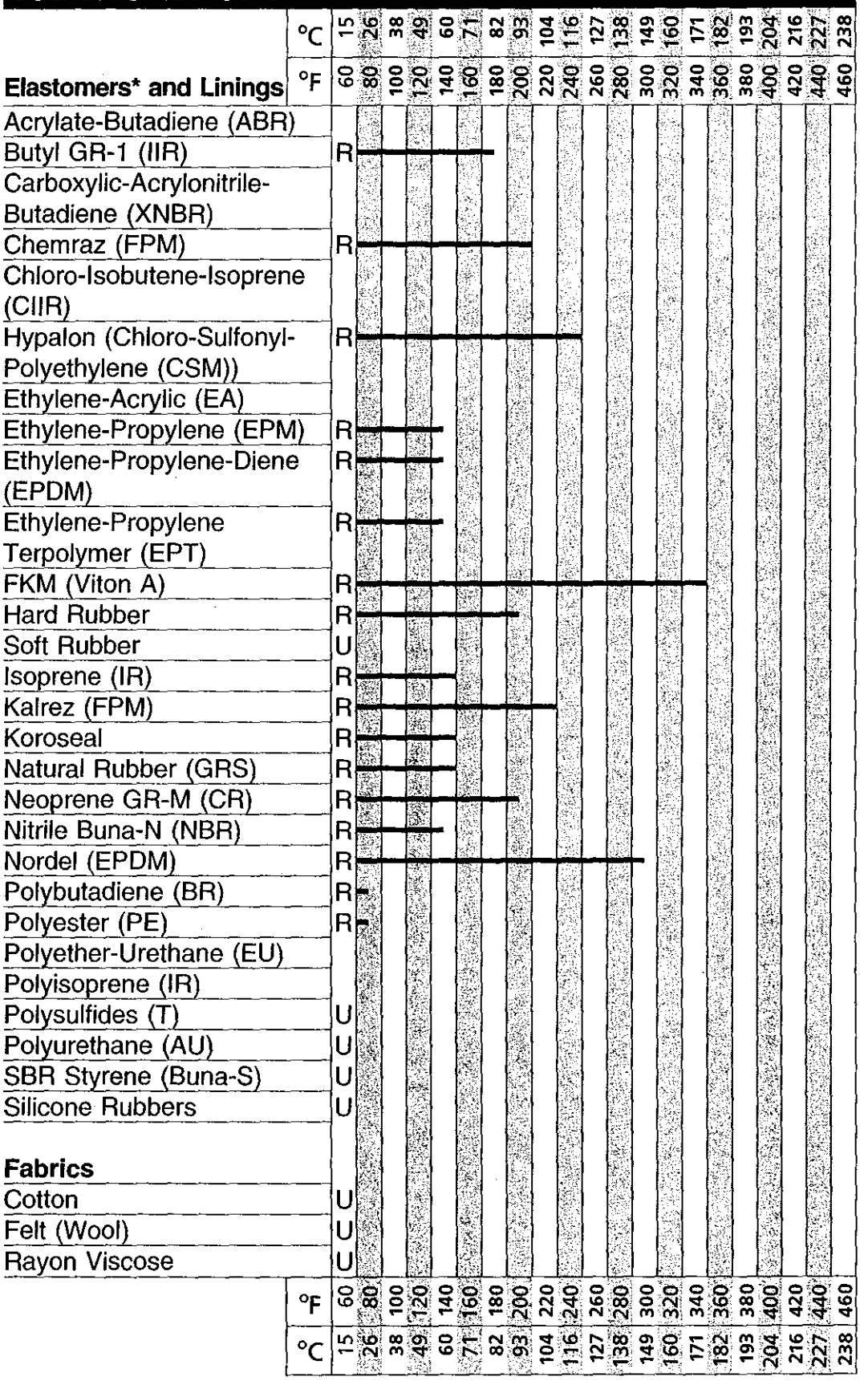

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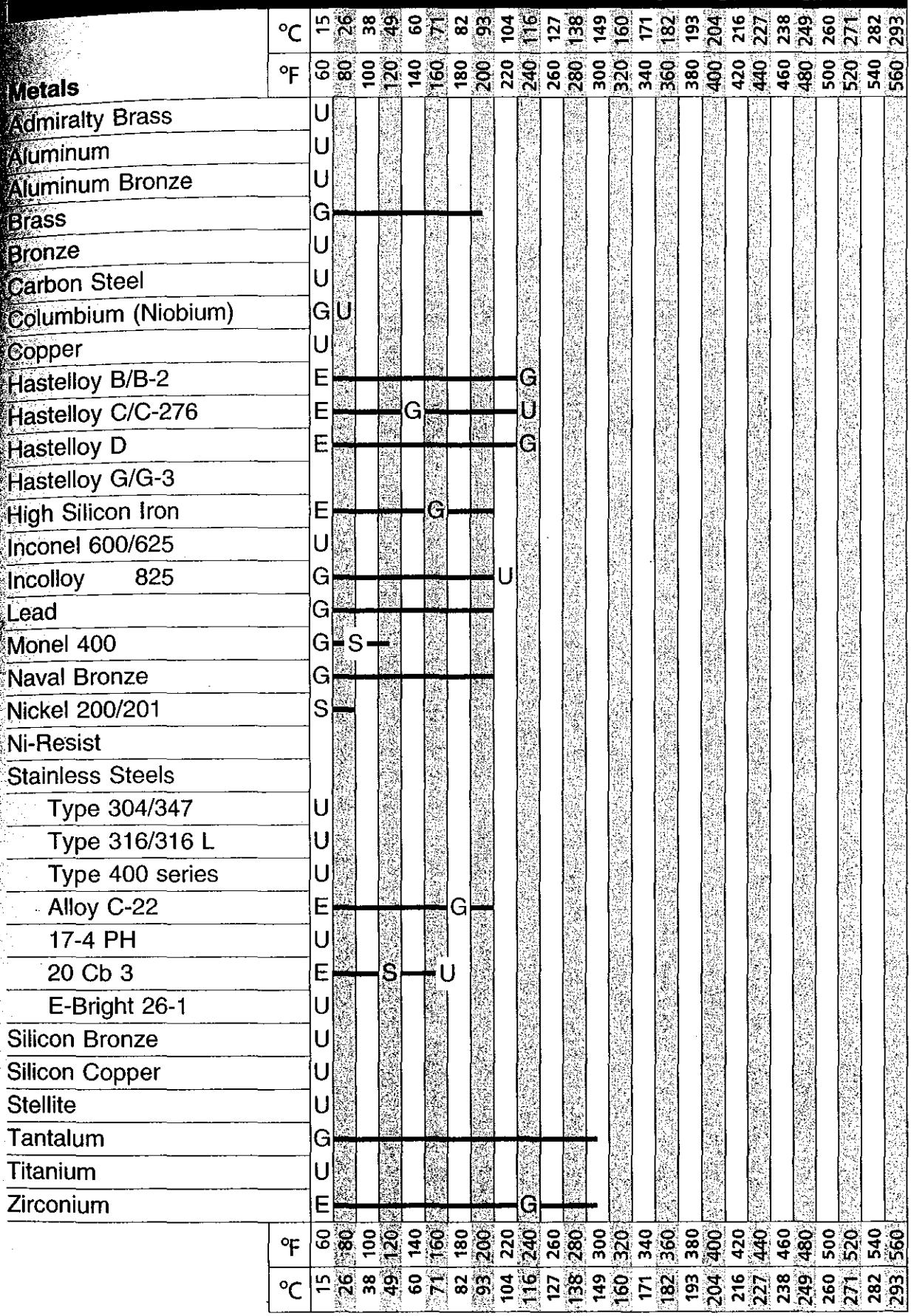

FOR METALS

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FOR NONMETALLICS

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U = Unsatisfactory

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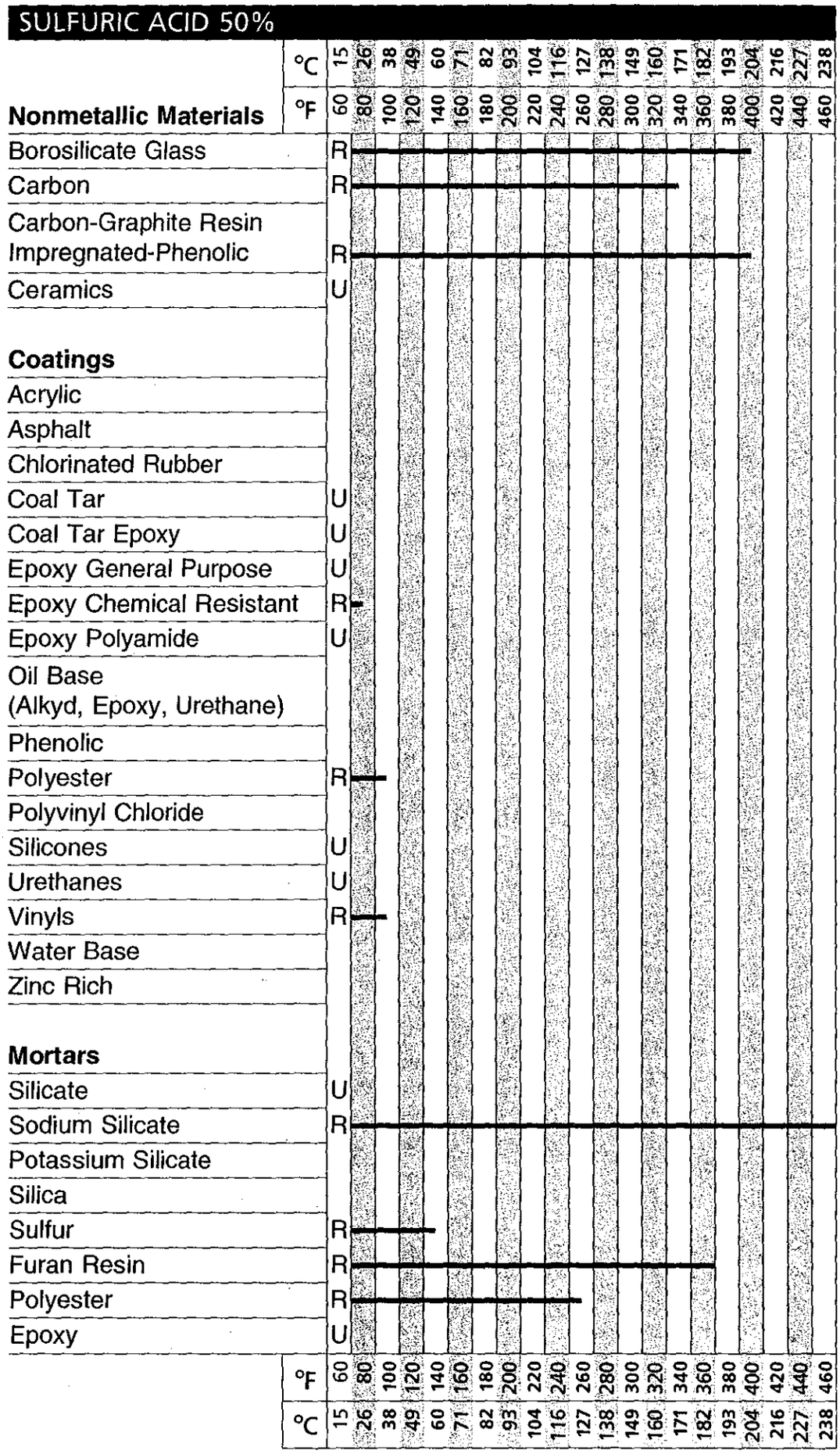

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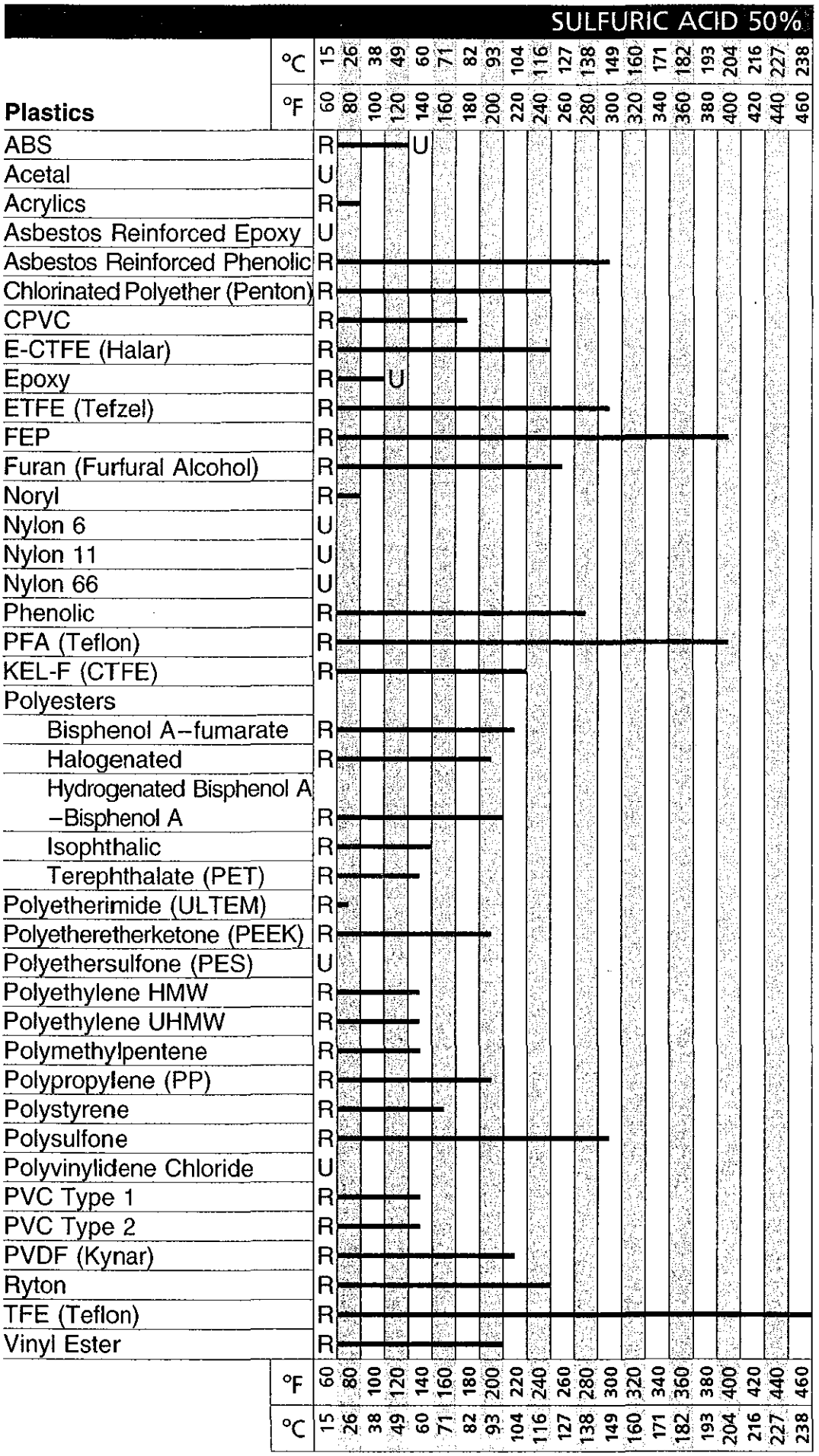

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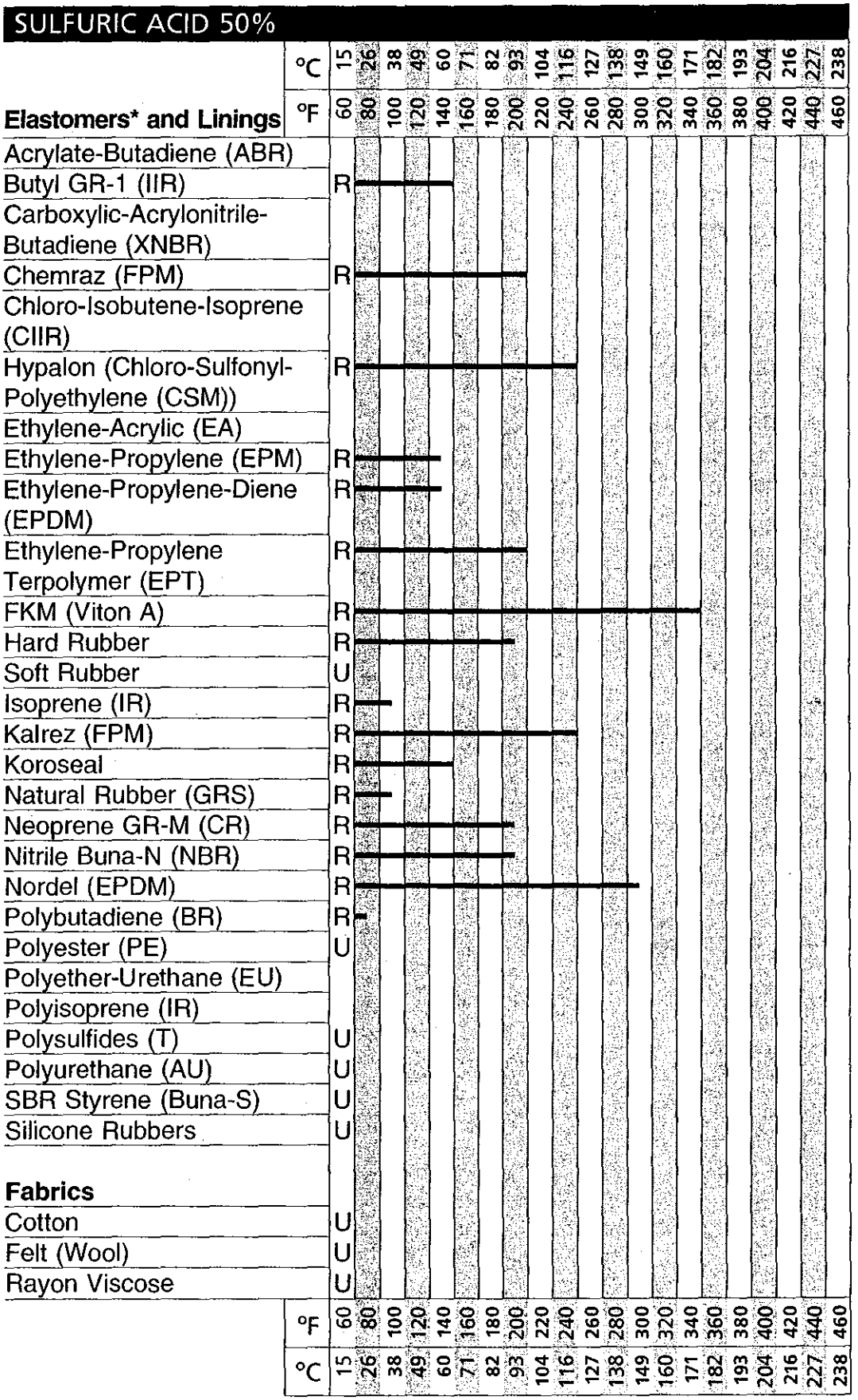

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SULFURIC ACID 60%

Metals	°C 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293
	°F 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560
Admiralty Brass	U
Aluminum	U
Aluminum Bronze	U
Brass	U
Bronze	U
Carbon Steel	U
Columbium (Niobium)	G U
Copper	U
Hastelloy B/B-2	E — G
Hastelloy C/C-276	E — U
Hastelloy D	E — G
Hastelloy G/G-3	
High Silicon Iron	E — G
Inconel 600/625	U
Incolloy 825	G — U
Lead	G
Monel 400	G — S
Naval Bronze	U
Nickel 200/201	S
Alloy Al 6XN	G
Stainless Steels	
Type 304/347	U
Type 316/316 L	U
Type 400 series	U
Type 904-L	G
17-4 PH	U
20 Cb 3	E — S — U
E-Bright 26-1	U
Silicon Bronze	U
Silicon Copper	U
Stellite	U
Tantalum	G
Titanium	U
Zirconium	E — G
	°F 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560
	°C 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293

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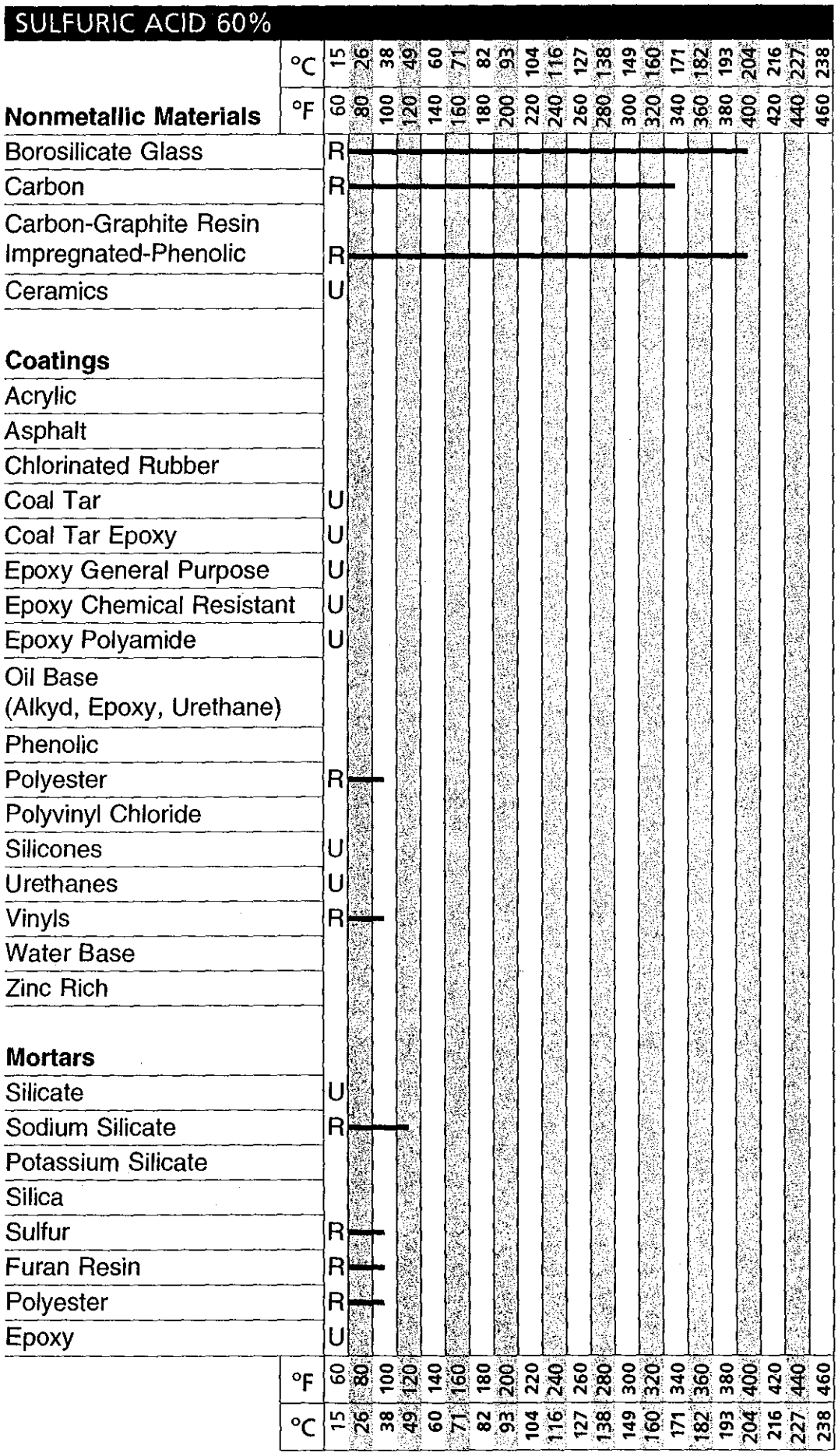

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SULFURIC ACID 60%

Plastics	
ABS	U
Acetal	U
Acrylics	R
Asbestos Reinforced Epoxy	U
Asbestos Reinforced Phenolic	R
Chlorinated Polyether (Penton)	R
CPVC	R
E-CTFE (Halar)	R
Epoxy	R
ETFE (Tefzel)	R
FEP	R
Furan (Furfural Alcohol)	R
Noryl	R
Nylon 6	U
Nylon 11	U
Nylon 66	U
Phenolic	R
PFA (Teflon)	R
KEL-F (CTFE)	R
Polyesters	
Bisphenol A–fumarate	R
Halogenated	R
Hydrogenated Bisphenol A –Bisphenol A	R
Isophthalic	U
Terephthalate (PET)	U
Polyetherimide (ULTEM)	U
Polyetheretherketone (PEEK)	U
Polyethersulfone (PES)	U
Polyethylene HMW	R
Polyethylene UHMW	R
Polymethylpentene	R
Polypropylene (PP)	R
Polystyrene	R
Polysulfone	U
Polyvinylidene Chloride	U
PVC Type 1	R
PVC Type 2	R
PVDF (Kynar)	R
Ryton	R
TFE (Teflon)	R
Vinyl Ester	R

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
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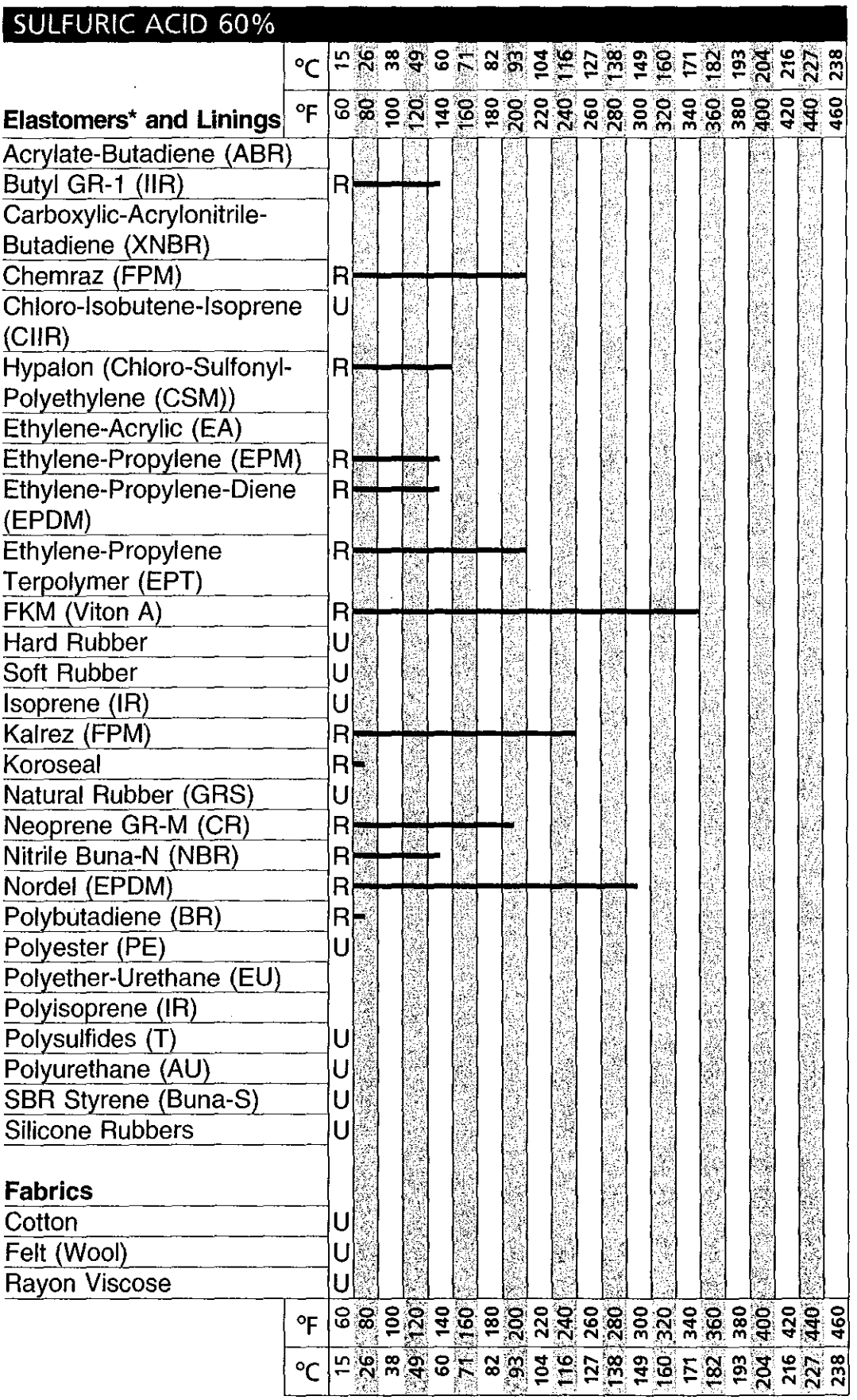
SULFURIC ACID 60%



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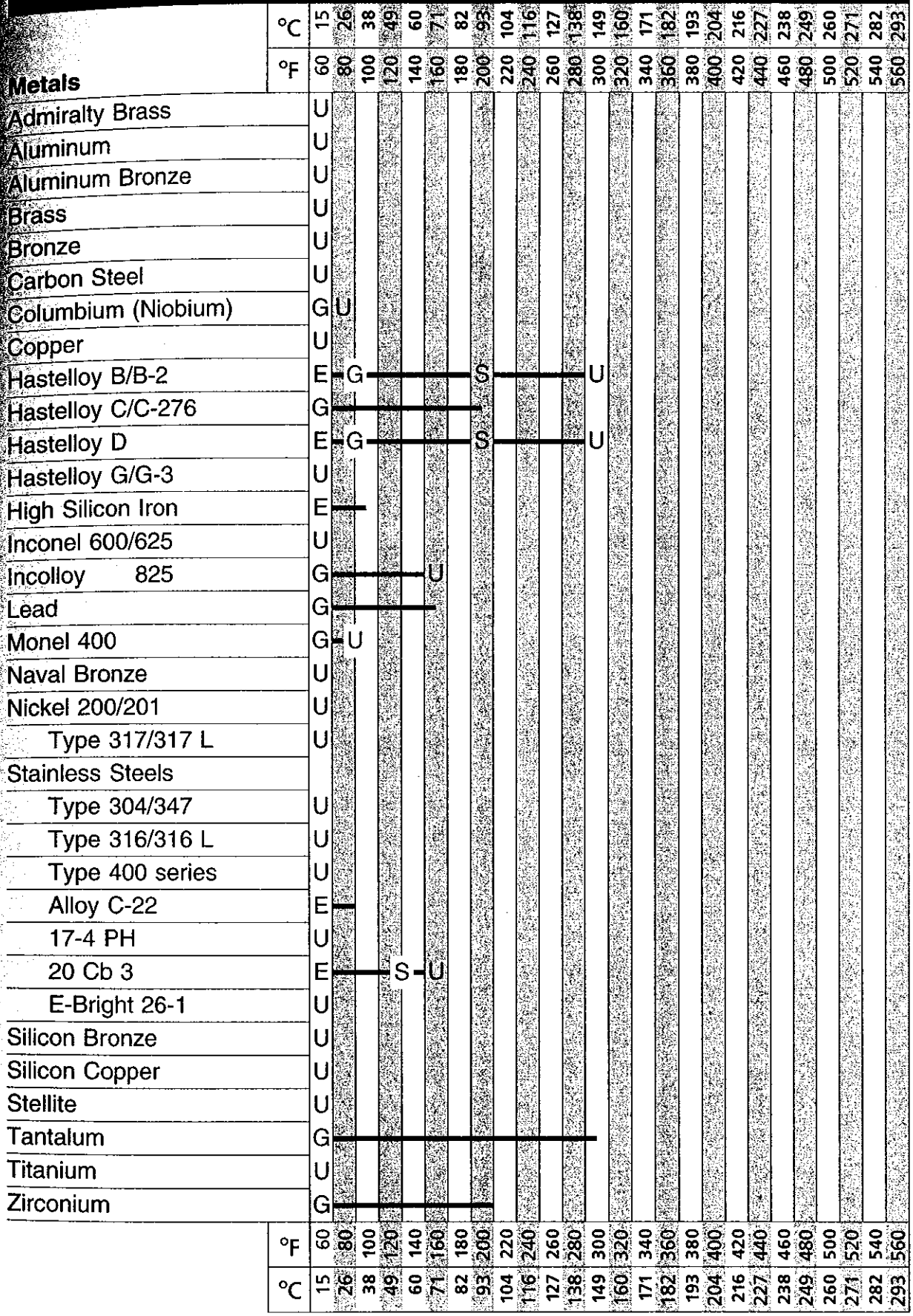

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S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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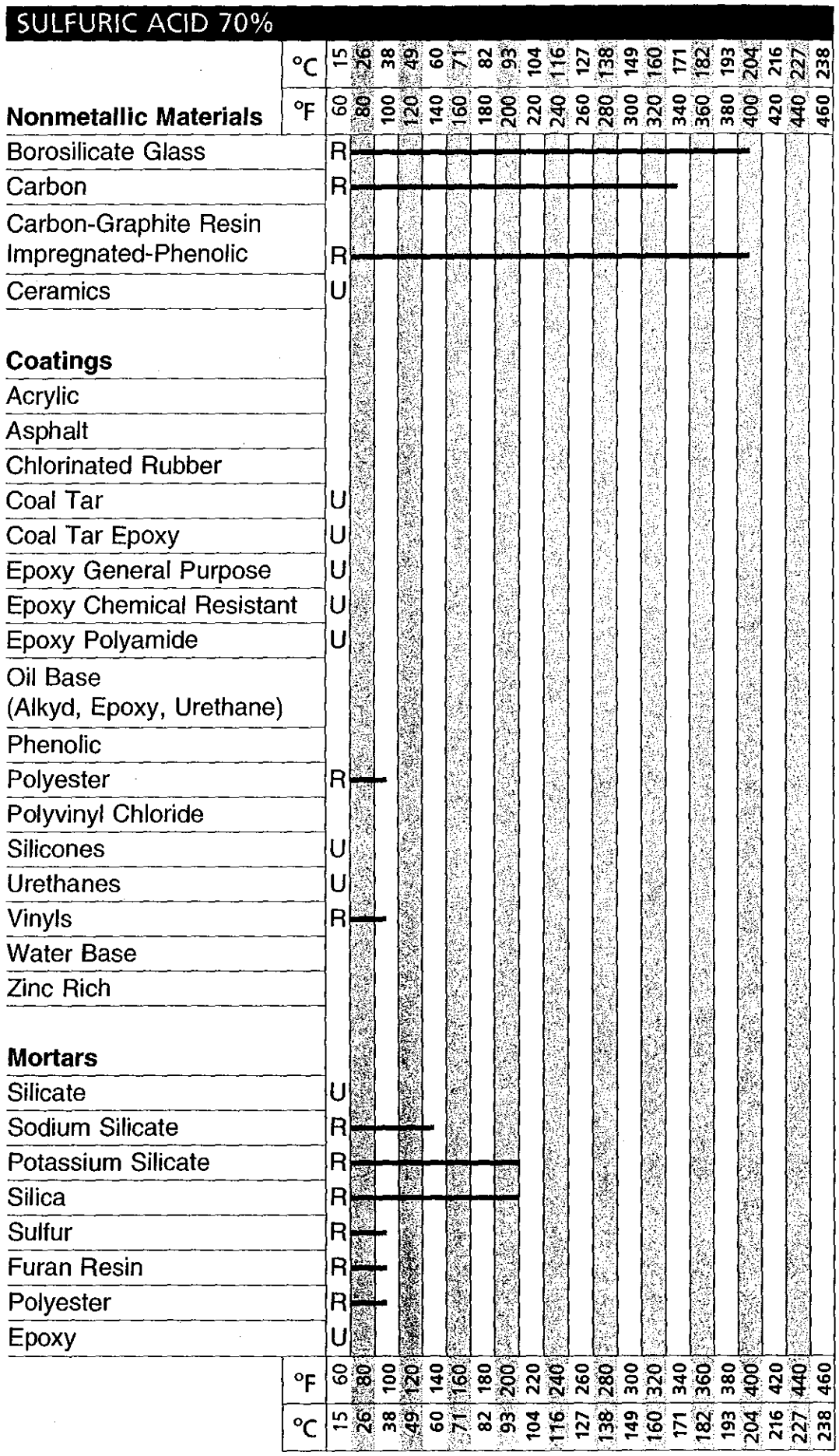

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SULFURIC ACID 70%

Plastics	°C	°F
ABS	U	
Acetal	U	
Acrylics	R	
Asbestos Reinforced Epoxy	U	
Asbestos Reinforced Phenolic	R–U	
Chlorinated Polyether (Penton)	R	
CPVC	R	
E-CTFE (Halar)	R	
Epoxy	R–U	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)	R	
Noryl	R	
Nylon 6	U	
Nylon 11	U	
Nylon 66	U	
Phenolic	R	
PFA (Teflon)	R	
KEL-F (CTFE)	R	
Polyesters		
Bisphenol A–fumarate	R	
Halogenated	R–U	
Hydrogenated Bisphenol A –Bisphenol A	R	
Isophthalic	U	
Terephthalate (PET)	U	
Polyetherimide (ULTEM)	U	
Polyetheretherketone (PEEK)	U	
Polyethersulfone (PES)	U	
Polyethylene HMW	R	
Polyethylene UHMW	R	
Polymethylpentene	R	
Polypropylene (PP)	R	
Polystyrene	R	
Polysulfone	U	
Polyvinylidene Chloride	U	
PVC Type 1	R	
PVC Type 2	R	
PVDF (Kynar)	R	
Ryton	R	
TFE (Teflon)	R	
Vinyl Ester	R	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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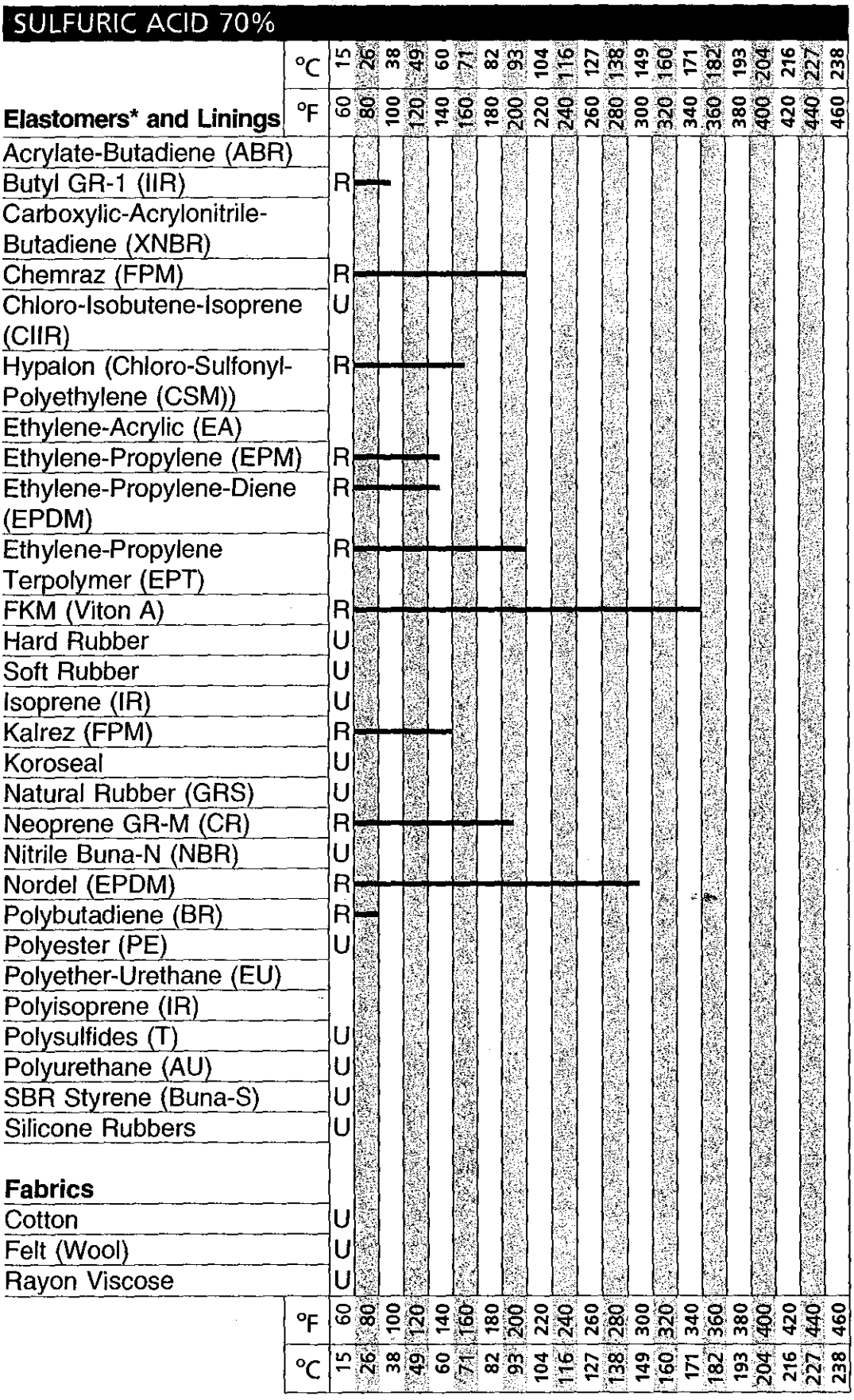

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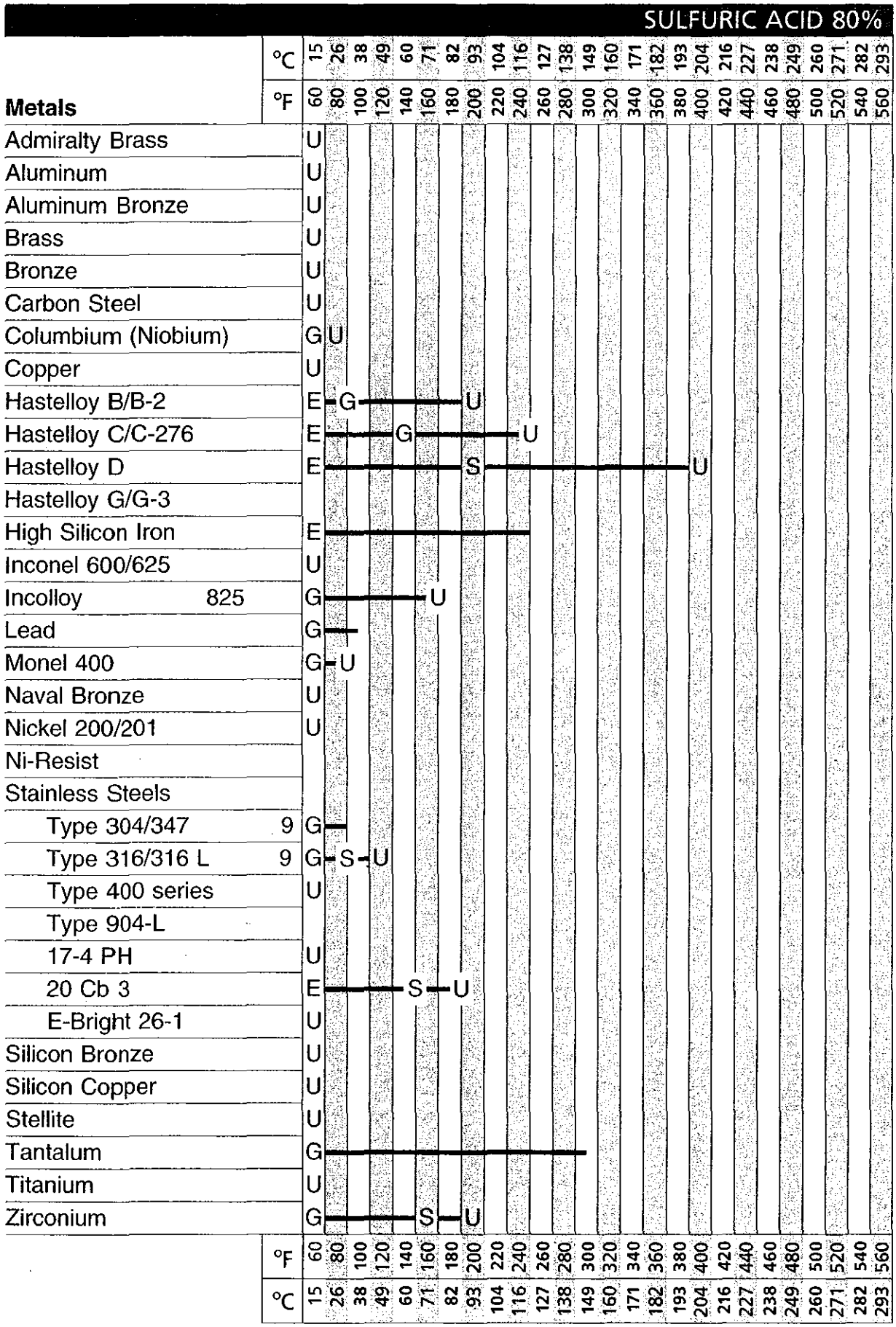

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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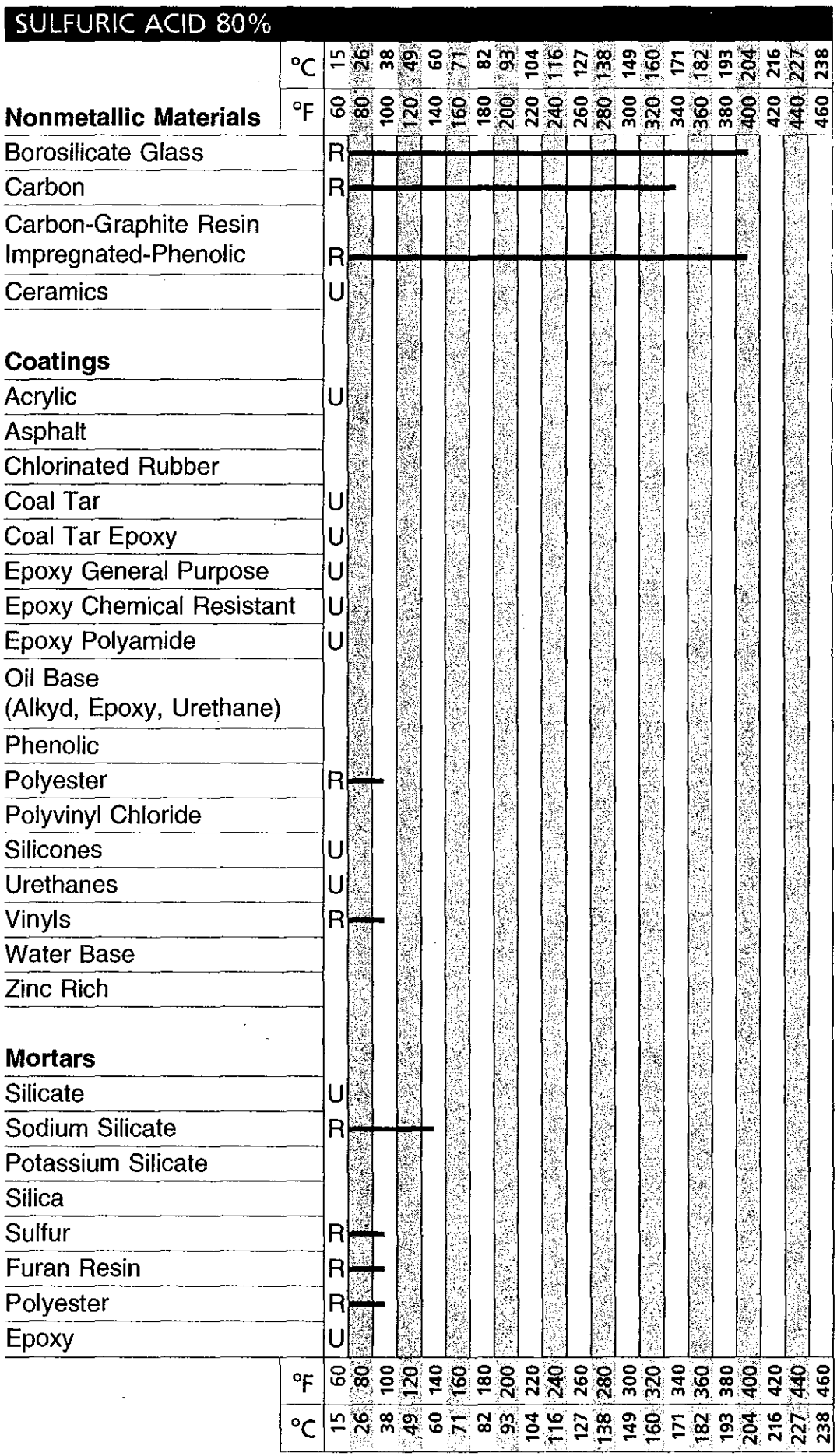

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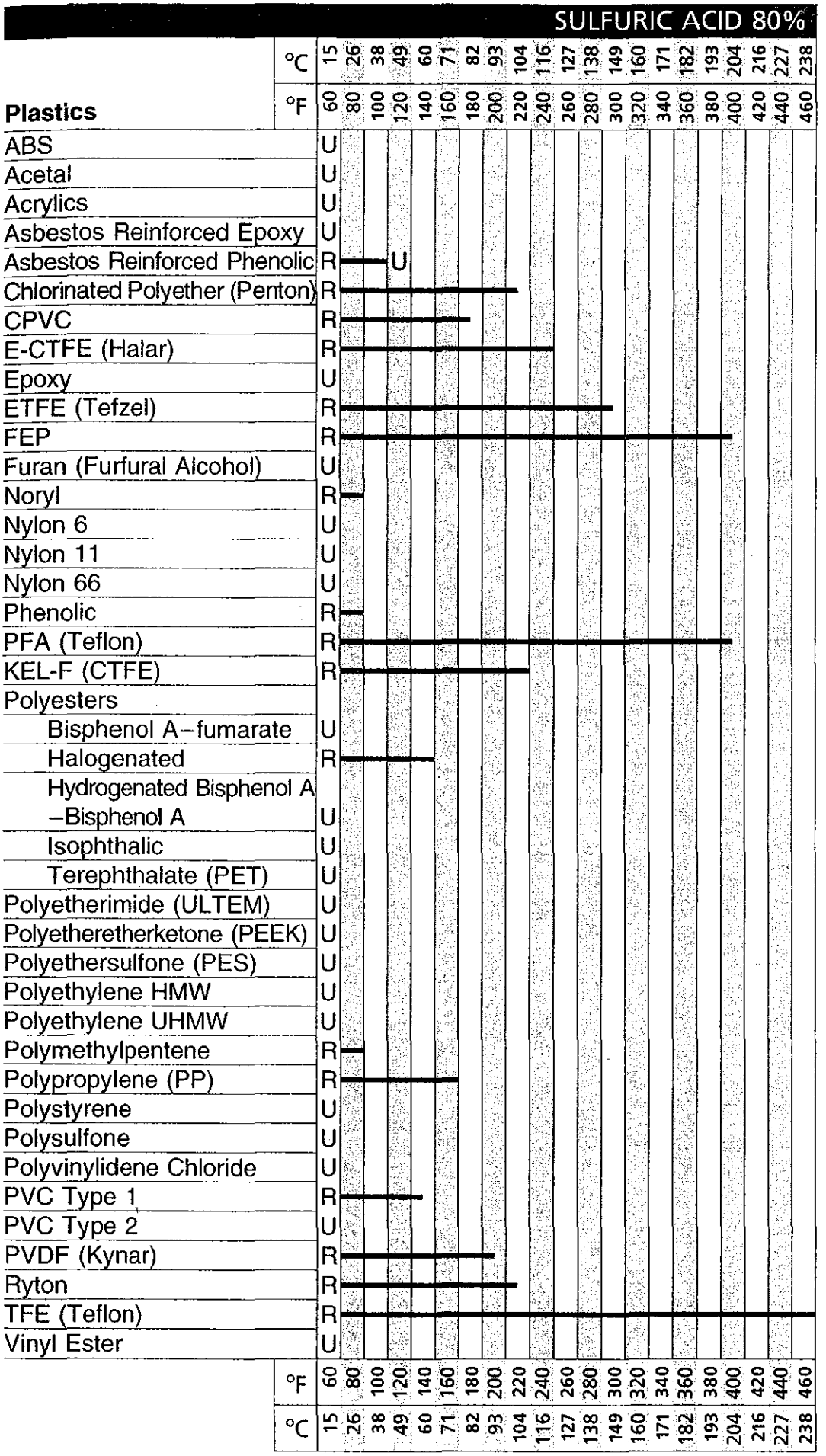

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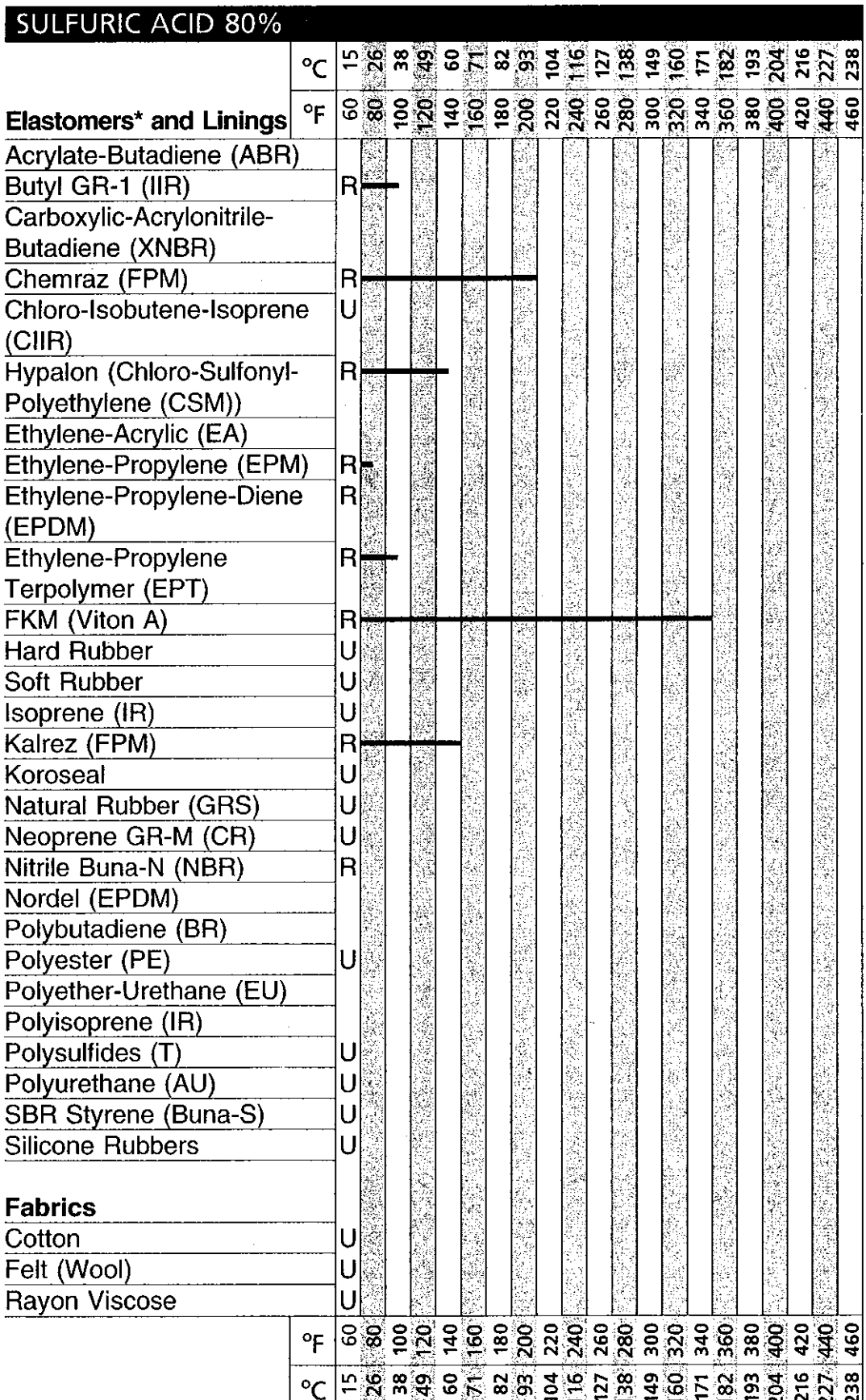

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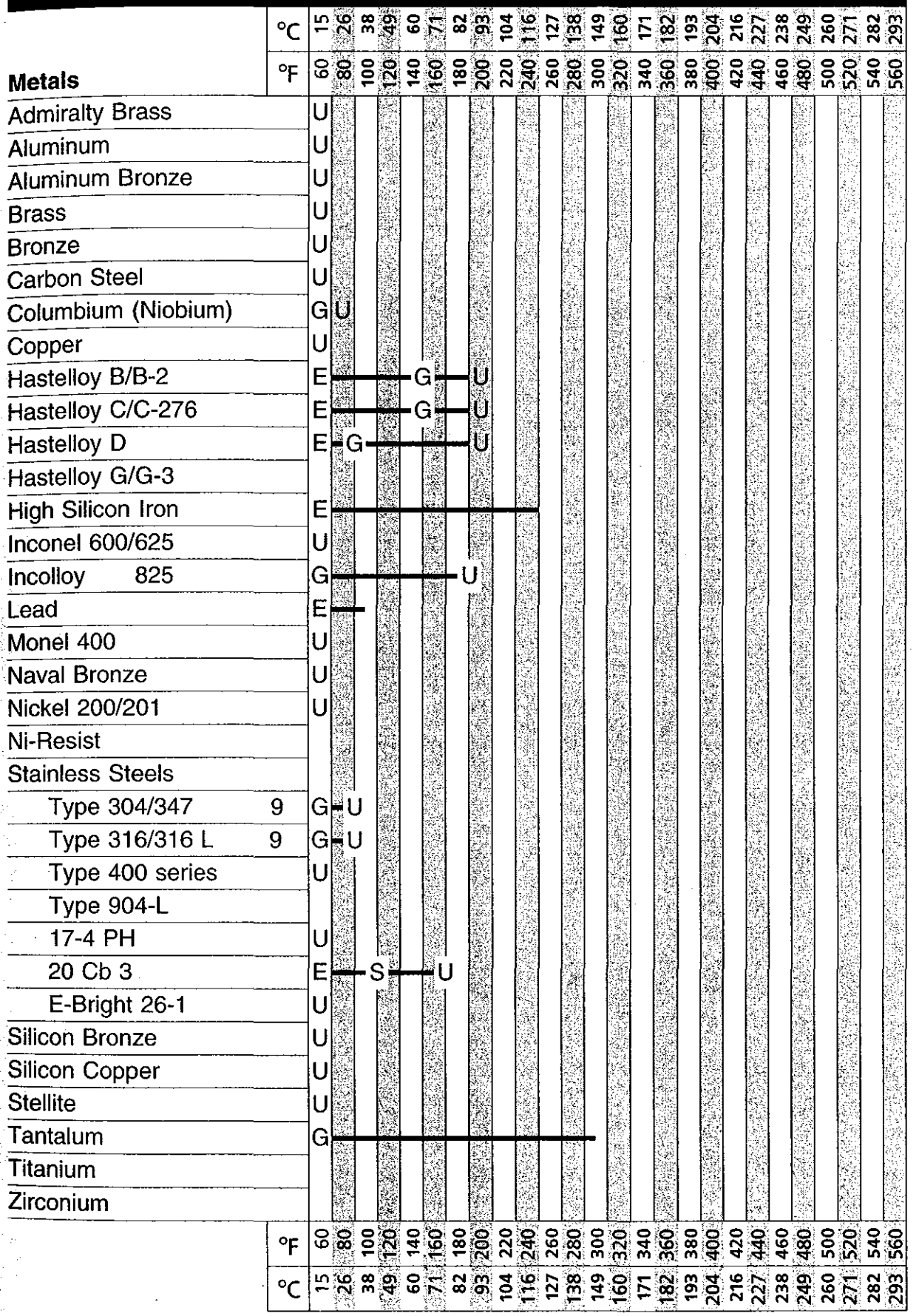

Metals

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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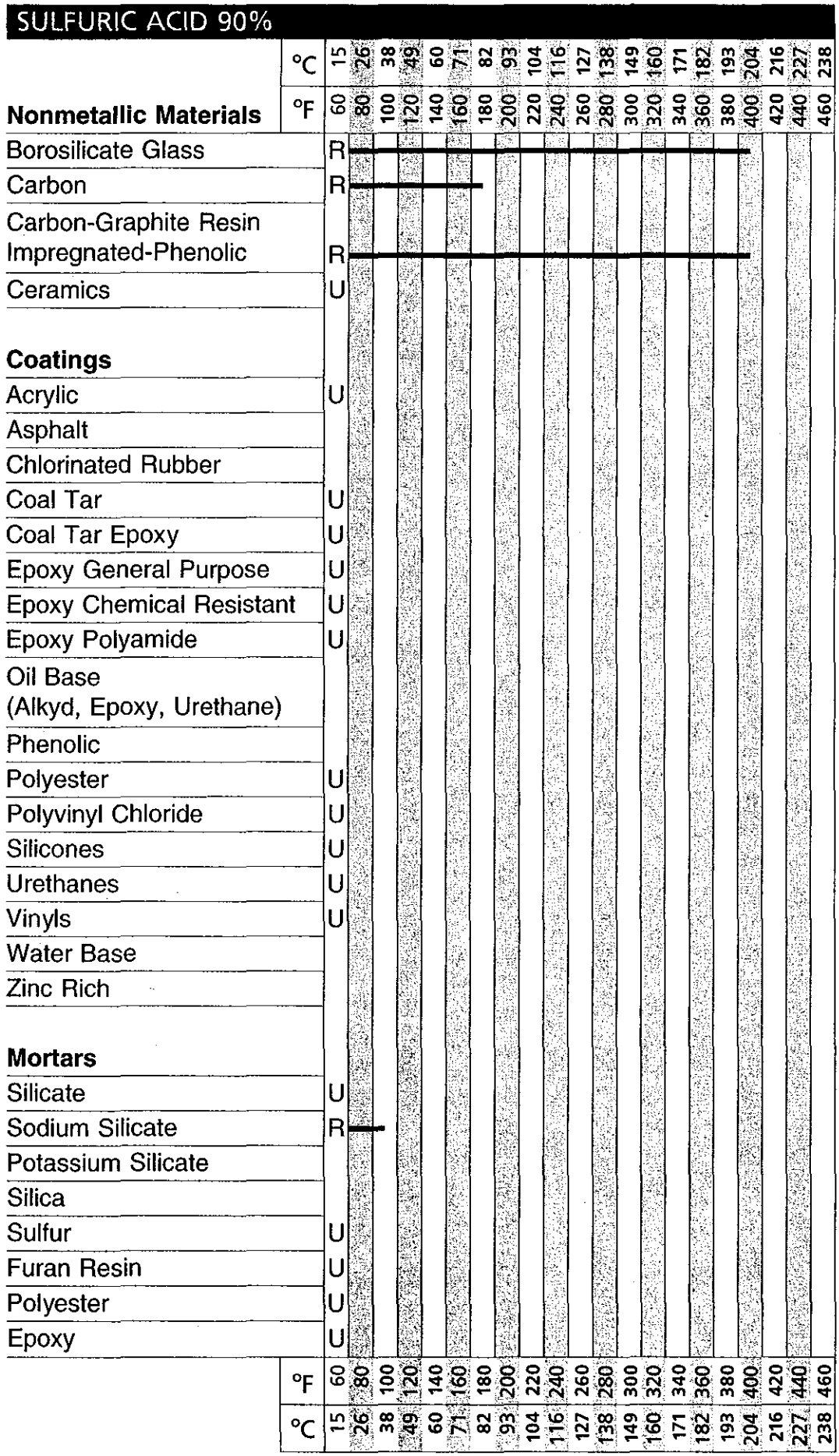

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SULFURIC ACID 90%

Plastics	
ABS	U
Acetal	U
Acrylics	U
Asbestos Reinforced Epoxy	U
Asbestos Reinforced Phenolic	R–U
Chlorinated Polyether (Penton)	R
CPVC	R
E-CTFE (Halar)	R
Epoxy	U
ETFE (Tefzel)	R
FEP	R
Furan (Furfural Alcohol)	U
Noryl	R
Nylon 6	U
Nylon 11	U
Nylon 66	U
Phenolic	R
PFA (Teflon)	R
KEL-F (CTFE)	R
Polyesters	
Bisphenol A–fumarate	U
Halogenated	U
Hydrogenated Bisphenol A –Bisphenol A	U
Isophthalic	U
Terephthalate (PET)	U
Polyetherimide (ULTEM)	U
Polyetheretherketone (PEEK)	U
Polyethersulfone (PES)	U
Polyethylene HMW	U
Polyethylene UHMW	U
Polymethylpentene	R
Polypropylene (PP)	R
Polystyrene	
Polysulfone	U
Polyvinylidene Chloride	U
PVC Type 1	R
PVC Type 2	U
PVDF (Kynar)	R
Ryton	R
TFE (Teflon)	R
Vinyl Ester	U

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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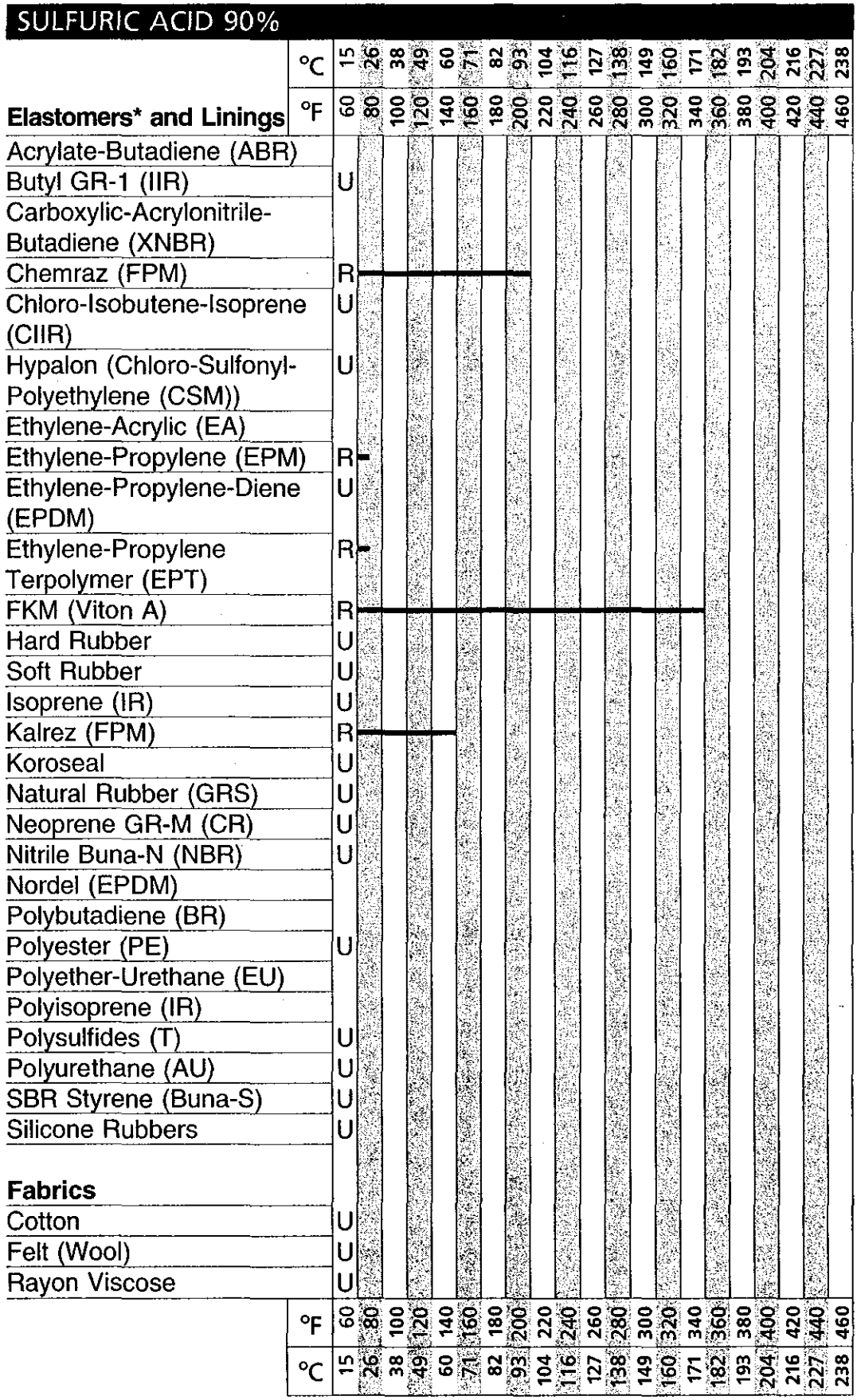
SULFURIC ACID 90%



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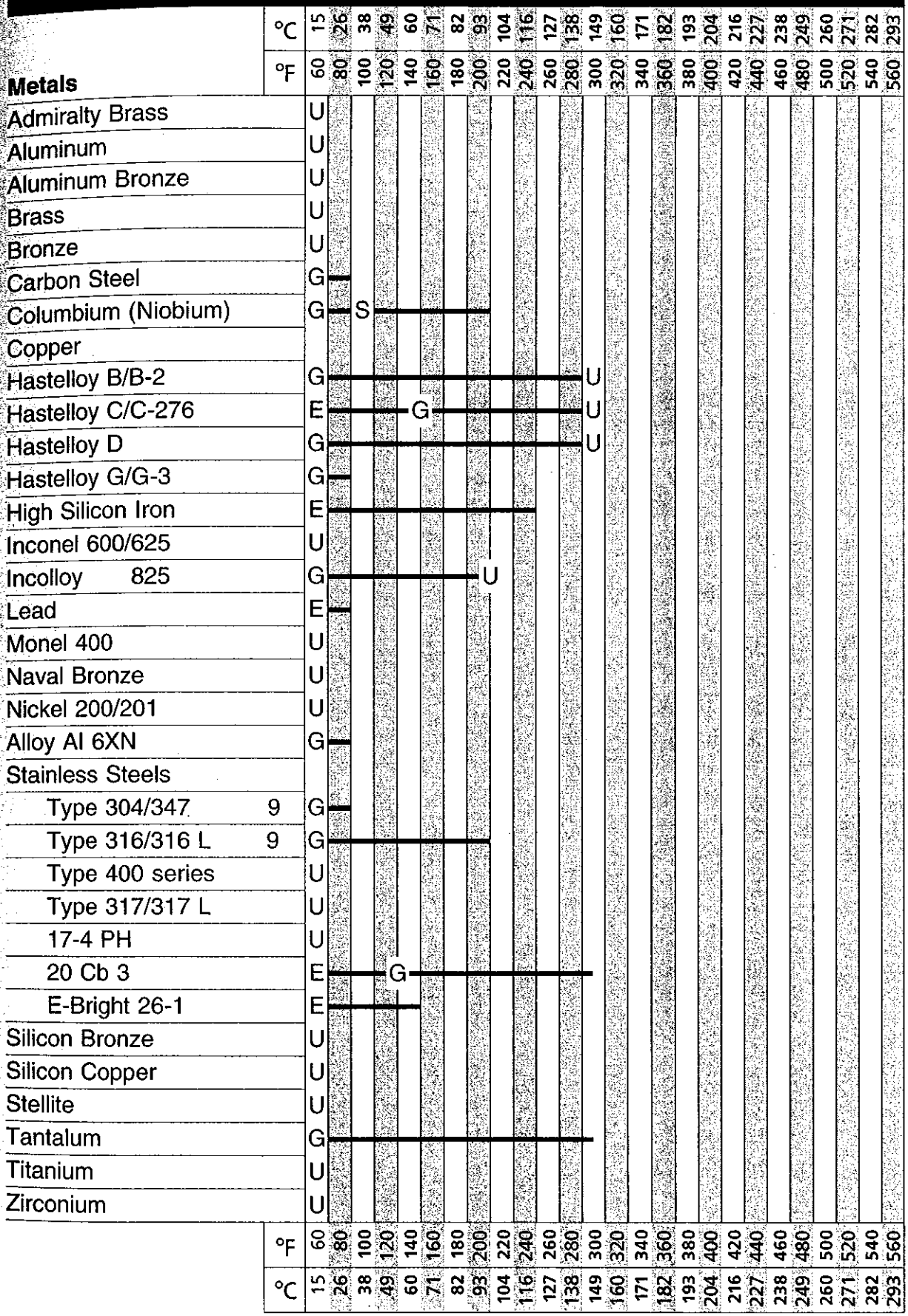
SULFURIC ACID 95%



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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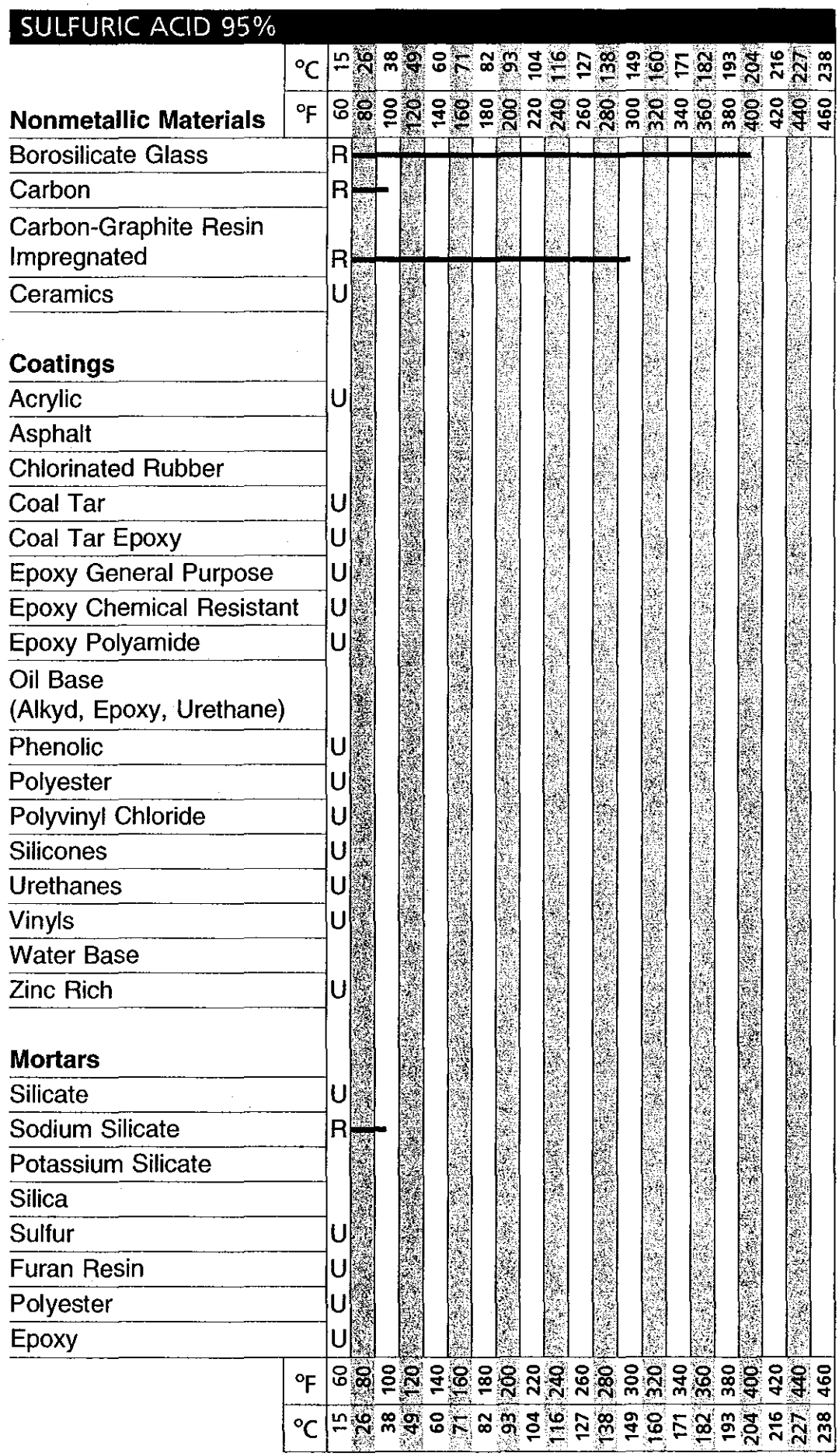

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SULFURIC ACID 95%

Plastics	
ABS	U
Acetal	U
Acrylics	U
Asbestos Reinforced Epoxy	U
Asbestos Reinforced Phenolic	U
Chlorinated Polyether (Penton)	R
CPVC	R
E-CTFE (Halar)	R
Epoxy	U
ETFE (Tefzel)	R
FEP	R
Furan (Furfural Alcohol)	U
Noryl	R
Nylon 6	U
Nylon 11	U
Nylon 66	U
Phenolic	U
PFA (Teflon)	R
KEL-F (CTFE)	R
Polyesters	
Bisphenol A–fumarate	U
Halogenated	U
Hydrogenated Bisphenol A –Bisphenol A	U
Isophthalic	U
Terephthalate (PET)	U
Polyetherimide (ULTEM)	U
Polyetheretherketone (PEEK)	U
Polyethersulfone (PES)	U
Polyethylene HMW	U
Polyethylene UHMW	U
Polymethylpentene	R
Polypropylene (PP)	R U
Polystyrene	
Polysulfone	U
Polyvinylidene Chloride	U
PVC Type 1	R
PVC Type 2	U
PVDF (Kynar)	R
Ryton	
TFE (Teflon)	R
Vinyl Ester	U

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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SULFURIC ACID 95%

Elastomers* and Linings	°C	°F
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)	U	
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)	R	
Chloro-Isobutene-Isoprene (CIIR)	U	
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	R	
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)	R	
Ethylene-Propylene-Diene (EPDM)	U	
Ethylene-Propylene Terpolymer (EPT)	U	
FKM (Viton A)	R	
Hard Rubber	U	
Soft Rubber	U	
Isoprene (IR)	U	
Kalrez (FPM)	R	
Koroseal	U	
Natural Rubber (GRS)	U	
Neoprene GR-M (CR)	U	
Nitrile Buna-N (NBR)	U	
Nordel (EPDM)	U	
Polybutadiene (BR)		
Polyester (PE)	U	
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)	U	
Polyurethane (AU)	U	
SBR Styrene (Buna-S)	U	
Silicone Rubbers	U	
Fabrics		
Cotton	U	
Felt (Wool)	U	
Rayon Viscose	U	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

*See also Nylon 11 under PLASTICS

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SULFURIC ACID 98%

Metals	°F	°C
Admiralty Brass	U	
Aluminum	U	
Aluminum Bronze	U	
Brass	U	
Bronze	U	
Carbon Steel	S	
Columbium (Niobium)	E	
Copper	U	
Hastelloy B/B-2	G	U
Hastelloy C/C-276	E	G
Hastelloy D	G	U
Hastelloy G/G-3	E	
High Silicon Iron	E	
Inconel 600/625	U	
Incolloy 825	G	U
Lead	E	
Monel 400	U	
Naval Bronze	U	
Nickel 200/201	U	
Type 321	U	
Stainless Steels		
Type 304/347 9	G	
Type 316/316 L 9	G	
Type 400 series	U	
Type 317/317 L	U	
17-4 PH	E	G
20 Cb 3	E	G
E-Bright 26-1	E	
Silicon Bronze	U	
Silicon Copper	U	
Stellite	U	
Tantalum	G	U
Titanium	U	
Zirconium	U	

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 480 500 520 540 560

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 249 260 271 282 293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SULFURIC ACID 98%

Nonmetallic Materials	
Borosilicate Glass	R
Carbon	U
Carbon-Graphite Resin Impregnated	U
Ceramics	U
Coatings	
Acrylic	U
Asphalt	
Chlorinated Rubber	
Coal Tar	U
Coal Tar Epoxy	U
Epoxy General Purpose	U
Epoxy Chemical Resistant	U
Epoxy Polyamide	U
Oil Base (Alkyd, Epoxy, Urethane)	
Phenolic	U
Polyester	U
Polyvinyl Chloride	U
Silicones	U
Urethanes	U
Vinyls	U
Water Base	
Zinc Rich	
Mortars	
Silicate	U
Sodium Silicate	R
Potassium Silicate	
Silica	
Sulfur	U
Furan Resin	U
Polyester	U
Epoxy	U

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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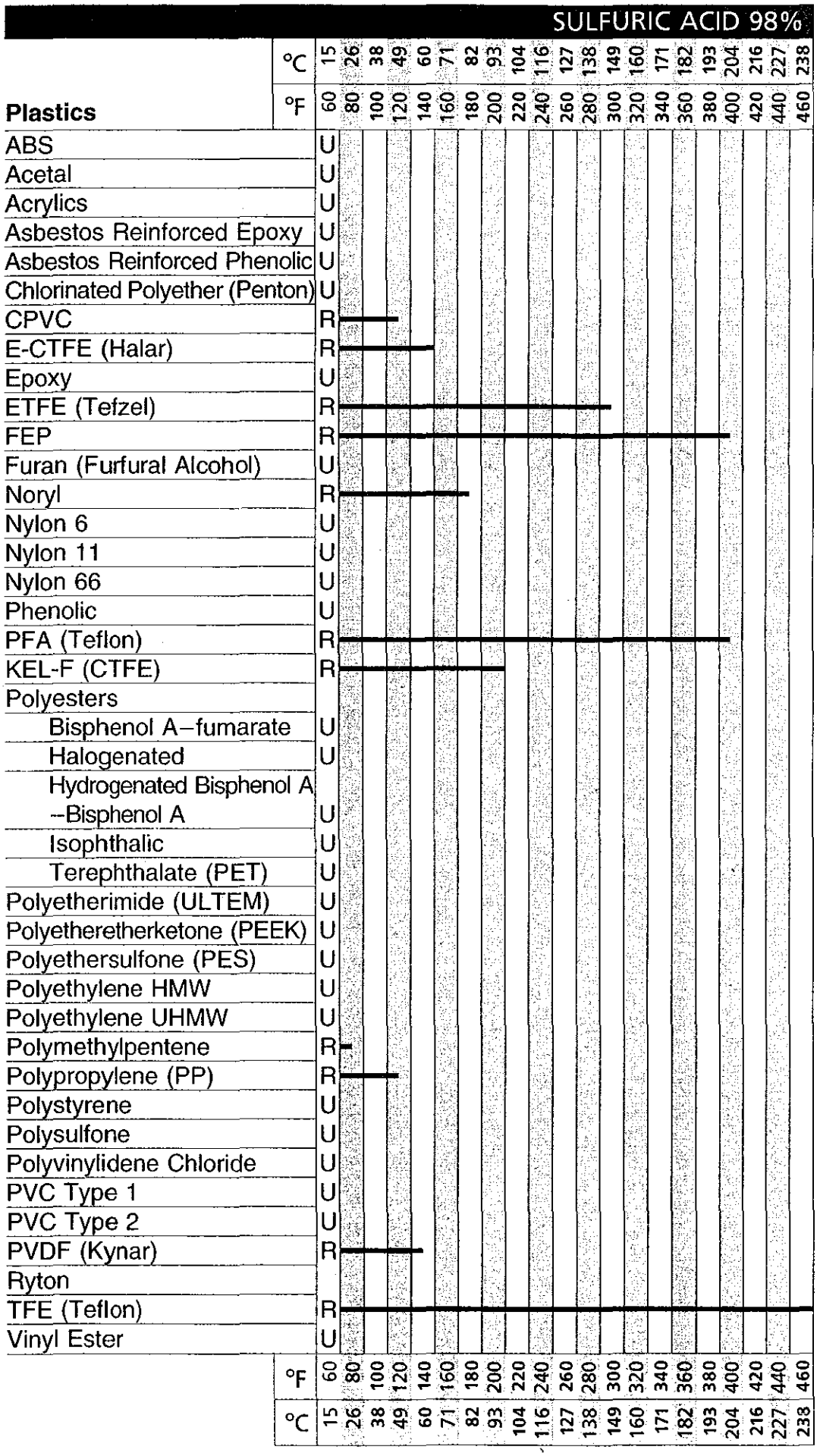

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SULFURIC ACID 98%

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)	U																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	R			U																	
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)	R																				
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	R																				
Hard Rubber	U																				
Soft Rubber	U																				
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal	U																				
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)	U																				
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)	U																				
Polyurethane (AU)	U																				
SBR Styrene (Buna-S)	U																				
Silicone Rubbers	U																				
Fabrics																					
Cotton	U																				
Felt (Wool)	U																				
Rayon Viscose	U																				
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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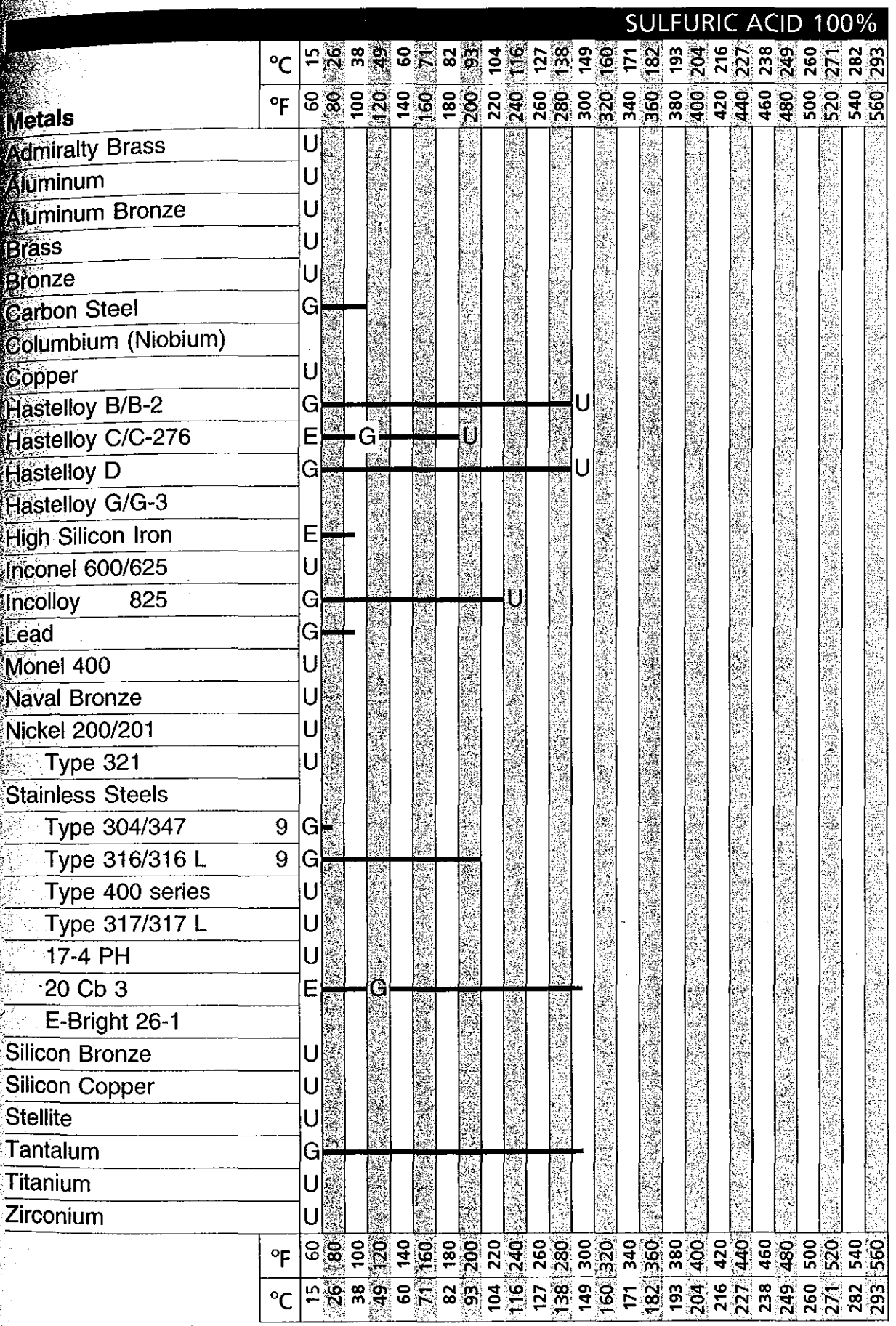

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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U = Unsatisfactory

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SULFURIC ACID 100%

Nonmetallic Materials	
Borosilicate Glass	R
Carbon	U
Carbon-Graphite Resin Impregnated	U
Ceramics	U
Coatings	
Acrylic	U
Asphalt	
Chlorinated Rubber	
Coal Tar	U
Coal Tar Epoxy	U
Epoxy General Purpose	U
Epoxy Chemical Resistant	U
Epoxy Polyamide	U
Oil Base (Alkyd, Epoxy, Urethane)	
Phenolic	U
Polyester	U
Polyvinyl Chloride	U
Silicones	U
Urethanes	U
Vinyls	U
Water Base	
Zinc Rich	
Mortars	
Silicate	R
Sodium Silicate	
Potassium Silicate	
Silica	
Sulfur	
Furan Resin	
Polyester	
Epoxy	

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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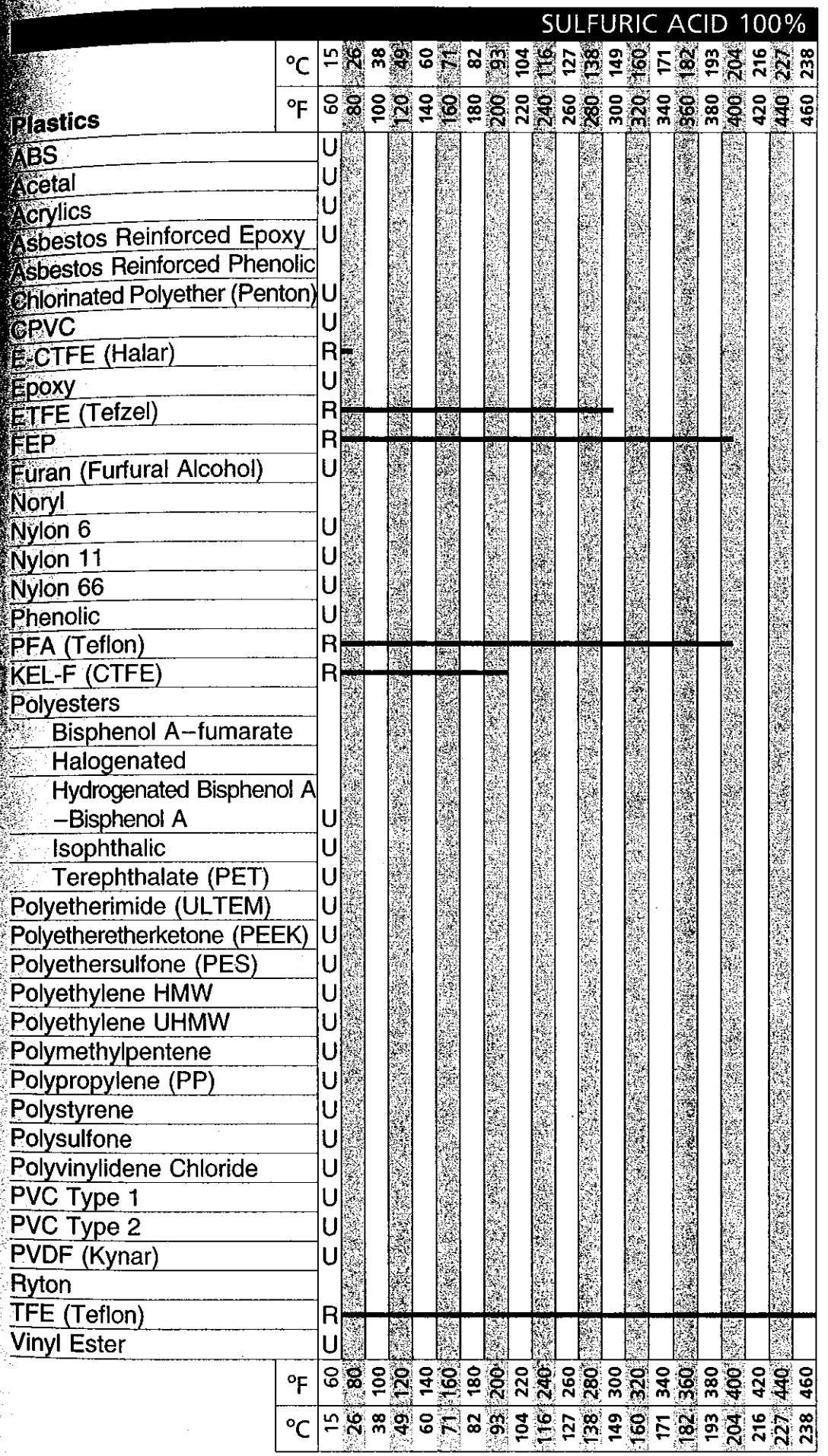

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SULFURIC ACID 100%

Elastomers* and Linings	
Acrylate-Butadiene (ABR)	
Butyl GR-1 (IIR)	U
Carboxylic-Acrylonitrile-Butadiene (XNBR)	
Chemraz (FPM)	R
Chloro-Isobutene-Isoprene (CIIR)	U
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U
Ethylene-Acrylic (EA)	
Ethylene-Propylene (EPM)	R
Ethylene-Propylene-Diene (EPDM)	U
Ethylene-Propylene Terpolymer (EPT)	U
FKM (Viton A)	R
Hard Rubber	U
Soft Rubber	U
Isoprene (IR)	U
Kalrez (FPM)	
Koroseal	U
Natural Rubber (GRS)	U
Neoprene GR-M (CR)	U
Nitrile Buna-N (NBR)	U
Nordel (EPDM)	
Polybutadiene (BR)	
Polyester (PE)	U
Polyether-Urethane (EU)	
Polyisoprene (IR)	
Polysulfides (T)	U
Polyurethane (AU)	U
SBR Styrene (Buna-S)	U
Silicone Rubbers	U
Fabrics	
Cotton	U
Felt (Wool)	U
Rayon Viscose	U

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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SULFURIC ACID 103%

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron	U																										
Inconel 600/625	U																										
Incolloy 800/825																											
Lead																											
Monel 400	U																										
Naval Bronze																											
Nickel 200/201	U																										
Ni-Resist																											
Stainless Steels																											
Type 304/347	U																										
Type 316/316 L	G																										
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum	U																										
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

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R = Resistant

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SULFURIC ACID 103%

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass		R																				
Carbon		U																				
Carbon-Graphite Resin Impregnated		U																				
Ceramics																						
Coatings																						
Acrylic		U																				
Asphalt																						
Chlorinated Rubber																						
Coal Tar		U																				
Coal Tar Epoxy		U																				
Epoxy General Purpose		U																				
Epoxy Chemical Resistant		U																				
Epoxy Polyamide		U																				
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic		U																				
Polyester		U																				
Polyvinyl Chloride		U																				
Silicones		U																				
Urethanes		U																				
Vinyls		U																				
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SULFURIC ACID 103%

Plastics	°C	°F
ABS	U	
Acetal	U	
Acrylics	U	
Asbestos Reinforced Epoxy	U	
Asbestos Reinforced Phenolic	U	
Chlorinated Polyether (Penton)	U	
CPVC	U	
E-CTFE (Halar)		
Epoxy	U	
ETFE (Tefzel)		
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6	U	
Nylon 11	U	
Nylon 66	U	
Phenolic	U	
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A	U	
Isophthalic	U	
Terephthalate (PET)	U	
Polyetherimide (ULTEM)	U	
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)	U	
Polyethylene HMW	U	
Polyethylene UHMW	U	
Polymethylpentene	U	
Polypropylene (PP)	U	
Polystyrene	U	
Polysulfone	U	
Polyvinylidene Chloride	U	
PVC Type 1	U	
PVC Type 2	U	
PVDF (Kynar)	U	
Ryton		
TFE (Teflon)	R	
Vinyl Ester	U	

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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SULFURIC ACID 103%

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)	U																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)	U																				
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)																					
Hard Rubber	U																				
Soft Rubber	U																				
Isoprene (IR)	U																				
Kalrez (FPM)																					
Koroseal	U																				
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)	U																				
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)	U																				
Polyurethane (AU)	U																				
SBR Styrene (Buna-S)	U																				
Silicone Rubbers	U																				
Fabrics																					
Cotton	U																				
Felt (Wool)	U																				
Rayon Viscose	U																				
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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SULFURIC ACID FUMING

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass		U																									
Aluminum		E																									
Aluminum Bronze		U																									
Brass		U																									
Bronze		U																									
Carbon Steel																											
Columbium (Niobium)																											
Copper		U																									
Hastelloy B/B-2		E		G																							
Hastelloy C/C-276		G																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625		U																									
Incolloy 800/825		U																									
Lead																											
Monel 400		U																									
Naval Bronze																											
Nickel 200/201		U																									
Ni-Resist																											
Stainless Steels																											
Type 304/347		E																									
Type 316/316 L		E		G																							
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3		E		G																							
E-Bright 26-1																											
Silicon Bronze		U																									
Silicon Copper		U																									
Stellite																											
Tantalum		U																									
Titanium		U																									
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SULFURIC ACID FUMING

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass		U																				
Carbon		U																				
Carbon-Graphite Resin Impregnated		U																				
Ceramics		U																				
Coatings																						
Acrylic		U																				
Asphalt																						
Chlorinated Rubber																						
Coal Tar		U																				
Coal Tar Epoxy		U																				
Epoxy General Purpose		U																				
Epoxy Chemical Resistant		U																				
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride		U																				
Silicones		U																				
Urethanes		U																				
Vinyls		U																				
Water Base																						
Zinc Rich																						
Mortars																						
Silicate		U																				
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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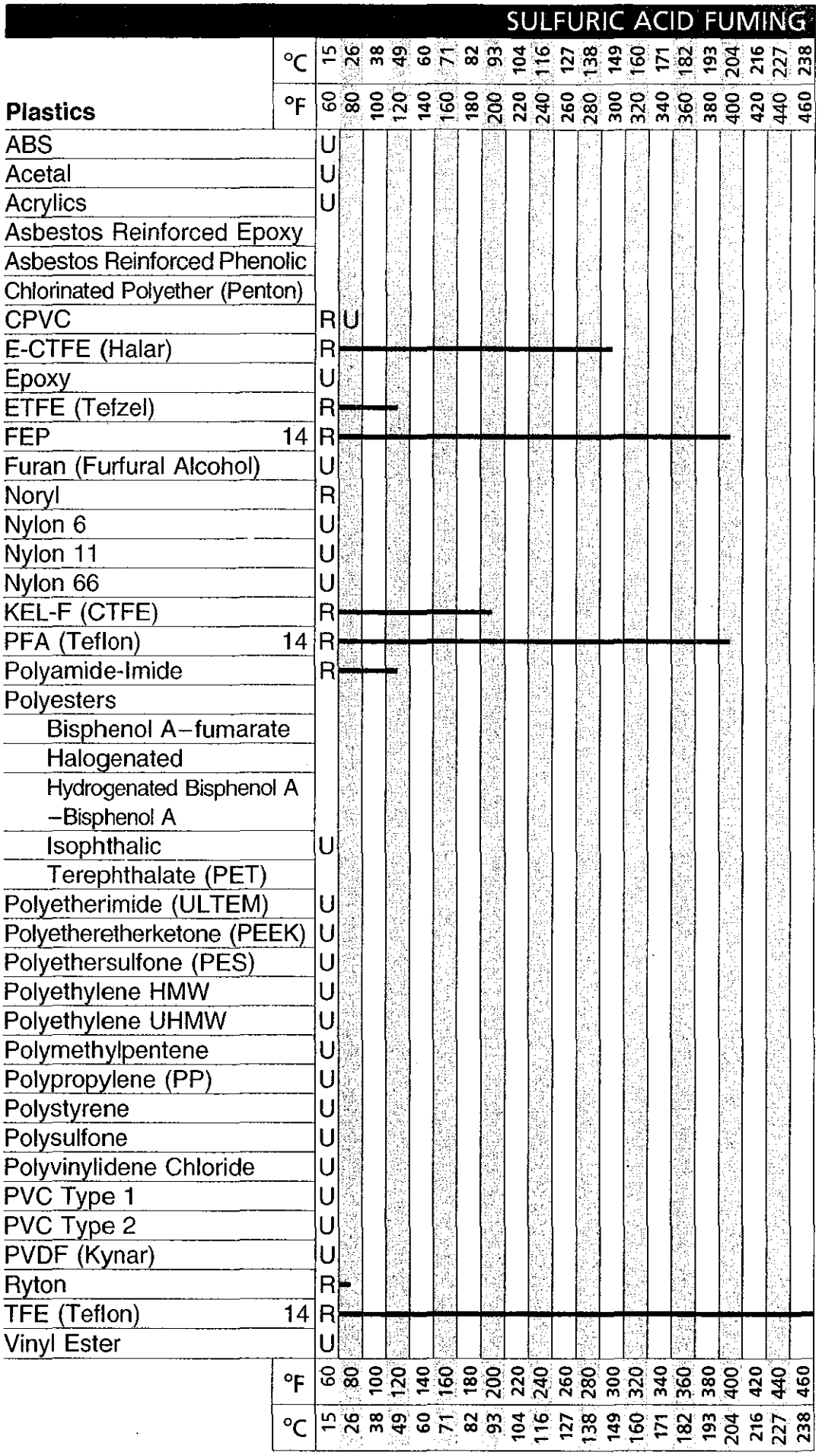

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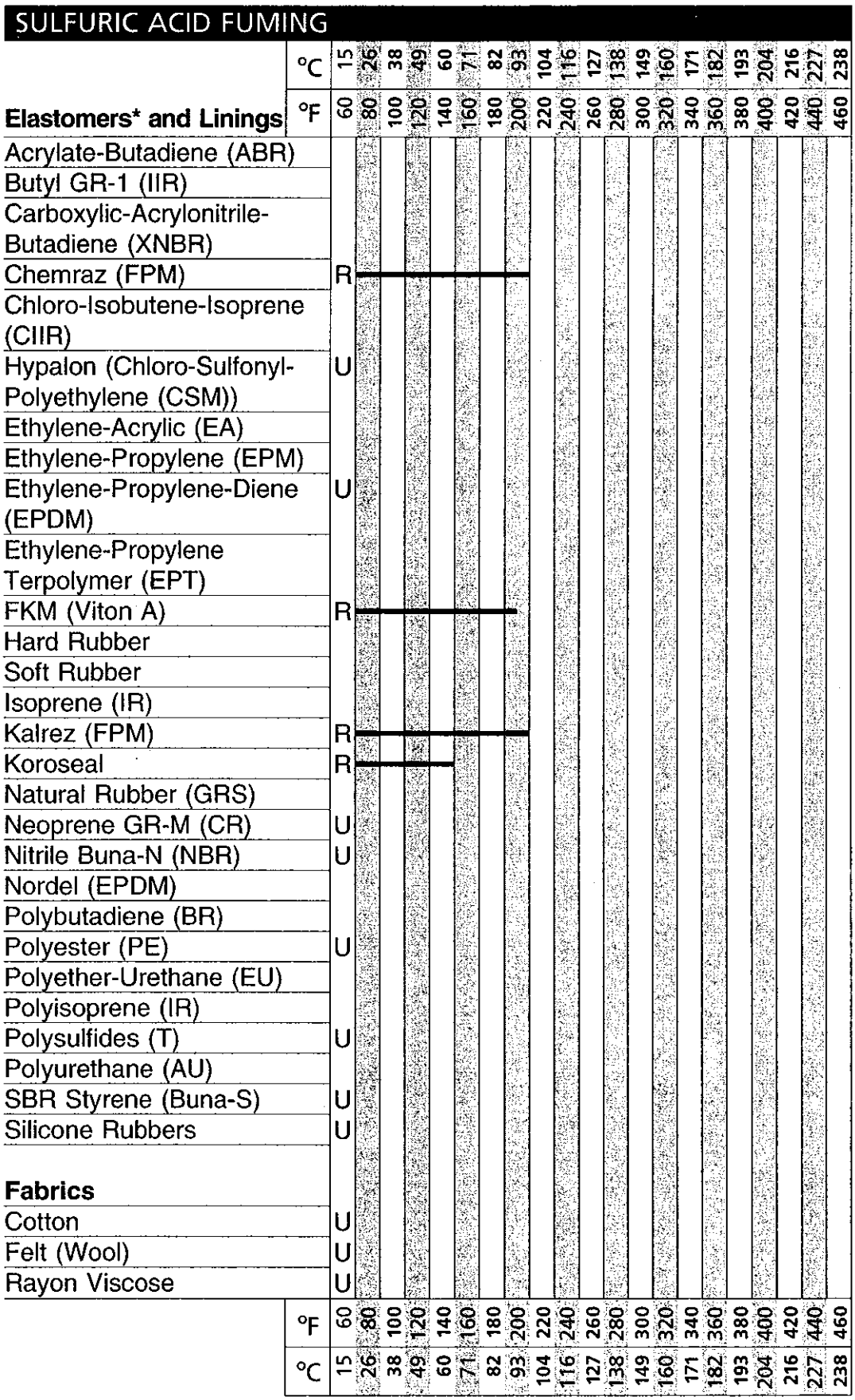
SULFURIC ACID FUMING



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SULFURIC ACID VAPORS

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2		G	G																								
Hastelloy C/C-276		G	G	G	G	G	G	G	G																		
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
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Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SULFURIC ACID VAPORS

Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SULFURIC ACID VAPORS

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP																						
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)																						
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SULFURIC ACID VAPORS

Elastomers* and Linings	°C / °F	15 / 60	26 / 80	38 / 100	49 / 120	60 / 140	71 / 160	82 / 180	93 / 200	104 / 220	116 / 240	127 / 260	138 / 280	149 / 300	160 / 320	171 / 340	182 / 360	193 / 380	204 / 400	216 / 420	227 / 440	238 / 460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F / °C	60 / 15	80 / 26	100 / 38	120 / 49	140 / 60	160 / 71	180 / 82	200 / 93	220 / 104	240 / 116	260 / 127	280 / 138	300 / 149	320 / 160	340 / 171	360 / 182	380 / 193	400 / 204	420 / 216	440 / 227	460 / 238

*See also Nylon 11 under PLASTICS

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SULFURIC ANHYDRIDE DRY

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		E																									
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper		G																									
Hastelloy B/B-2		E																									
Hastelloy C/C-276		E																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625		U																									
Incolloy 800/825		U																									
Lead																											
Monel 400		U																									
Naval Bronze																											
Nickel 200/201		U																									
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
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Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze		G																									
Silicon Copper																											
Stellite																											
Tantalum		U																									
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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SULFURIC ANHYDRIDE DRY

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SULFURIC ANHYDRIDE DRY

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1		
PVC Type 2		
PVDF (Kynar)		
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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SULFURIC ANHYDRIDE DRY

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
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Ethylene-Propylene-Diene (EPDM)																						
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FKM (Viton A)																						
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Kalrez (FPM)																						
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Natural Rubber (GRS)																						
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Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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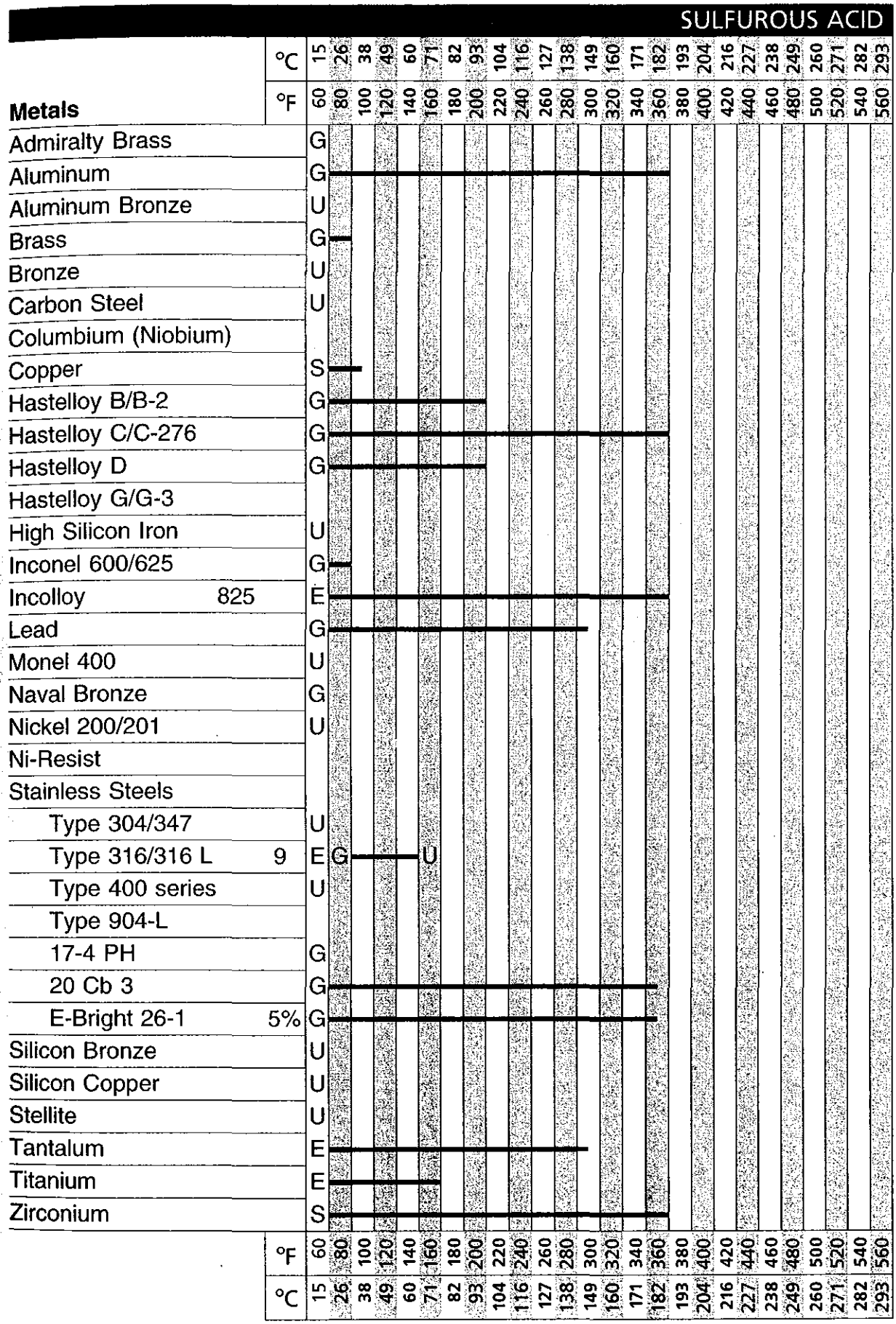

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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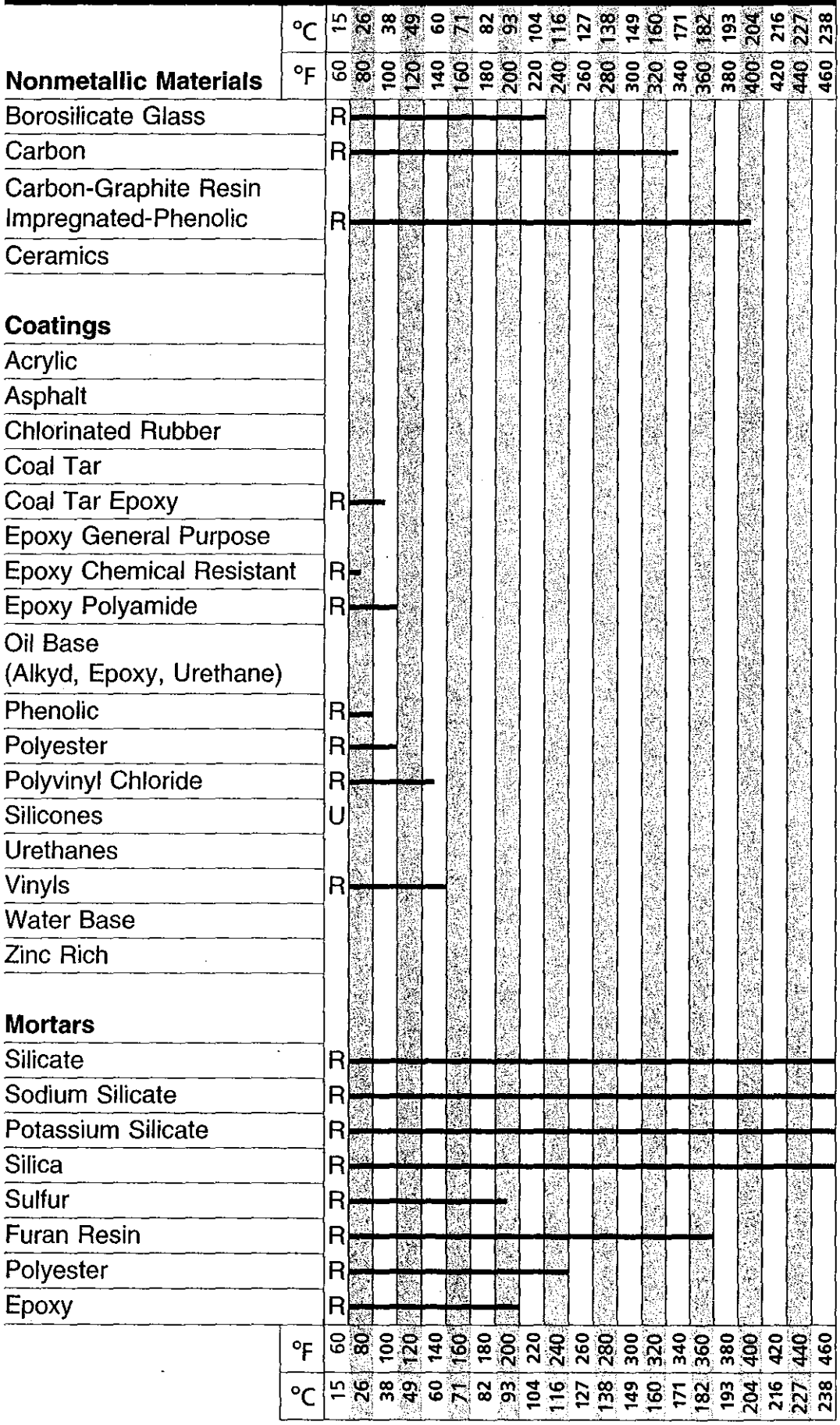
SULFUROUS ACID



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SULFUROUS ACID

Plastics		
ABS		R
Acetal		U
Acrylics		R
Asbestos Reinforced Epoxy		R
Asbestos Reinforced Phenolic		R
Chlorinated Polyether (Penton)		R
CPVC		R
E-CTFE (Halar)		R
Epoxy	TO 20%	R
ETFE (Tefzel)		R
FEP		R
Furan (Furfural Alcohol)		R
Noryl		
Nylon 6		U
Nylon 11		U
Nylon 66		U
Phenol-Formaldehyde		R
PFA (Teflon)		R
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate	ALL	R
Halogenated	10%	R
Hydrogenated Bisphenol A –Bisphenol A	25%	R
Isophthalic	10%	U
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		R
Polyethylene UHMW		R
Polymethylpentene		
Polypropylene (PP)		R
Polystyrene	10%	R
Polysulfone		R
Polyvinylidene Chloride		R
PVC Type 1		R
PVC Type 2		R
PVDF (Kynar)		R
Ryton	10%	R
TFE (Teflon)		R
Vinyl Ester	10%	R

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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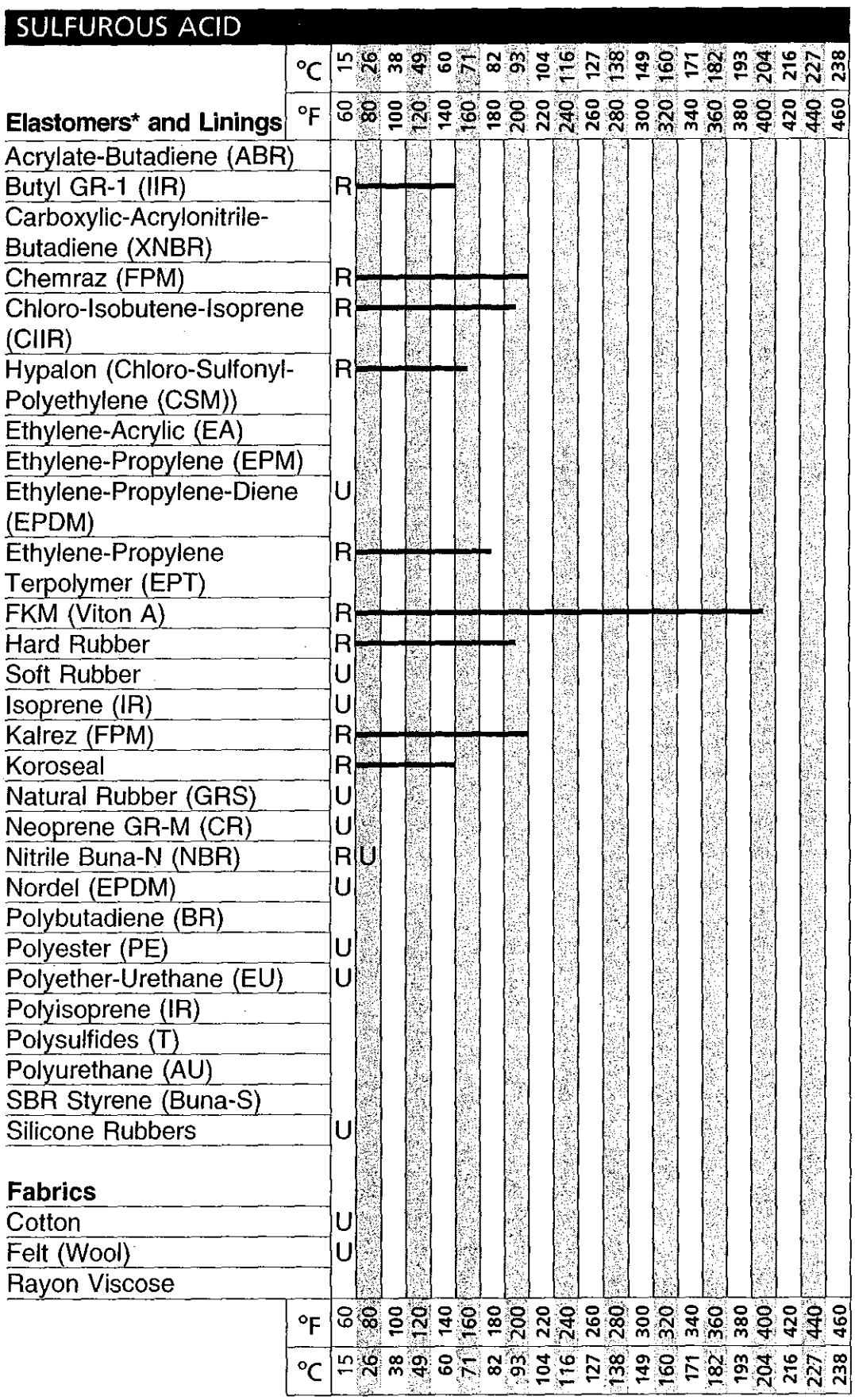
SULFUROUS ACID



*See also Nylon 11 under PLASTICS

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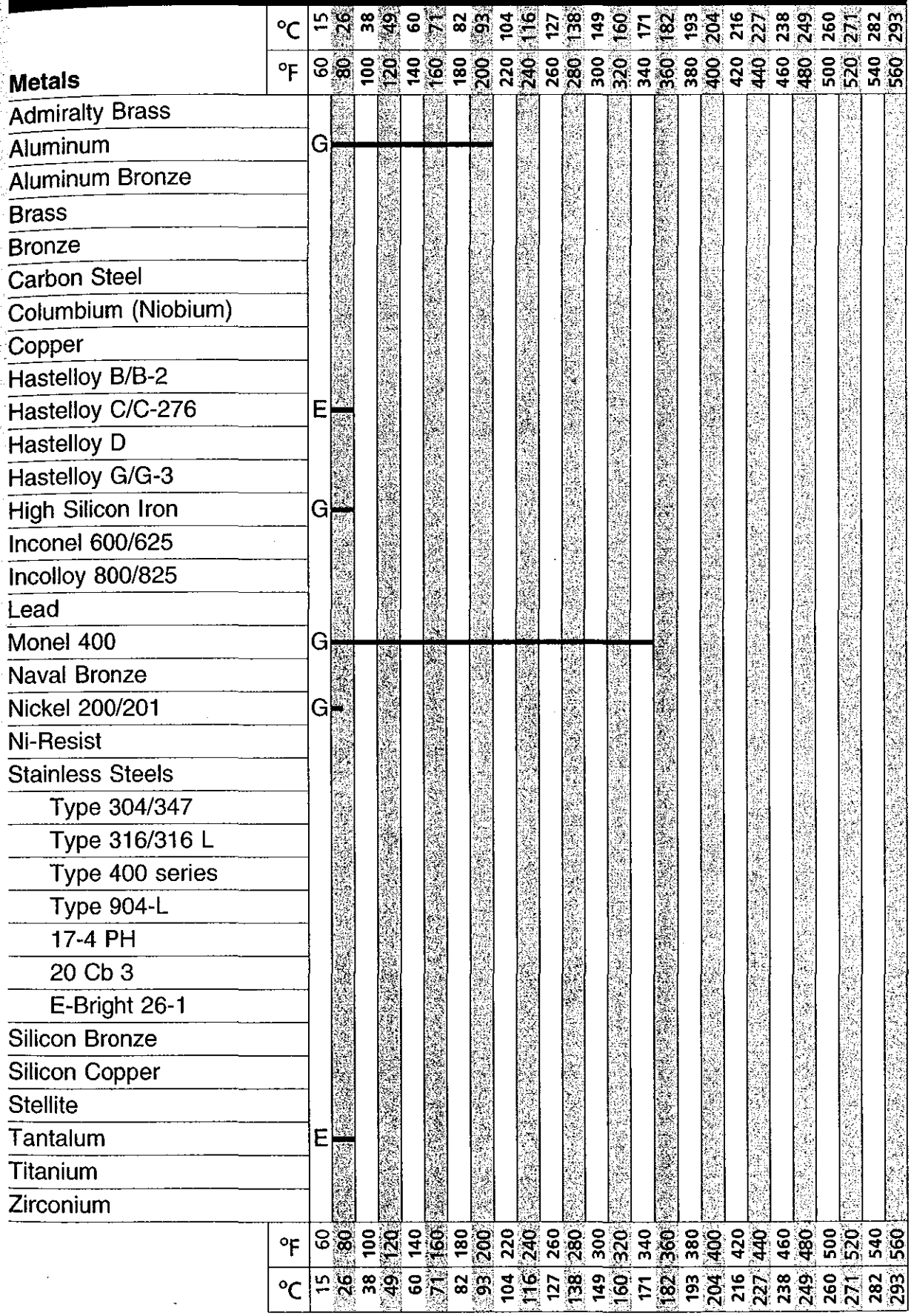

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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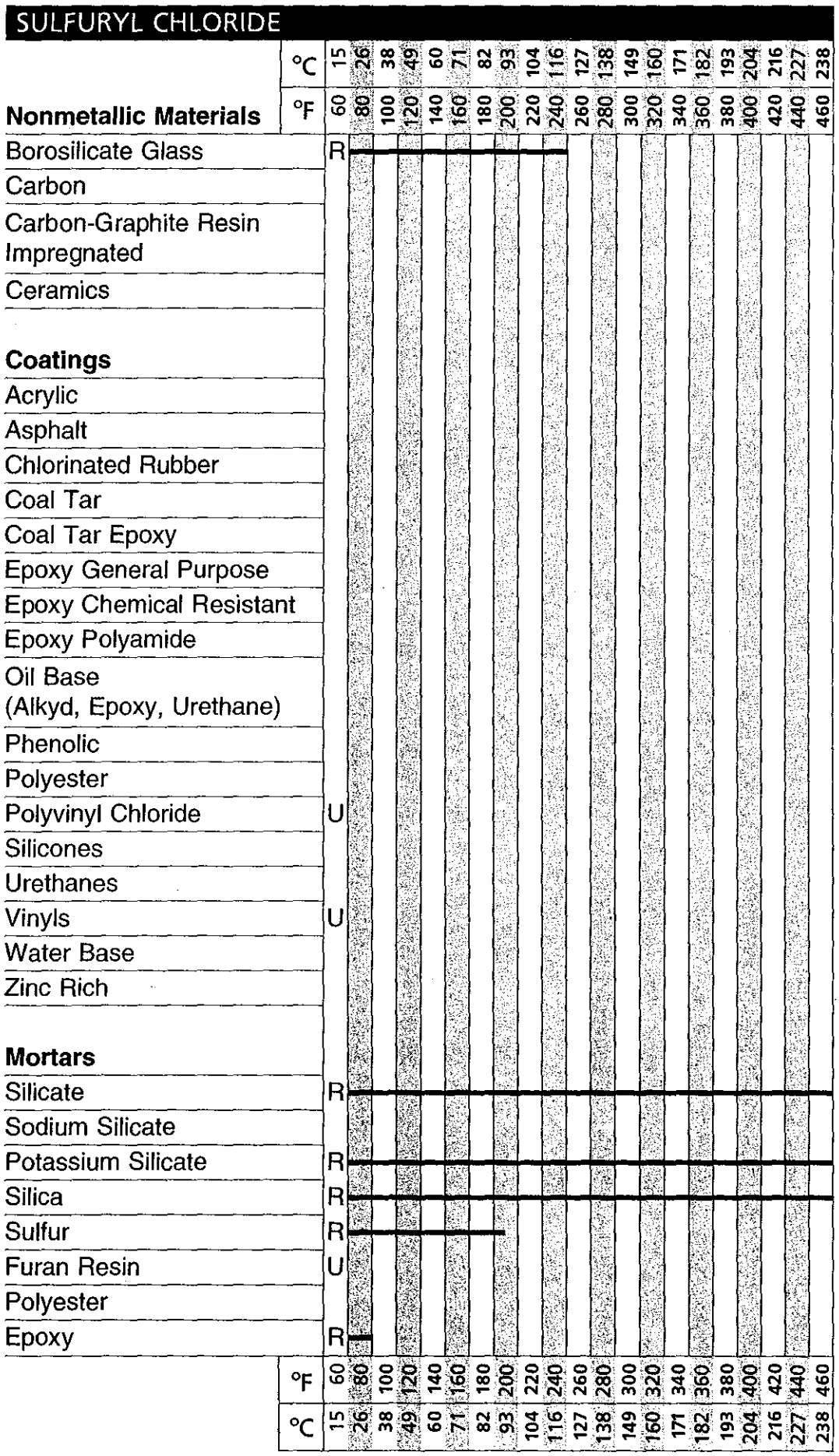
SULFURYL CHLORIDE



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Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)	U																					
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic	U																					
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate	U																					
Halogenated	U																					
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic	U																					
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW	U																					
Polyethylene UHMW	U																					
Polymethylpentene																						
Polypropylene (PP)	U																					
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1	U																					
PVC Type 2	U																					
PVDF (Kynar)	U																					
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester	U																					
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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SULFURYL CHLORIDE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)	U																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)																					
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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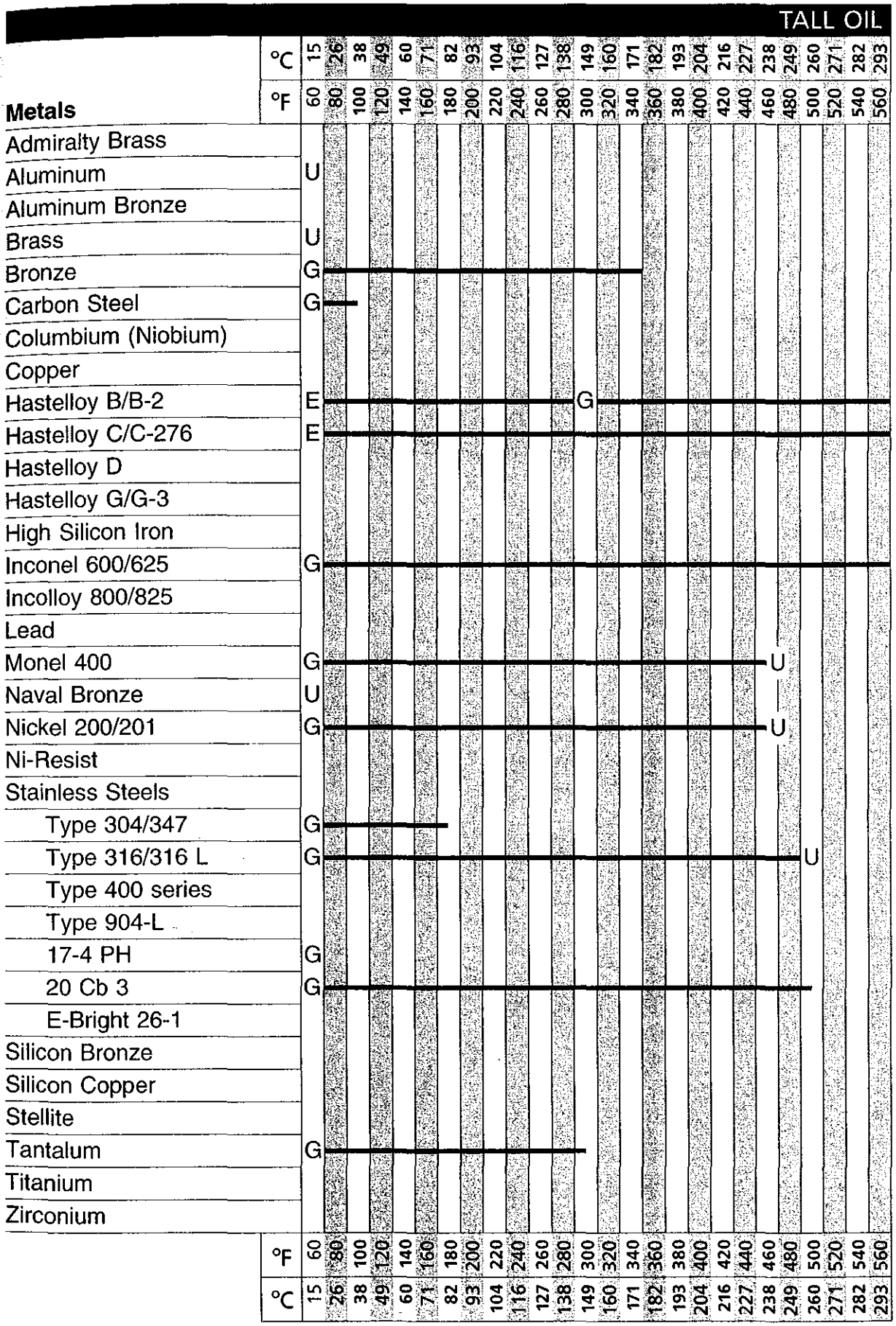

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

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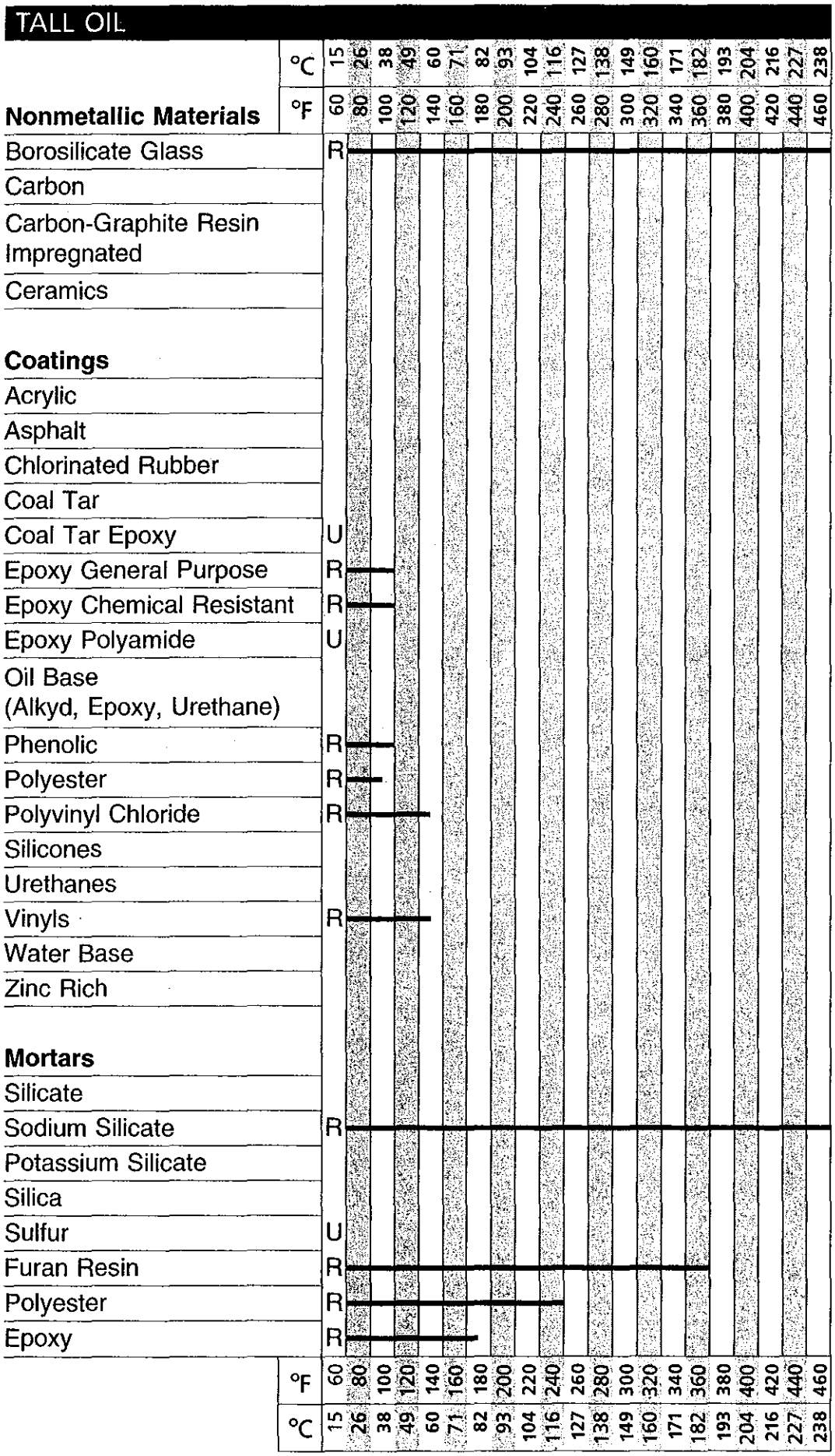
TALL OIL



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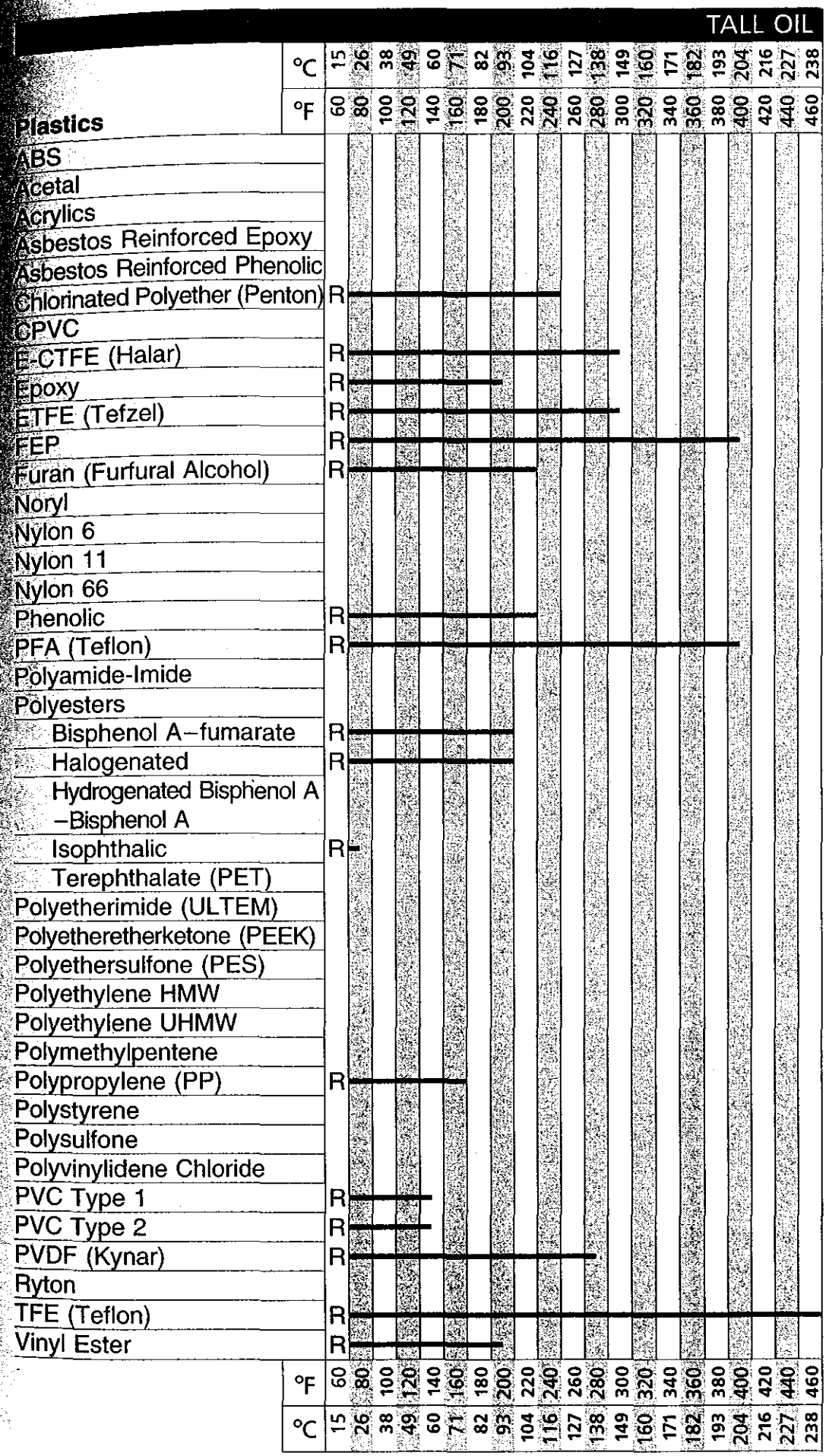

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TALL OIL

Elastomers* and Linings	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)		U																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		U																				
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)		U																				
Ethylene-Propylene Terpolymer (EPT)		U																				
FKM (Viton A)		R																				
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)		U																				
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)		U																				
Neoprene GR-M (CR)		U																				
Nitrile Buna-N (NBR)		R																				
Nordel (EPDM)		U																				
Polybutadiene (BR)																						
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Fabrics																						
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	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
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Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass			G																									
Aluminum			U																									
Aluminum Bronze			G																									
Brass	Air Free		G																									
Bronze			U																									
Carbon Steel			U																									
Columbium (Niobium)			G																									
Copper			G																									
Hastelloy B/B-2	10%		G																									
Hastelloy C/C-276	10%		G																									
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron			G																									
Inconel 600/625	ALL		G																									
Incolloy 800/825	ALL		G																									
Lead			U																									
Monel 400	ALL		G																									
Naval Bronze			G																									
Nickel 200/201	ALL		G																									
Ni-Resist																												
Stainless Steels																												
Type 304/347			G																									
Type 316/316 L	ALL		G																									
Type 400 series	10–50%		G																									
Type 904-L																												
17-4 PH			G																									
20 Cb 3	ALL		G																									
E-Bright 26-1																												
Silicon Bronze	ALL		G																									
Silicon Copper			E																									
Galv. Stl.			G																									
Tantalum			G																									
Titanium	10–20%		E																									
Zirconium	10–25%		E																									
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

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R = Resistant

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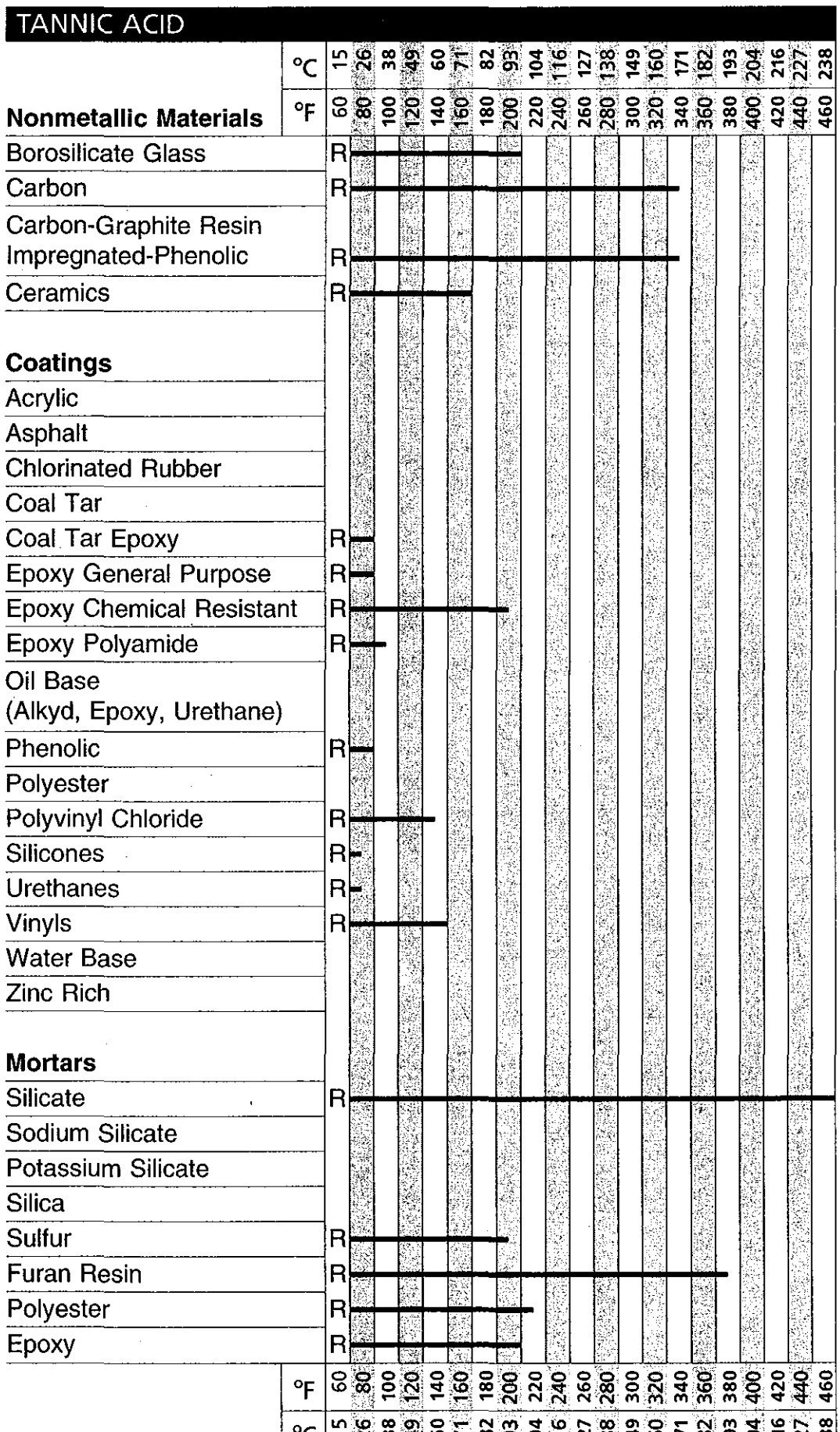
TANNIC ACID



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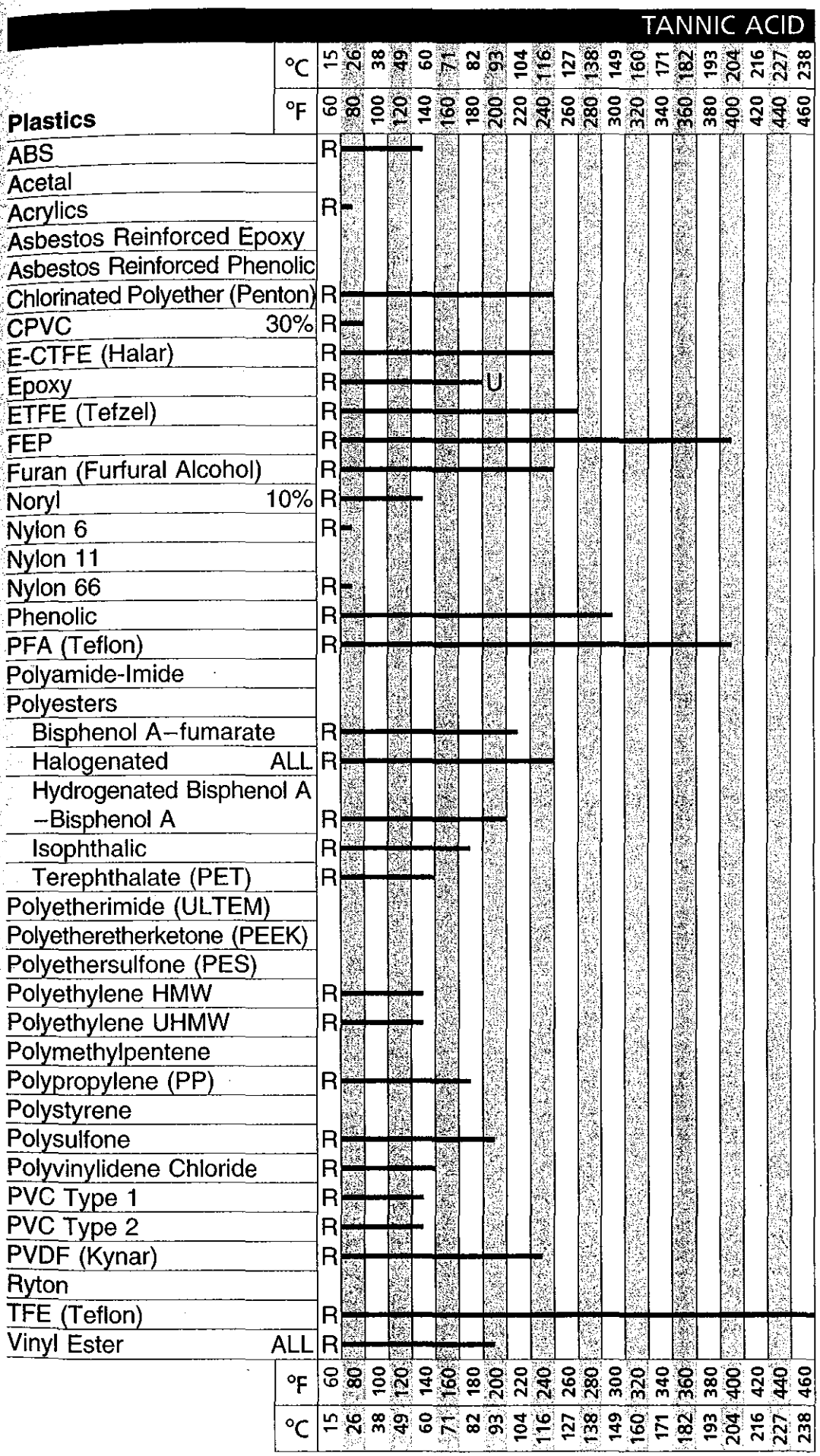

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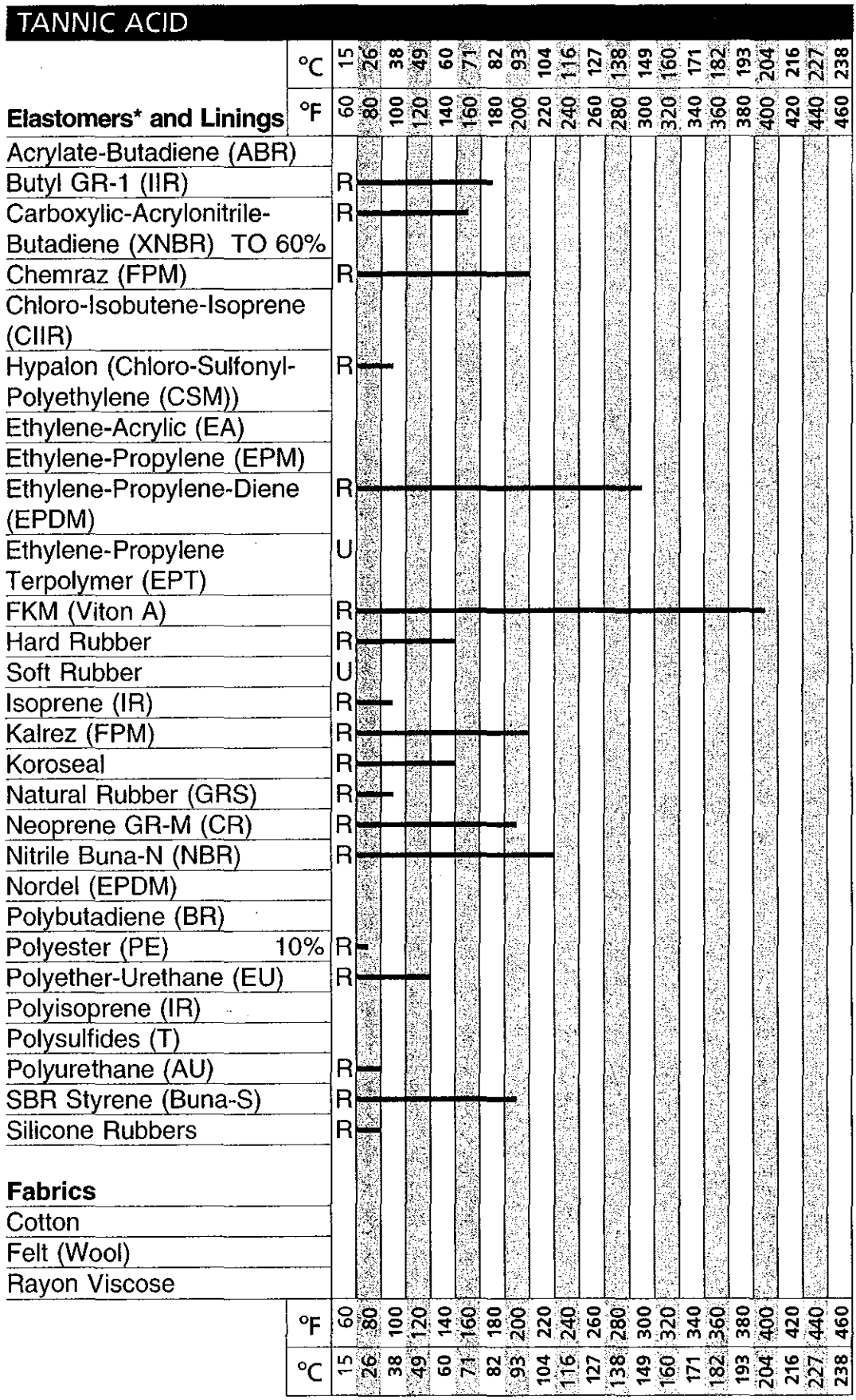
TANNIC ACID



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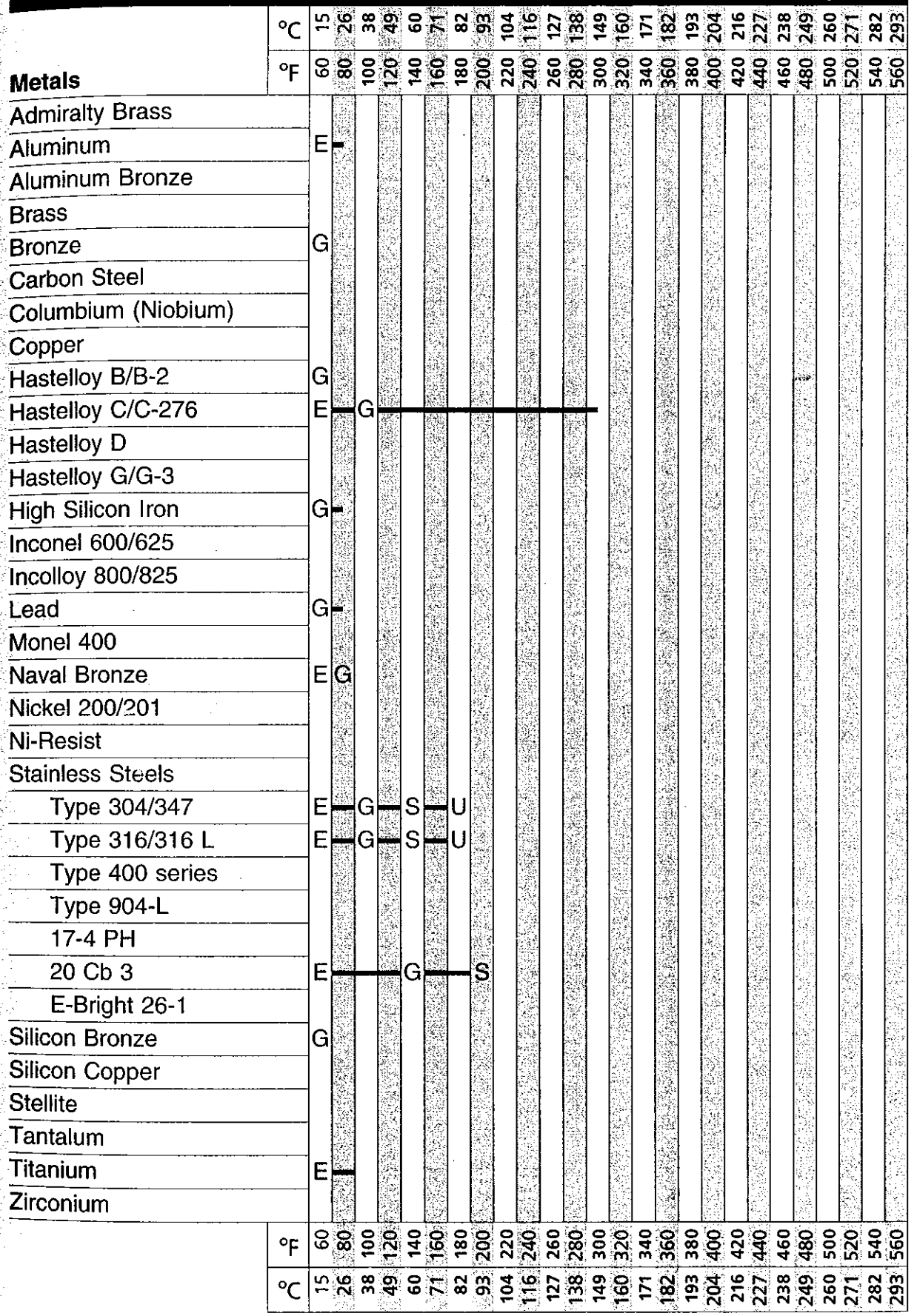

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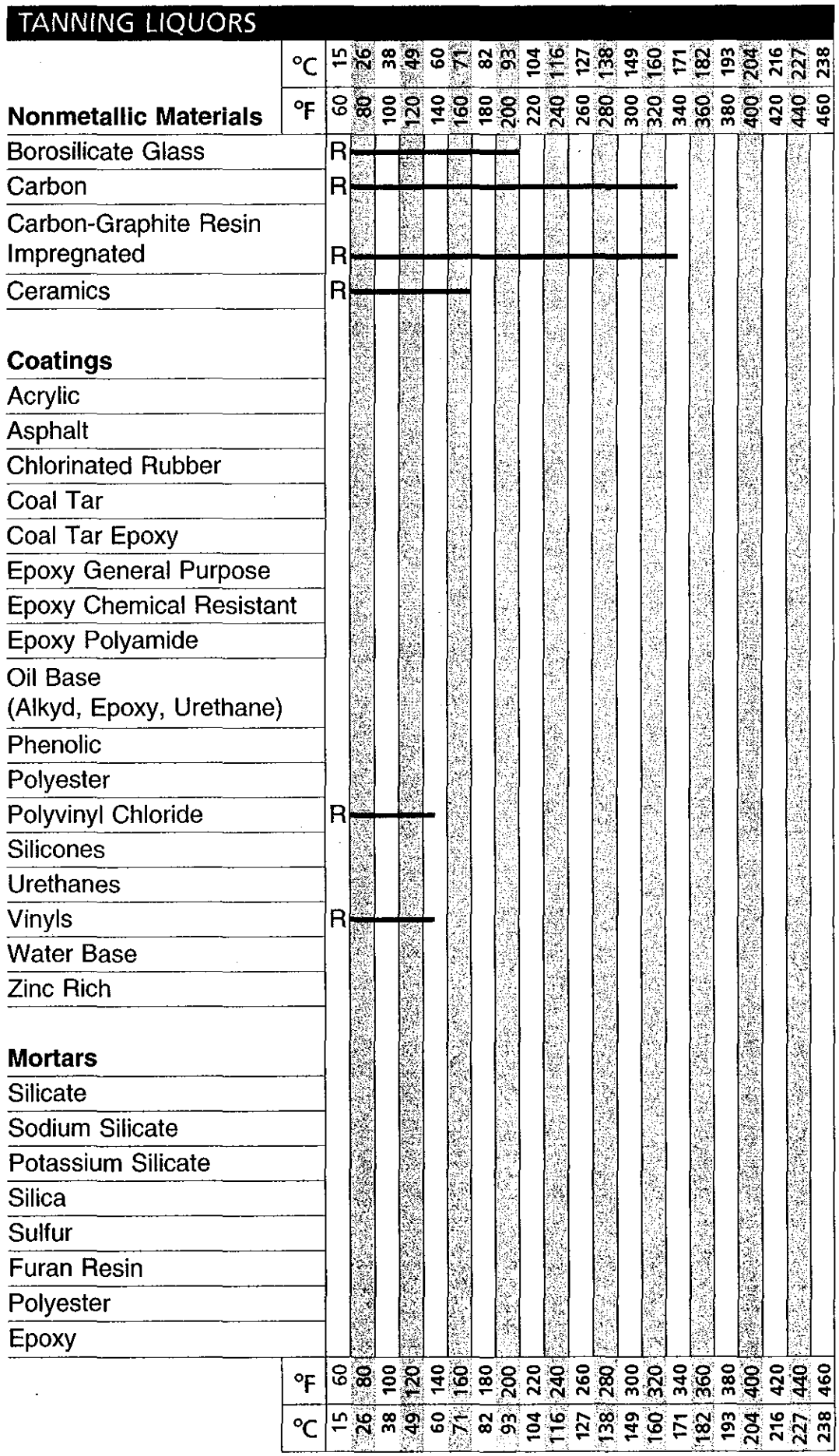
TANNING LIQUORS



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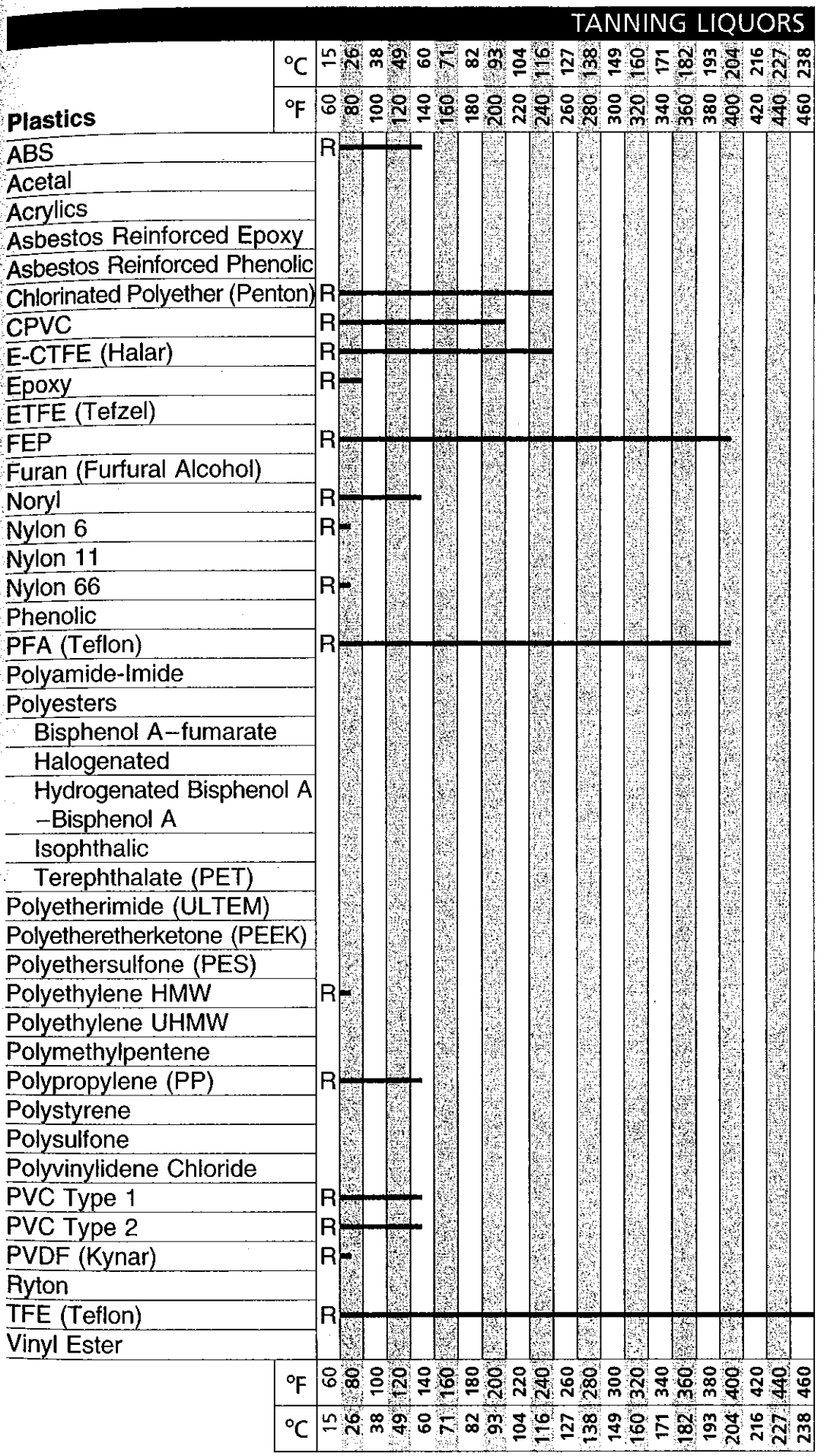

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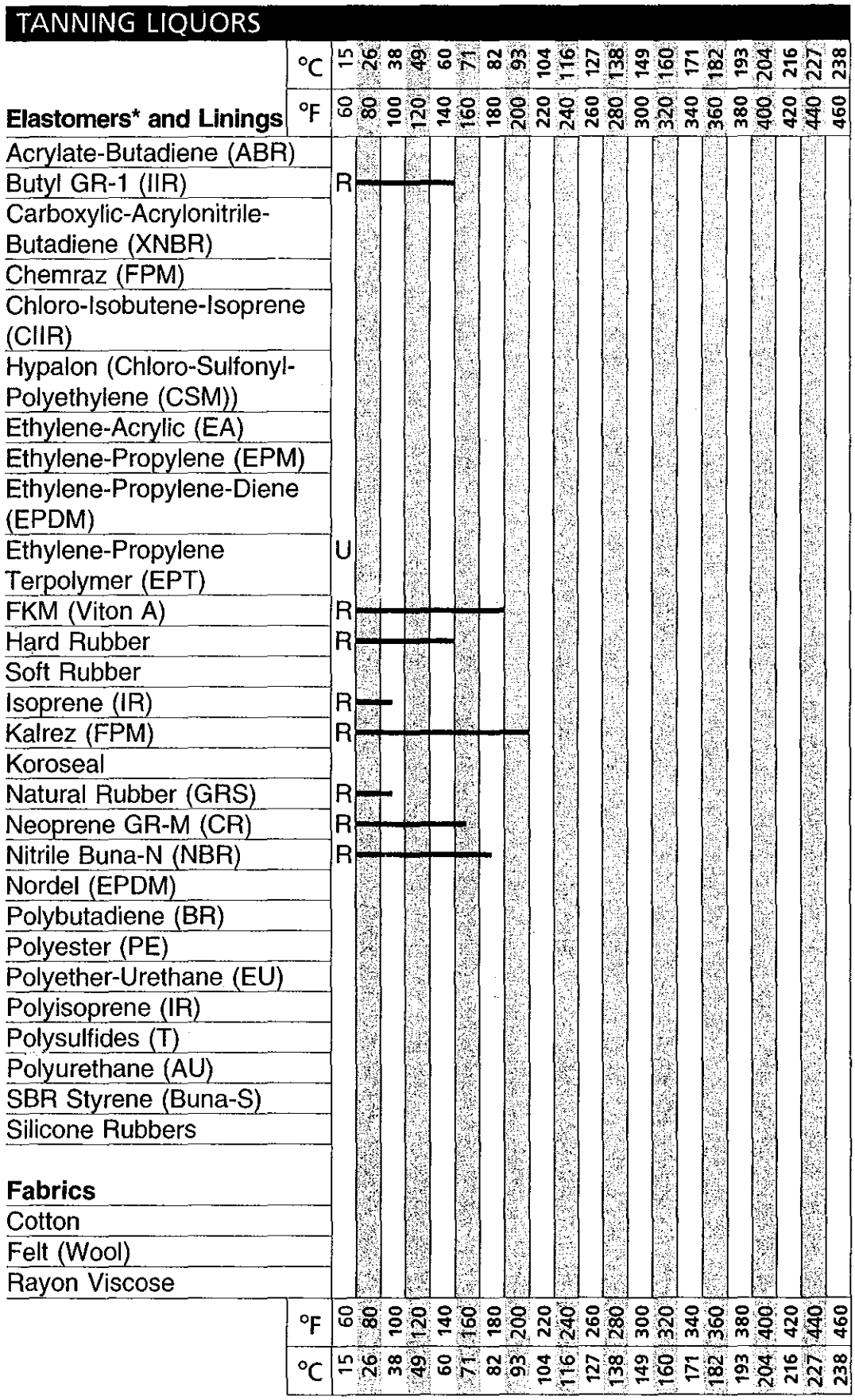
TANNING LIQUORS



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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G	G	G	G	G	G	G																			
Aluminum Bronze		G	G	G	G	G	G	G																			
Brass		G	G	G	G	G	G	G																			
Bronze		G	G	G	G	G	G	G																			
Carbon Steel		G	G	G	G	G	G	G																			
Columbium (Niobium)																											
Copper		G	G	G	G	G	G	G																			
Hastelloy B/B-2																											
Hastelloy C/C-276		G	G	G	G	G	G	G																			
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625		E	E	E	E	E	E	E																			
Incolloy 800/825																											
Lead																											
Monel 400		G	G	G	G	G	G	G																			
Naval Bronze																											
Nickel 200/201		G	G	G	G	G	G	G																			
Ni-Resist		G	G	G	G	G	G	G																			
Stainless Steels																											
Type 304/347		G	G	G	G	G	G	G																			
Type 316/316 L		G	G	G	G	G	G	G																			
Type 400 series		G	G	G	G	G	G	G																			
Type 904-L																											
17-4 PH		G	G	G	G	G	G	G																			
20 Cb 3		G	G	G	G	G	G	G																			
E-Bright 26-1																											
Silicon Bronze		G	G	G	G	G	G	G																			
Silicon Copper		E	E	E	E	E	E	E																			
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
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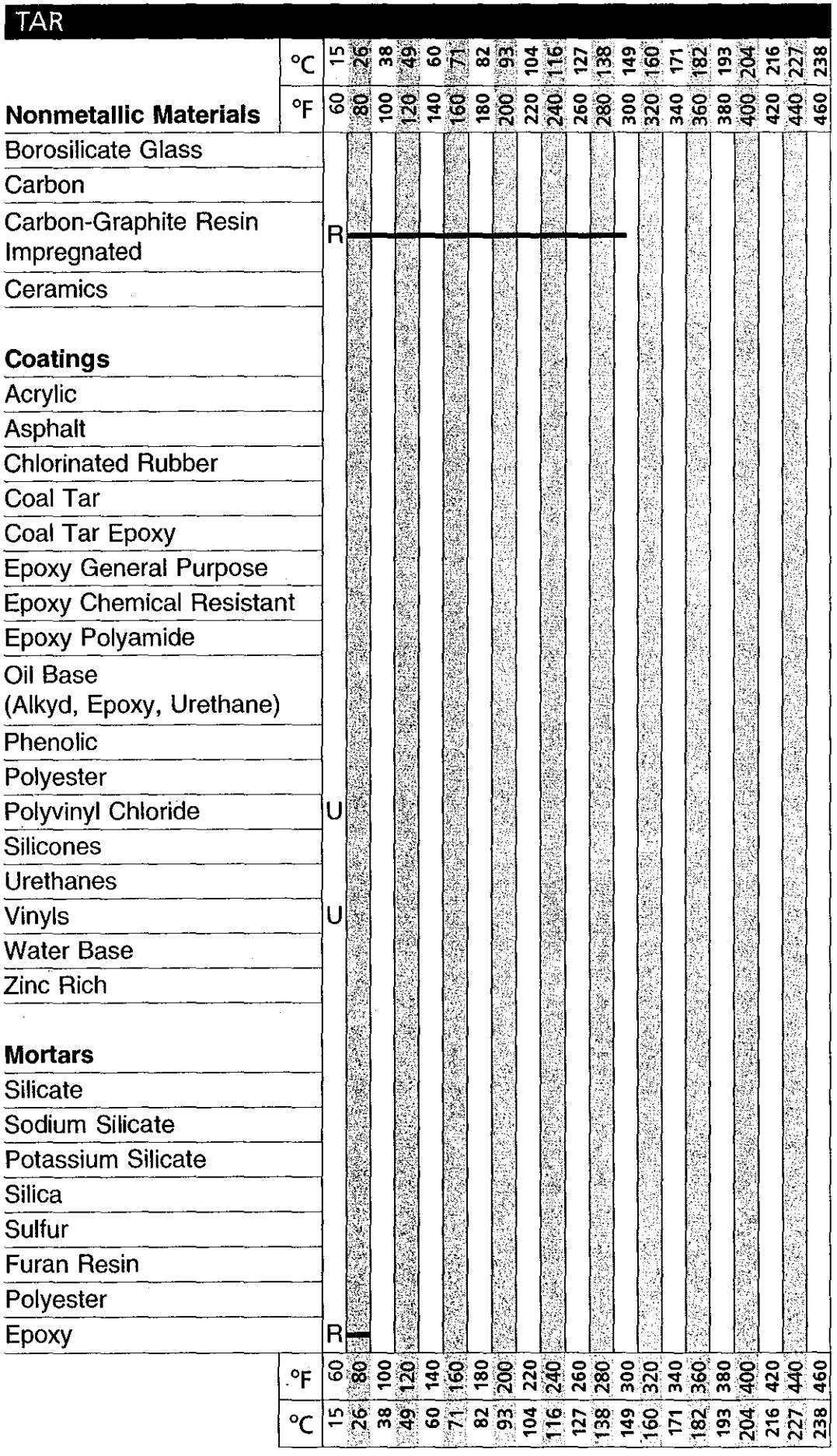
TAR



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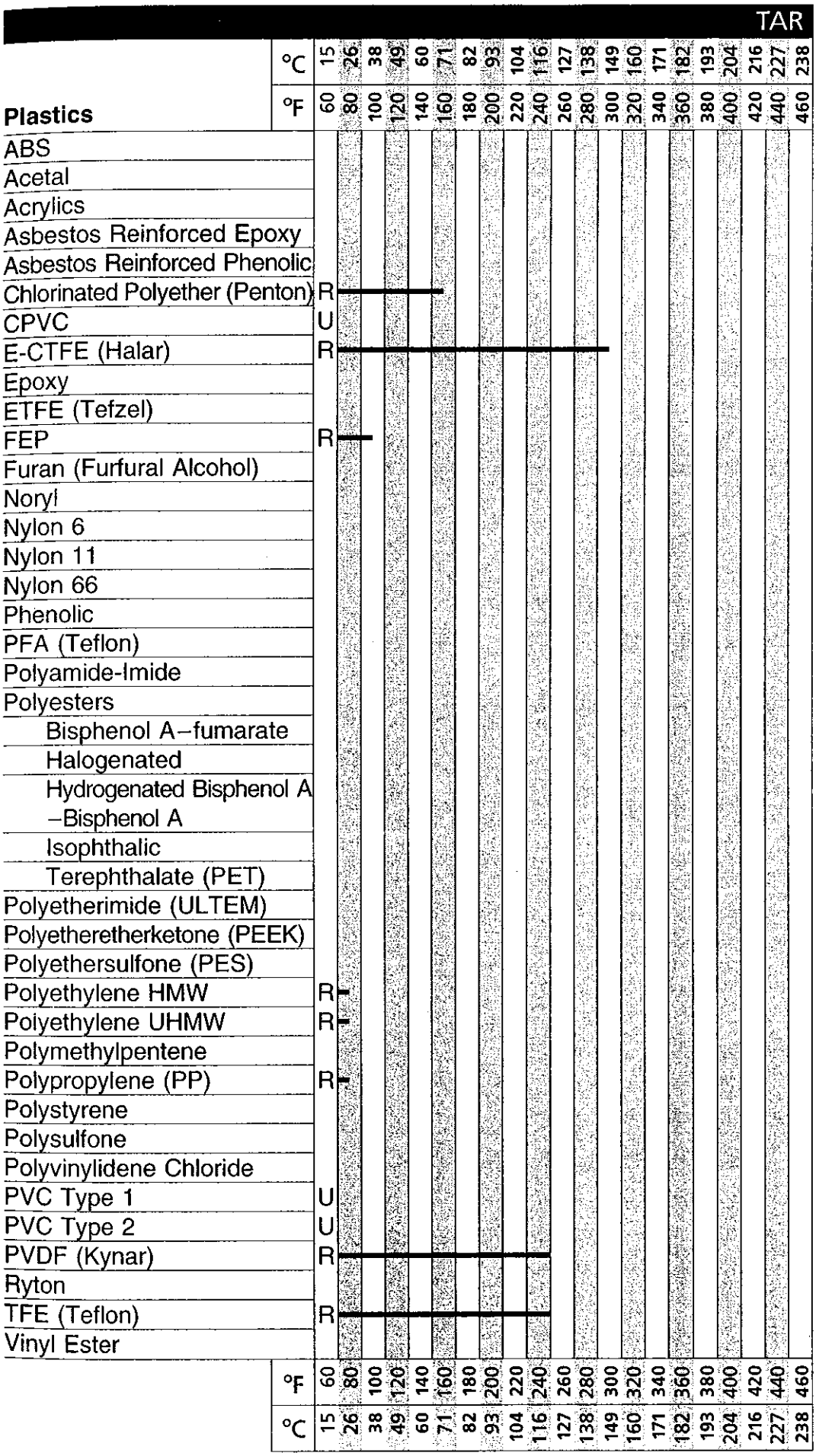

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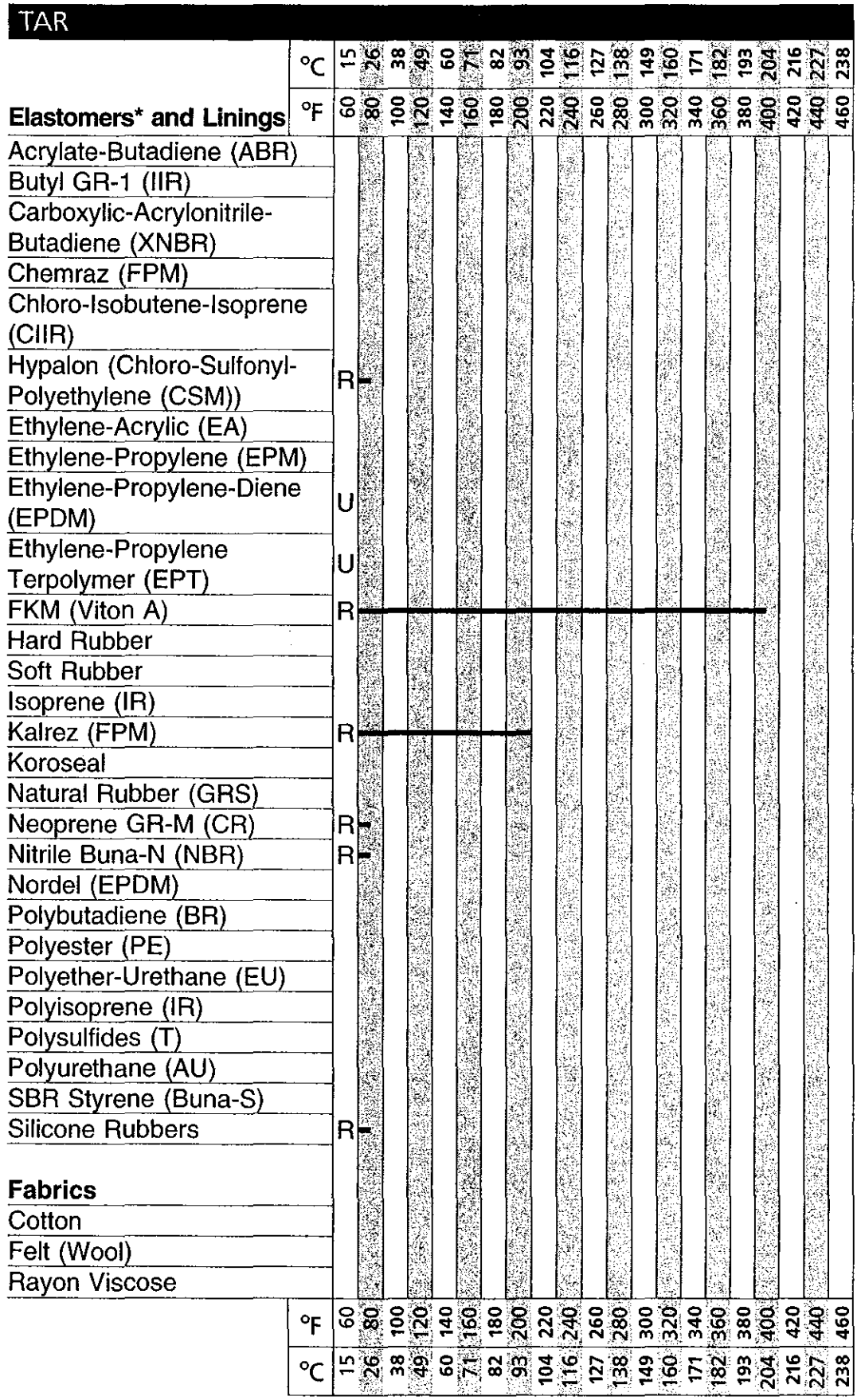
TAR



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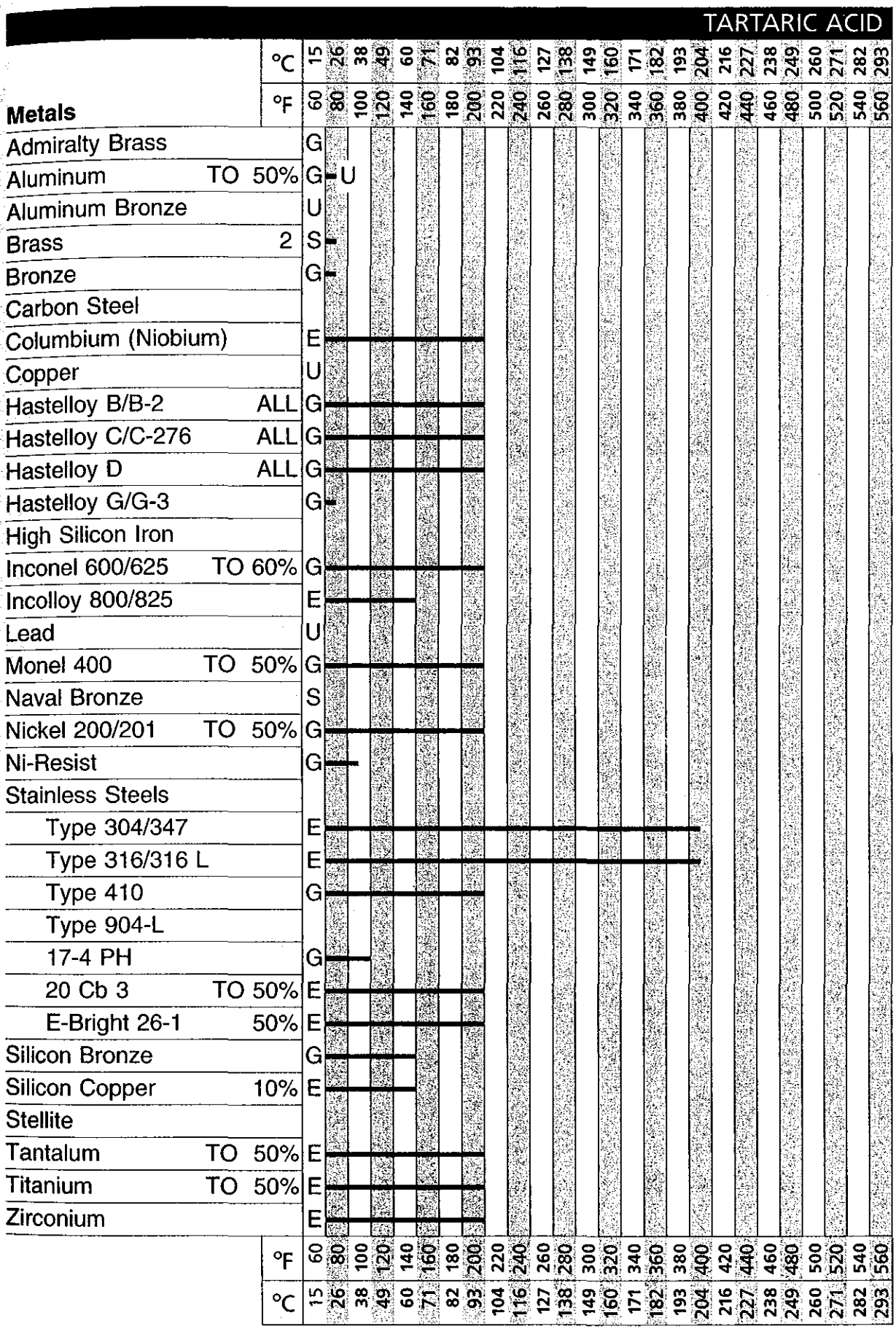

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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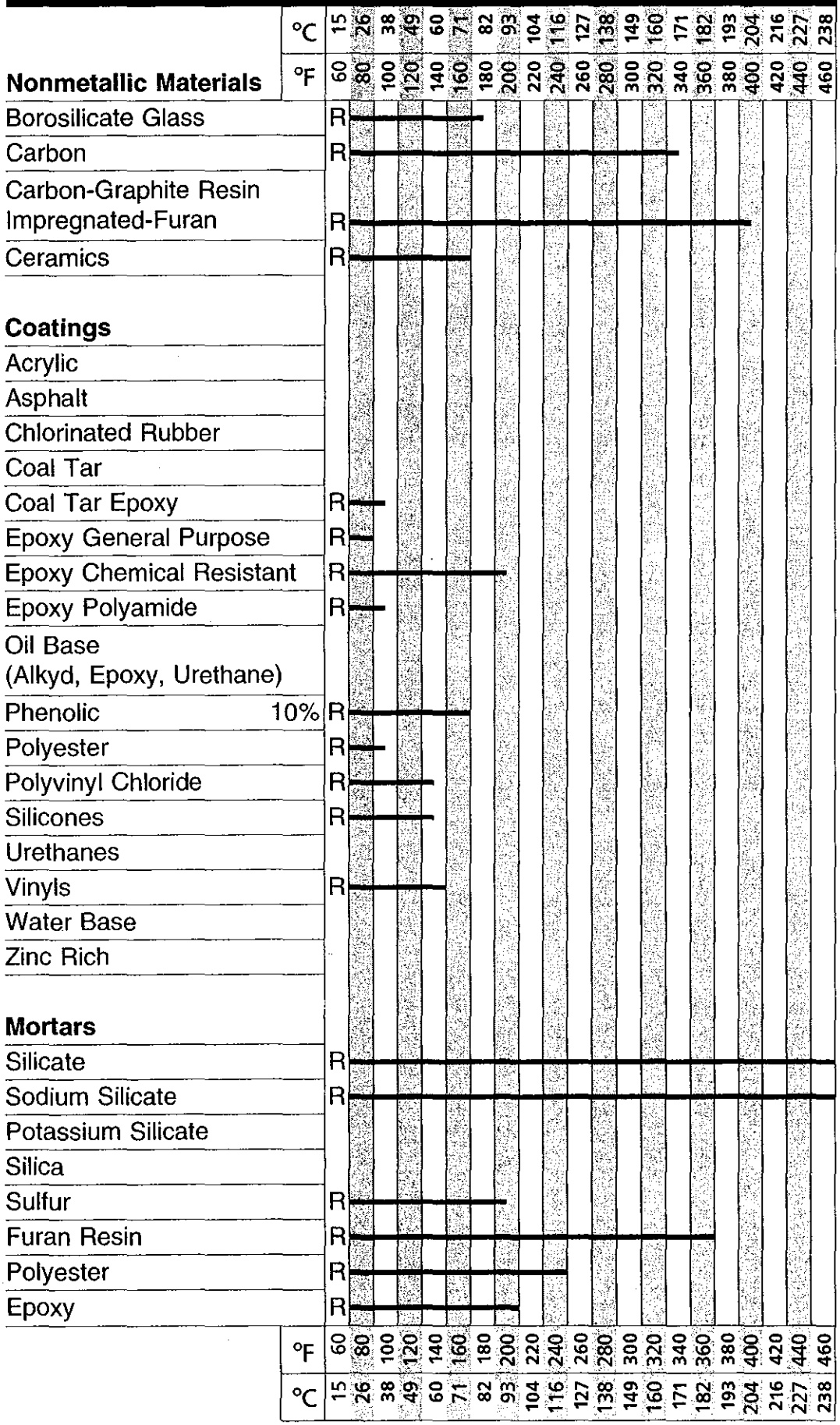
TARTARIC ACID



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TARTARIC ACID

Plastics		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS			R																				
Acetal																							
Acrylics																							
Asbestos Reinforced Epoxy																							
Asbestos Reinforced Phenolic																							
Chlorinated Polyether (Penton)			R																				
CPVC			R																				
E-CTFE (Halar)			R																				
Epoxy	11%		R				U																
ETFE (Tefzel)			R																				
FEP			R																				
Furan (Furfural Alcohol)			R																				
Noryl			R																				
Nylon 6			R																				
Nylon 11			R																				
Nylon 66			R																				
Phenolic	50%		R																				
PFA (Teflon)			R																				
Polyamide-Imide																							
Polyesters																							
Bisphenol A–fumarate			R																				
Halogenated	ALL		R																				
Hydrogenated Bisphenol A –Bisphenol A			R																				
Isophthalic			R																				
Terephthalate (PET)			R																				
Polyetherimide (ULTEM)																							
Polyetheretherketone (PEEK)																							
Polyethersulfone (PES)																							
Polyethylene HMW			R																				
Polyethylene UHMW			R																				
Polymethylpentene			R																				
Polypropylene (PP)			R																				
Polystyrene																							
Polysulfone			R																				
Polyvinylidene Chloride			R																				
PVC Type 1			R																				
PVC Type 2			R																				
PVDF (Kynar)			R																				
Ryton	ALL		R																				
TFE (Teflon)			R																				
Vinyl Ester	ALL		R																				
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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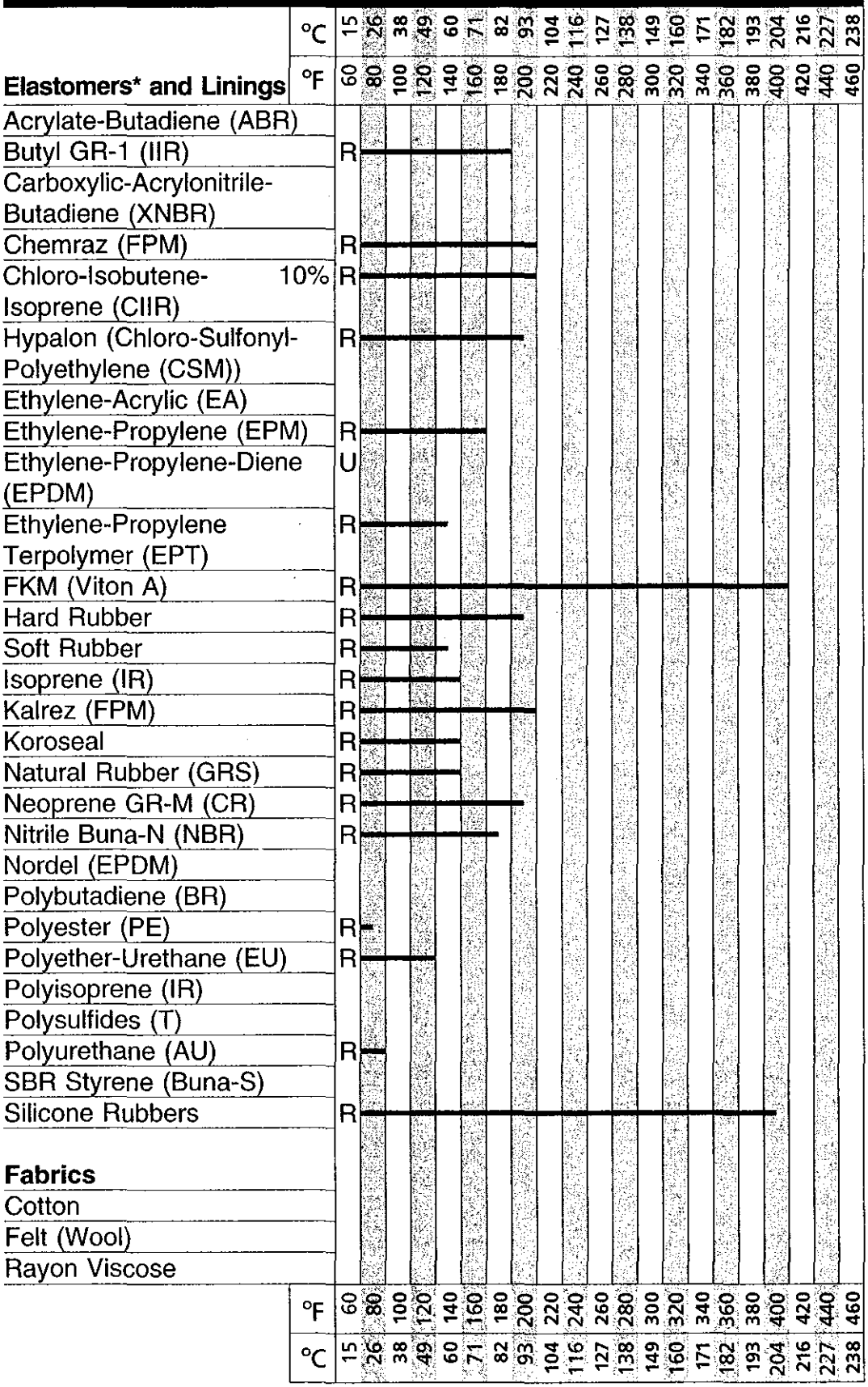
TARTARIC ACID



*See also Nylon 11 under PLASTICS

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TETRACHLOROACETIC ACID

Metals	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																										
Aluminum	U																									
Aluminum Bronze																										
Brass																										
Bronze																										
Carbon Steel	U																									
Columbium (Niobium)	E																									
Copper	G	U																								
Hastelloy B/B-2																										
Hastelloy C/C-276																										
Hastelloy D																										
Hastelloy G/G-3																										
High Silicon Iron																										
Inconel 600/625																										
Incolloy 800/825	U																									
Galv. Stl.	U																									
Monel 400	G																									
Naval Bronze																										
Nickel 200/201																										
Ni-Resist																										
Stainless Steels																										
Type 304/347	U																									
Type 316/316 L	U																									
Type 400 series	U																									
Type 904-L																										
17-4 PH																										
20 Cb 3																										
E-Bright 26-1																										
Silicon Bronze	G	U																								
Silicon Copper																										
Stellite																										
Tantalum																										
Titanium	U																									
Zirconium																										
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS
E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year
S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS
R = Resistant
U = Unsatisfactory

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TETRACHLOROACETIC ACID

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																					
Carbon																					
Carbon-Graphite Resin Impregnated																					
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride	U																				
Silicones																					
Urethanes																					
Vinyls	U																				
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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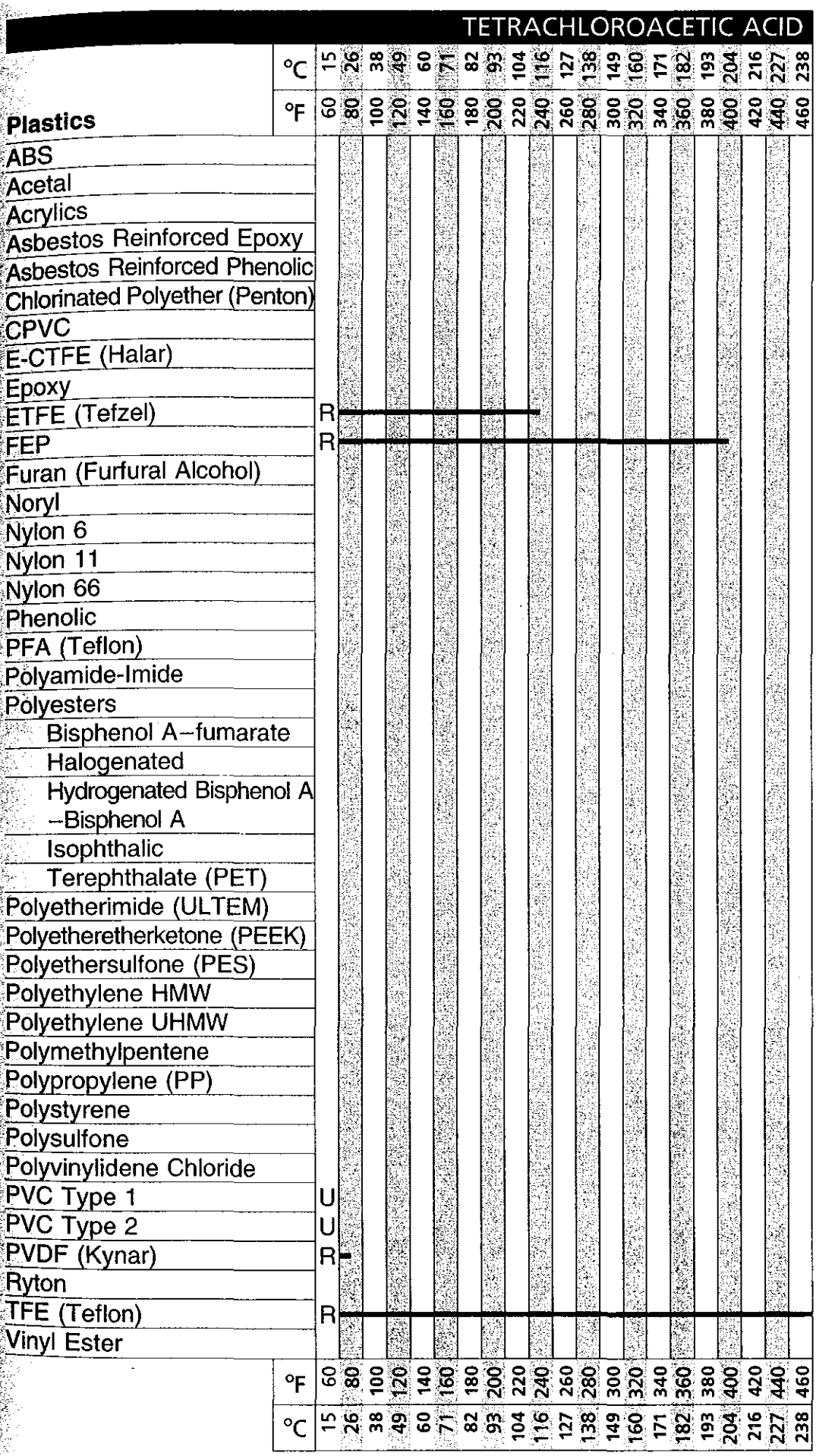
TETRACHLOROACETIC ACID



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TETRACHLOROACETIC ACID

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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TETRACHLOROETHANE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G	U																								
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel		E	G																								
Columbium (Niobium)																											
Copper		S																									
Hastelloy B/B-2																											
Hastelloy C/C-276		E																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze		E	G																								
Nickel 200/201																											
Ni-Resist		G																									
Stainless Steels																											
Type 304/347		E	G																								
Type 316/316 L		E																									
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3		E																									
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium		E																									
Zirconium		E																									
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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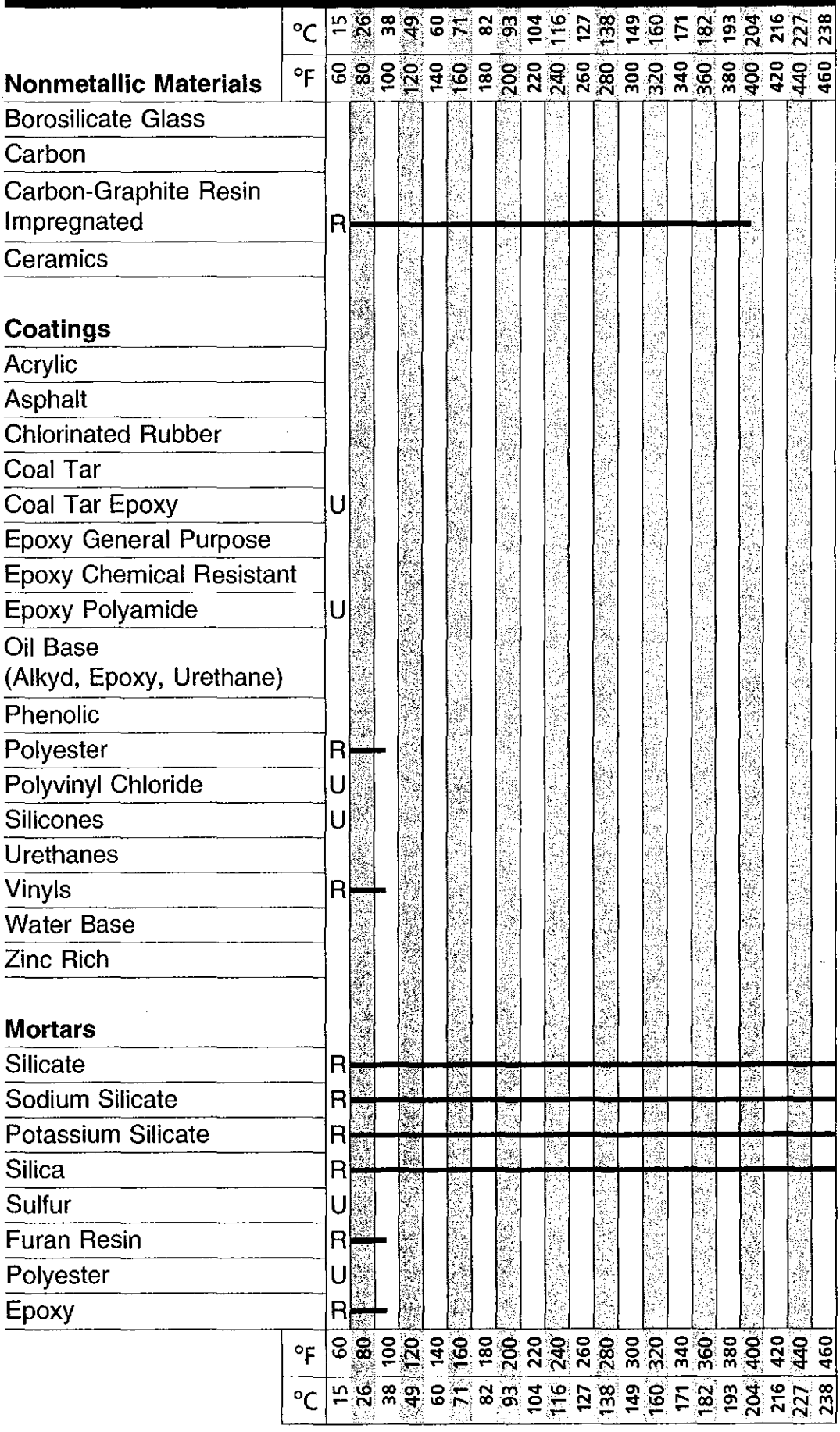
TETRACHLOROETHANE



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TETRACHLOROETHANE

Plastics	°C 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238 / °F 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460
ABS	
Acetal	
Acrylics	
Asbestos Reinforced Epoxy	
Asbestos Reinforced Phenolic	
Chlorinated Polyether (Penton)	
CPVC	U
E-CTFE (Halar)	
Epoxy	R
ETFE (Tefzel)	R
FEP	R
Furan (Furfural Alcohol)	R
Noryl	
Nylon 6	R
Nylon 11	R
Nylon 66	R
Phenolic	R
PFA (Teflon)	
Polyamide-Imide	
Polyesters	
Bisphenol A–fumarate	
Halogenated	
Hydrogenated Bisphenol A –Bisphenol A	
Isophthalic	
Terephthalate (PET)	R
Polyetherimide (ULTEM)	
Polyetheretherketone (PEEK)	
Polyethersulfone (PES)	
Polyethylene HMW	U
Polyethylene UHMW	U
Polymethylpentene	R
Polypropylene (PP)	R U
Polystyrene	
Polysulfone	U
Polyvinylidene Chloride	
PVC Type 1	U
PVC Type 2	U
PVDF (Kynar)	R
Ryton	
TFE (Teflon)	R
Vinyl Ester	R

°F 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460 / °C 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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TETRACHLOROETHANE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)	U																				
Polyurethane (AU)																					
SBR Styrene (Buna-S)	U																				
Silicone Rubbers	U																				
Fabrics																					
Cotton																					
Felt (Wool)	R																				
Rayon Viscose	R																				
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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TETRACHLOROETHYLENE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum	DRY		G	—	—	—	—	—	—	—																		
Aluminum Bronze																												
Brass	DRY		G	—																								
Bronze	DRY		G	—																								
Carbon Steel																												
Columbium (Niobium)			E	—	—	—	—	—	—	—																		
Copper	DRY		G	—																								
Hastelloy B/B-2																												
Hastelloy C/C-276																												
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron			G	—	—	—	—	—	—	—																		
Inconel 600/625																												
Incolloy 800/825																												
Lead																												
Monel 400																												
Naval Bronze																												
Nickel 200/201																												
Ni-Resist																												
Stainless Steels																												
Type 304/347																												
Type 316/316 L																												
Type 400 series																												
Type 904-L																												
17-4 PH																												
20 Cb 3																												
E-Bright 26-1																												
Silicon Bronze																												
Silicon Copper																												
Stellite																												
Tantalum																												
Titanium			E	—	—	—	—	—	—	—	—																	
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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U = Unsatisfactory

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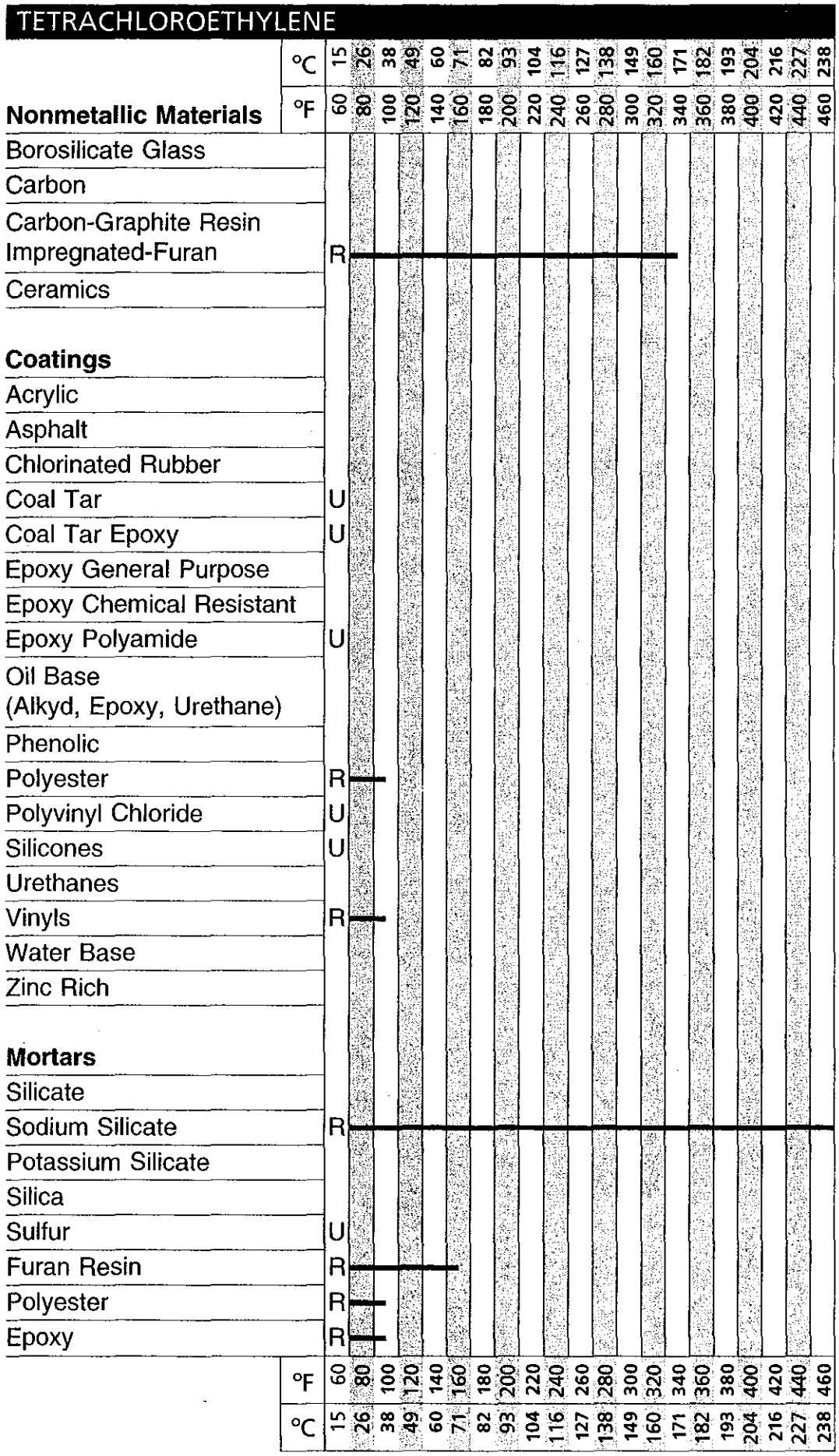
TETRACHLOROETHYLENE



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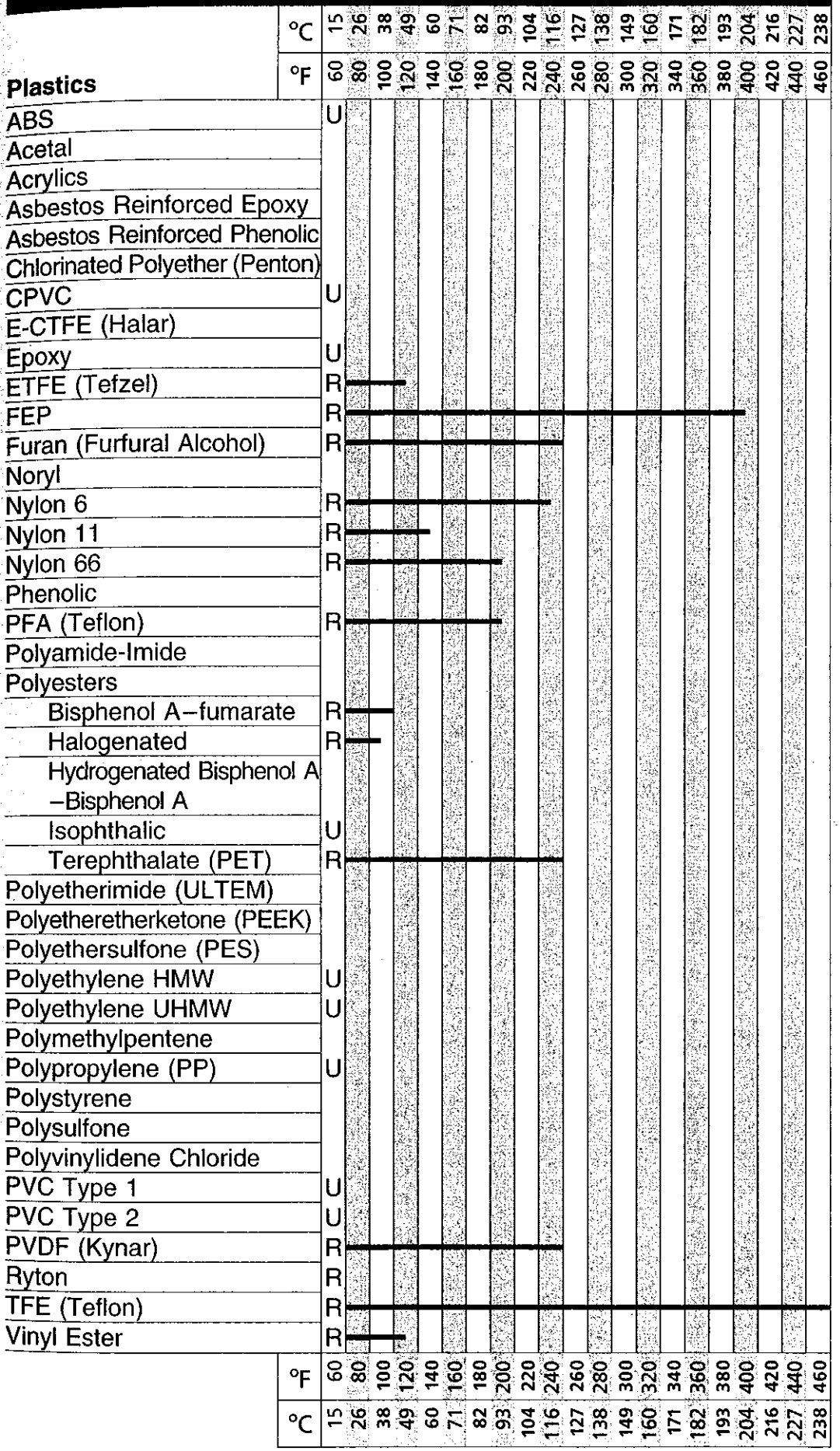
TETRACHLOROETHYLENE



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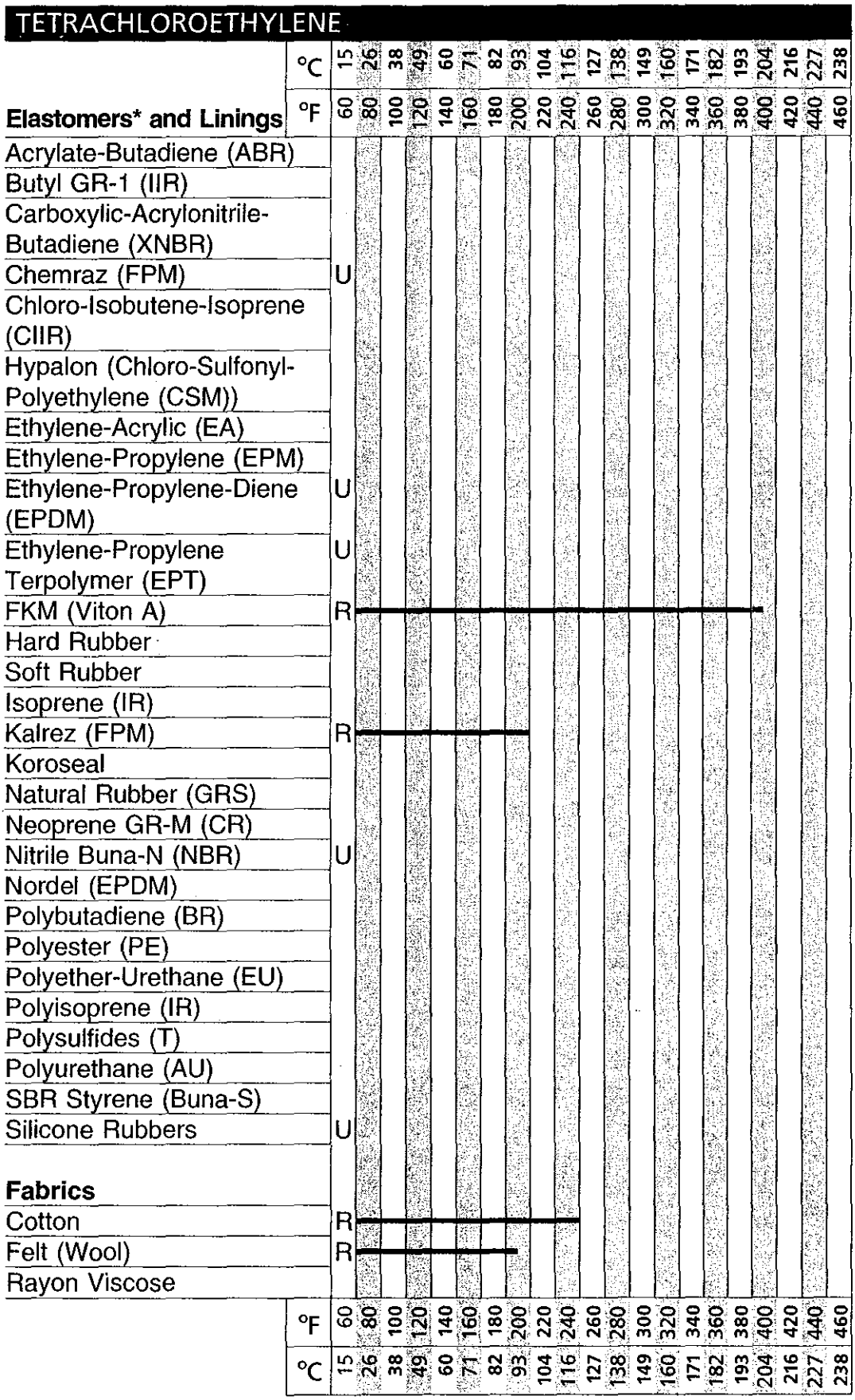
TETRACHLOROETHYLENE



*See also Nylon 11 under PLASTICS

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Metals	°F	°C
Admiralty Brass		
Aluminum	G	
Aluminum Bronze	G	
Brass	G	
Bronze	G	
Carbon Steel	G	
Columbium (Niobium)		
Copper		
Hastelloy B/B-2		
Hastelloy C/C-276		
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625	G	
Incolloy 800/825		
Lead		
Monel 400	G	
Naval Bronze	E	
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347	G	
Type 316/316 L	G	
Type 400 series		
Type 904-L		
17-4 PH		
20 Cb 3	G	
E-Bright 26-1		
Silicon Bronze	G	
Silicon Copper		
Stellite		
Tantalum		
Titanium		
Zirconium		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

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FOR NONMETALLICS

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U = Unsatisfactory

Schweitzer/*Corrosion Resistance Tables: Fifth Edition, Revised and Expanded* DOI: 10.1081/5672-X-120030073

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TETRAETHYL LEAD

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																					
Carbon	R																				
Carbon-Graphite Resin Impregnated	R																				
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride	R																				
Silicones																					
Urethanes																					
Vinyls	R																				
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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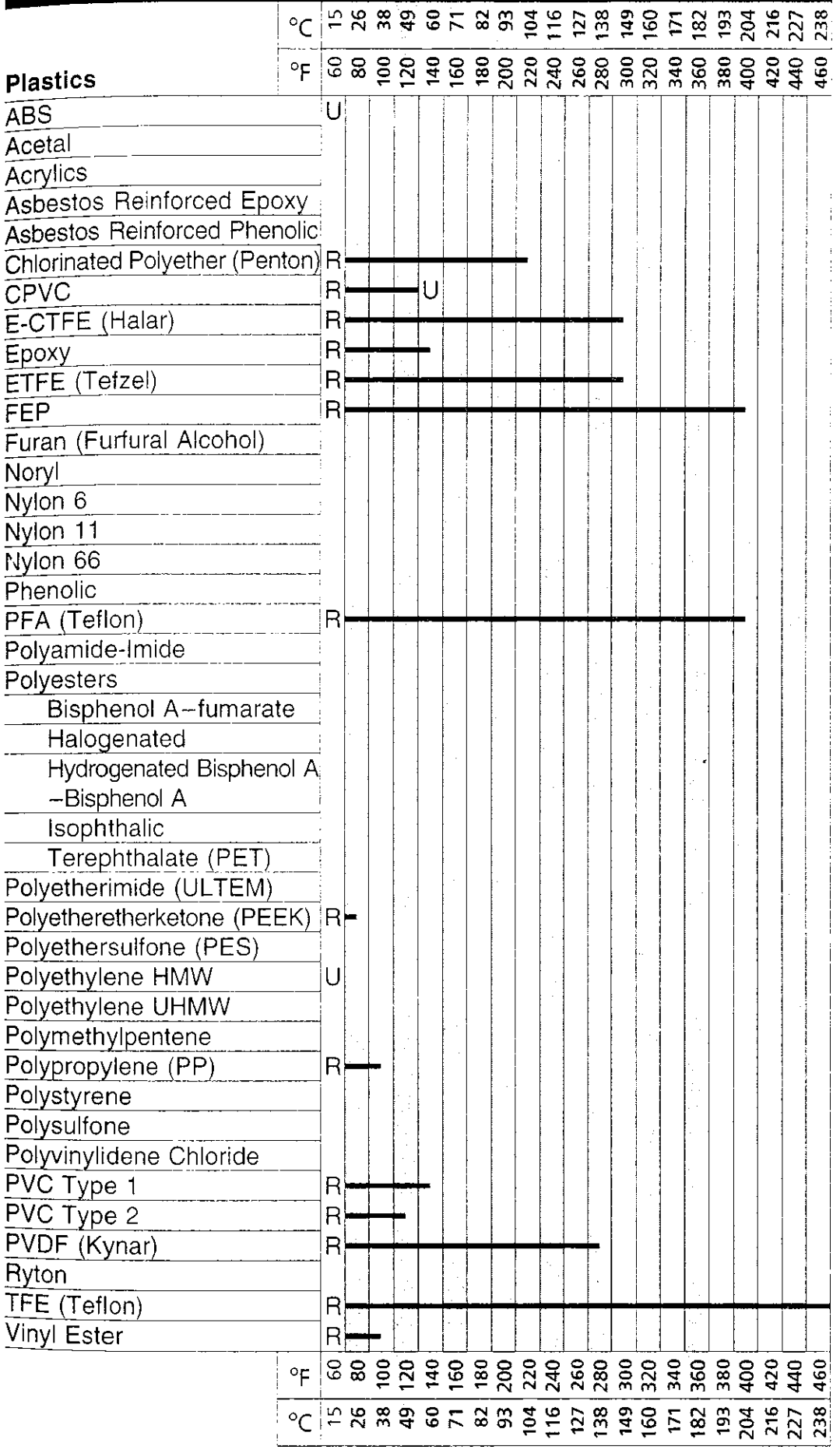

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TETRAETHYL LEAD

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)	U																				
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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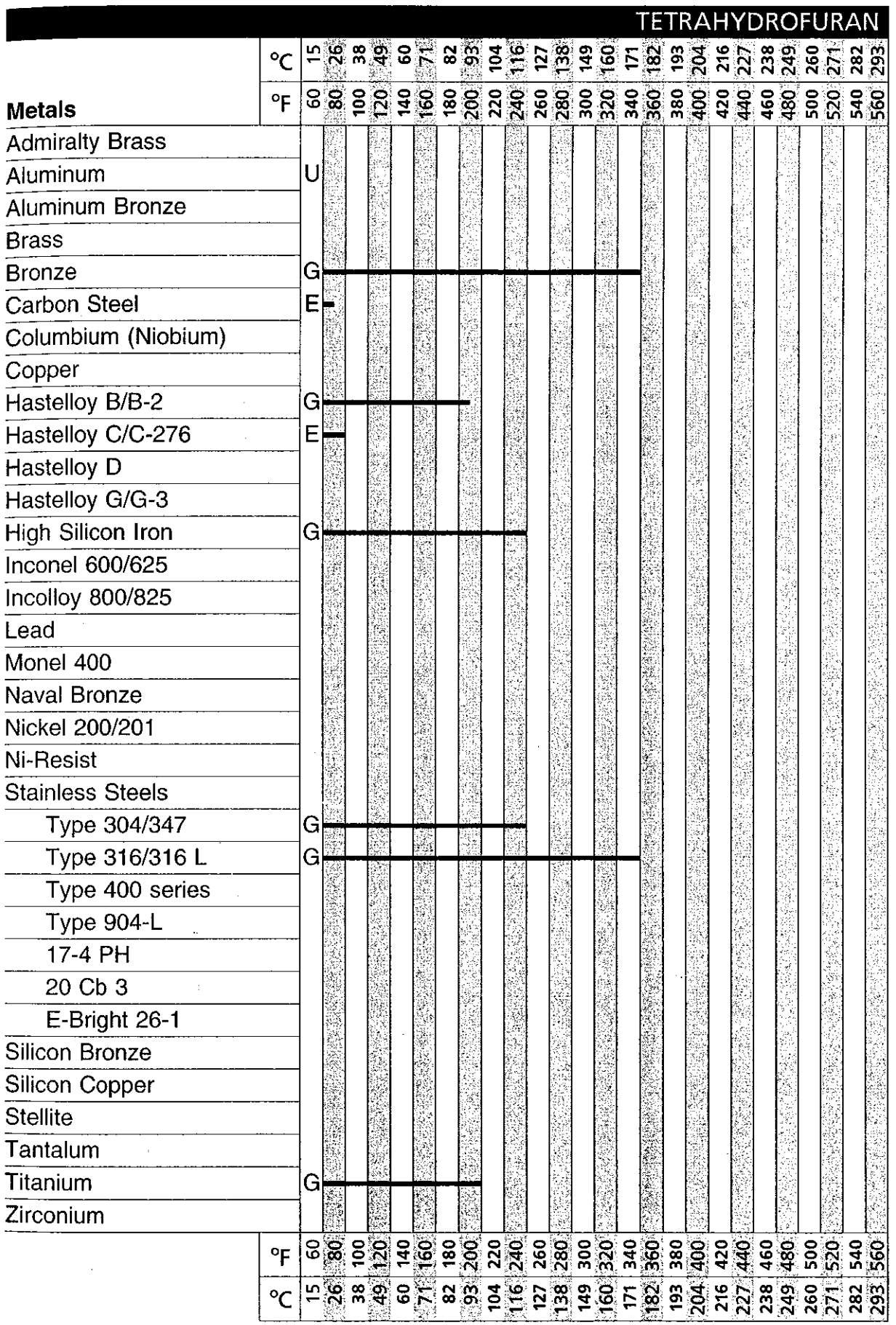

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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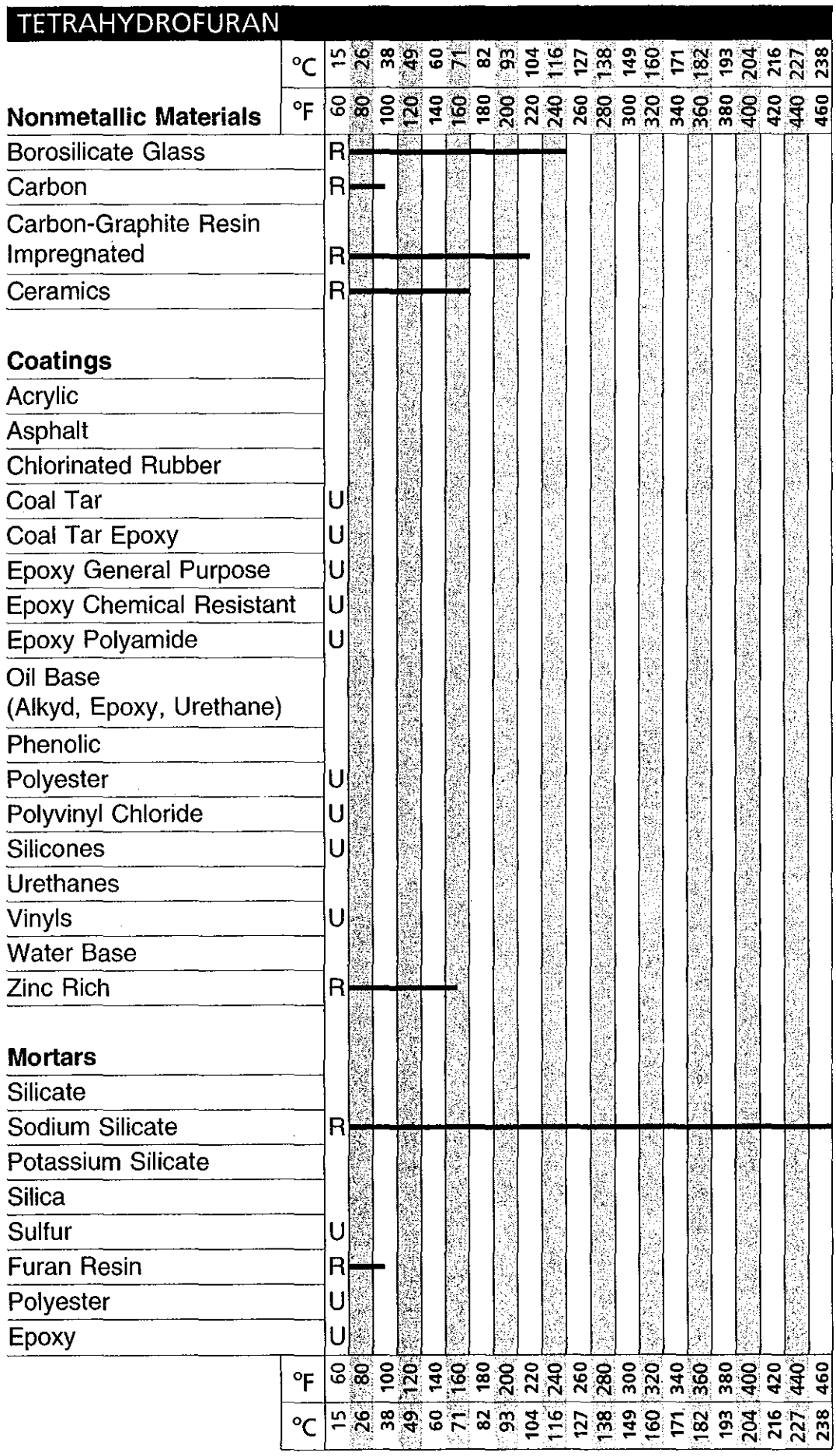
TETRAHYDROFURAN



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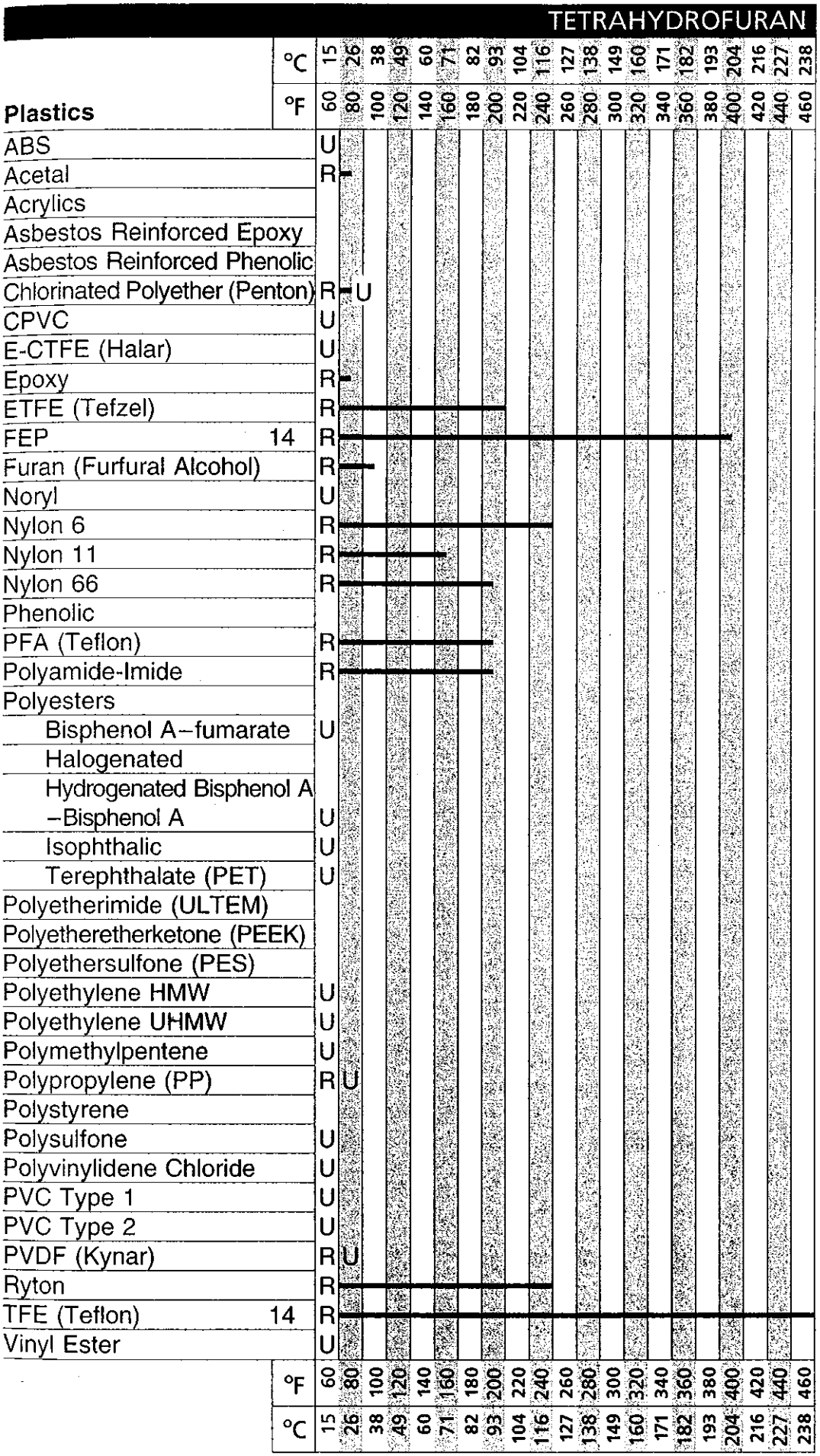

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TETRAHYDROFURAN

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)	U																				
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	R	U																			
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)	U																				
Polybutadiene (BR)																					
Polyester (PE)	R																				
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)	U																				
Silicone Rubbers	U																				
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	°F
Admiralty Brass		
Aluminum	G	
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel		
Columbium (Niobium)		
Copper		
Hastelloy B/B-2		
Hastelloy C/C-276		
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625		
Incolloy 800/825		
Lead		
Monel 400		
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347	G	
Type 316/316 L		
Type 400 series		
Type 904-L		
17-4 PH		
20 Cb 3		
E-Bright 26-1		
Silicon Bronze		
Silicon Copper		
Stellite		
Tantalum	G	
Titanium		
Zirconium		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TETRALIN

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass		R																				
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride		U																				
Silicones		U																				
Urethanes																						
Vinyls		U																				
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC	U																					
E-CTFE (Halar)																						
Epoxy	R																					
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)																						
Noryl	U																					
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)	R																					
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW	U																					
Polyethylene UHMW	U																					
Polymethylpentene																						
Polypropylene (PP)	R			U																		
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1	U																					
PVC Type 2	U																					
PVDF (Kynar)																						
Ryton	R																					
TFE (Teflon)	R																					
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TETRALIN

Elastomers* and Linings	°F	°C
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)	U	
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)	R	
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)	U	
Ethylene-Propylene Terpolymer (EPT)	U	
FKM (Viton A)	R	
Hard Rubber		
Soft Rubber		
Isoprene (IR)	U	
Kalrez (FPM)	R	
Koroseal		
Natural Rubber (GRS)	U	
Neoprene GR-M (CR)	U	
Nitrile Buna-N (NBR)	U	
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers	U	
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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TETRAMETHYL AMMONIUM HYDROXIDE 50%

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TETRAMETHYL AMMONIUM HYDROXIDE 50%

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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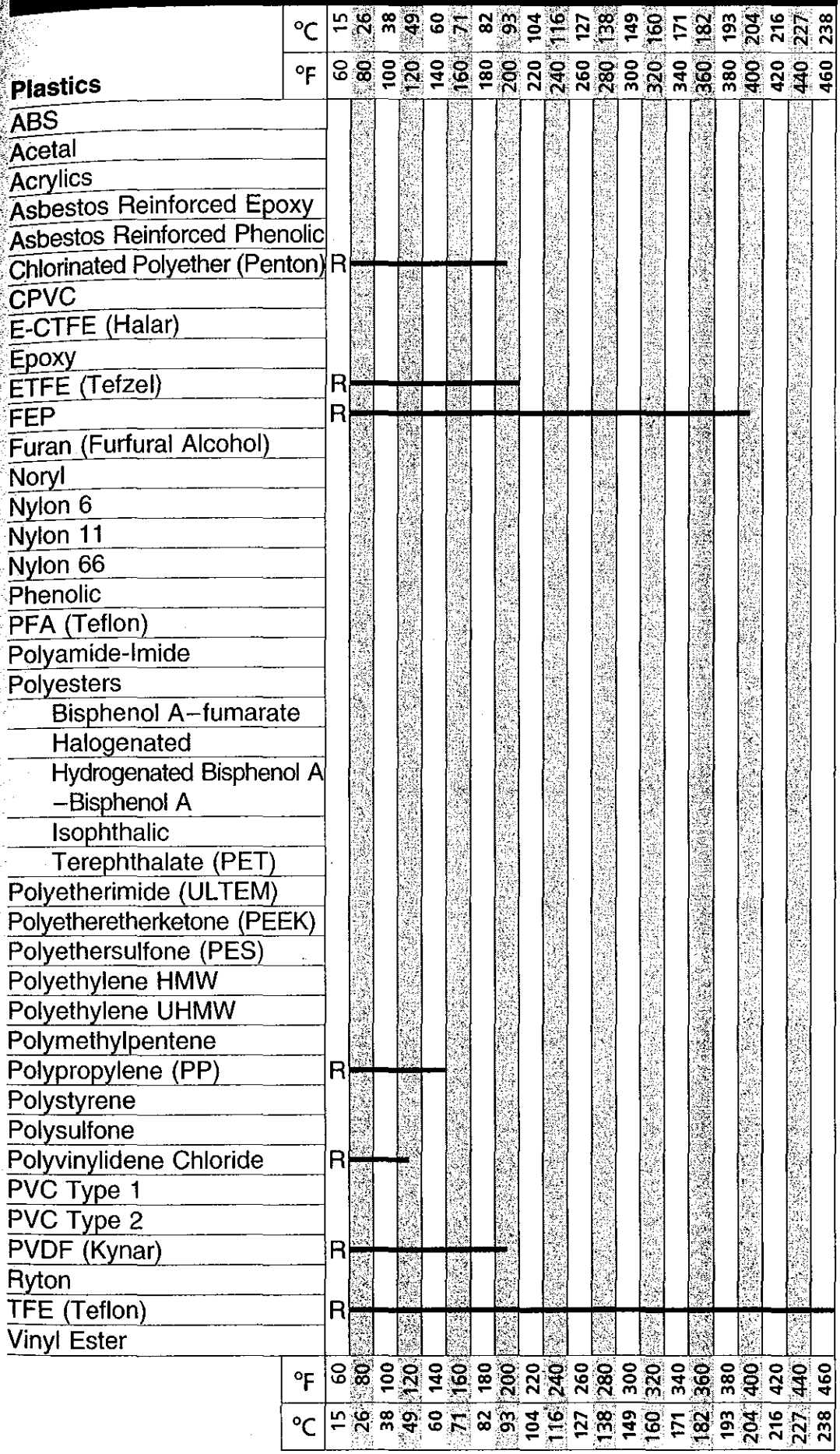
TETRAMETHYL AMMONIUM HYDROXIDE 50%



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TETRAMETHYL AMMONIUM HYDROXIDE 50%

Elastomers* and Linings	°F / °C	60 / 15	80 / 26	100 / 38	120 / 49	140 / 60	160 / 71	180 / 82	200 / 93	220 / 104	240 / 116	260 / 127	280 / 138	300 / 149	320 / 160	340 / 171	360 / 182	380 / 193	400 / 204	420 / 216	440 / 227	460 / 238
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)		R																				
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F / °C	60 / 15	80 / 26	100 / 38	120 / 49	140 / 60	160 / 71	180 / 82	200 / 93	220 / 104	240 / 116	260 / 127	280 / 138	300 / 149	320 / 160	340 / 171	360 / 182	380 / 193	400 / 204	420 / 216	440 / 227	460 / 238

*See also Nylon 11 under PLASTICS

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TETRAPHOSPHORIC ACID

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		U																									
Aluminum Bronze																											
Brass		S				U																					
Bronze																											
Carbon Steel		U																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2		G																									
Hastelloy C/C-276		G																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625		G																									
Incolloy 800/825																											
Lead																											
Monel 400		S																									
Naval Bronze		U																									
Nickel 200/201		U																									
Ni-Resist																											
Stainless Steels																											
Type 304/347		U																									
Type 316/316 L		U																									
Type 400 series		U																									
Type 904-L																											
17-4 PH																											
20 Cb 3		G																									
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TETRAPHOSPHORIC ACID

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TETRAPHOSPHORIC ACID

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TETRAPHOSPHORIC ACID

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)	R																					
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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THIONYL CHLORIDE

Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum			U																									
Aluminum Bronze																												
Brass																												
Bronze																												
Carbon Steel			U																									
Columbium (Niobium)																												
Copper																												
Hastelloy B/B-2																												
Hastelloy C/C-276	10%		G																									
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625																												
Incolloy 800/825																												
Lead			G																									
Monel 400			G																									
Naval Bronze																												
Nickel 200/201			G																									
Ni-Resist																												
Stainless Steels																												
Type 304/347																												
Type 316/316 L			U																									
Type 400 series																												
Type 904-L																												
17-4 PH																												
20 Cb 3																												
E-Bright 26-1																												
Silicon Bronze																												
Silicon Copper																												
Stellite																												
Tantalum			G																									
Titanium																												
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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THIONYL CHLORIDE

Nonmetallic Materials	
Borosilicate Glass	R
Carbon	
Carbon-Graphite Resin Impregnated-Phenolic	R
Ceramics	
Coatings	
Acrylic	
Asphalt	
Chlorinated Rubber	
Coal Tar	
Coal Tar Epoxy	U
Epoxy General Purpose	U
Epoxy Chemical Resistant	U
Epoxy Polyamide	U
Oil Base (Alkyd, Epoxy, Urethane)	
Phenolic	R
Polyester	U
Polyvinyl Chloride	U
Silicones	
Urethanes	
Vinyls	U
Water Base	
Zinc Rich	
Mortars	
Silicate	
Sodium Silicate	U
Potassium Silicate	
Silica	
Sulfur	U
Furan Resin	U
Polyester	U
Epoxy	U

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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THIONYL CHLORIDE

Plastics		°C	°F
ABS		U	
Acetal		U	
Acrylics			
Asbestos Reinforced Epoxy			
Asbestos Reinforced Phenolic			
Chlorinated Polyether (Penton)		U	
CPVC		U	
E-CTFE (Halar)		R	
Epoxy		U	
ETFE (Tefzel)		R	
FEP	14	R	
Furan (Furfural Alcohol)		U	
Noryl			
Nylon 6		U	
Nylon 11		U	
Nylon 66		U	
Phenolic		R	
PFA (Teflon)	14	R	
Polyamide-Imide			
Polyesters			
Bisphenol A–fumarate		U	
Halogenated		U	
Hydrogenated Bisphenol A –Bisphenol A			
Isophthalic		U	
Terephthalate (PET)			
Polyetherimide (ULTEM)			
Polyetheretherketone (PEEK)			
Polyethersulfone (PES)			
Polyethylene HMW		U	
Polyethylene UHMW		U	
Polymethylpentene		U	
Polypropylene (PP)		R	
Polystyrene			
Polysulfone		U	
Polyvinylidene Chloride		U	
PVC Type 1		U	
PVC Type 2		U	
PVDF (Kynar)		U	
Ryton		U	
TFE (Teflon)	14	R	
Vinyl Ester		U	

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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THIONYL CHLORIDE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)	U																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)	U																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel	G																										
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347	G																										
Type 316/316 L	G																										
Type 400 series	G																										
Type 904-L																											
17-4 PH	G																										
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite	U																										
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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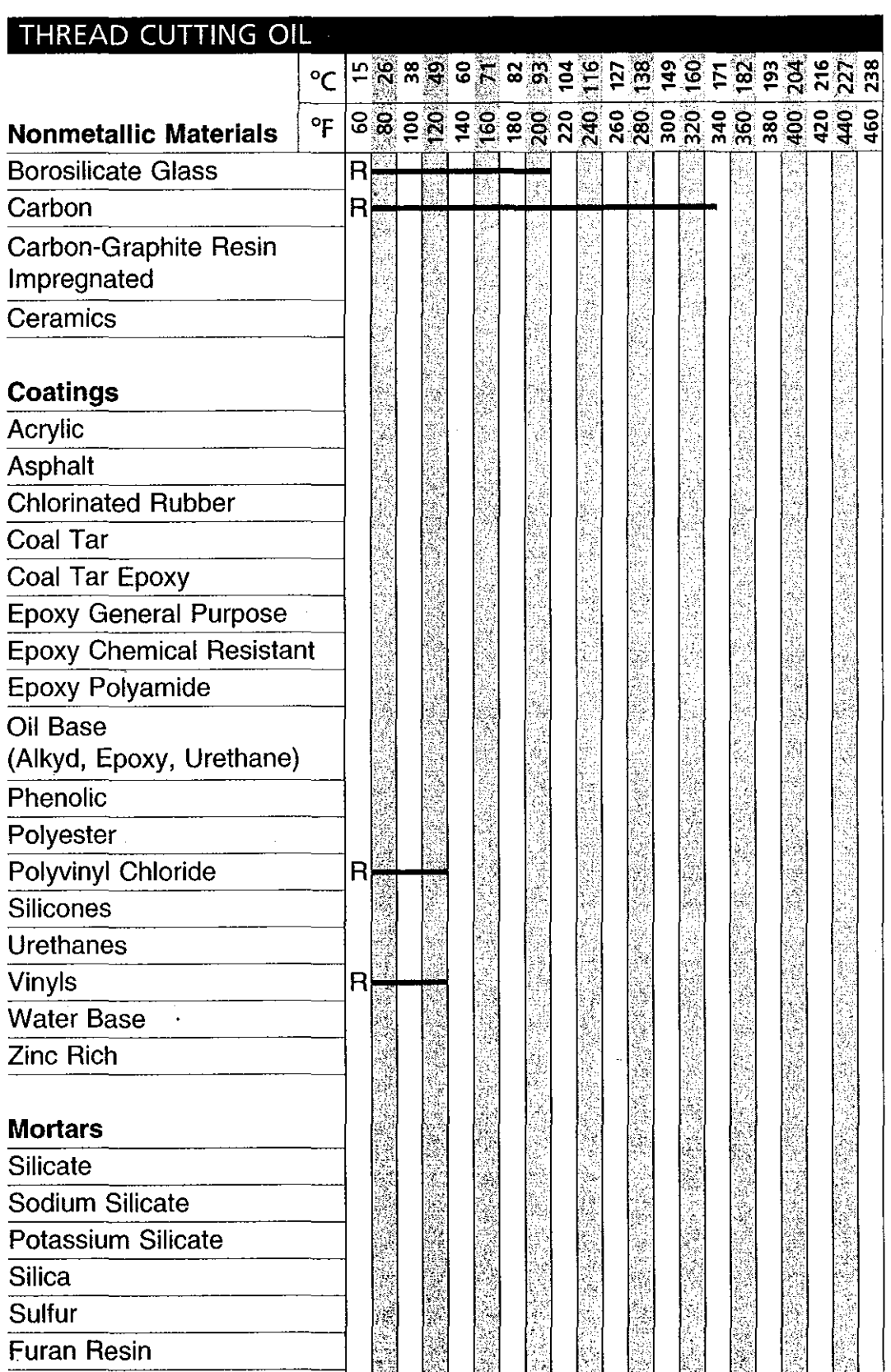
THREAD CUTTING OIL



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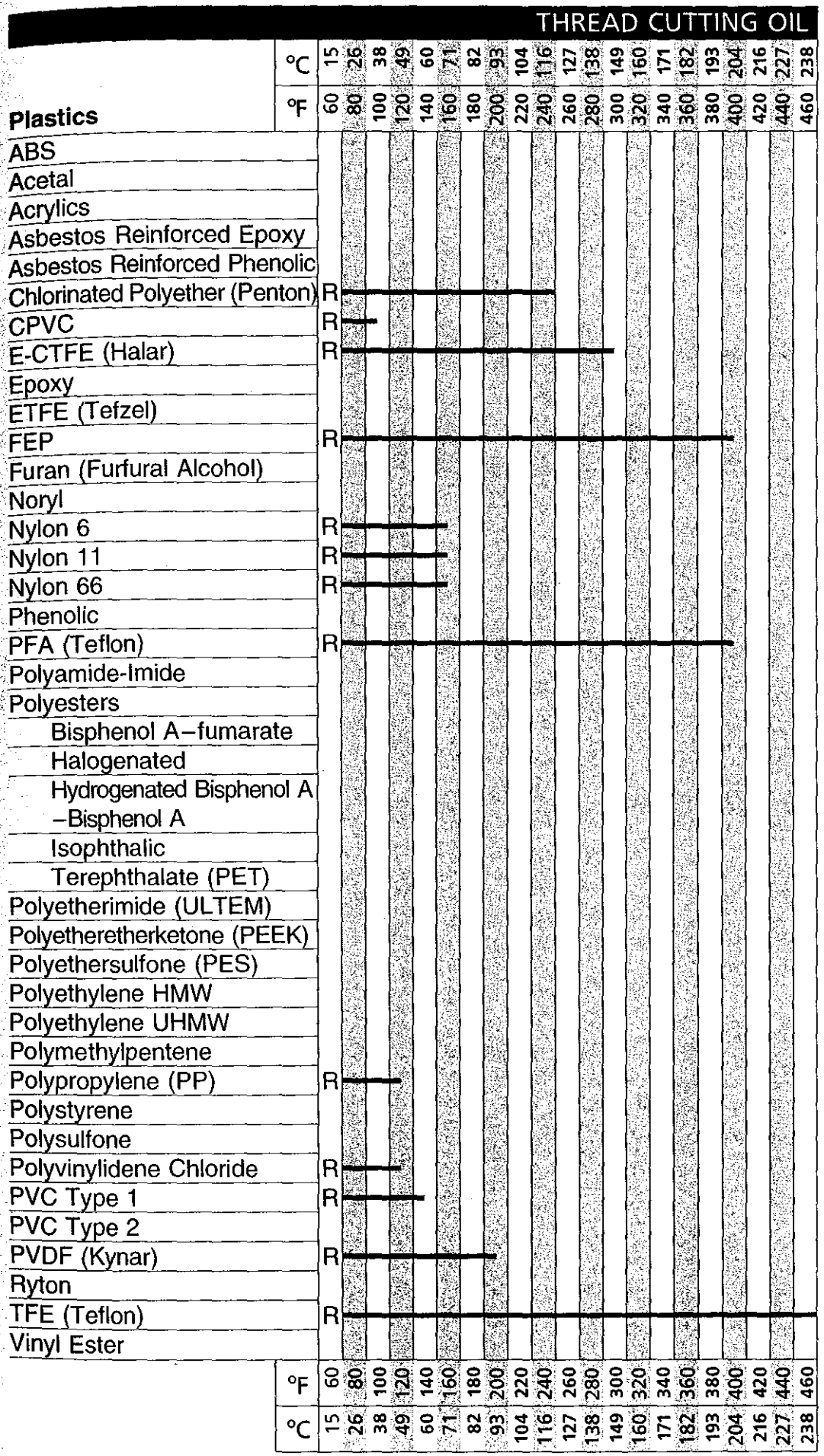

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THREAD CUTTING OIL

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)																					
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)	R																				
Nordel (EPDM)	U																				
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	°F
Admiralty Brass		
Aluminum		
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel		
Columbium (Niobium)		
Copper		
Hastelloy B/B-2	G	G
Hastelloy C/C-276	G	G
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625		
Incolloy 800/825		
Lead		
Monel 400		
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347	U	
Type 316/316 L	G	G
Type 400 series		
Type 904-L		
17-4 PH		
20 Cb 3		
E-Bright 26-1		
Silicon Bronze		
Silicon Copper		
Stellite		
Tantalum	E	
Titanium		
Zirconium		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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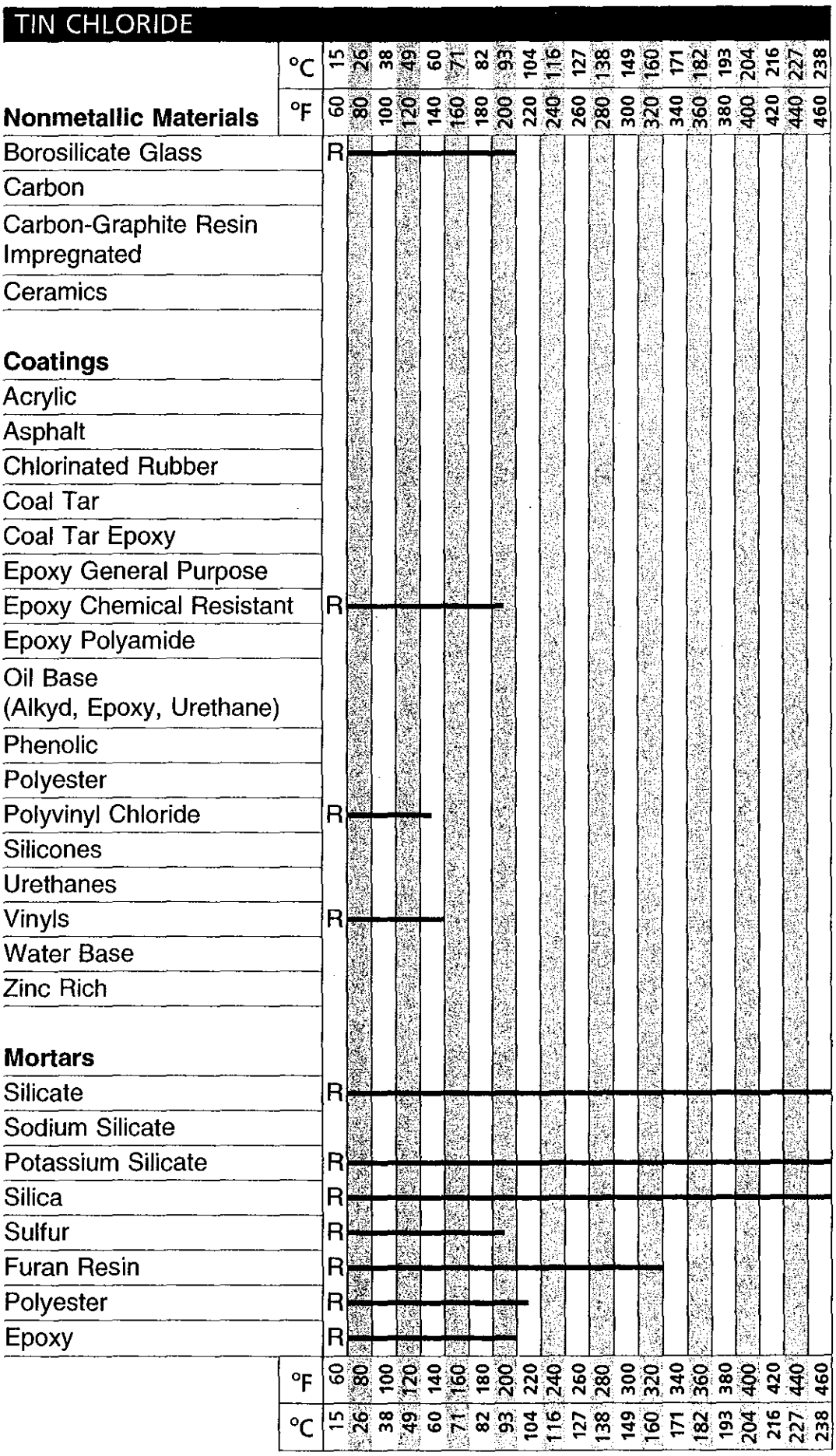
TIN CHLORIDE



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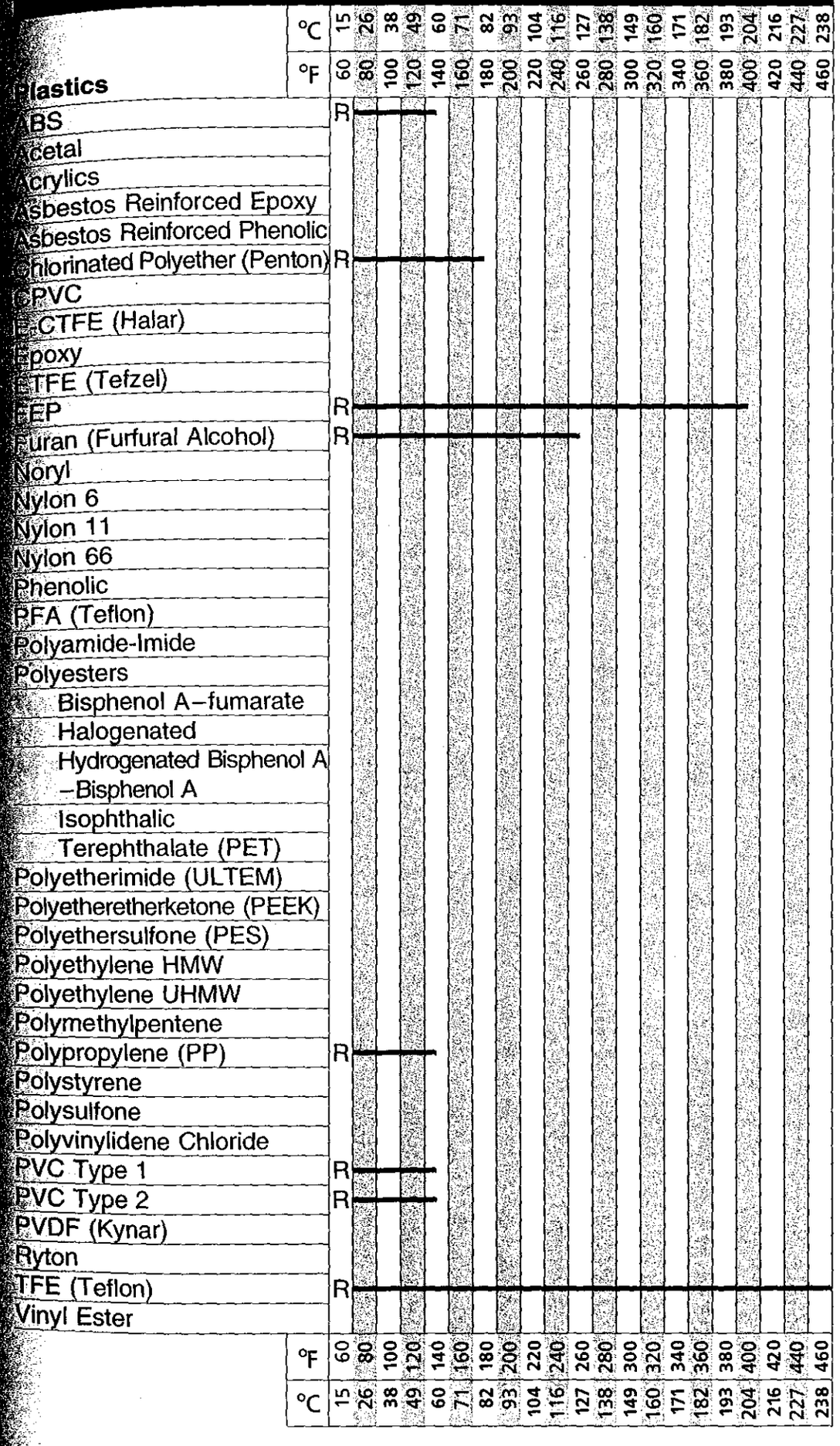

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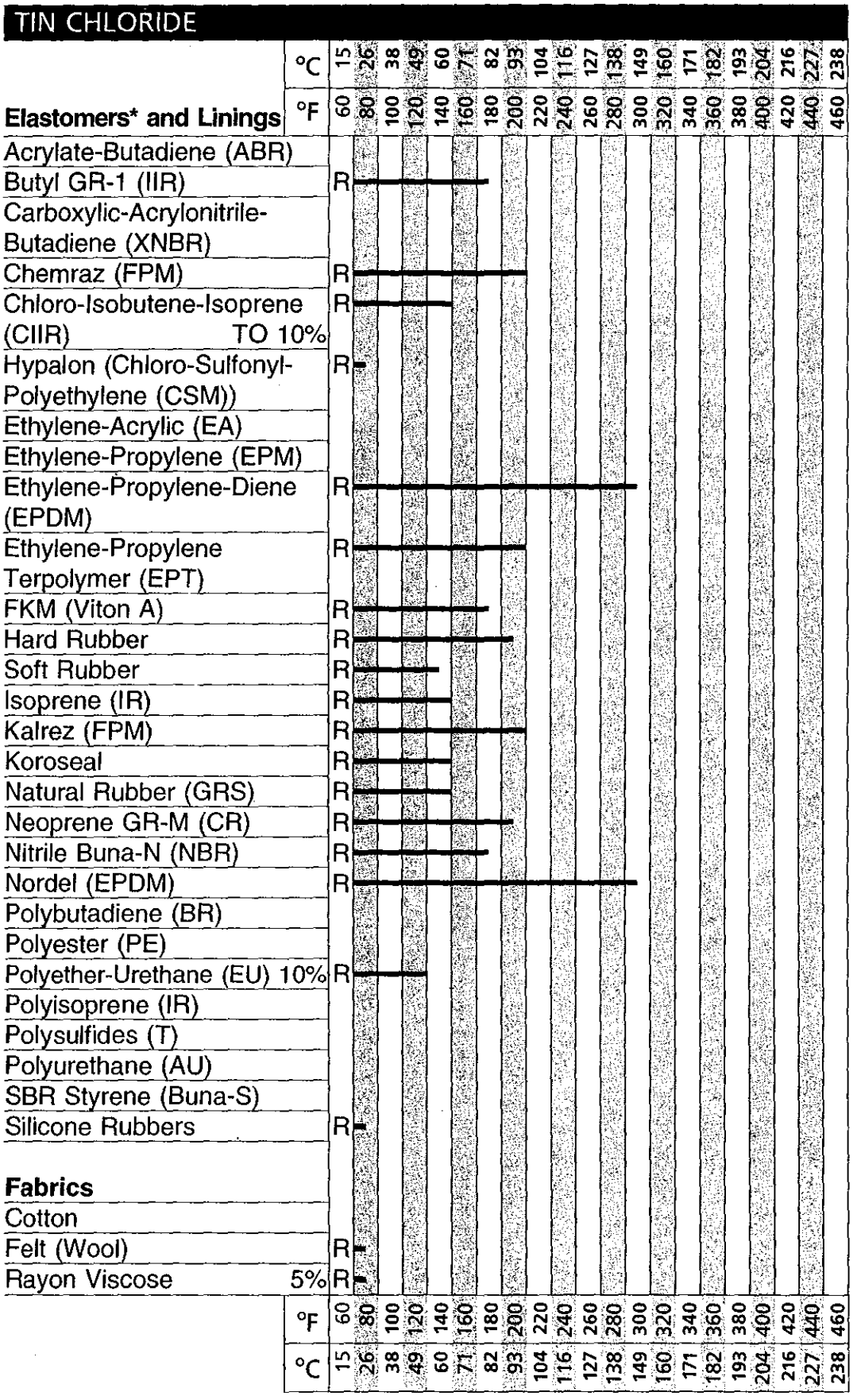
TIN CHLORIDE



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TIN (MOLTEN)

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass		U																									
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper		U																									
Hastelloy B/B-2		E																									
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625		U																									
Incolloy 800/825																											
Lead																											
Monel 400		U																									
Naval Bronze																											
Nickel 200/201		U																									
Ni-Resist																											
Stainless Steels																											
Type 304/347		S																									
Type 316		S																									
Type 430		S																									
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper		U																									
Stellite																											
Tantalum		E												G		S											
Titanium		E																									
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TIN (MOLTEN)

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated		R																				
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride		U																				
Silicones																						
Urethanes																						
Vinyls		U																				
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TIN (MOLTEN)

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal		U																				
Acrylics		U																				
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)		U																				
CPVC																						
E-CTFE (Halar)		U																				
Epoxy		U																				
ETFE (Tefzel)		U																				
FEP		U																				
Furan (Furfural Alcohol)		U																				
Noryl		U																				
Nylon 6		U																				
Nylon 11		U																				
Nylon 66		U																				
Phenolic																						
PFA (Teflon)		U																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		U																				
Polyethylene UHMW		U																				
Polymethylpentene																						
Polypropylene (PP)		U																				
Polystyrene																						
Polysulfone		U																				
Polyvinylidene Chloride																						
PVC Type 1		U																				
PVC Type 2		U																				
PVDF (Kynar)		U																				
Ryton																						
TFE (Teflon)		U																				
Vinyl Ester		U																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TIN (MOLTEN)

Elastomers* and Linings	°C	°F
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)		
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)		
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)		
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)		
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)		
Nitrile Buna-N (NBR)		
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

*See also Nylon 11 under PLASTICS

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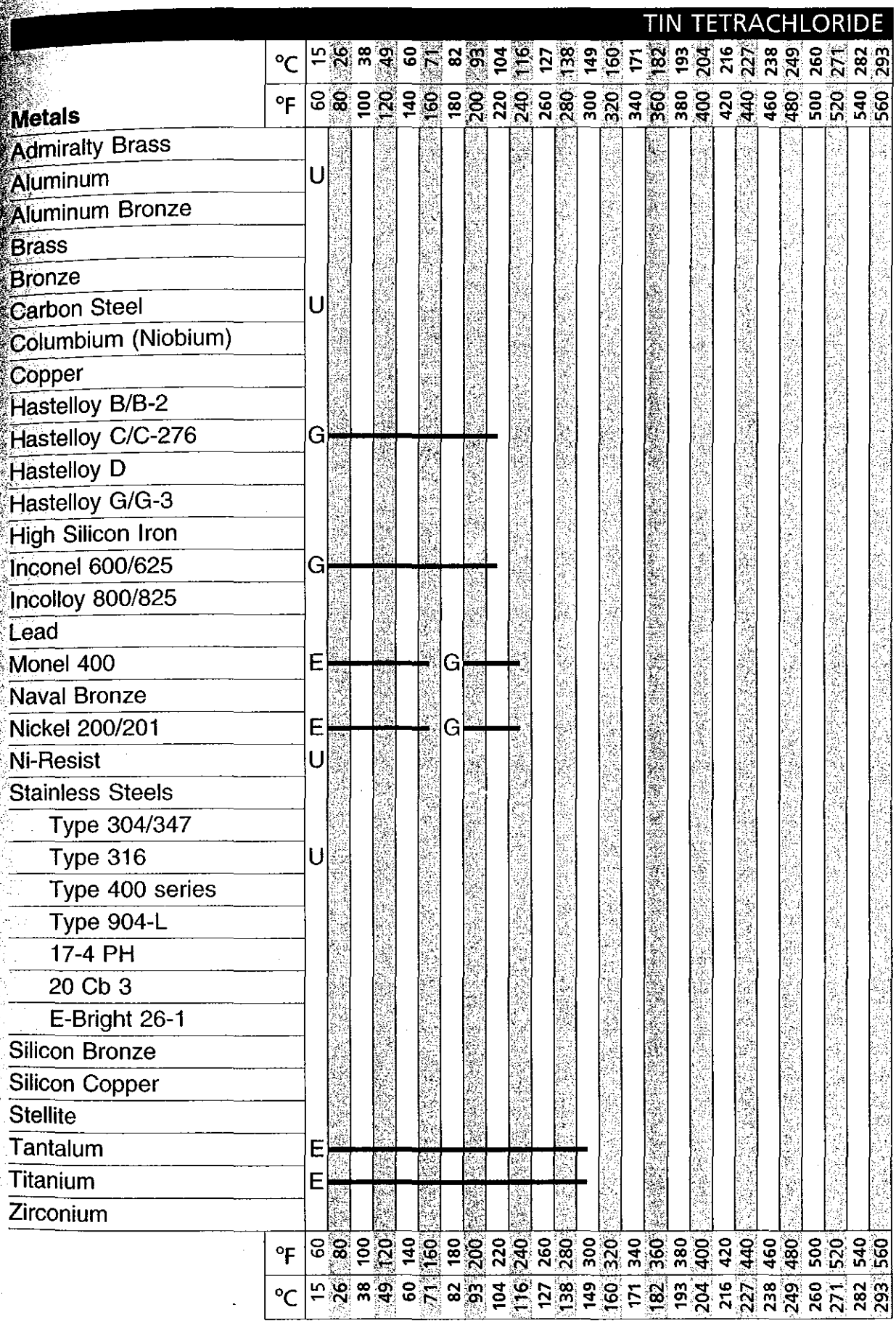
TIN TETRACHLORIDE



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TIN TETRACHLORIDE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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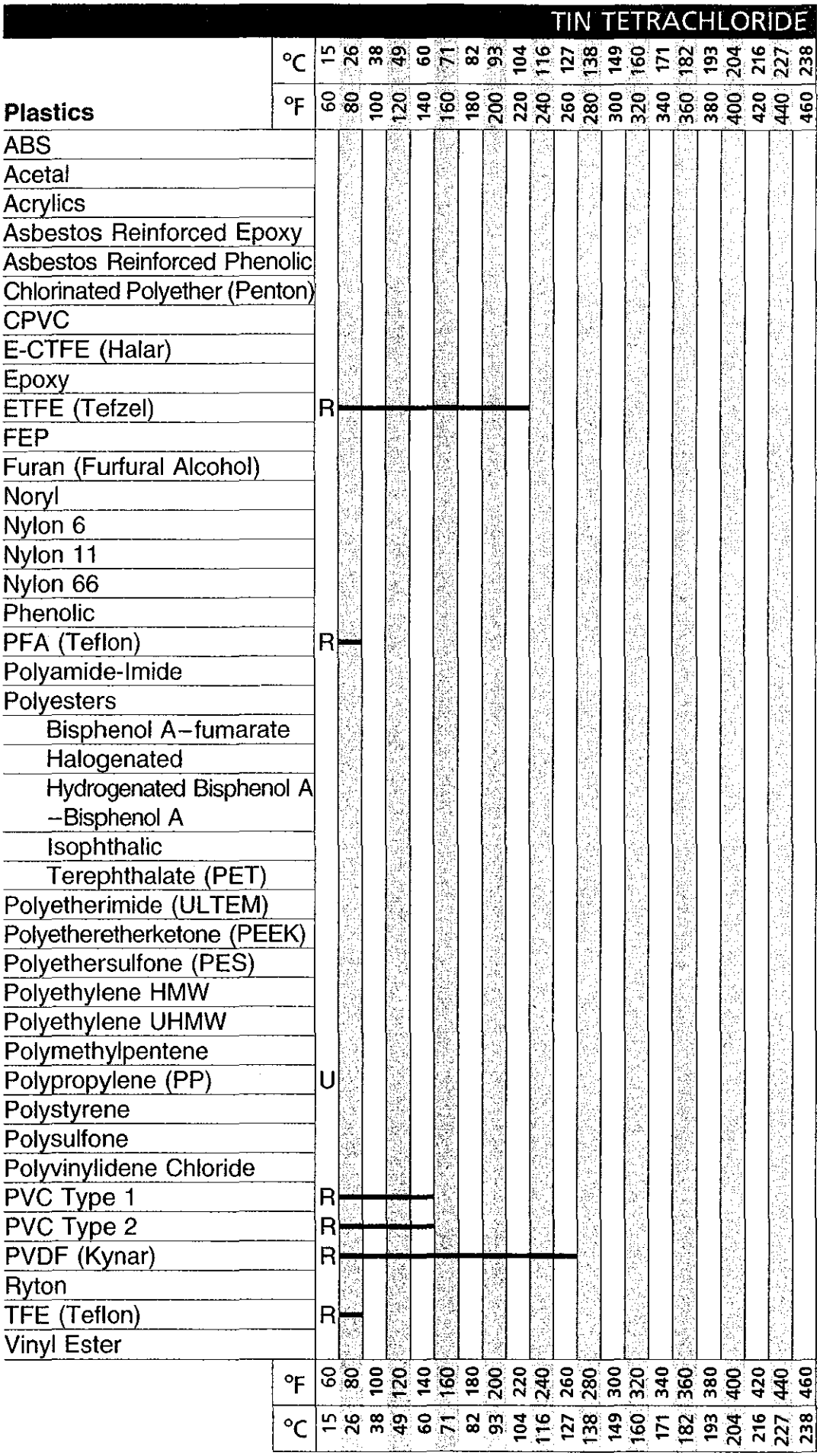

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TIN TETRACHLORIDE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)		R																				
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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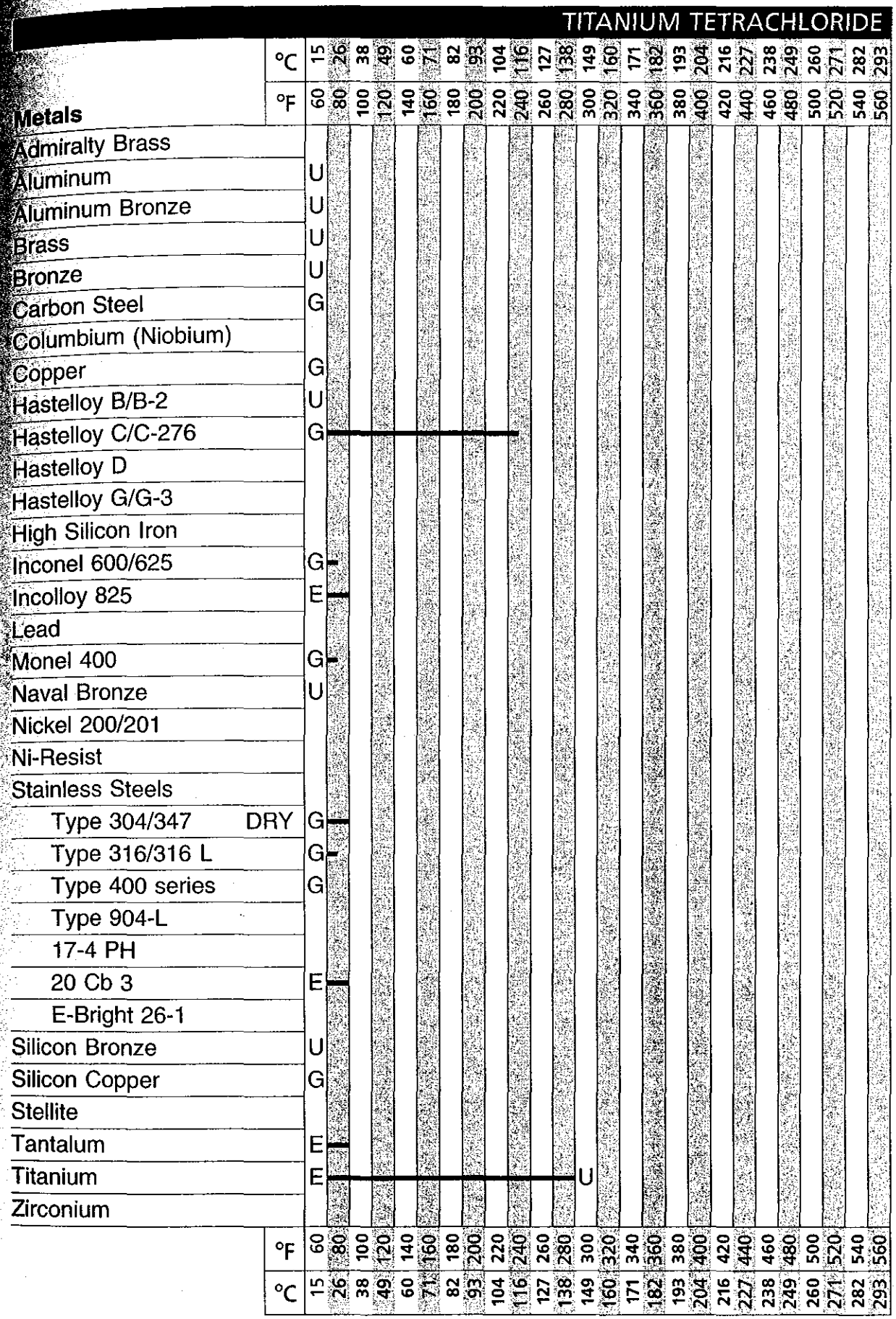

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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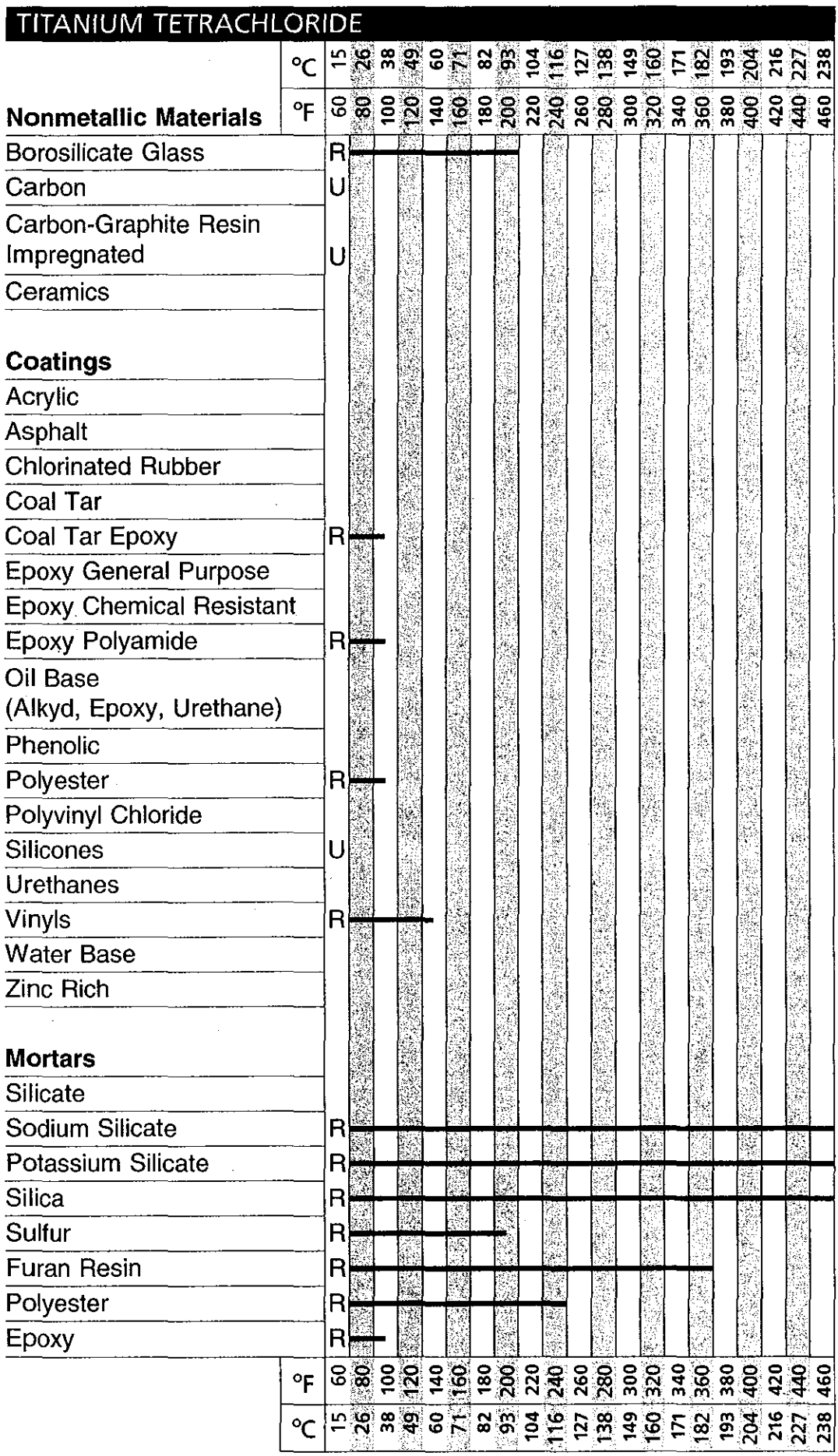
TITANIUM TETRACHLORIDE



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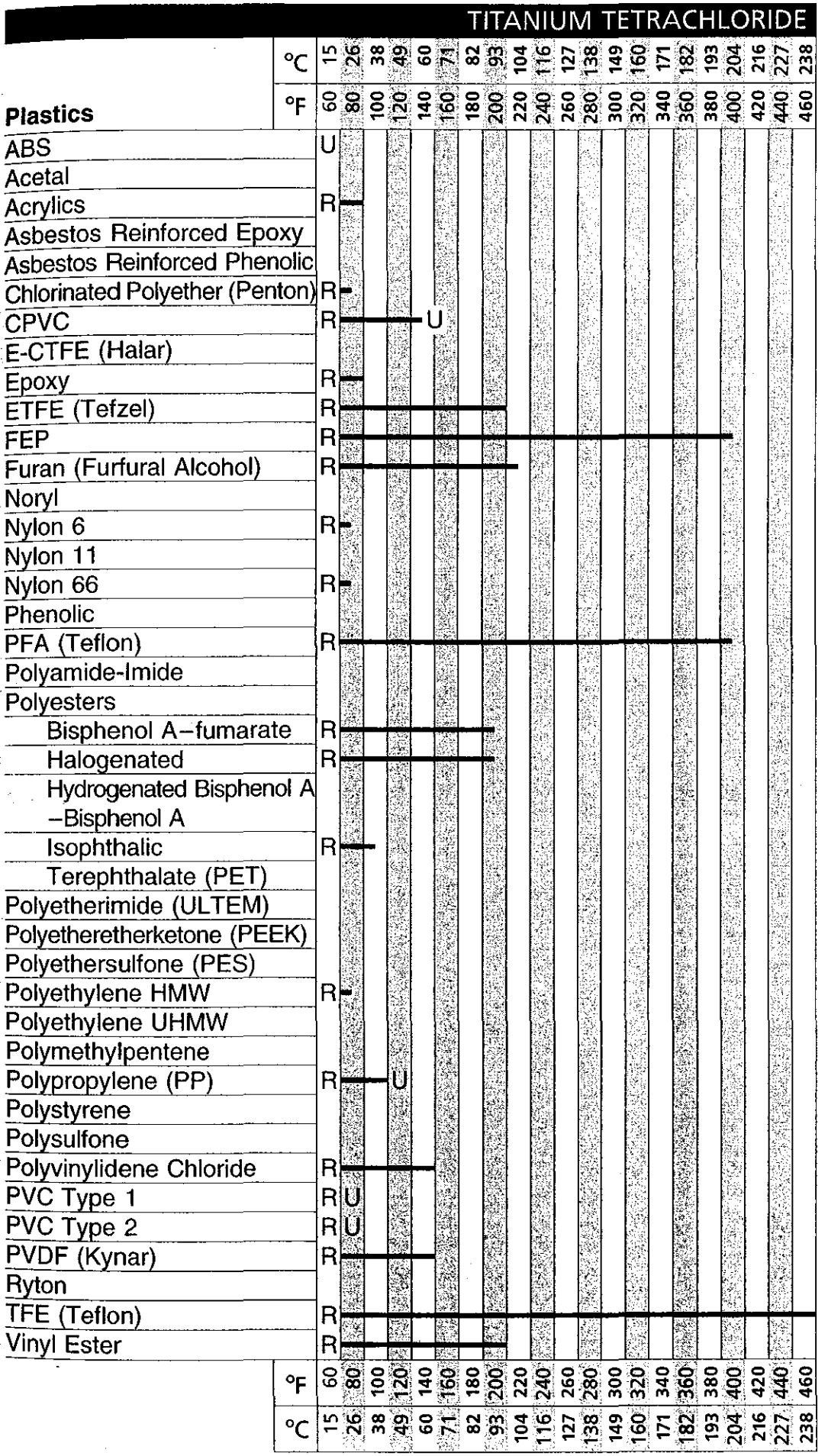
TITANIUM TETRACHLORIDE



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TITANIUM TETRACHLORIDE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
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Chemraz (FPM)	U																					
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																					
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)	U																					
Ethylene-Propylene Terpolymer (EPT)	U																					
FKM (Viton A)	R																					
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)	U																					
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)	U																					
Neoprene GR-M (CR)	U																					
Nitrile Buna-N (NBR)	R	U																				
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers	U																					
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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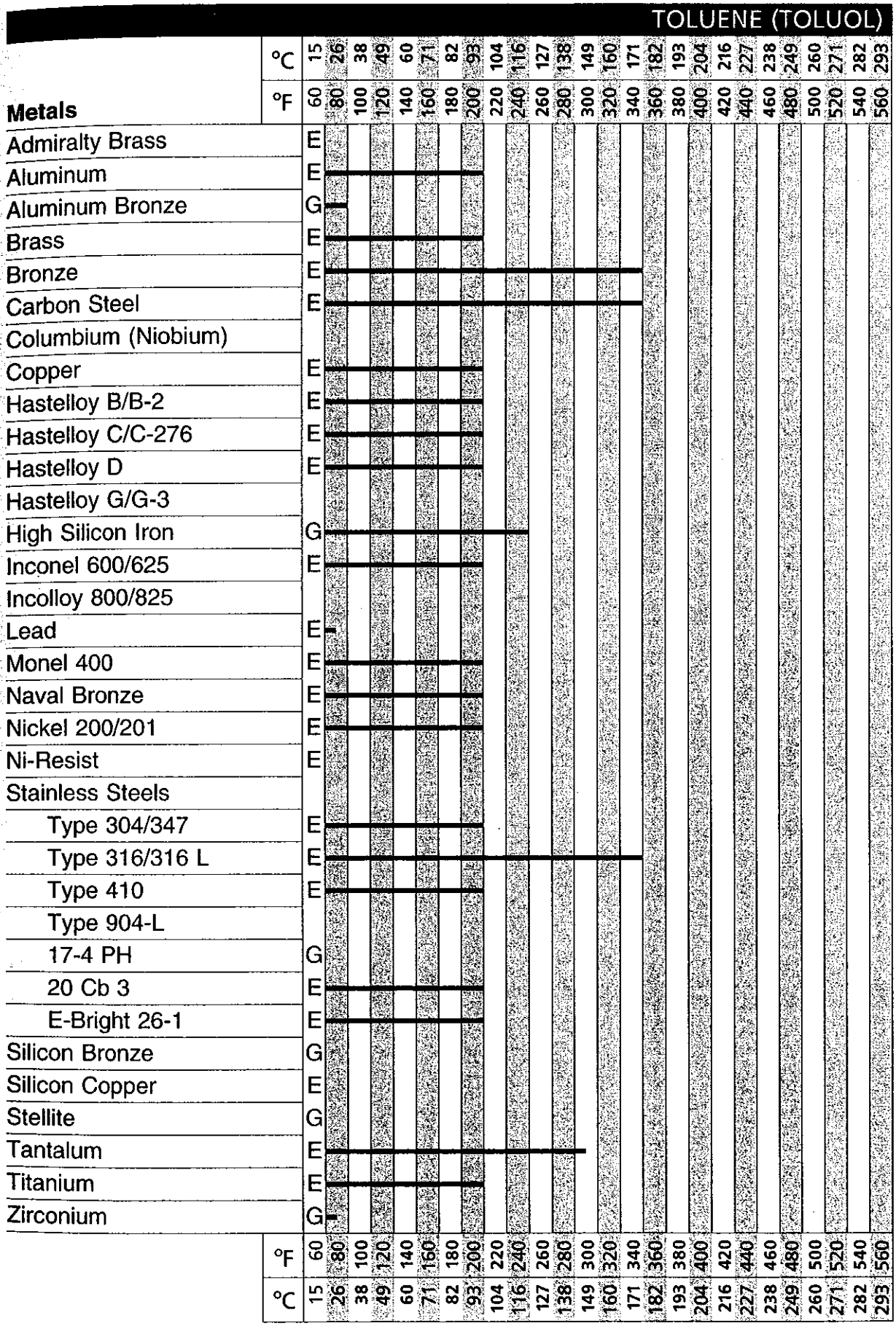

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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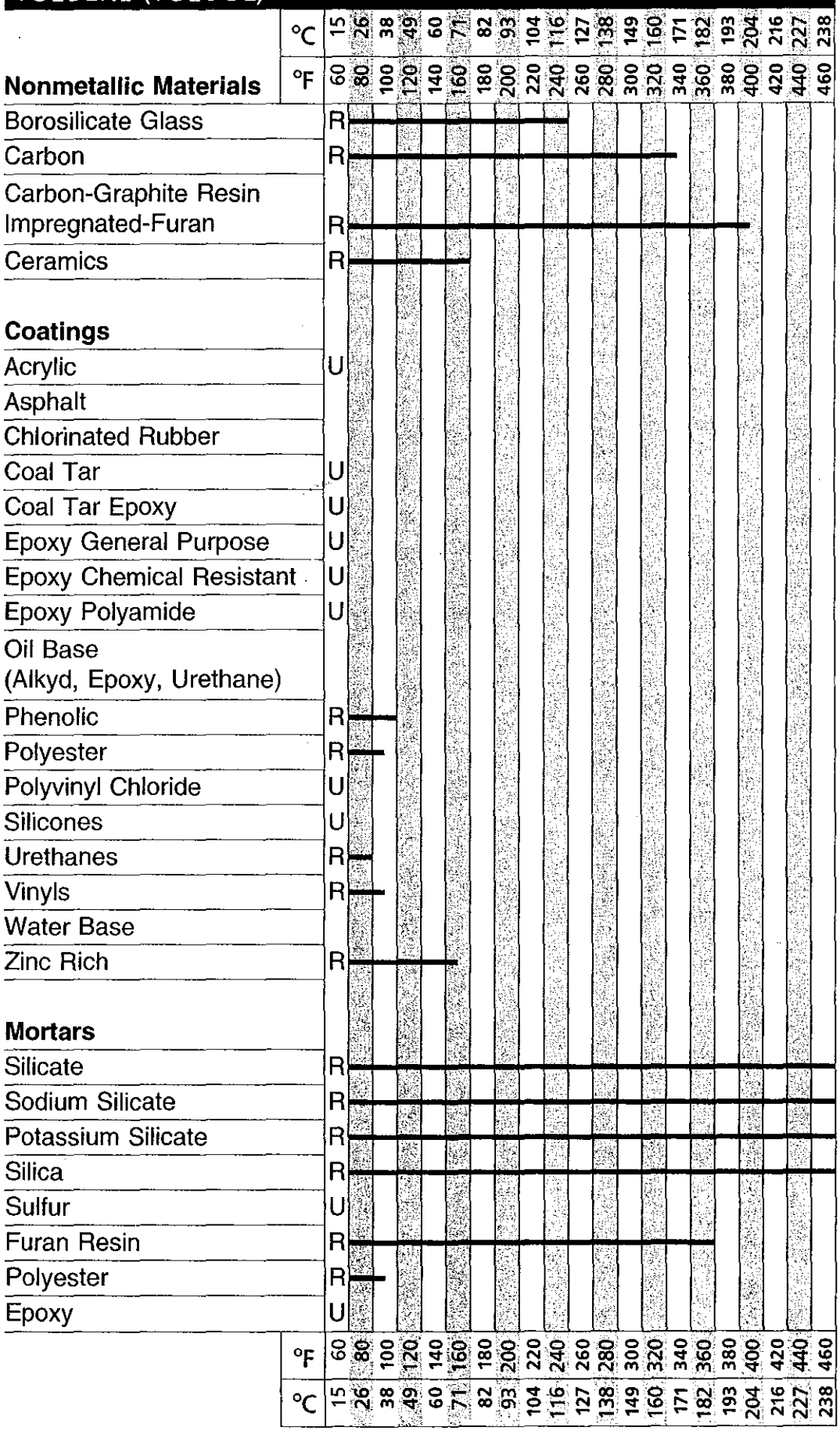
TOLUENE (TOLUOL)



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TOLUENE (TOLUOL)

Plastics	°C	°F
ABS	U	
Acetal	U	
Acrylics	U	
Asbestos Reinforced Epoxy	R	
Asbestos Reinforced Phenolic	R	
Chlorinated Polyether (Penton)	R	
CPVC	U	
E-CTFE (Halar)	R	
Epoxy	R	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)	R	
Noryl	U	
Nylon 6	R	
Nylon 11	R	
Nylon 66	R	
Phenolic	R	
PFA (Teflon)	R	
Polyamide-Imide	R	
Polyesters		
Bisphenol A–fumarate	U	
Halogenated	R	
Hydrogenated Bisphenol A –Bisphenol A	R	
Isophthalic	R	
Terephthalate (PET)	R	
Polyetherimide (ULTEM)	R	
Polyetheretherketone (PEEK)	R	
Polyethersulfone (PES)	R	
Polyethylene HMW	U	
Polyethylene UHMW	U	
Polymethylpentene	U	
Polypropylene (PP)	R	
Polystyrene	U	
Polysulfone	U	
Polyvinylidene Chloride	R	
PVC Type 1	U	
PVC Type 2	U	
PVDF (Kynar)	R	
Ryton	R	
TFE (Teflon)	R	
Vinyl Ester	R	

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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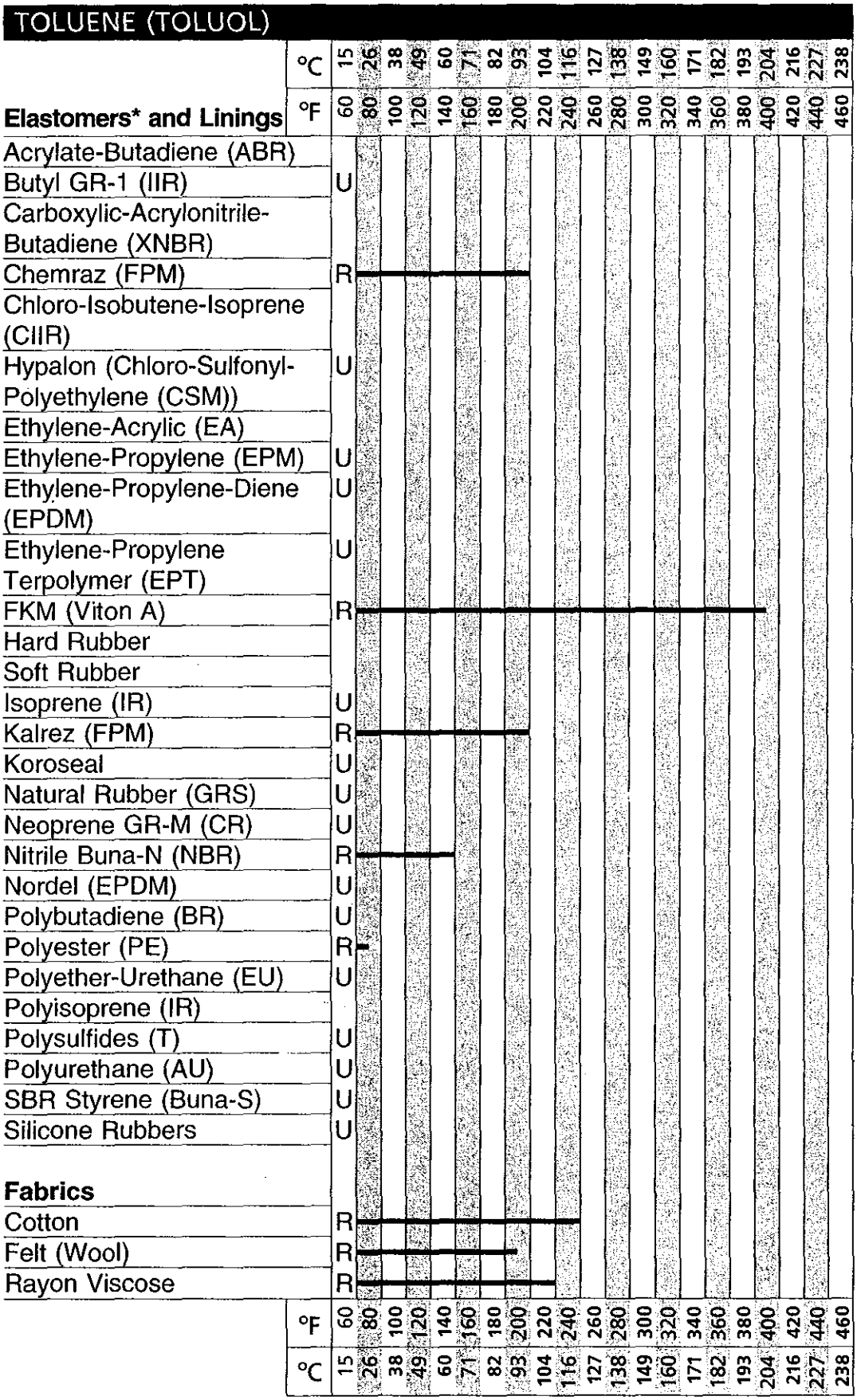
TOLUENE (TOLUOL)



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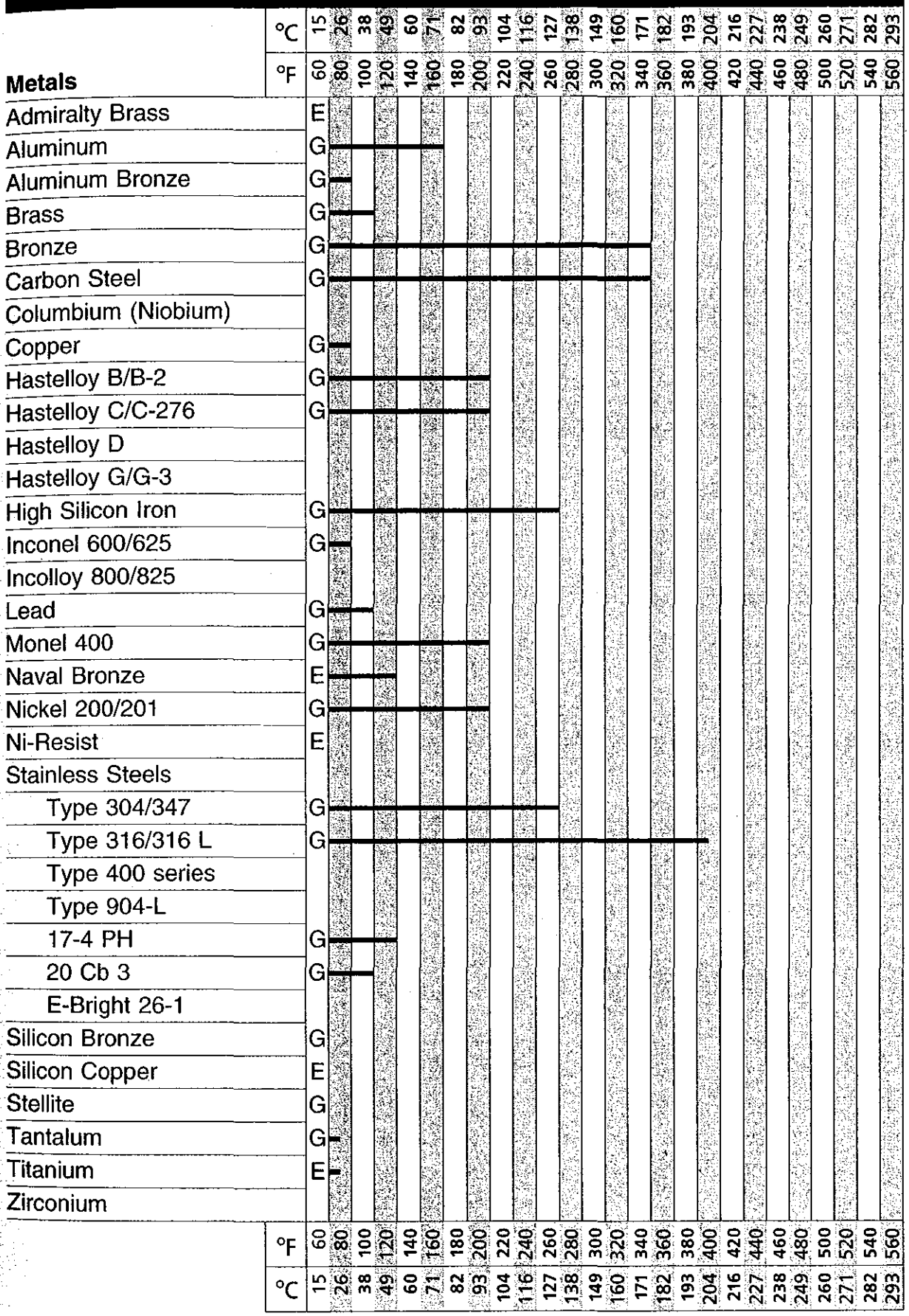
TOLUENE-KEROSENE 25–75%



FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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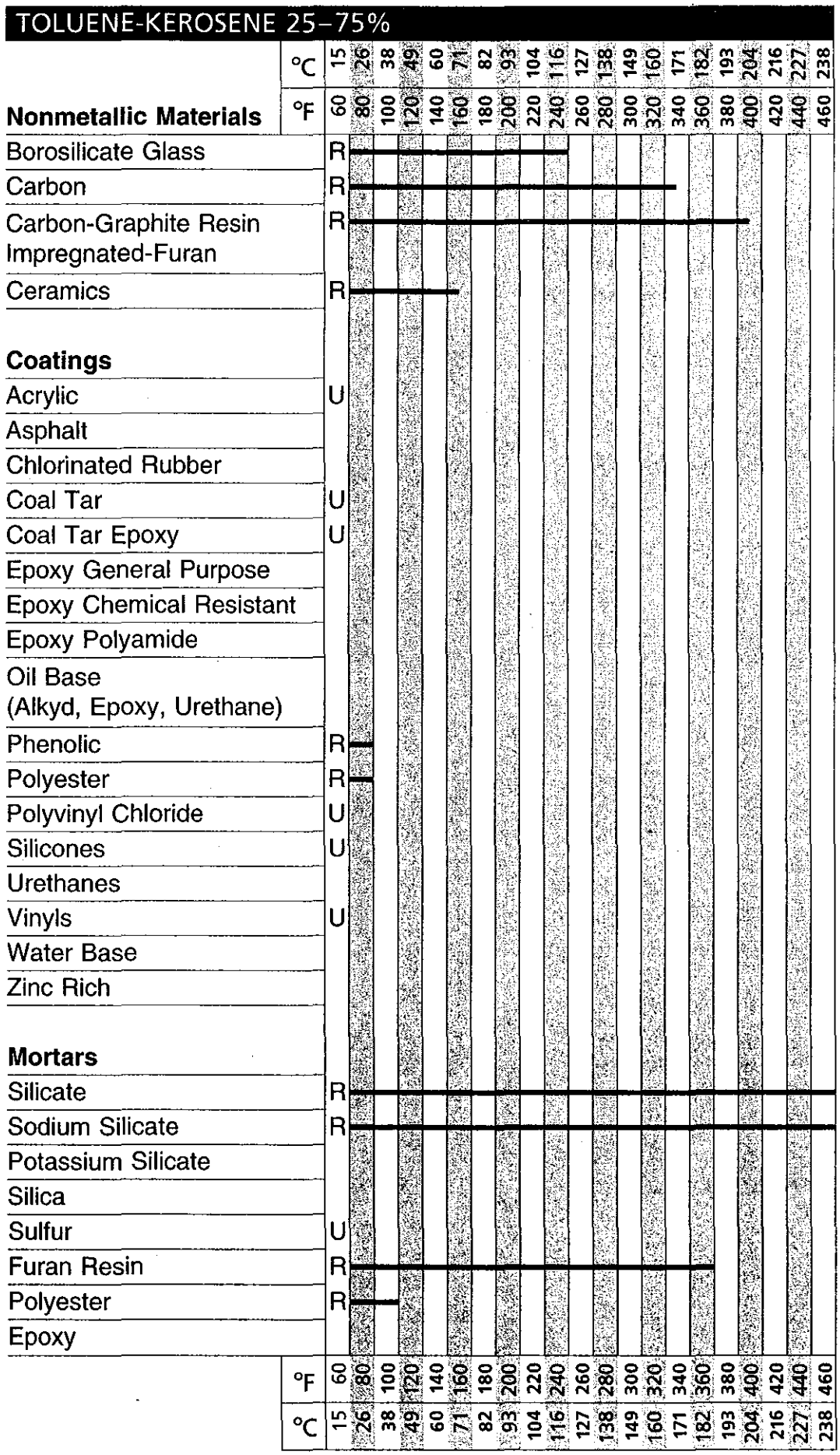
TOLUENE-KEROSENE 25–75%



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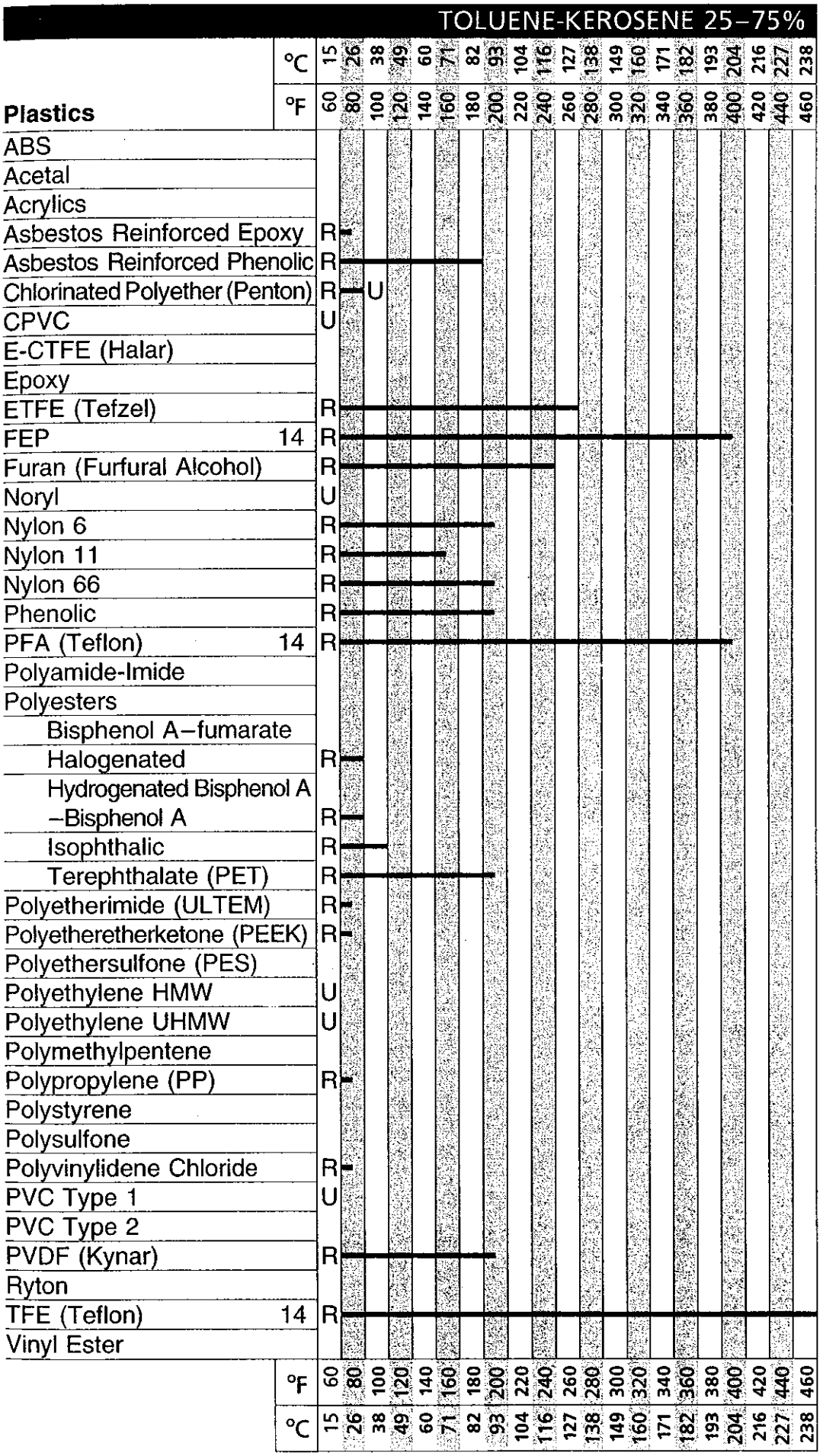

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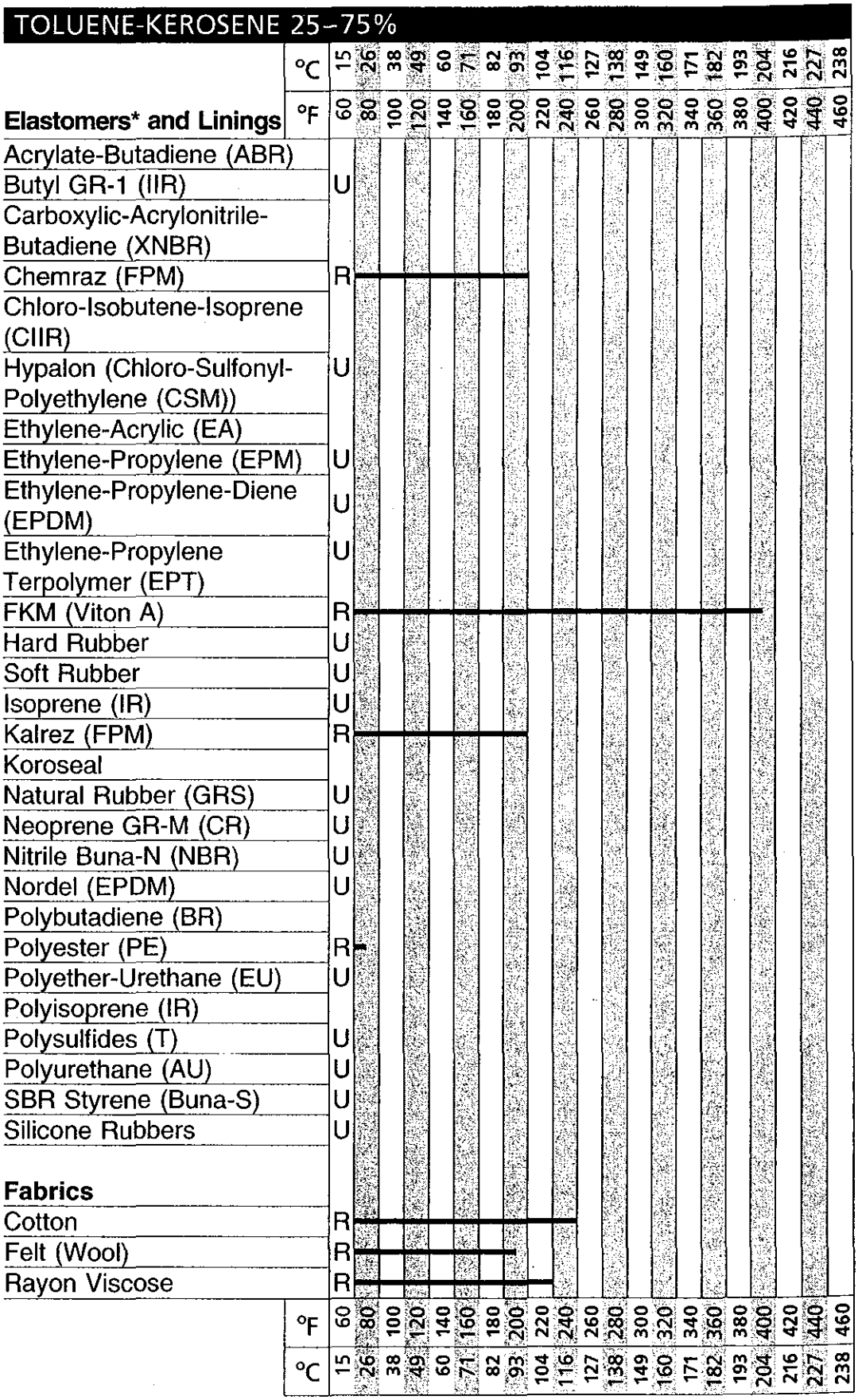
TOLUENE-KEROSENE 25–75%



*See also Nylon 11 under PLASTICS

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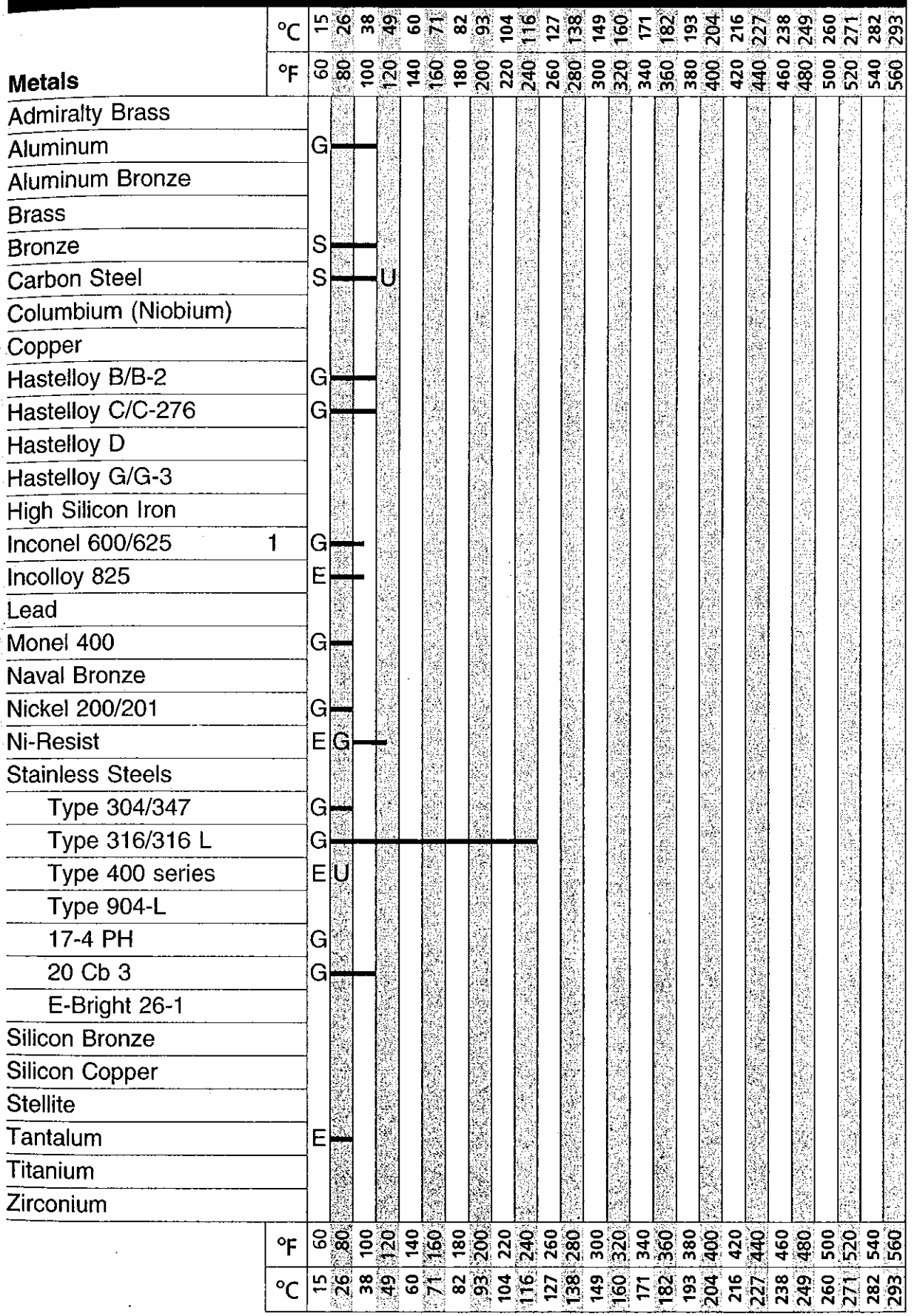

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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U = Unsatisfactory

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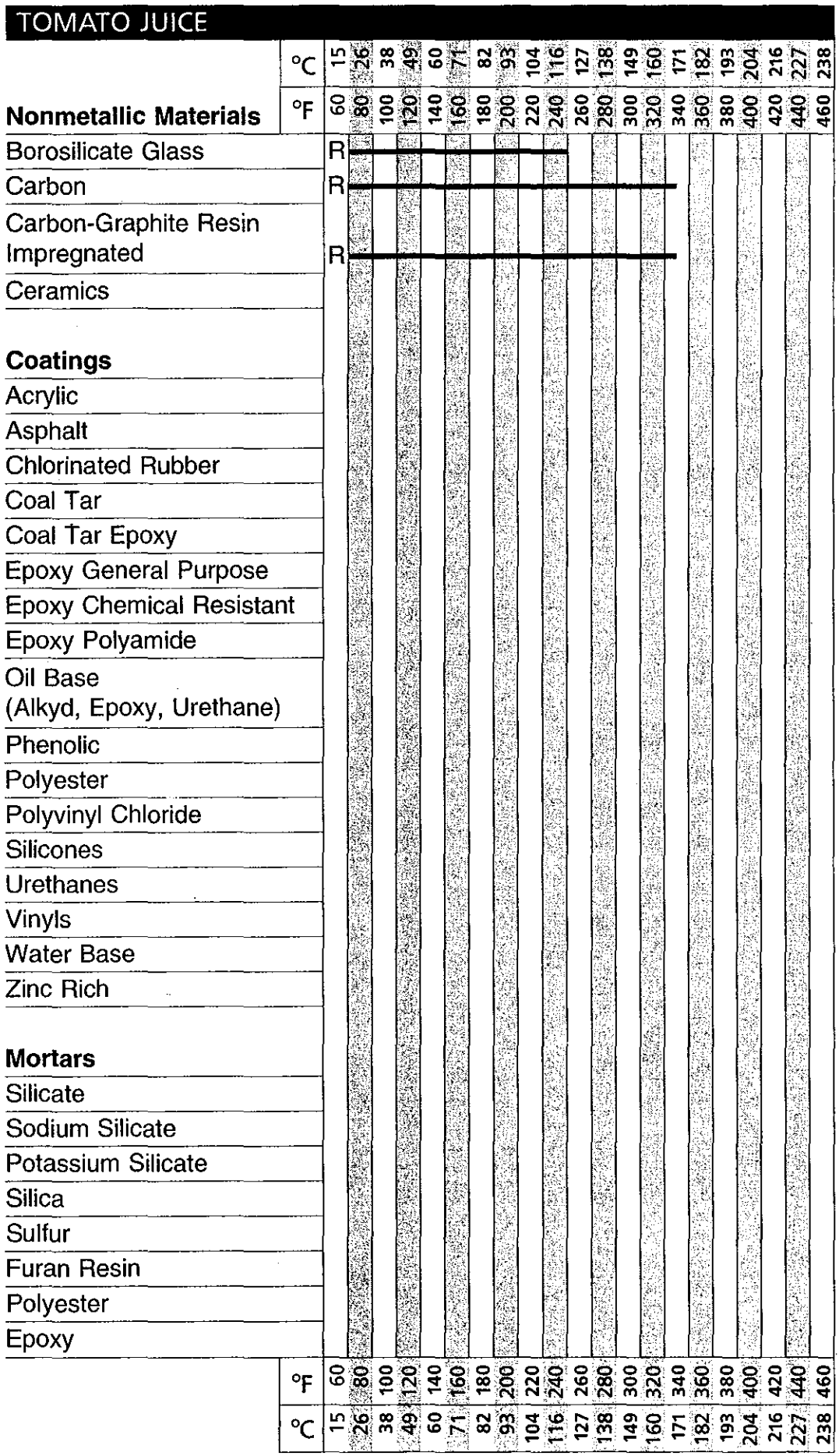
TOMATO JUICE



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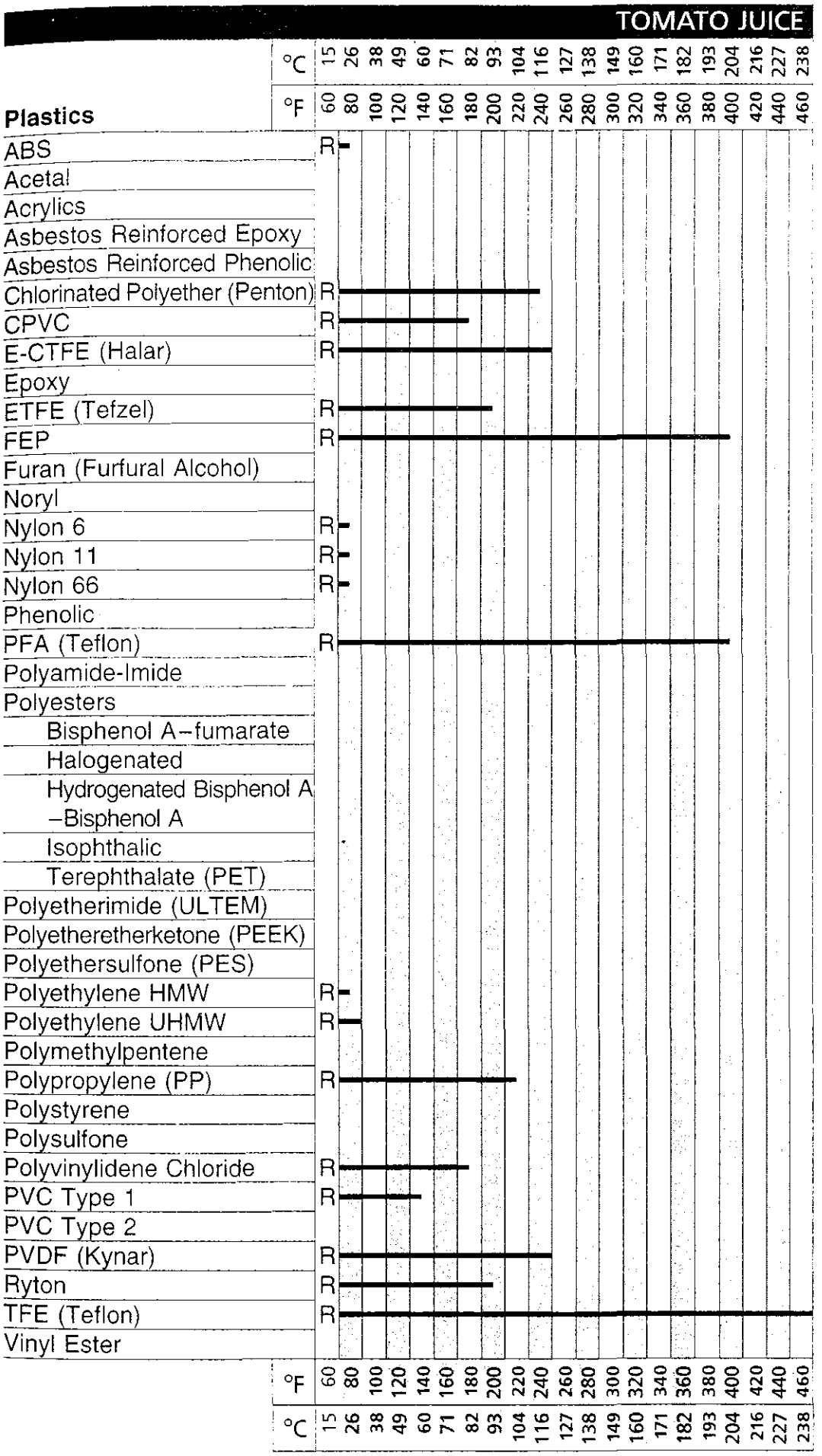

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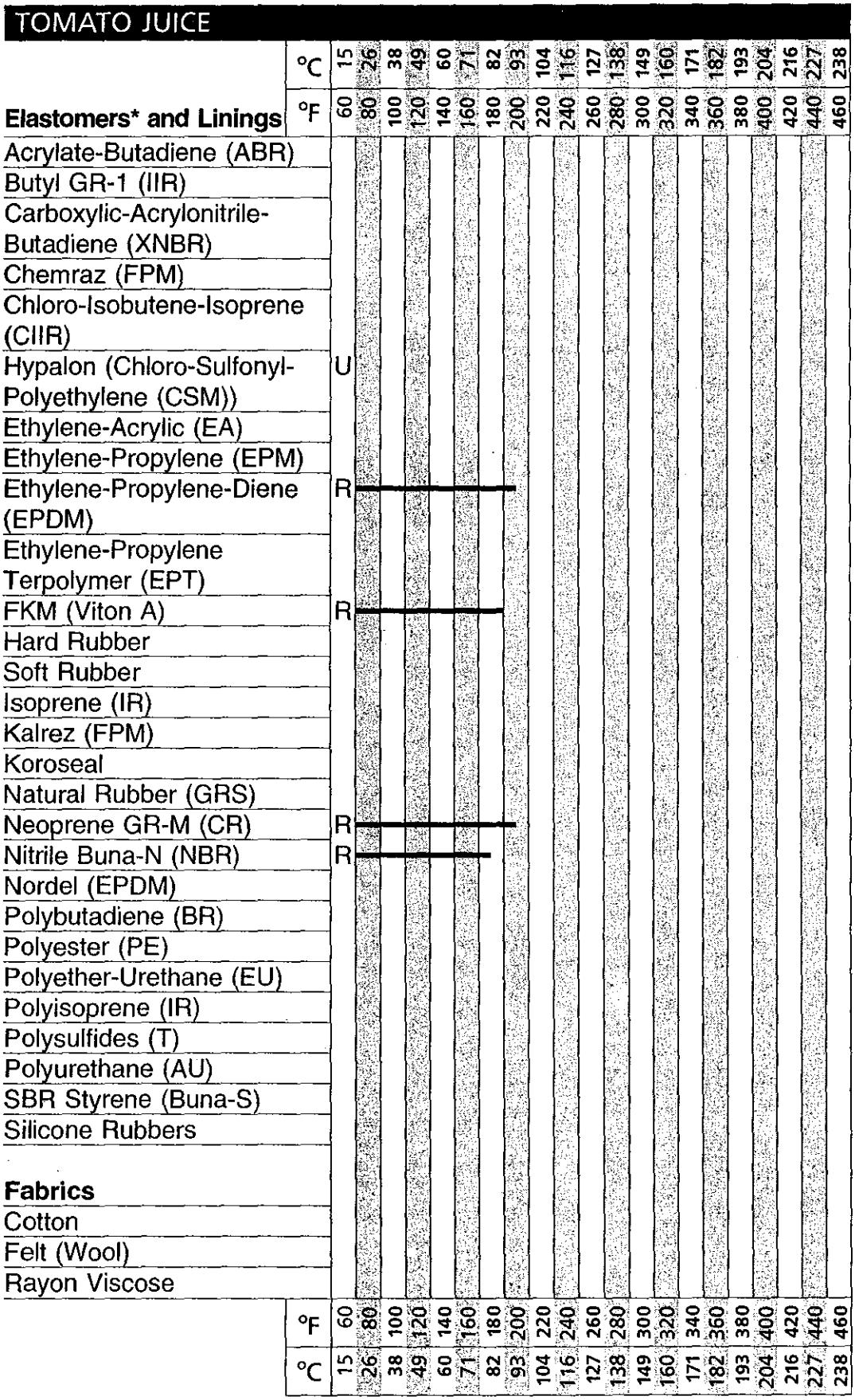
TOMATO JUICE



*See also Nylon 11 under PLASTICS

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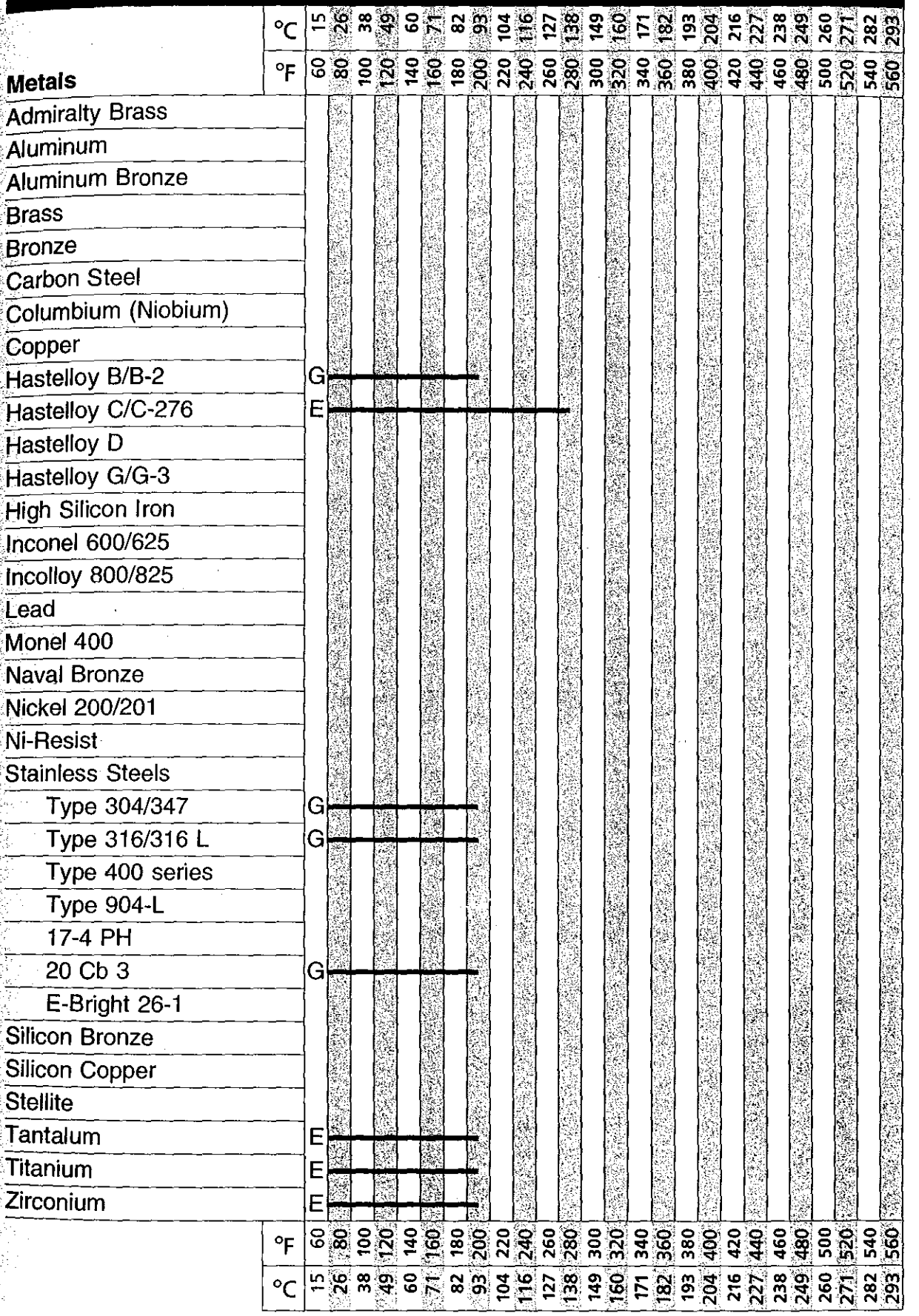

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TOXAPHENE-XYLENE 10–90%

Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Borosilicate Glass																						
Carbon	R																					
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy	U																					
Epoxy General Purpose	U																					
Epoxy Chemical Resistant	U																					
Epoxy Polyamide	U																					
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride	U																					
Silicones																						
Urethanes																						
Vinyls	U																					
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur	U																					
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TOXAPHENE-XYLENE 10–90%

Plastics	°C	°F
ABS	U	
Acetal		
Acrylics		
Asbestos Reinforced Epoxy	U	
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)	R	U
CPVC	U	
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP	R	
Furan (Furfural Alcohol)	R	
Noryl	U	
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated	R	
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic	U	
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	U	
Polyethylene UHMW	U	
Polymethylpentene		
Polypropylene (PP)	R	U
Polystyrene		
Polysulfone	U	
Polyvinylidene Chloride	R	
PVC Type 1	U	
PVC Type 2	U	
PVDF (Kynar)		
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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TOXAPHENE-XYLENE 10–90%

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)	U																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)	U																				
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	R																				
Hard Rubber	U																				
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal	U																				
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)	U																				
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)	U																				
SBR Styrene (Buna-S)	U																				
Silicone Rubbers	U																				
Fabrics																					
Cotton	R																				
Felt (Wool)	R																				
Rayon Viscose	R																				
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G																									
Aluminum Bronze																											
Brass		G																									
Bronze		G																									
Carbon Steel		G																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2		G																									
Hastelloy C/C-276		G																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400		G																									
Naval Bronze		E																									
Nickel 200/201		G																									
Ni-Resist																											
Stainless Steels																											
Type 304/347		G																									
Type 316/316 L		G																									
Type 400 series																											
Type 904-L																											
17-4 PH		G																									
20 Cb 3		G																									
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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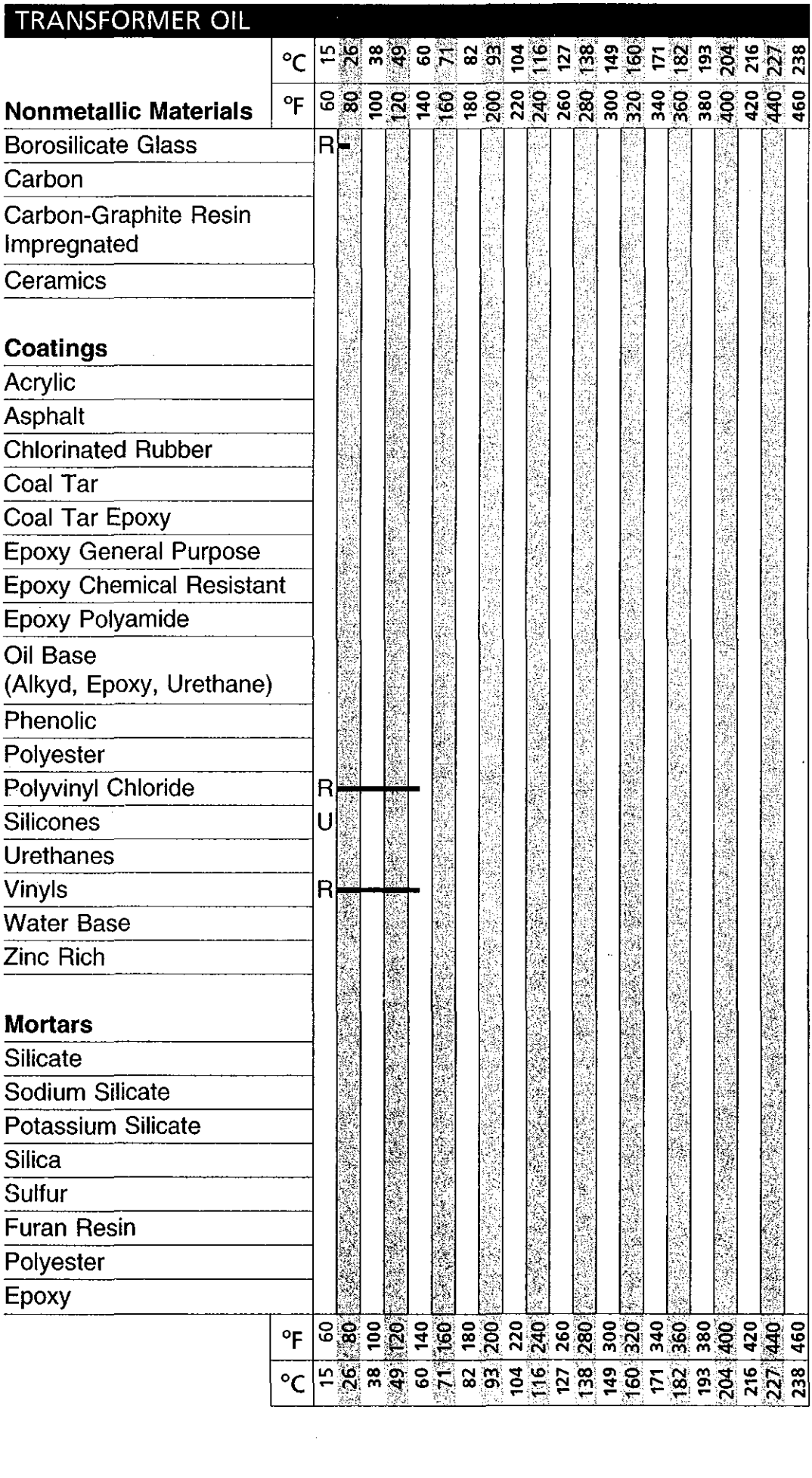

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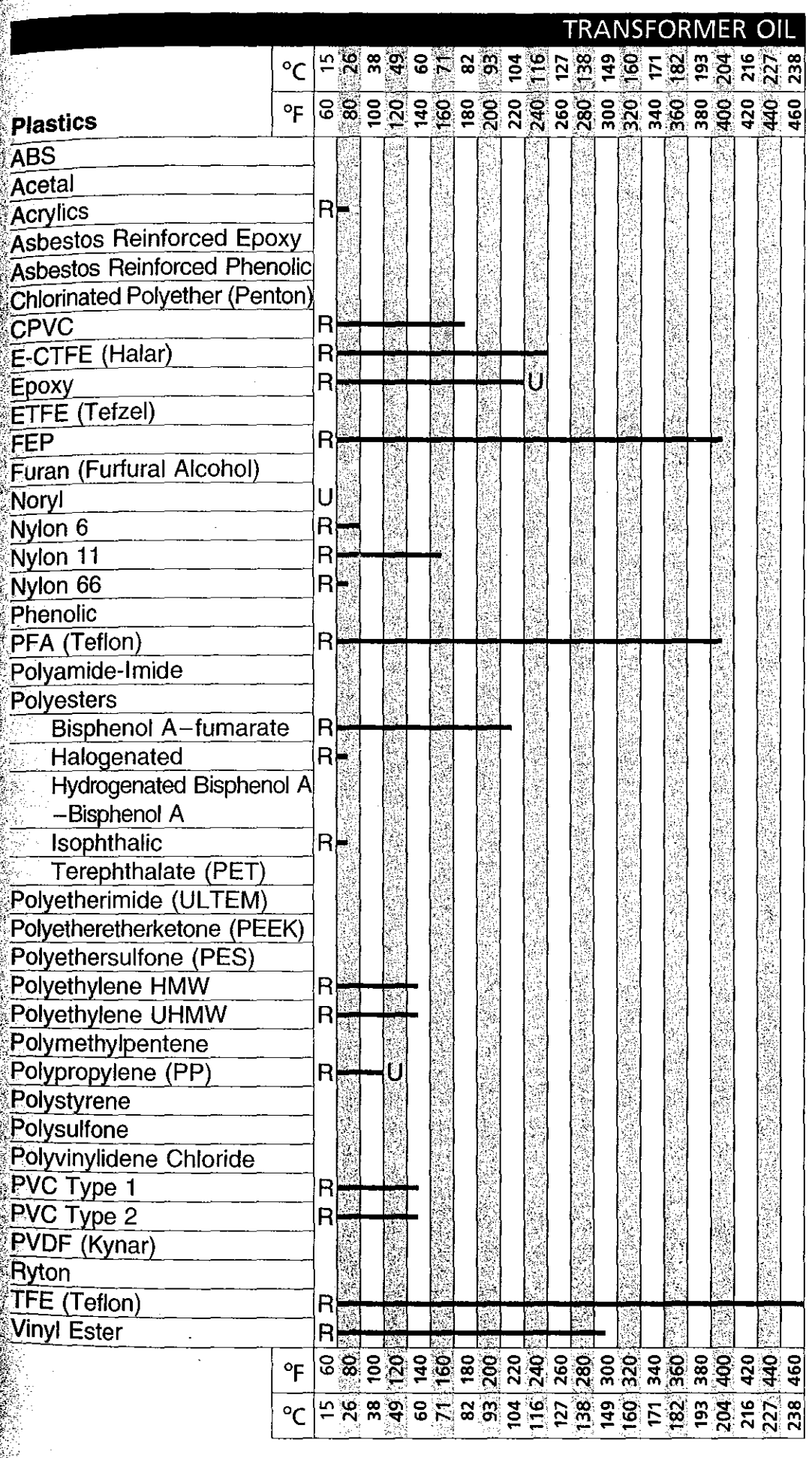

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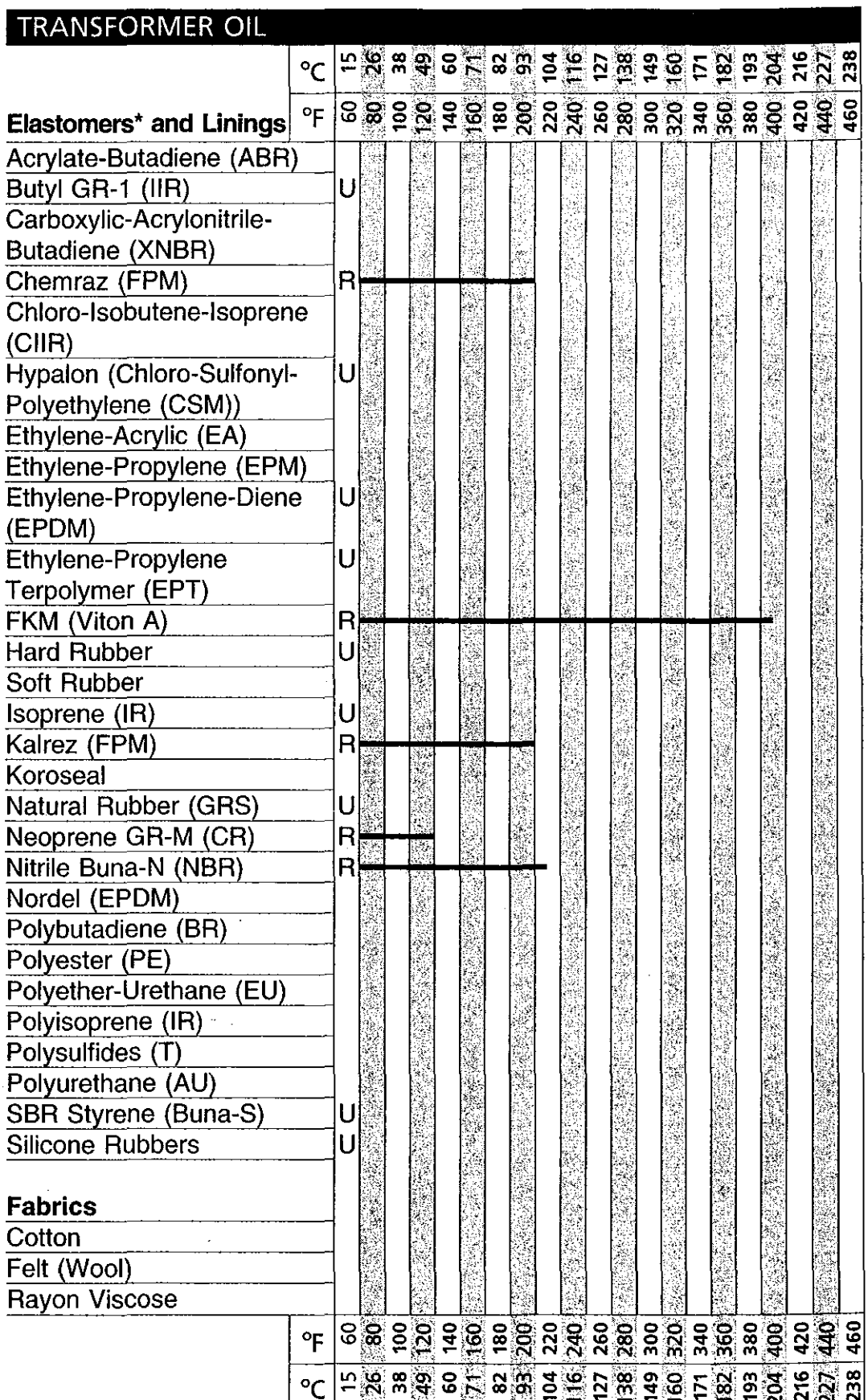

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G																									
Aluminum Bronze																											
Brass																											
Bronze		G																									
Carbon Steel		G																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276		G																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400		G																									
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L		G																									
Type 400 series																											
Type 904-L																											
17-4 PH		G																									
20 Cb 3		G																									
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS
E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year
S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS
R = Resistant
U = Unsatisfactory

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TRANSFORMER OIL DTE/30

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TRANSFORMER OIL DTE/30

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC	R	
E-CTFE (Halar)	R	
Epoxy		
ETFE (Tefzel)		
FEP		
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)		
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	R	
Polyethylene UHMW	R	
Polymethylpentene		
Polypropylene (PP)	R	
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1	R	
PVC Type 2		
PVDF (Kynar)		
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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TRANSFORMER OIL DTE/30

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)																					
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)																					
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	R																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	
°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	

*See also Nylon 11 under PLASTICS

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TRIBUTYL PHOSPHATE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		G	—	—	—																						
Aluminum Bronze																											
Brass																											
Bronze		G	—	—	—																						
Carbon Steel		G	—																								
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2		G	—	—	—																						
Hastelloy C/C-276		G	—	—	—																						
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400		G	—	—	—																						
Naval Bronze																											
Nickel 200/201		G	—	—	—																						
Ni-Resist																											
Stainless Steels																											
Type 304/347		G	—	—	—	—	—	—	—	—	—																
Type 316/316 L		G	—	—	—																						
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3		G	—	—	—																						
E-Bright 26-1																											
Silicon Bronze																											
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Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TRIBUTYL PHOSPHATE

Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Borosilicate Glass		R																				
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride		U																				
Silicones		U																				
Urethanes																						
Vinyls		U																				
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TRIBUTYL PHOSPHATE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS		U																				
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)		R																				
CPVC		U																				
E-CTFE (Halar)		R	U																			
Epoxy																						
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6		R																				
Nylon 11																						
Nylon 66		R																				
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate		U																				
Halogenated		U																				
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic		R																				
Terephthalate (PET)		U																				
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		U																				
Polyethylene UHMW		U																				
Polymethylpentene																						
Polypropylene (PP)		R				U																
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride		R																				
PVC Type 1		U																				
PVC Type 2		U																				
PVDF (Kynar)		R				U																
Ryton		R																				
TFE (Teflon)		R																				
Vinyl Ester		R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TRIBUTYL PHOSPHATE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
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Felt (Wool)																					
Rayon Viscose																					
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°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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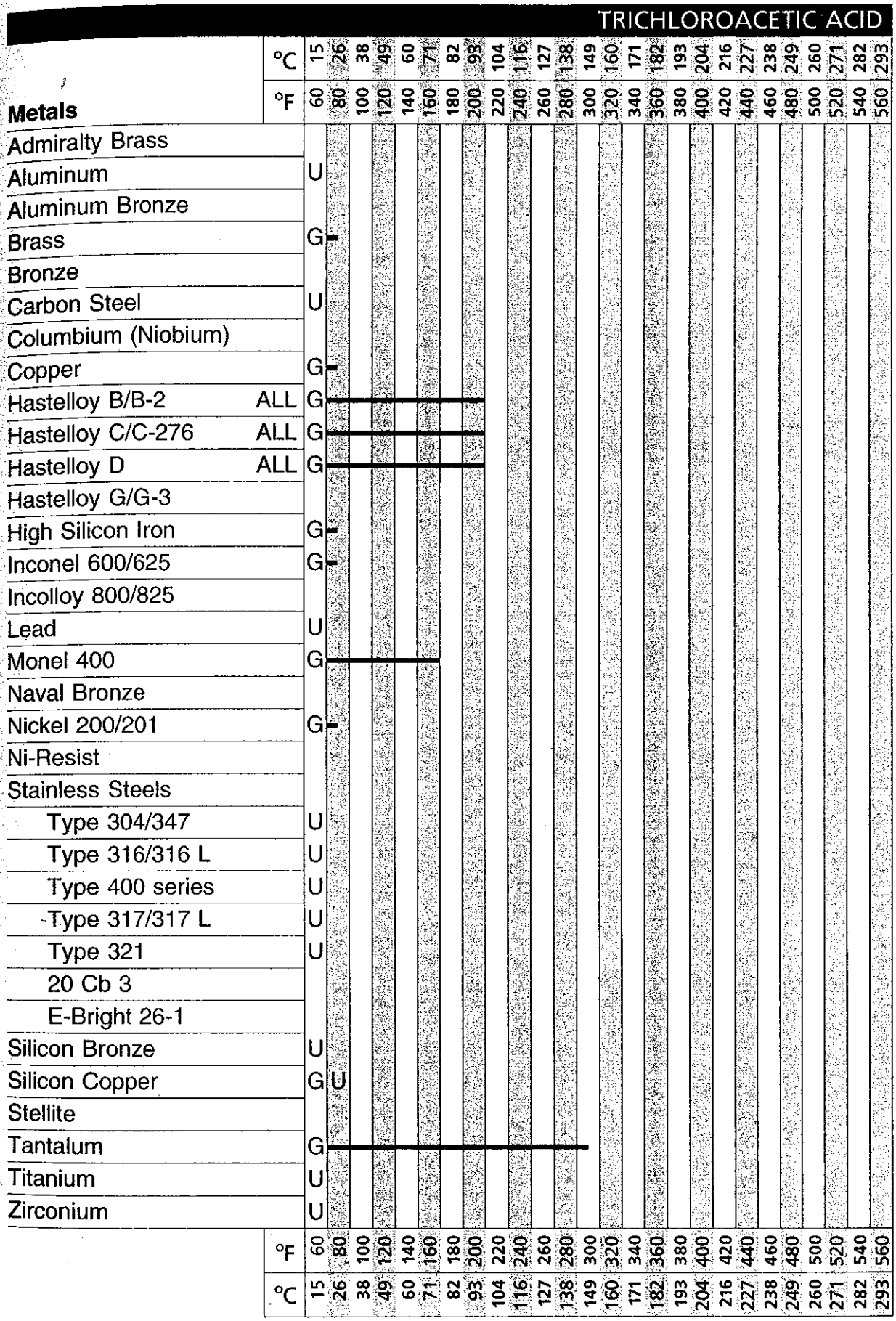

FOR METALS

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S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

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U = Unsatisfactory

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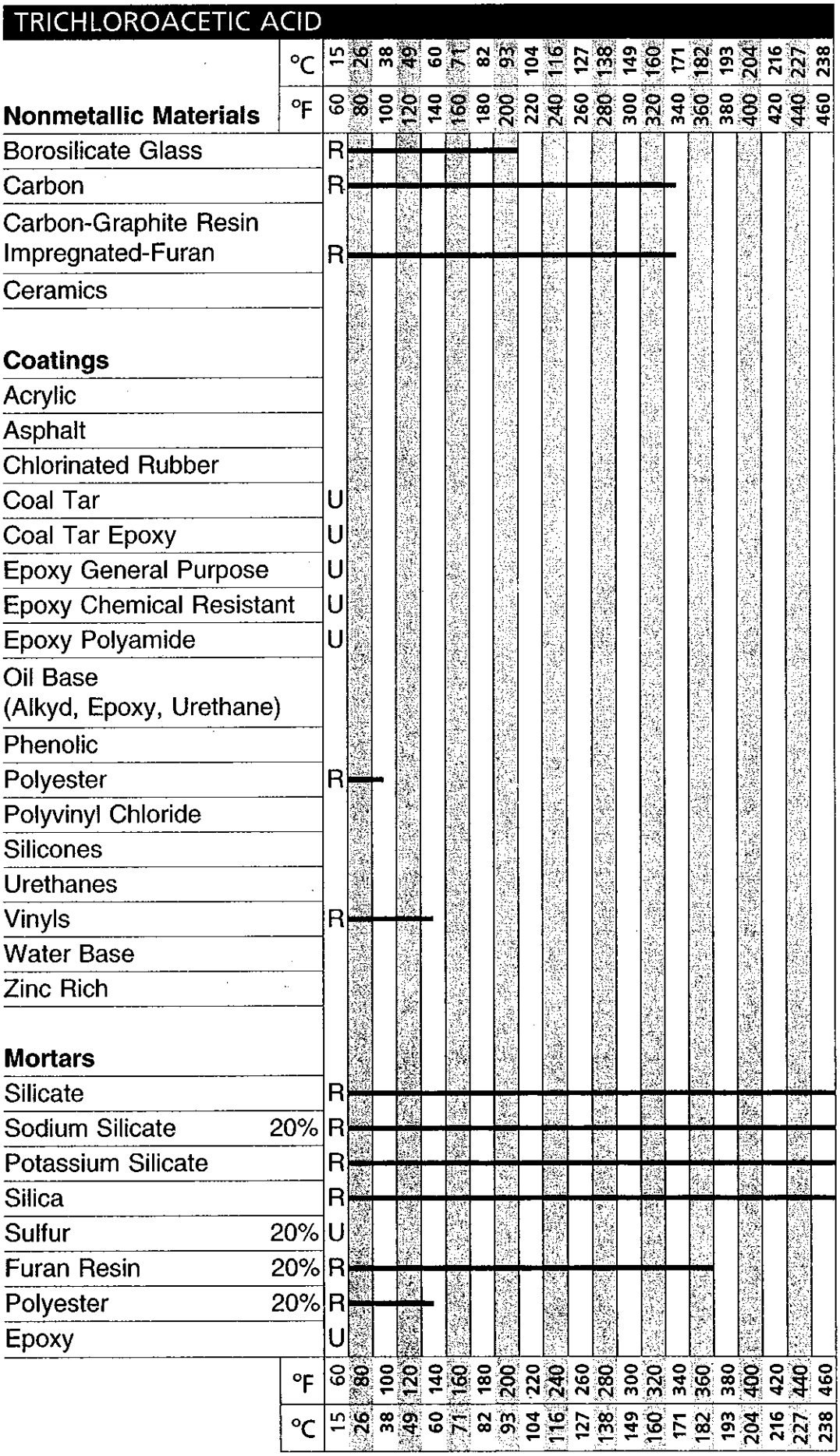
TRICHLOROACETIC ACID



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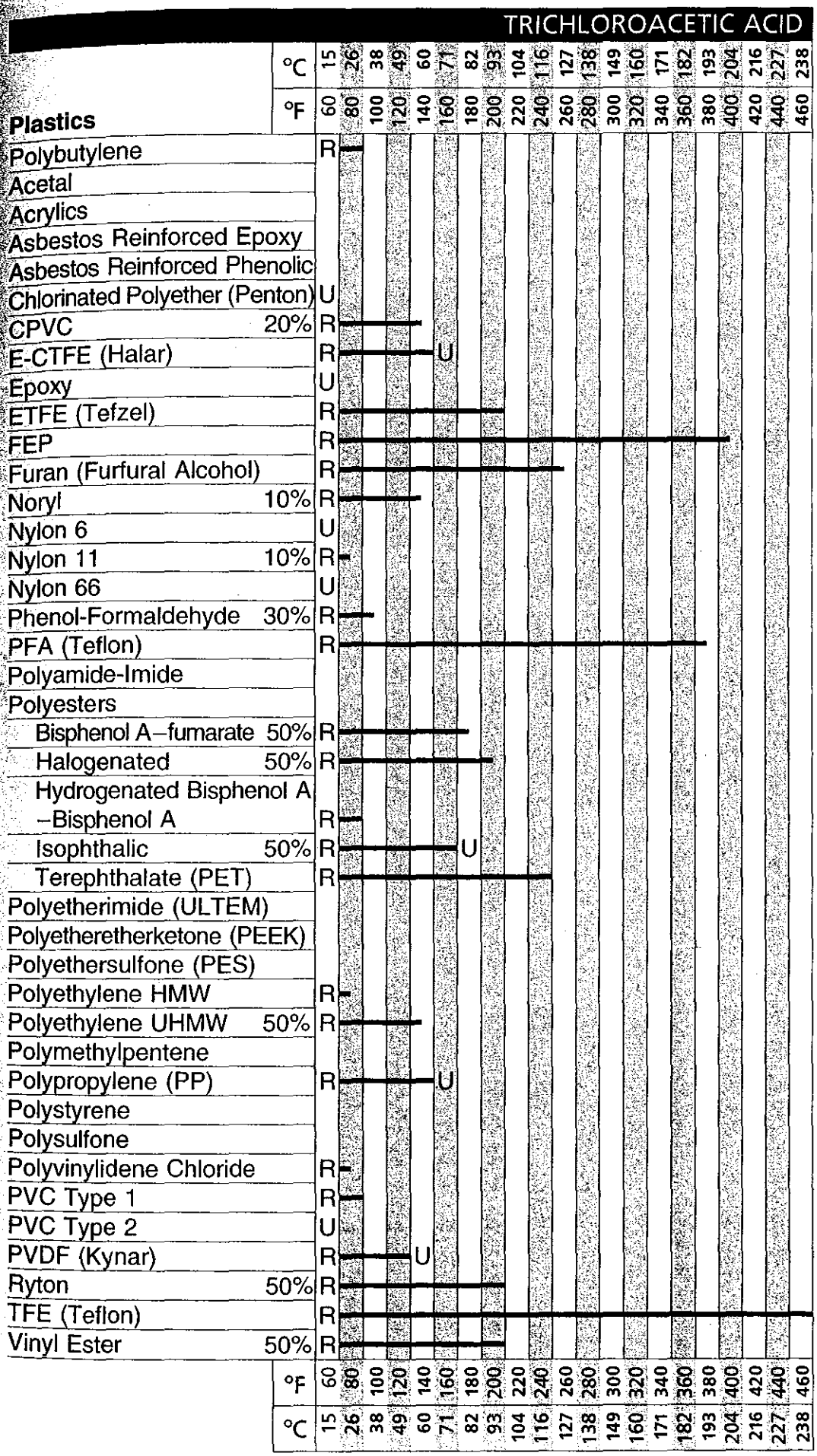
TRICHLOROACETIC ACID



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TRICHLOROACETIC ACID

Elastomers* and Linings	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)	U																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR) 10%	R																				
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	R																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	R	U																			
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	R	U																			
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton	U																				
Felt (Wool)	U																				
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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TRICHLOROACETIC ACID 2N

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass		U																									
Aluminum		U																									
Aluminum Bronze		G																									
Brass																											
Bronze																											
Carbon Steel		U																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2		G																									
Hastelloy C/C-276		G																									
Hastelloy D		G																									
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze		G																									
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		U																									
Type 316/316 L		U																									
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze		G																									
Silicon Copper		G																									
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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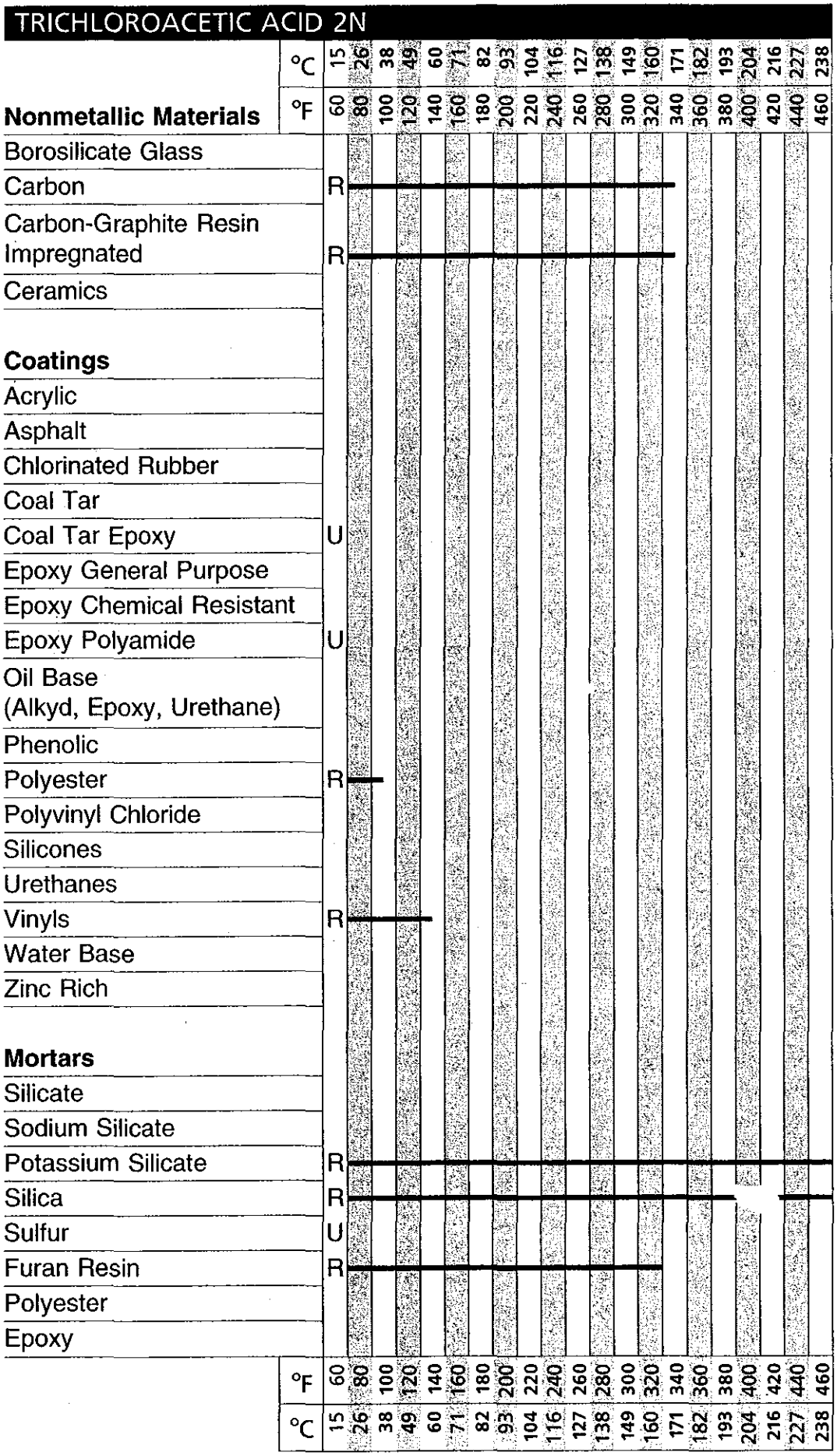
TRICHLOROACETIC ACID 2N



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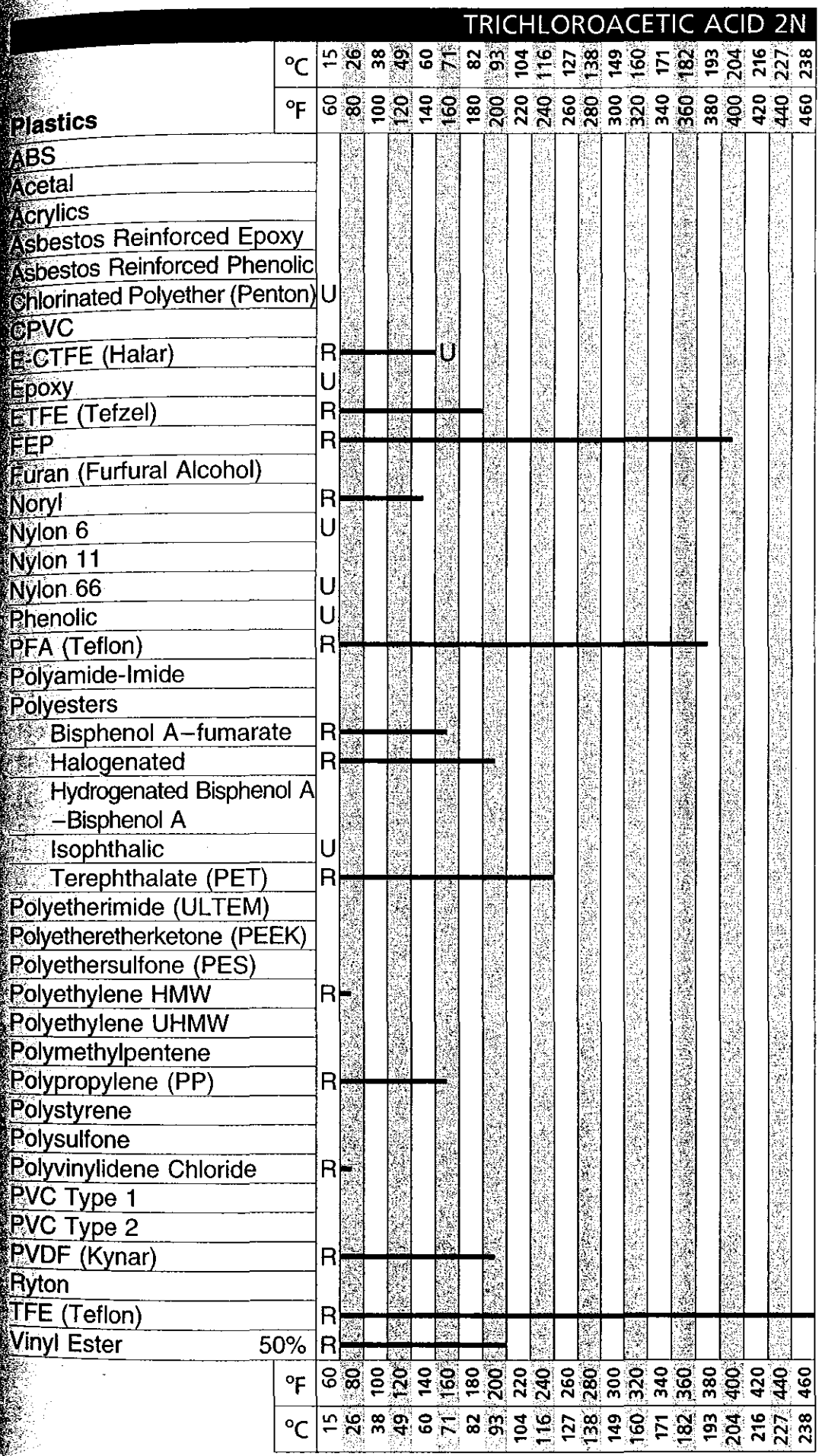
TRICHLOROACETIC ACID 2N



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TRICHLOROACETIC ACID 2N

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)	U																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	R																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	R	U																			
Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	U																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	R	U																			
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton	U																				
Felt (Wool)	U																				
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel (DRY)		G																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
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Lead																											
Monel 400																											
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Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		E																									
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Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TRICHLOROETHANE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon	R																					
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Polycarbonate		U																				
KEL-F (CTFE)		R																				
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy		R																				
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic		U																				
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		U																				
Polyethylene UHMW		U																				
Polymethylpentene		R																				
Polypropylene (PP)		U																				
Polystyrene																						
Polysulfone		U																				
Polyvinylidene Chloride		R																				
PVC Type 1		U																				
PVC Type 2		U																				
PVDF (Kynar)		R																				
Ryton		R																				
TFE (Teflon)		R																				
Vinyl Ester		U																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TRICHLOROETHANE

Elastomers* and Linings	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)	R																				
Hard Rubber	U																				
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)	U																				
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)	U																				
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers	U																				
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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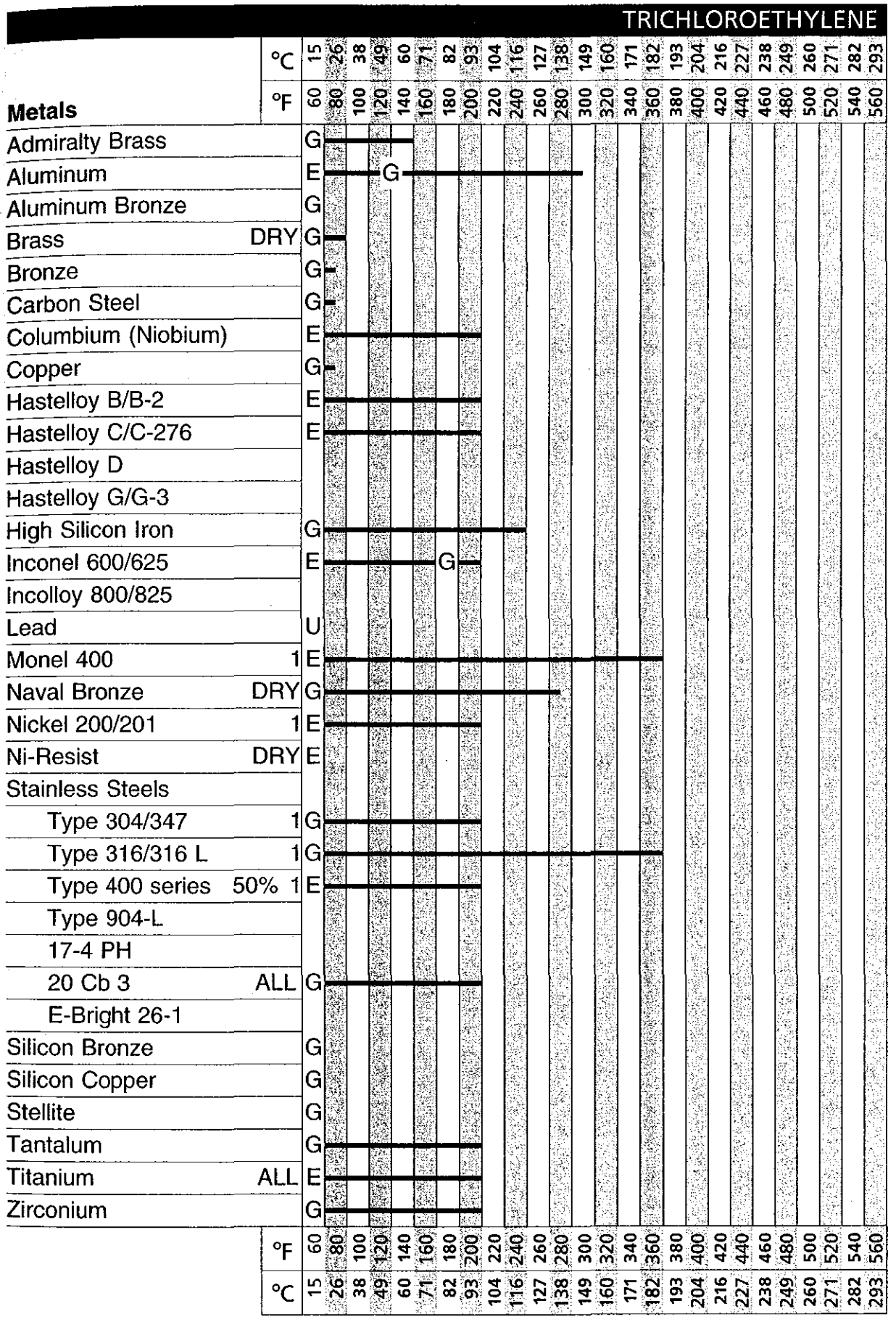

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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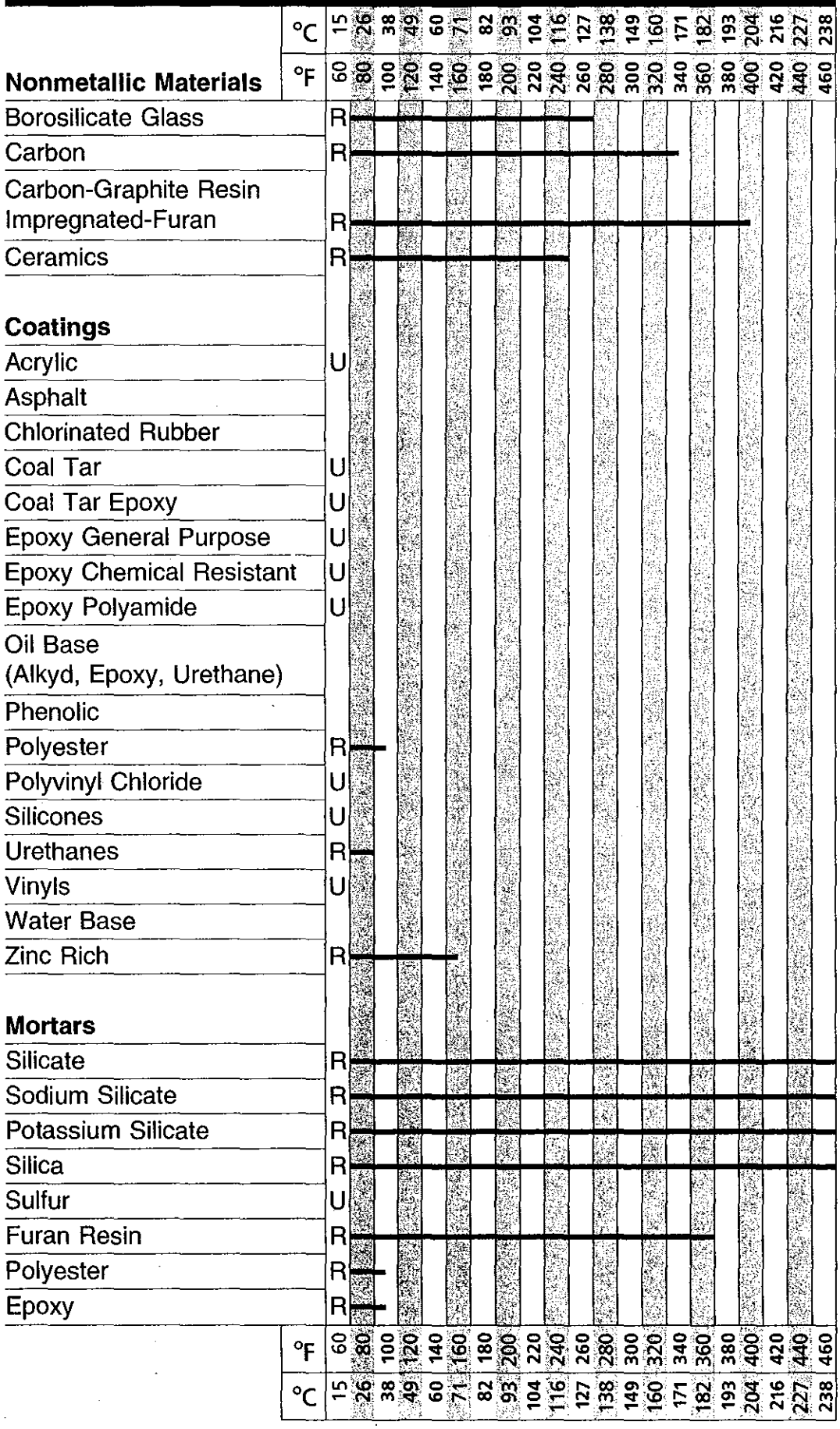
TRICHLOROETHYLENE



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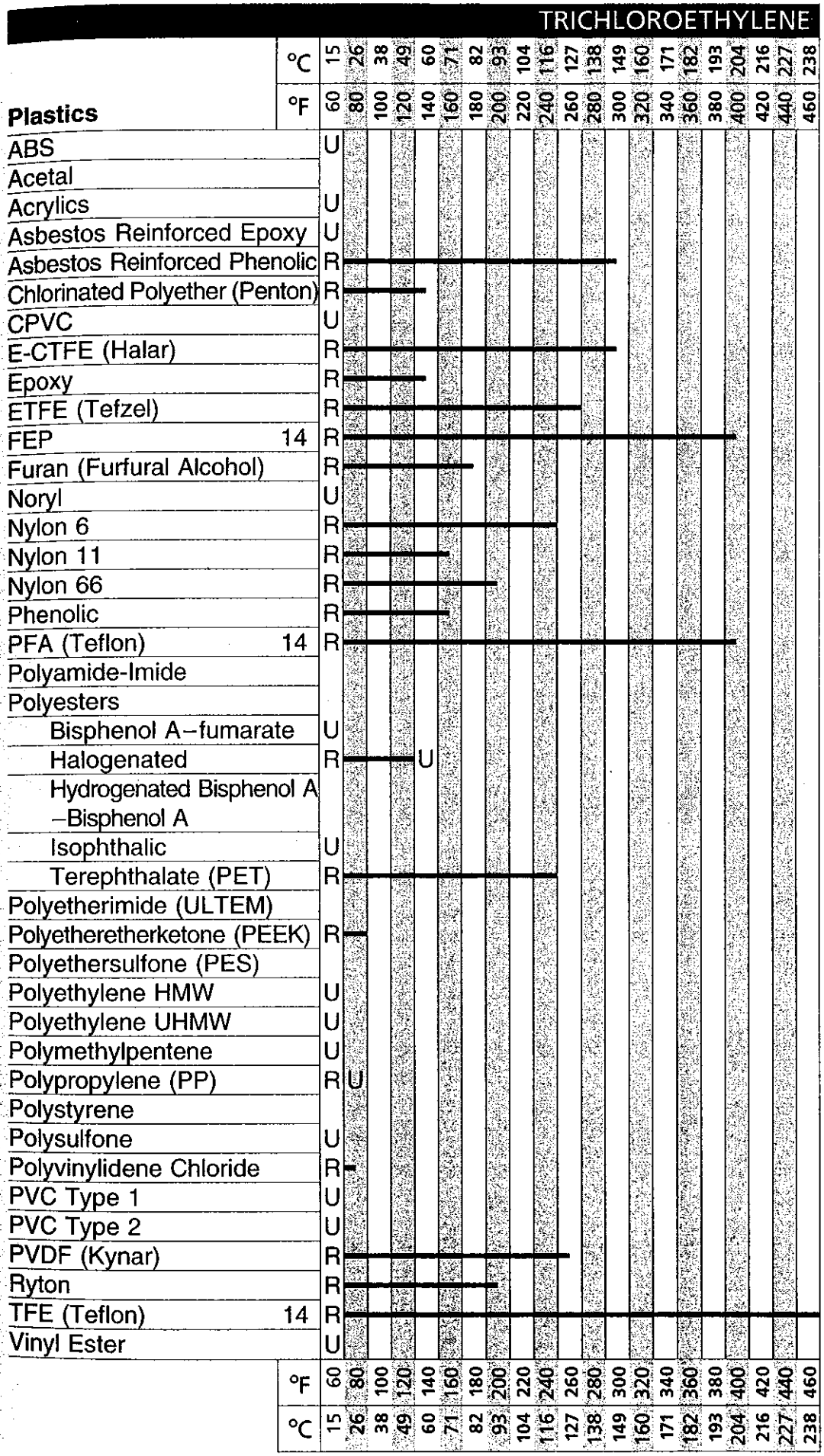
TRICHLOROETHYLENE



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TRICHLOROETHYLENE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)	U																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
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Ethylene-Propylene Terpolymer (EPT)	U																				
FKM (Viton A)	R																				
Hard Rubber	U																				
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal	U																				
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)	U																				
Polybutadiene (BR)																					
Polyester (PE)	U																				
Polyether-Urethane (EU)	U																				
Polyisoprene (IR)																					
Polysulfides (T)	U																				
Polyurethane (AU)	U																				
SBR Styrene (Buna-S)	U																				
Silicone Rubbers	U																				
Fabrics																					
Cotton	R																				
Felt (Wool)	R																				
Rayon Viscose	R																				
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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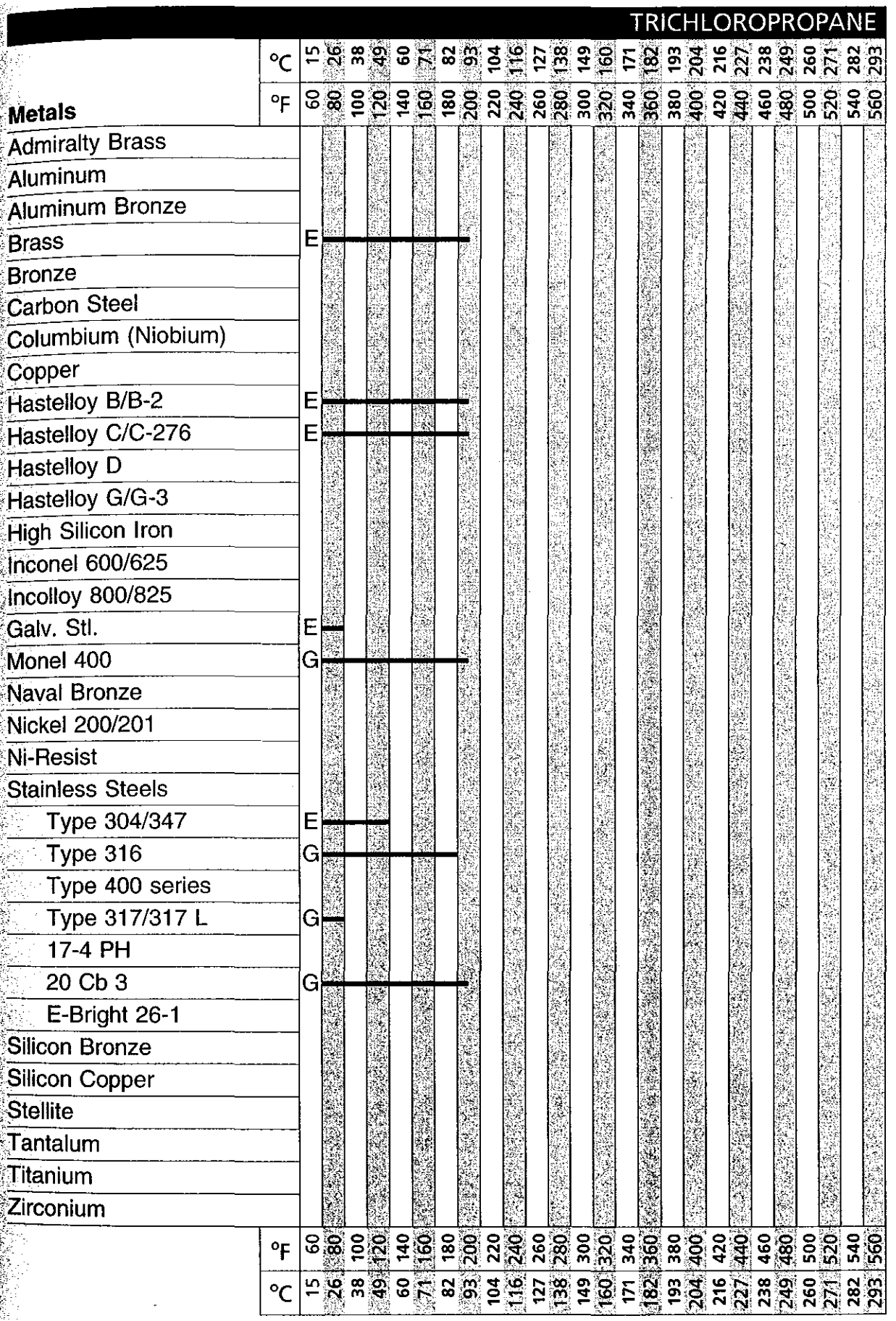

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TRICHLOROPROPANE

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																					
Carbon																					
Carbon-Graphite Resin Impregnated																					
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride																					
Silicones																					
Urethanes																					
Vinyls																					
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TRICHLOROPROPANE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP																						
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)																						
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TRICHLOROPROPANE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)		R																				
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass			U																									
Aluminum																												
Aluminum Bronze																												
Brass																												
Bronze																												
Carbon Steel			E																									
Columbium (Niobium)																												
Copper																												
Hastelloy B/B-2																												
Hastelloy C/C-276	90%		E																									
Hastelloy D																												
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625																												
Incolloy 800/825																												
Lead																												
Monel 400																												
Naval Bronze																												
Nickel 200/201																												
Ni-Resist			E																									
Stainless Steels																												
Type 304/347			G																									
Type 316/316 L			E					G																				
Type 400																												
Type 904-L																												
17-4 PH																												
20 Cb 3			E					G																				
E-Bright 26-1																												
Silicon Bronze																												
Silicon Copper																												
Stellite																												
Tantalum																												
Titanium																												
Zirconium																												
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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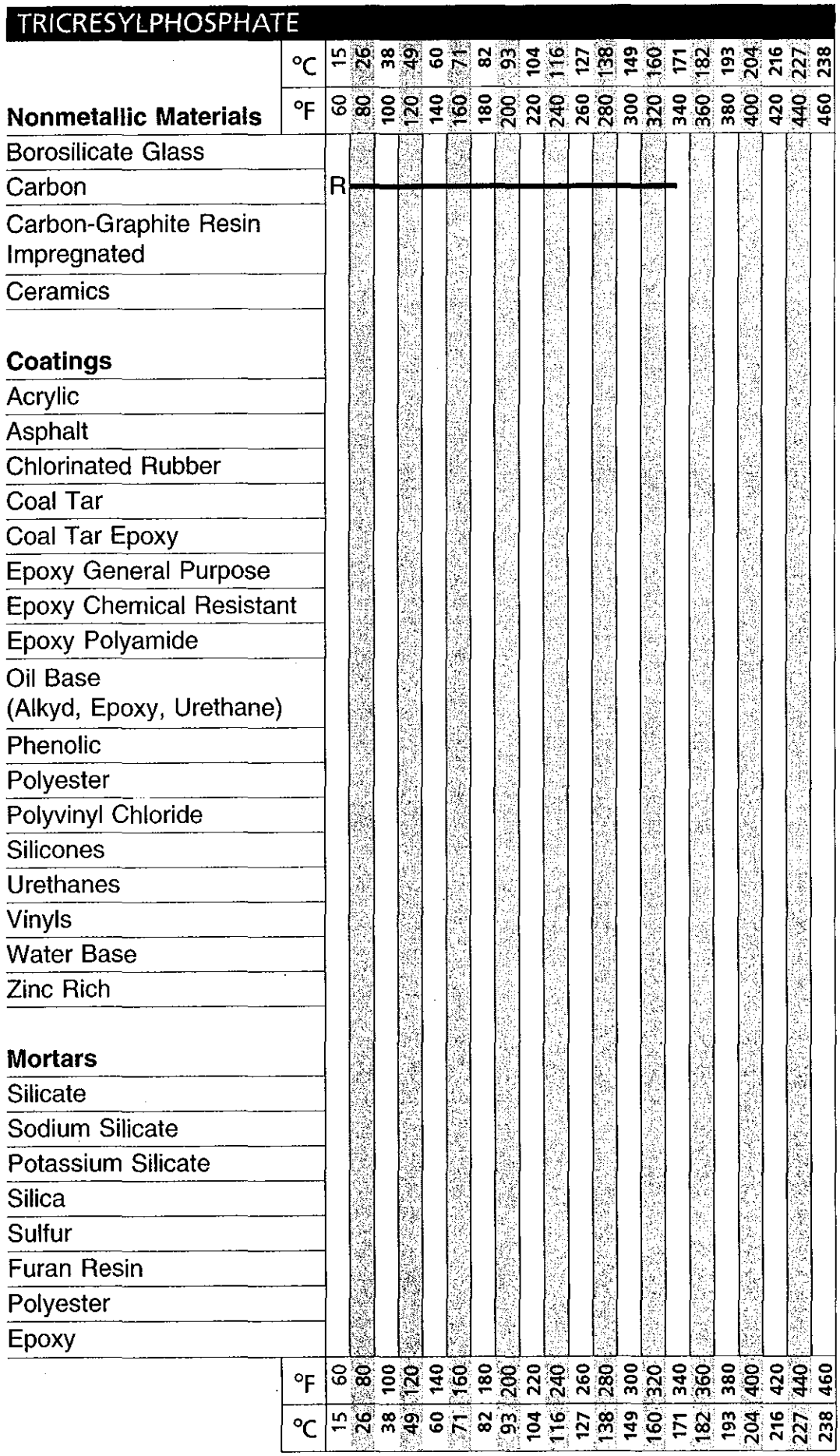
TRICRESYLPHOSPHATE



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TRICRESYLPHOSPHATE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy	R																					
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)	R																					
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW	R				U																	
Polymethylpentene																						
Polypropylene (PP)	R																					
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1	U																					
PVC Type 2	U																					
PVDF (Kynar)	U																					
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester	R																					
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TRICRESYLPHOSPHATE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	U																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	U																				
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)	U																				
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)	U																				
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers	U																				
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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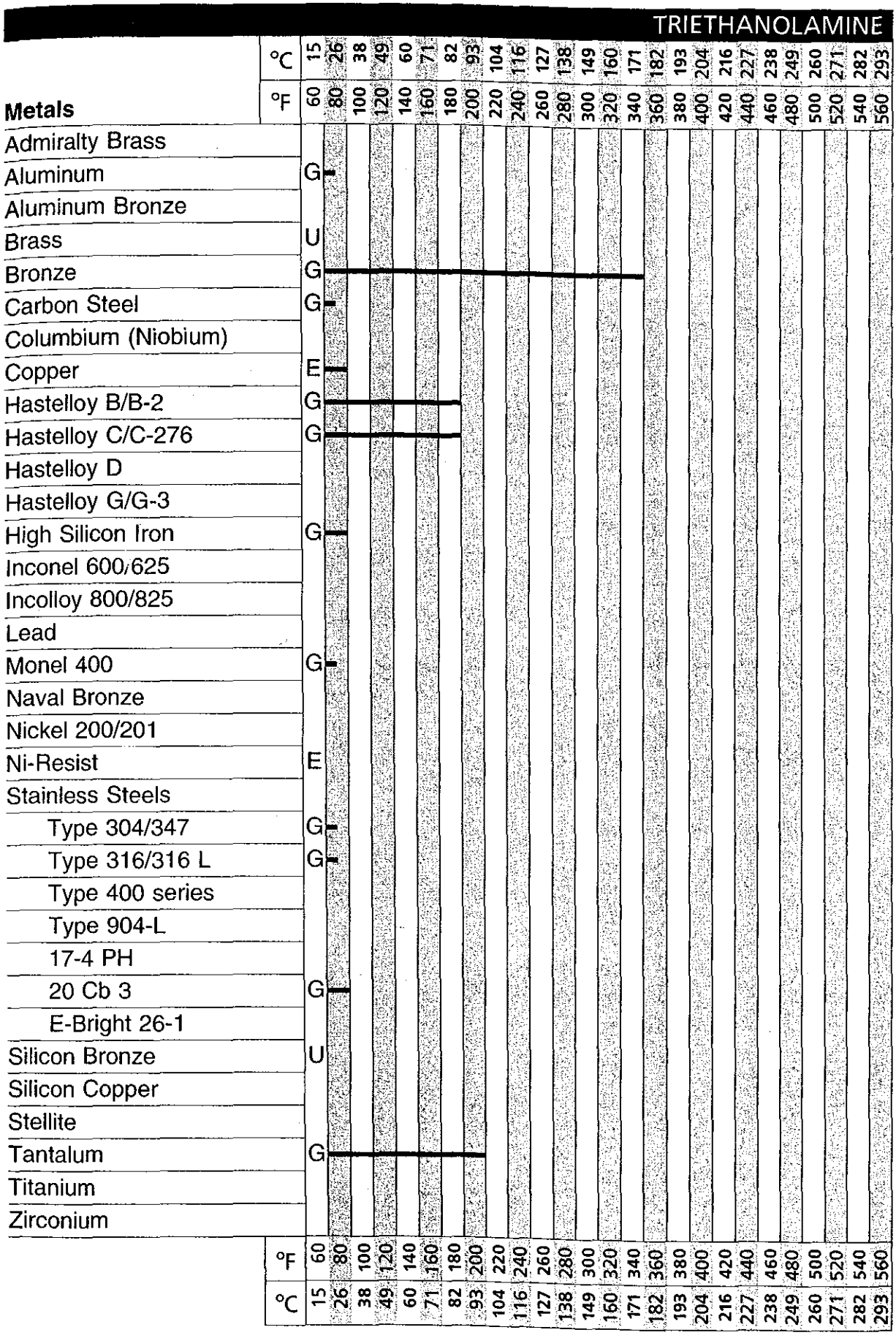

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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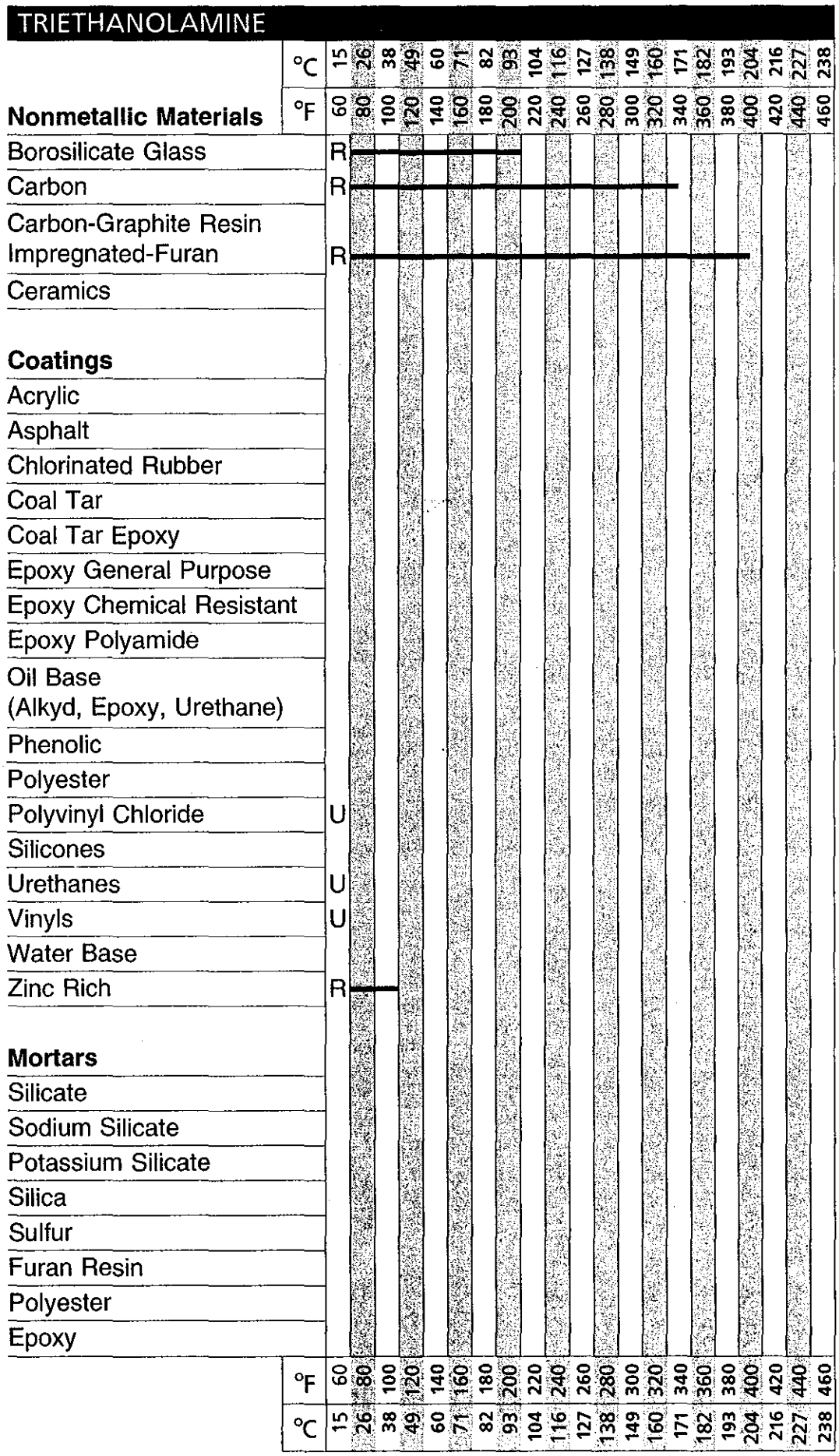
TRIETHANOLAMINE



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TRIETHANOLAMINE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS		R																				
Acetal		U																				
Acrylics		R																				
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)		R																				
CPVC		R		U																		
E-CTFE (Halar)		R	U																			
Epoxy		R																				
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)		R																				
Noryl		R																				
Nylon 6		R																				
Nylon 11		R																				
Nylon 66		R																				
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate		R																				
Halogenated		R																				
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic		U																				
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		U																				
Polyethylene UHMW		R																				
Polymethylpentene																						
Polypropylene (PP)		R		U																		
Polystyrene																						
Polysulfone		U																				
Polyvinylidene Chloride		R																				
PVC Type 1		U																				
PVC Type 2		U																				
PVDF (Kynar)		R																				
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester		R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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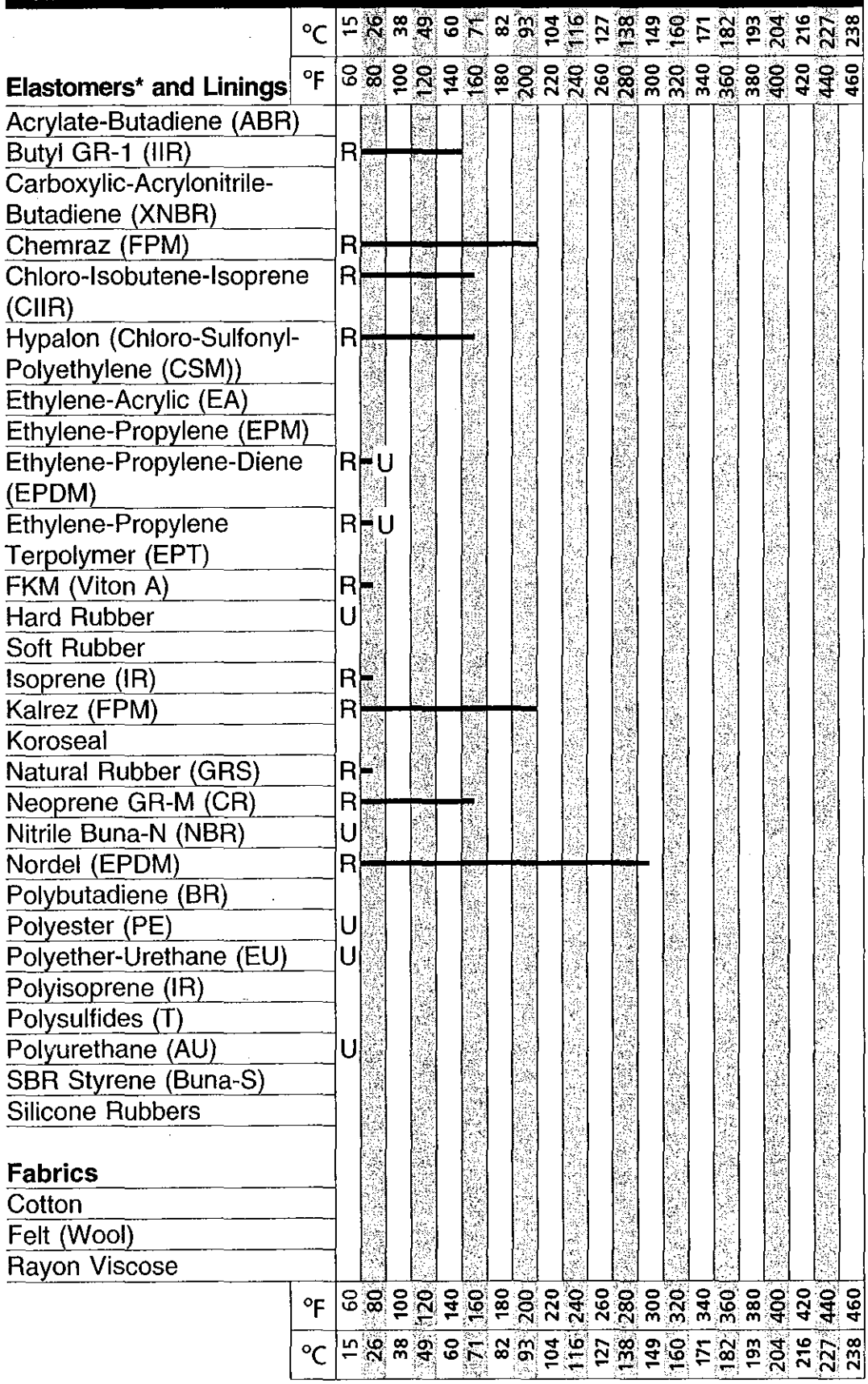
TRIETHANOLAMINE



*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron	G																										
Inconel 600/625																											
Incolloy 800/825																											
Galv. Stl.	E																										
Monel 400	G																										
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347	G																										
Type 316/316 L	G																										
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3	G																										
E-Bright 26-1																											
Silicon Bronze	G																										
Silicon Copper																											
Stellite																											
Tantalum	E																										
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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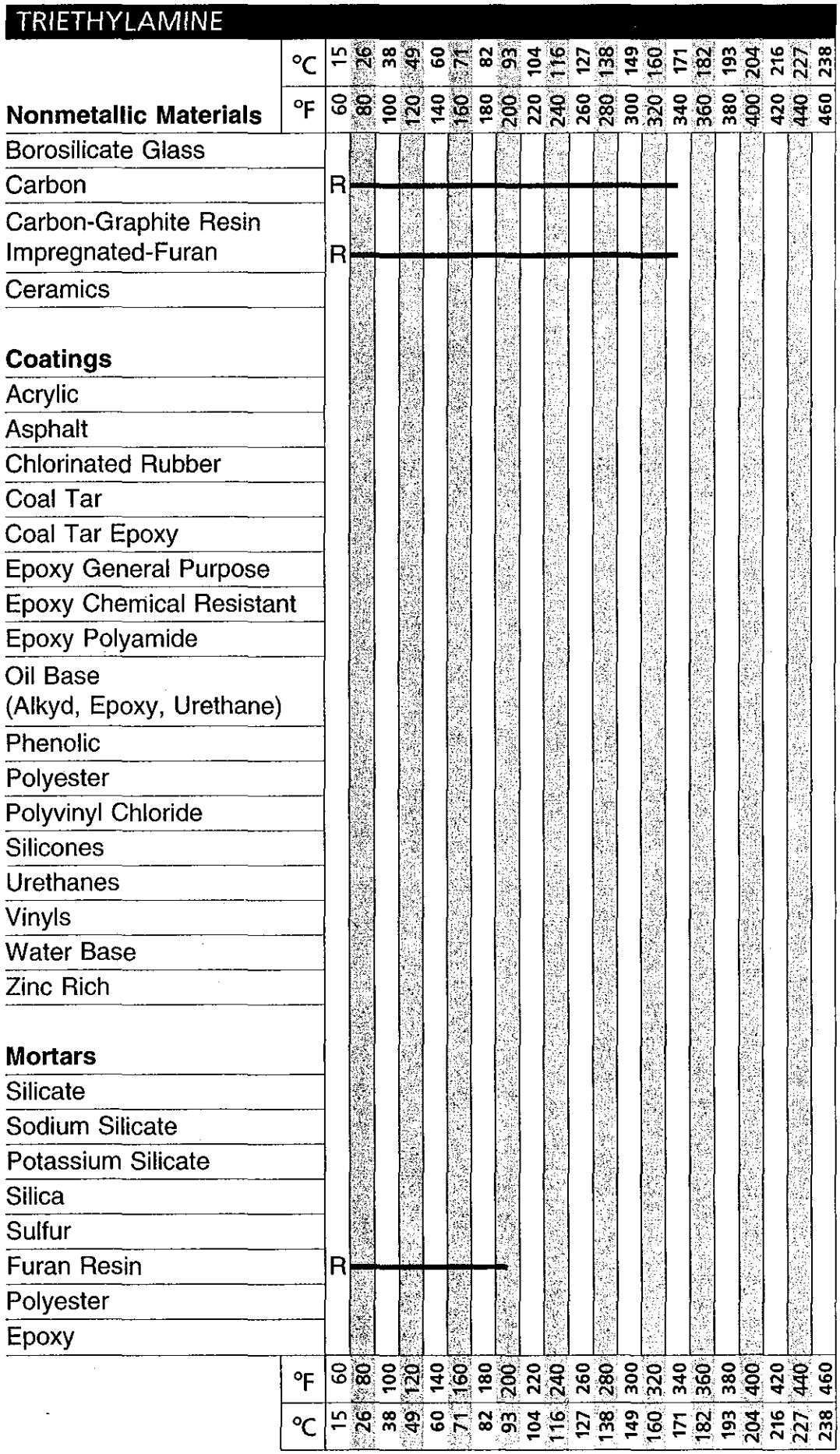
TRIETHYLAMINE



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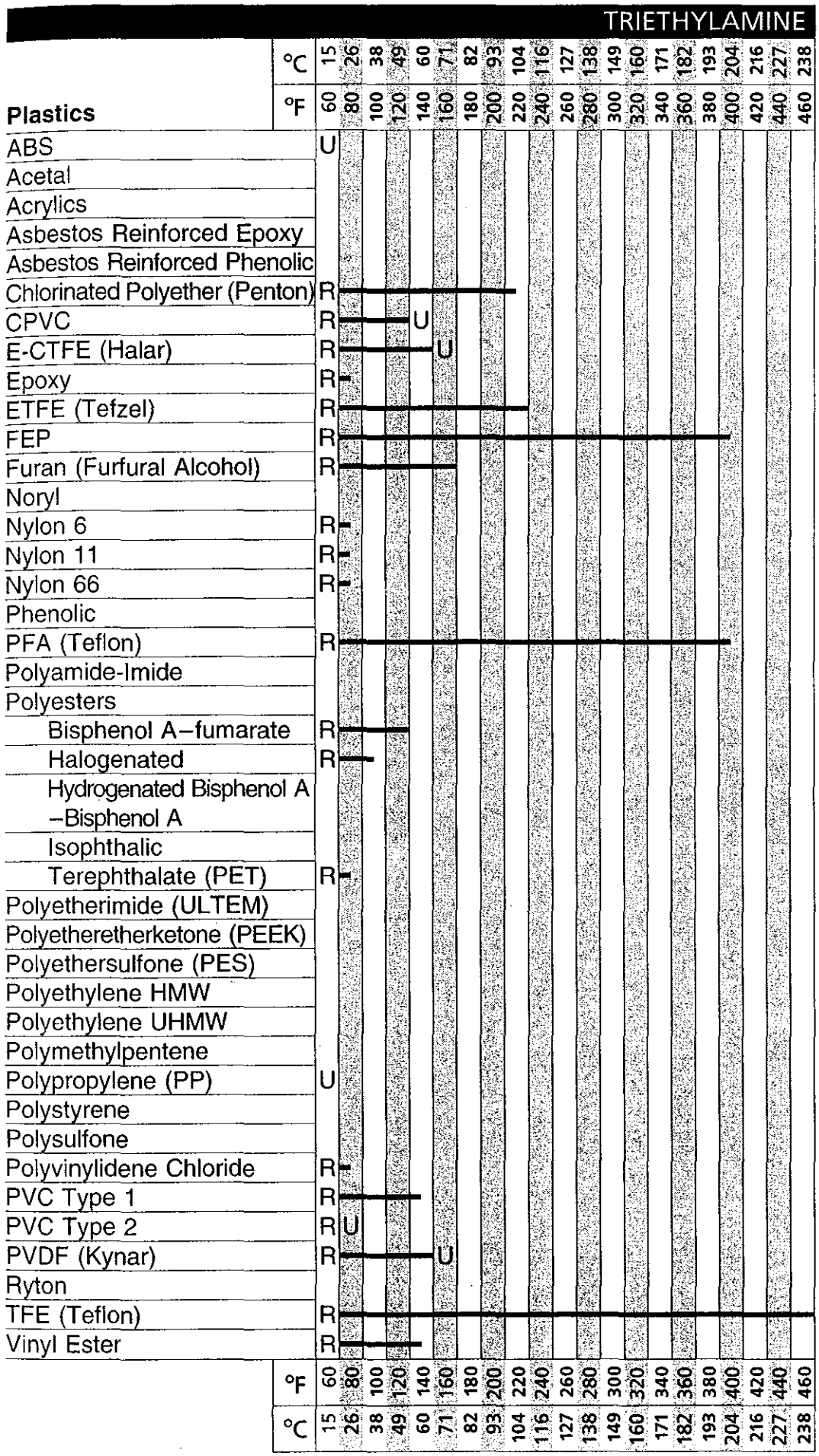

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TRIETHYLAMINE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)	R																				
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)																					
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)	R																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton	U																				
Felt (Wool)	U																				
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		E	E																								
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel		E	E																								
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel																											
Incolloy																											
Lead																											
Monel																											
Naval Bronze																											
Nickel																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		E	E																								
Type 316		E	E																								
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

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TRIETHYL PHOSPHATE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TRIETHYL PHOSPHATE

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)	U	
CPVC		
E-CTFE (Halar)	R	
Epoxy		
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1		
PVC Type 2		
PVDF (Kynar)		
Ryton	R	
TFE (Teflon)	R	
Vinyl Ester	R	

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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TRIETHYL PHOSPHATE

Elastomers* and Linings	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)		R	R	R	R	R	R	R	R													
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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T

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		E																									
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel		G																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400		E																									
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347	85%	E																									
Type 316/316 L		G																									
Type 430		E																									
Type 904-L																											
17-4 PH																											
20 Cb 3		E																									
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS
E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year
S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS
R = Resistant
U = Unsatisfactory

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TRIETHYL PHOSPHITE

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																					
Carbon																					
Carbon-Graphite Resin Impregnated																					
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride																					
Silicones																					
Urethanes																					
Vinyls																					
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TRIETHYL PHOSPHITE

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Polycarbonate	U	
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)	R	15–38
Epoxy		
ETFE (Tefzel)	R	15–93
FEP	R	15–49
Furan (Furfural Alcohol)		
Noryl	U	
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)	R	15–93
Polyamide-Imide	R	15–93
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone	R	15–93
Polyvinylidene Chloride		
PVC Type 1		
PVC Type 2		
PVDF (Kynar)		
Ryton	R	15–93
TFE (Teflon)	R	15–93
Vinyl Ester		

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

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TRIETHYL PHOSPHITE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)																						
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Nitrile Buna-N (NBR)																						
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Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TRIMETHYL PROPANE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride	R	R	R	R																		
Silicones																						
Urethanes																						
Vinyls	R	R	R	R																		
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TRIMETHYL PROPANE

Plastics		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS			U																				
Acetal																							
Acrylics																							
Asbestos Reinforced Epoxy																							
Asbestos Reinforced Phenolic																							
Chlorinated Polyether (Penton)			R	—	—	—	—	—	—	—	—	—											
CPVC			R	—	—	—	—																
E-CTFE (Halar)																							
Epoxy																							
ETFE (Tefzel)																							
FEP	14		R	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
Furan (Furfural Alcohol)																							
Noryl																							
Nylon 6																							
Nylon 11																							
Nylon 66																							
Phenolic																							
PFA (Teflon)	14		R	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—			
Polyamide-Imide																							
Polyesters																							
Bisphenol A–fumarate																							
Halogenated																							
Hydrogenated Bisphenol A –Bisphenol A																							
Isophthalic																							
Terephthalate (PET)																							
Polyetherimide (ULTEM)																							
Polyetheretherketone (PEEK)																							
Polyethersulfone (PES)																							
Polyethylene HMW																							
Polyethylene UHMW																							
Polymethylpentene																							
Polypropylene (PP)			U																				
Polystyrene																							
Polysulfone																							
Polyvinylidene Chloride			R	—	—	—																	
PVC Type 1			R	—	—	—																	
PVC Type 2			R	—	—	—																	
PVDF (Kynar)			R	—	—	—	—	—	—	—	—	—											
Ryton																							
TFE (Teflon)	14		R	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
Vinyl Ester																							
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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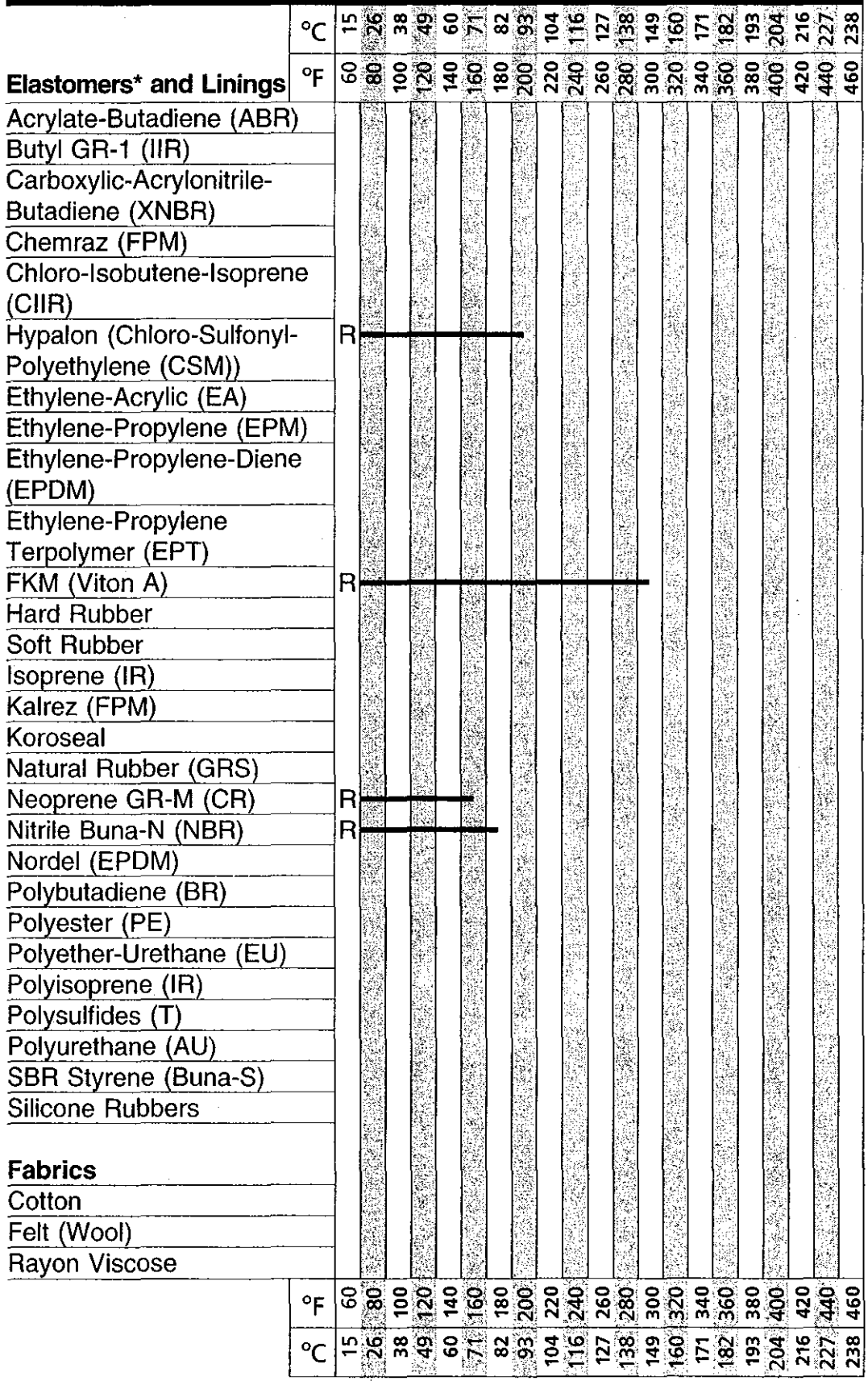
TRIMETHYL PROPANE



*See also Nylon 11 under PLASTICS

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Metals		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																												
Aluminum			U																									
Aluminum Bronze			G																									
Brass			G																									
Bronze																												
Carbon Steel			G																									
Columbium (Niobium)																												
Copper			G																									
Hastelloy B/B-2	10%		E																									
Hastelloy C/C-276	10%		E																									
Hastelloy D	10%		E																									
Hastelloy G/G-3																												
High Silicon Iron																												
Inconel 600/625																												
Incolloy 800/825																												
Lead			U																									
Monel 400			G																									
Naval Bronze			S																									
Nickel 200/201			G																									
Ni-Resist																												
Stainless Steels																												
Type 304/347	10%		E																									
Type 316/316 L	10%		E																									
Type 400 series			G																									
Type 904-L																												
17-4 PH																												
20 Cb 3	10%		E																									
E-Bright 26-1																												
Silicon Bronze																												
Silicon Copper																												
Stellite																												
Tantalum			G																									
Titanium																												
Zirconium	5–20%		G																									
		°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
		°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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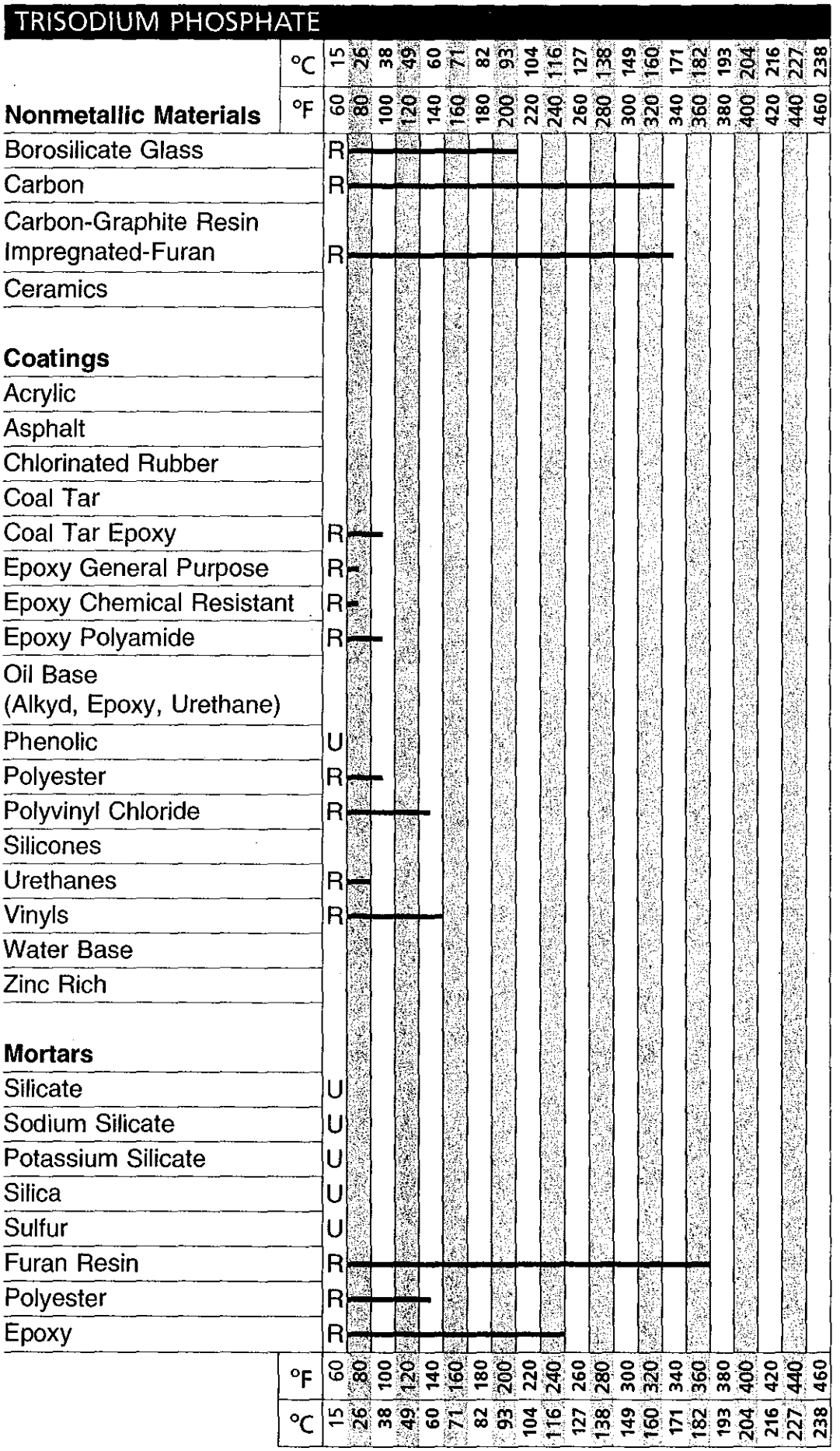
TRISODIUM PHOSPHATE



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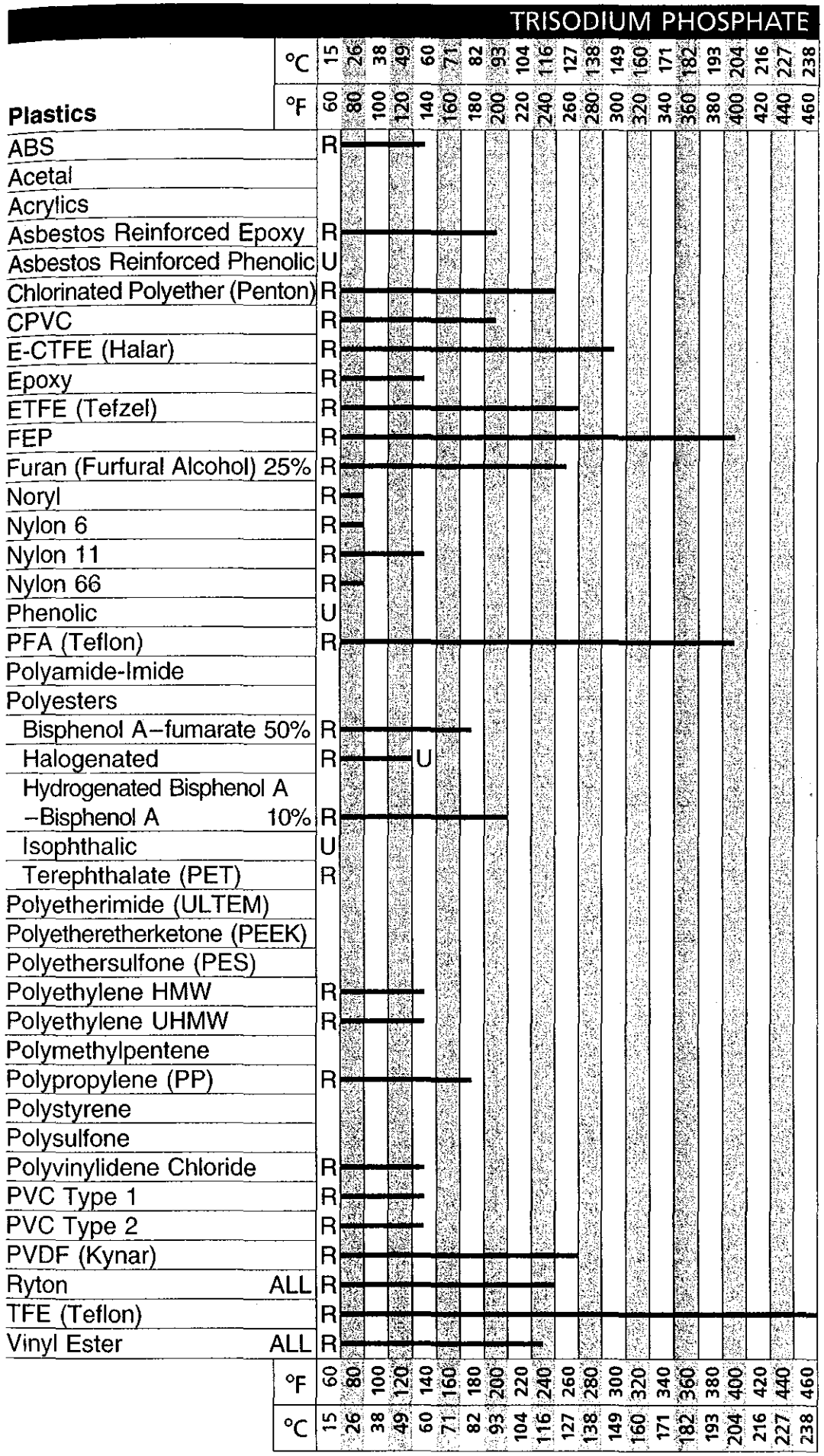

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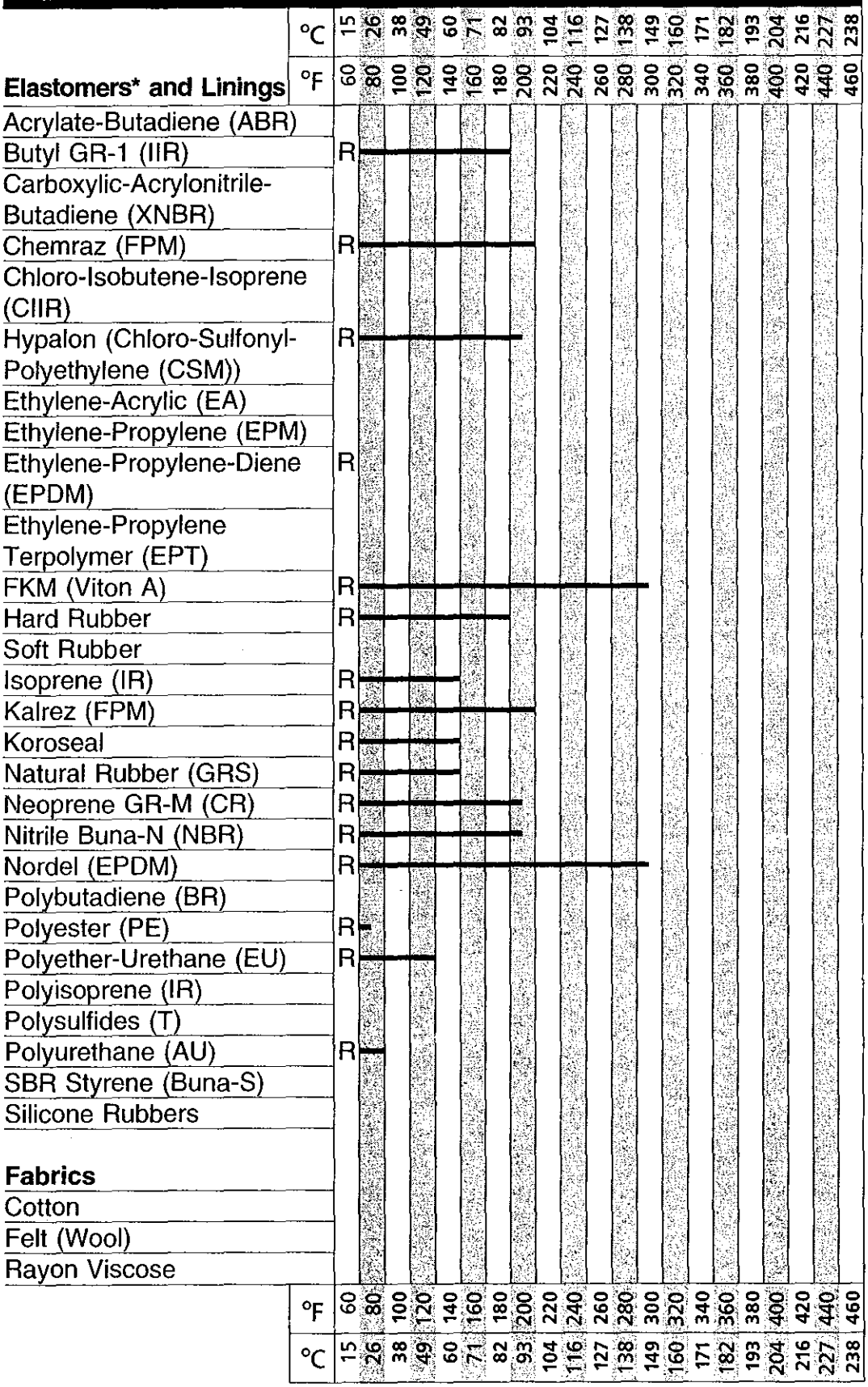
TRISODIUM PHOSPHATE



*See also Nylon 11 under PLASTICS

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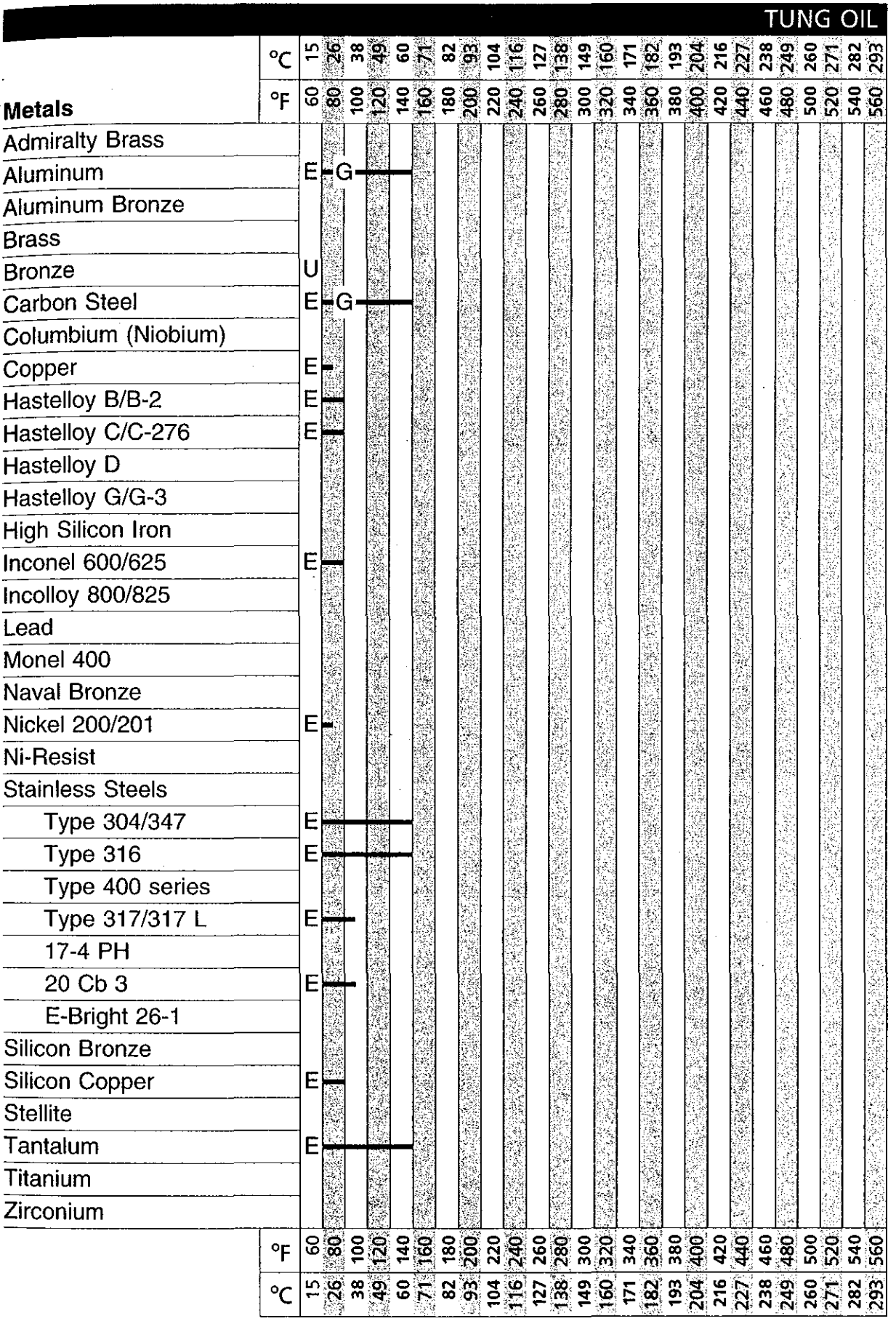

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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TUNG OIL

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Nonmetallic Materials																						
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant	R																					
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls	R																					
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy	R																					
ETFE (Tefzel)																						
FEP	R																					
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A																						
–Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1	U																					
PVC Type 2	U																					
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)	R																					
Vinyl Ester	R																					
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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TUNG OIL

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)	R																				
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	R																				
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)	U																				
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)	U																				
Neoprene GR-M (CR)	R																				
Nitrile Buna-N (NBR)	R																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)	U																				
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers	U																				
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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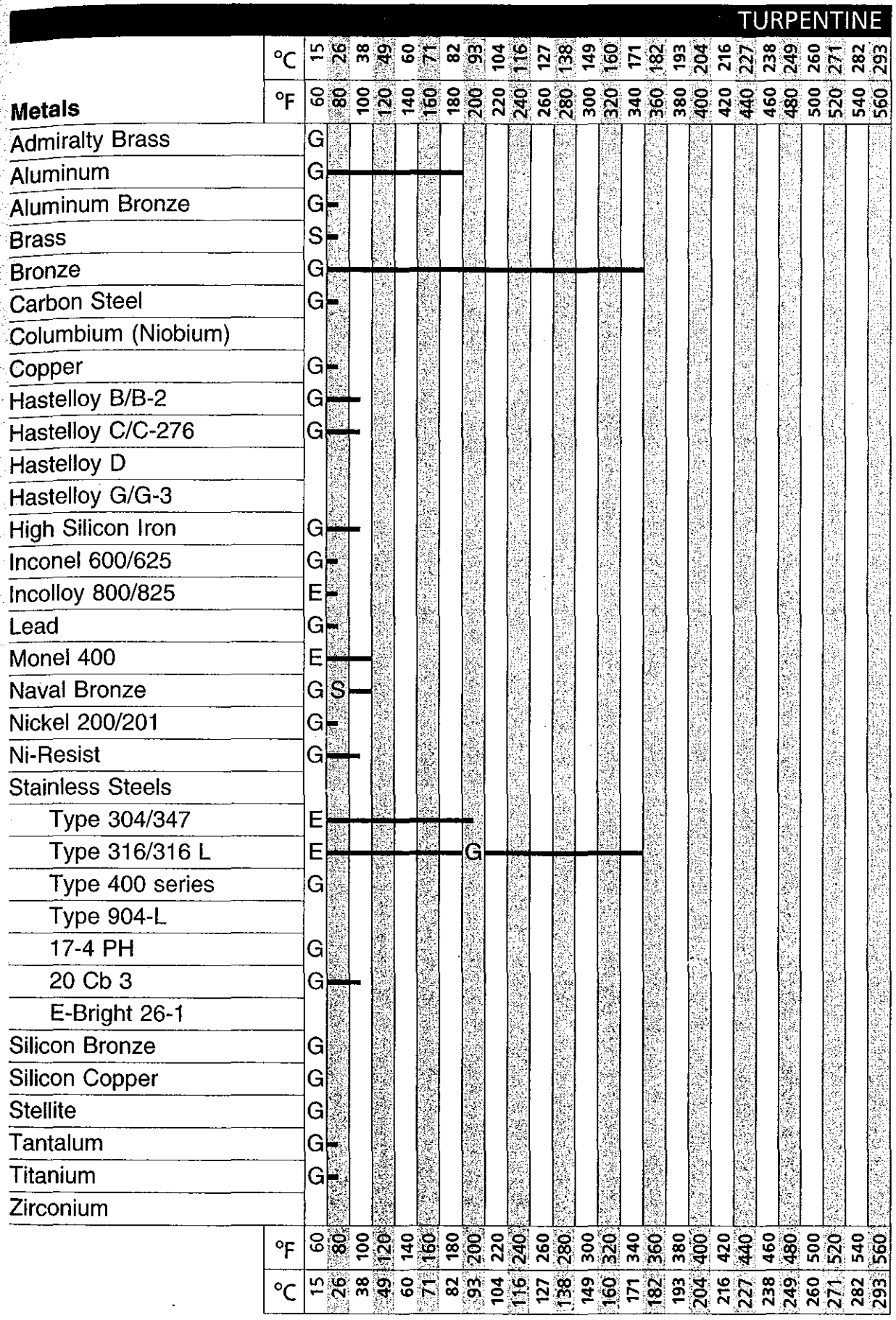

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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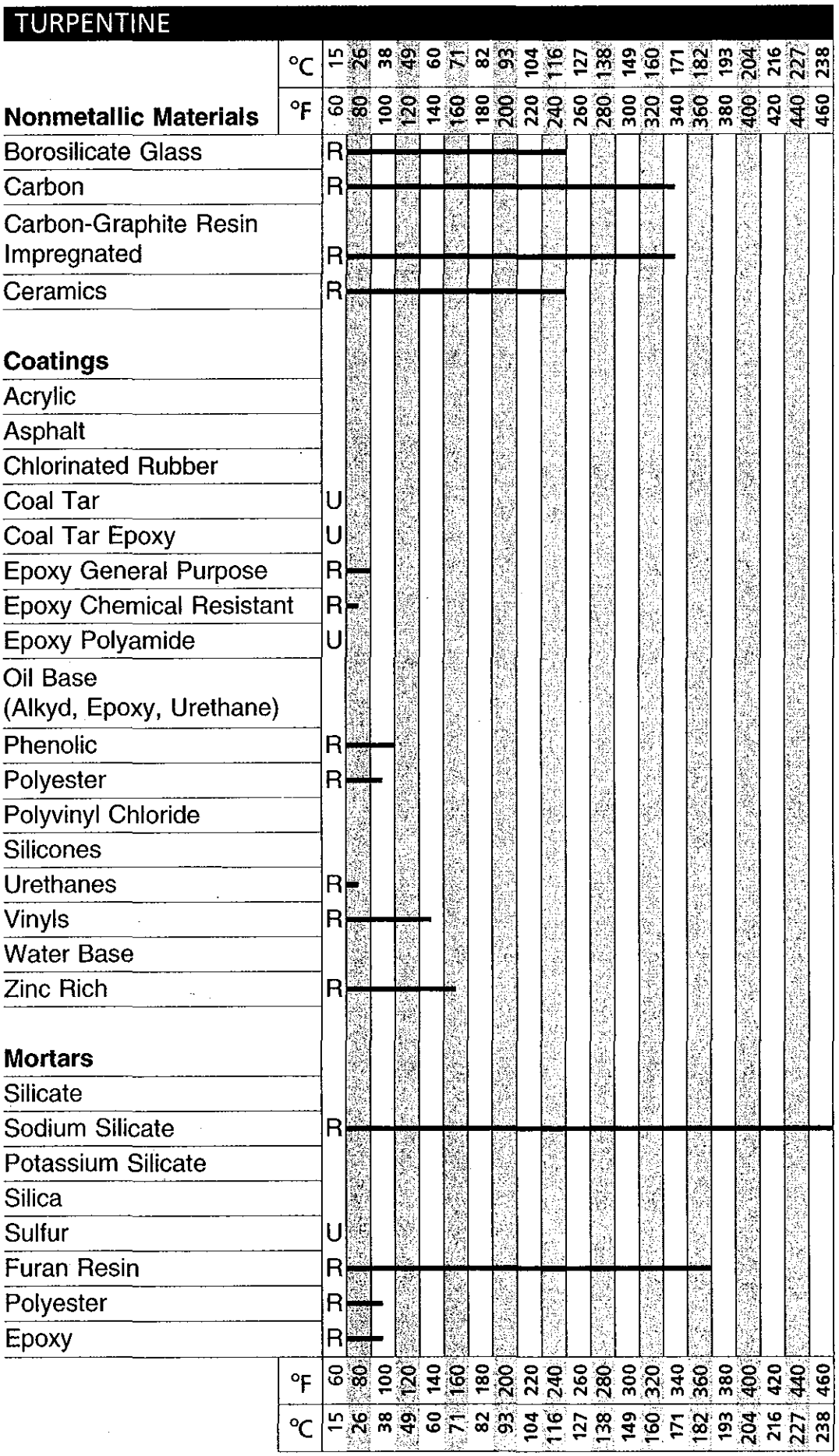
TURPENTINE



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Plastics	°C	°F
ABS	U	
Acetal	R	
Acrylics	R	
Asbestos Reinforced Epoxy	R	
Asbestos Reinforced Phenolic	R	
Chlorinated Polyether (Penton)	R	
CPVC		
E-CTFE (Halar)	R	
Epoxy	R	
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)		
Noryl	R	
Nylon 6	R	
Nylon 11	R	
Nylon 66	R	
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate	R	
Halogenated	R	
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic	R	
Terephthalate (PET)	R	
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW	U	
Polyethylene UHMW	U	
Polymethylpentene	U	
Polypropylene (PP)	R	U
KEL-F (CTFE)	R	
Polysulfone	R	
Polyvinylidene Chloride	R	
PVC Type 1	R	
PVC Type 2	U	
PVDF (Kynar)	R	
Ryton	R	
TFE (Teflon)	R	
Vinyl Ester	R	

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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TURPENTINE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)		U																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)		R																				
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		R																				
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)		U																				
Ethylene-Propylene Terpolymer (EPT)		U																				
FKM (Viton A)		R																				
Hard Rubber		U																				
Soft Rubber		U																				
Isoprene (IR)		U																				
Kalrez (FPM)		R																				
Koroseal																						
Natural Rubber (GRS)		U																				
Neoprene GR-M (CR)		U																				
Nitrile Buna-N (NBR)		R																				
Nordel (EPDM)		U																				
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)		U																				
Polyisoprene (IR)																						
Polysulfides (T)		R																				
Polyurethane (AU)		U																				
SBR Styrene (Buna-S)		U																				
Silicone Rubbers		U																				
Fabrics																						
Cotton		R																				
Felt (Wool)		R																				
Rayon Viscose		R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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UDECYL ALCOHOL

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L																											
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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UDECYL ALCOHOL

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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UDECYL ALCOHOL

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Polycarbonate (PC)		R																				
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		R																				
Polyethylene UHMW		R																				
Polymethylpentene		R																				
Polypropylene (PP)		R																				
Polystyrene																						
Polysulfone		U																				
Polyvinylidene Chloride																						
PVC Type 1		R																				
PVC Type 2		R																				
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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UDECYL ALCOHOL

Elastomers and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (PTFE)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez																						
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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URANYL SULFATE 5%

Metals	°C	°F
Admiralty Brass		
Aluminum		
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel		
Columbium (Niobium)		
Copper		
Hastelloy B/B-2		
Hastelloy C/C-276		
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625		
Incolloy 800/825		
Lead		
Monel 400		
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347		
Type 316/316 L		
Type 400 series		
Type 904-L		
17-4 PH		
20 Cb 3		
E-Bright 26-1		
Silicon Bronze		
Silicon Copper		
Stellite		
Tantalum		
Titanium		
Zirconium	G	

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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URANYL SULFATE 5%

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																					
Carbon																					
Carbon-Graphite Resin Impregnated																					
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride																					
Silicones																					
Urethanes																					
Vinyls																					
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	
°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	

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URANYL SULFATE 5%

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Asbestos Reinforced Epoxy		
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)		
FEP	R	R
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)	R	R
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)	R	R
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1		
PVC Type 2		
PVDF (Kynar)	R	R
Ryton		
TFE (Teflon)	R	R
Vinyl Ester		

°C: 15 26 38 49 60 71 82 93 104 116 127 138 149 160 171 182 193 204 216 227 238

°F: 60 80 100 120 140 160 180 200 220 240 260 280 300 320 340 360 380 400 420 440 460

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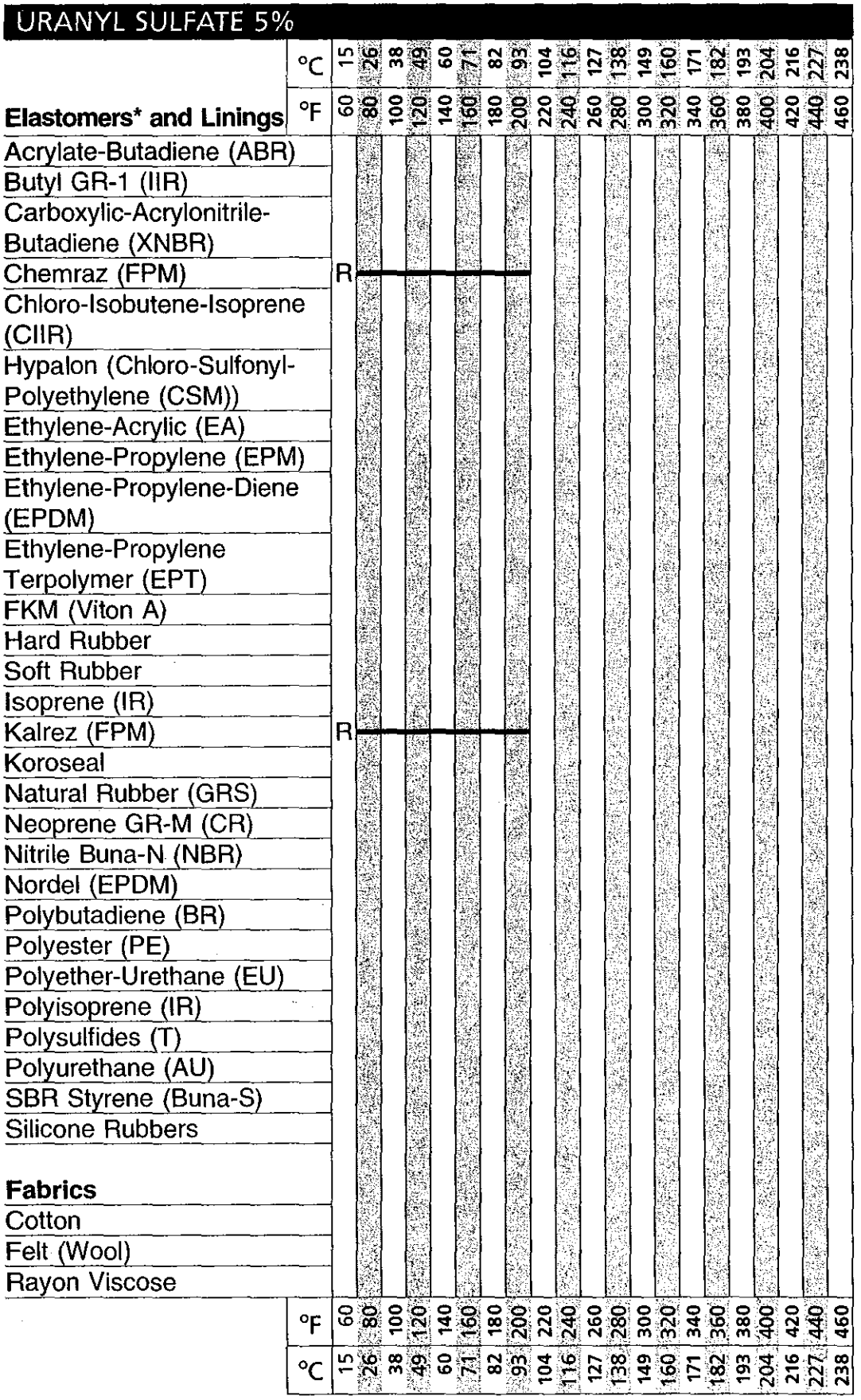
URANYL SULFATE 5%



*See also Nylon 11 under PLASTICS

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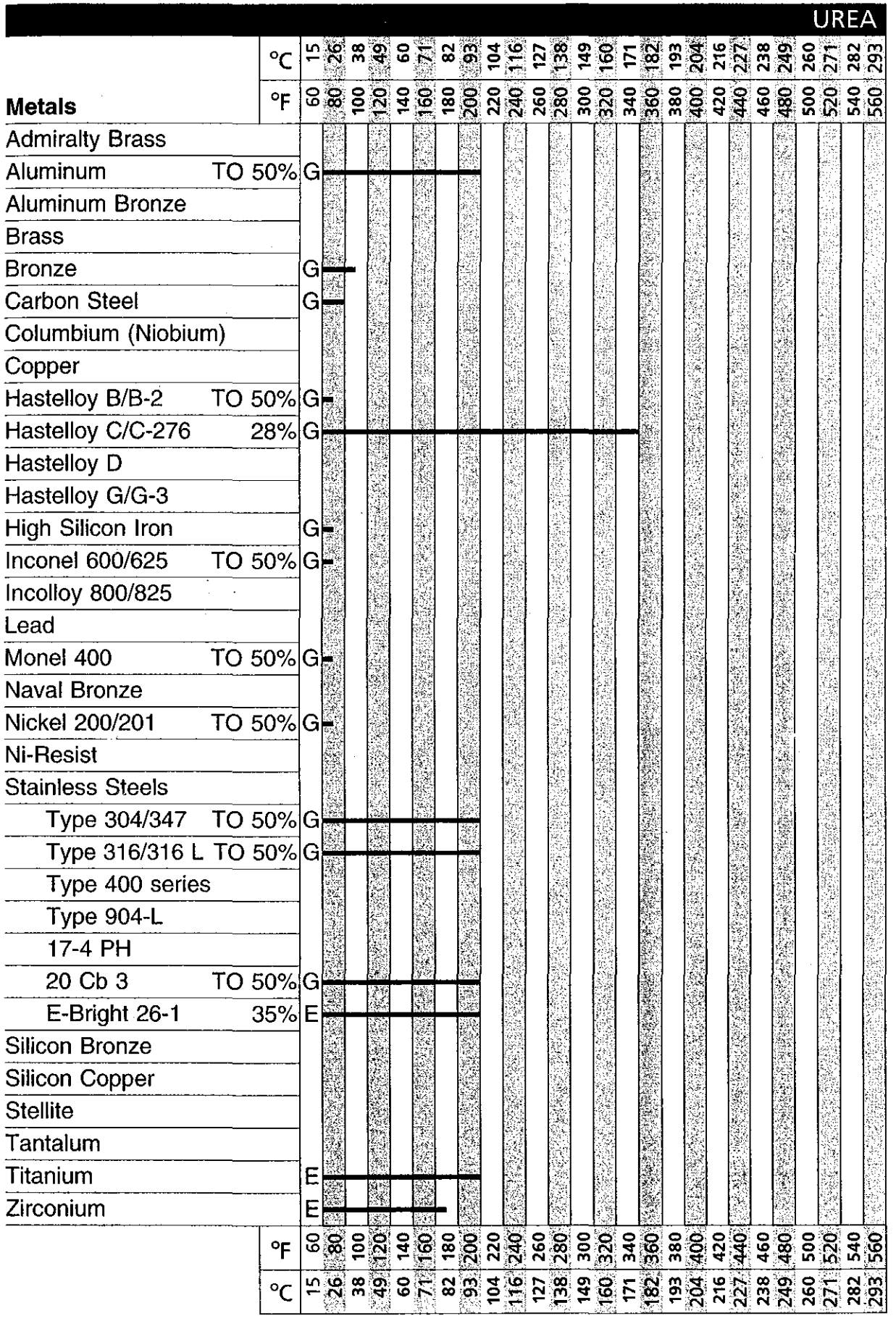

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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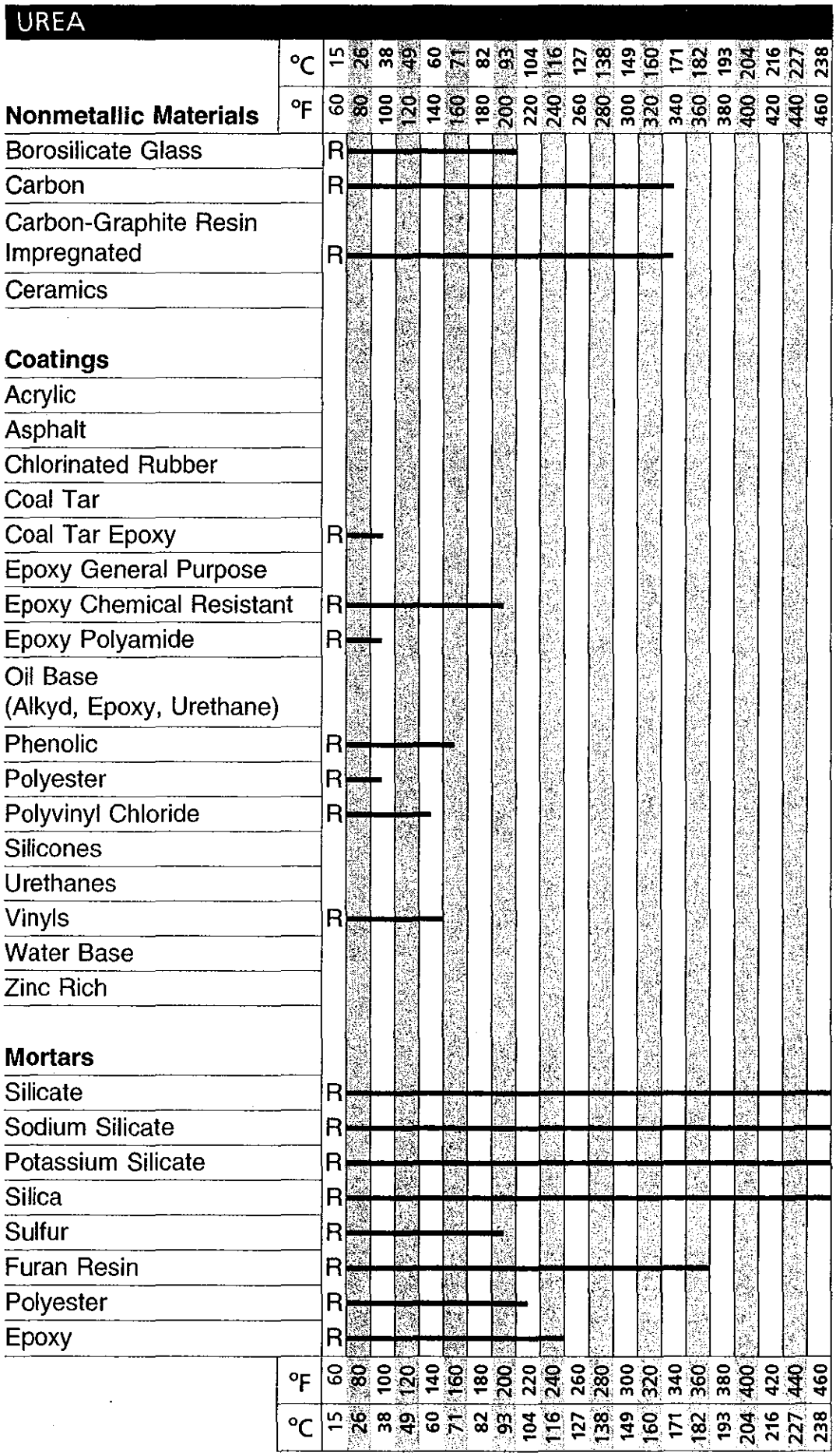
UREA



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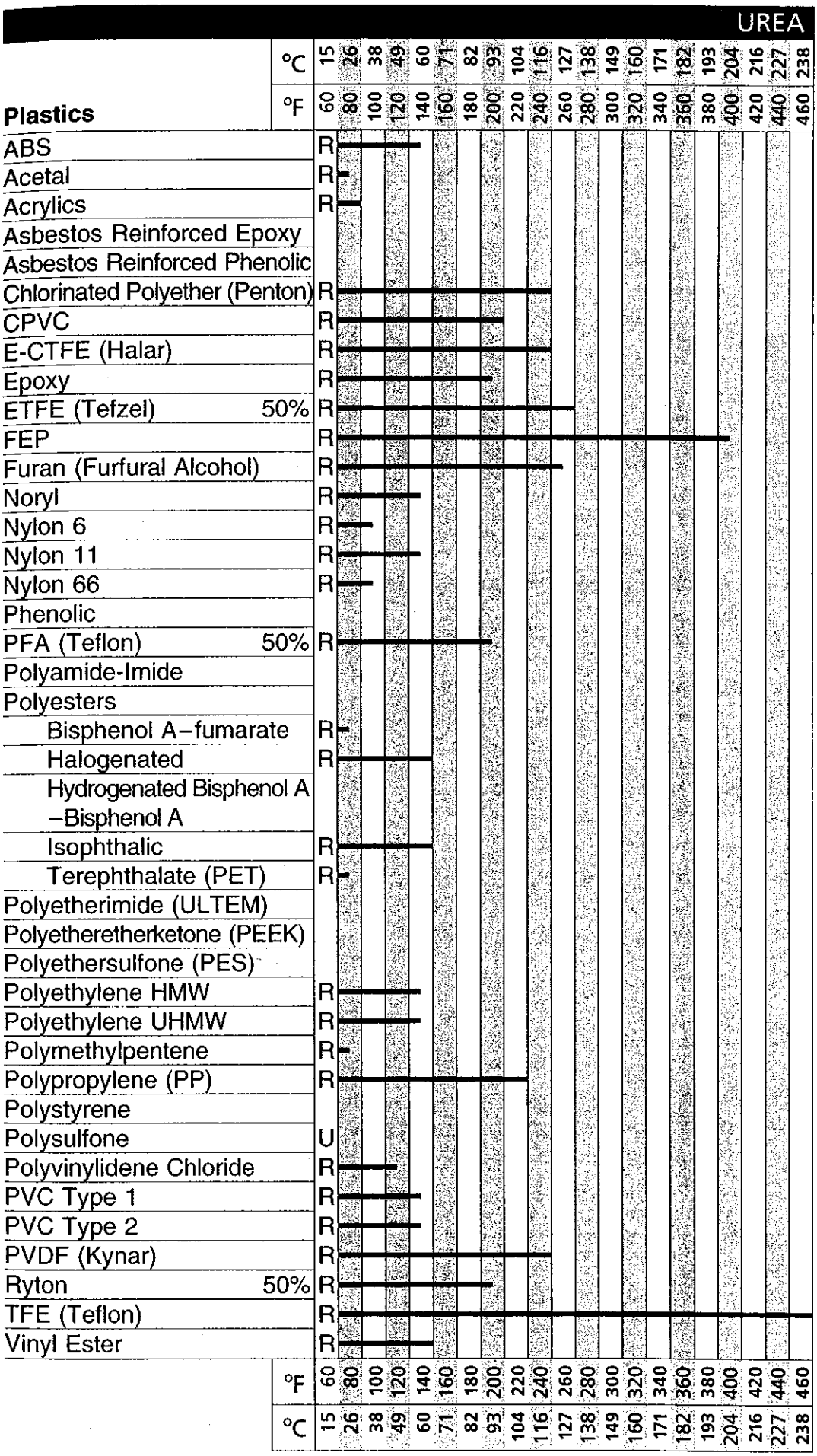

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UREA

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)		R																				
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		R																				
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)		R																				
Ethylene-Propylene-Diene (EPDM)		R																				
Ethylene-Propylene Terpolymer (EPT)		R																				
FKM (Viton A)		R																				
Hard Rubber		R																				
Soft Rubber																						
Isoprene (IR)		R																				
Kalrez (FPM)																						
Koroseal		R																				
Natural Rubber (GRS)		R																				
Neoprene GR-M (CR)		R																				
Nitrile Buna-N (NBR)		R																				
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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UREA AMMONIUM LIQUOR

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist		G	—																								
Stainless Steels																											
Type 304/347		U																									
Type 316/316 L		G	—																								
Type 400 series																											
Type 317/317 L		G	—																								
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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UREA AMMONIUM LIQUOR

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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UREA AMMONIUM LIQUOR

Plastics	°C	°F
ABS	15–238	60–460
Acetal	15–238	60–460
Acrylics	15–238	60–460
Asbestos Reinforced Epoxy	15–238	60–460
Asbestos Reinforced Phenolic	15–238	60–460
Chlorinated Polyether (Penton)	15–238	60–460
CPVC	15–238	60–460
E-CTFE (Halar)	15–238	60–460
Epoxy	15–238	60–460
ETFE (Tefzel)	15–238	60–460
FEP	15–238	60–460
Furan (Furfural Alcohol)	15–238	60–460
Noryl	15–238	60–460
Nylon 6	15–238	60–460
Nylon 11	15–238	60–460
Nylon 66	15–238	60–460
Phenolic	15–238	60–460
PFA (Teflon)	15–238	60–460
Polyamide-Imide	15–238	60–460
Polyesters	15–238	60–460
Bisphenol A–fumarate	15–238	60–460
Halogenated	15–238	60–460
Hydrogenated Bisphenol A –Bisphenol A	15–238	60–460
Isophthalic	15–238	60–460
Terephthalate (PET)	15–238	60–460
Polyetherimide (ULTEM)	15–238	60–460
Polyetheretherketone (PEEK)	15–238	60–460
Polyethersulfone (PES)	15–238	60–460
Polyethylene HMW	15–238	60–460
Polyethylene UHMW	15–238	60–460
Polymethylpentene	15–238	60–460
Polypropylene (PP)	15–238	60–460
Polystyrene	15–238	60–460
Polysulfone	15–238	60–460
Polyvinylidene Chloride	15–238	60–460
PVC Type 1	15–238	60–460
PVC Type 2	15–238	60–460
PVDF (Kynar)	15–238	60–460
Ryton	15–238	60–460
TFE (Teflon)	15–238	60–460
Vinyl Ester	15–238	60–460

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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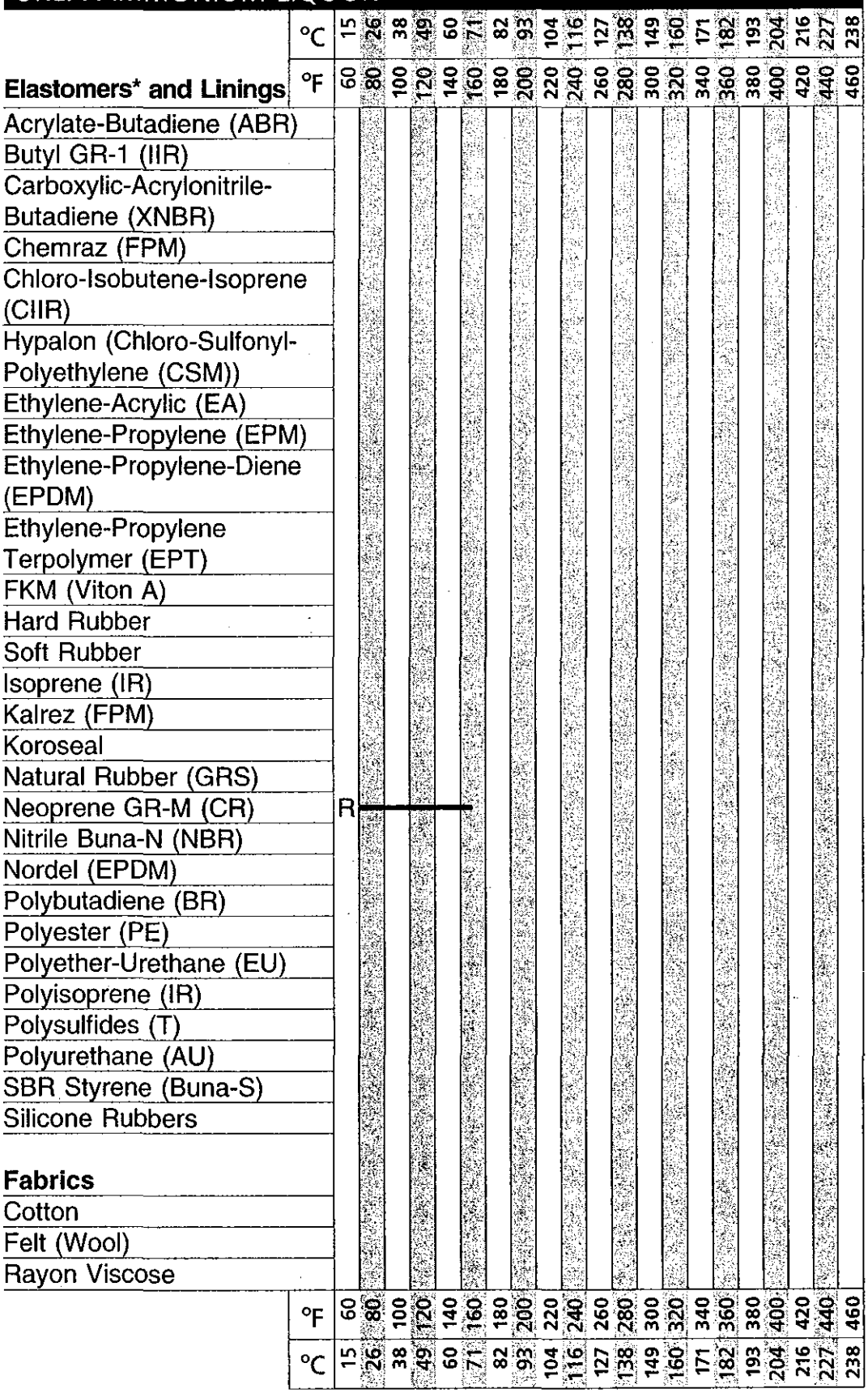
UREA AMMONIUM LIQUOR



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URIC ACID (CONC.)

Metals	°C	°F
Admiralty Brass		
Aluminum	U	
Aluminum Bronze		
Brass		
Bronze		
Carbon Steel		
Columbium (Niobium)		
Copper	E	
Hastelloy B/B-2	E	
Hastelloy C/C-276	E	
Hastelloy D		
Hastelloy G/G-3		
High Silicon Iron		
Inconel 600/625	E	G
Incolloy 800/825	E	G
Lead		
Monel 400	E	
Naval Bronze		
Nickel 200/201		
Ni-Resist		
Stainless Steels		
Type 304/347	E	
Type 316/316 L	E	
Type 400 series	E	
Type 904-L		
17-4 PH		
20 Cb 3	E	
E-Bright 26-1		
Silicon Bronze	E	
Silicon Copper		
Stellite		
Tantalum		
Titanium	E	
Zirconium		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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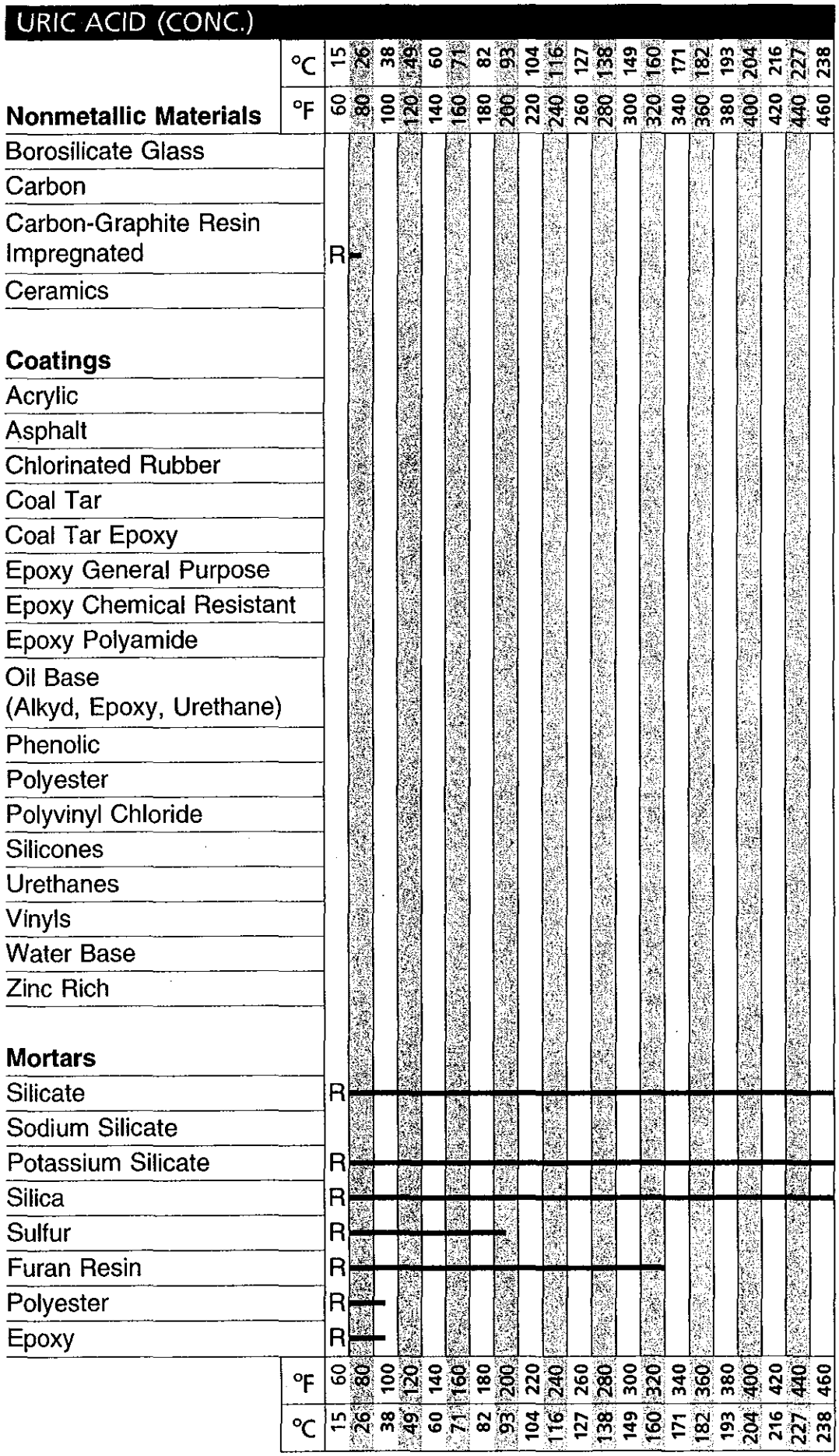
URIC ACID (CONC.)



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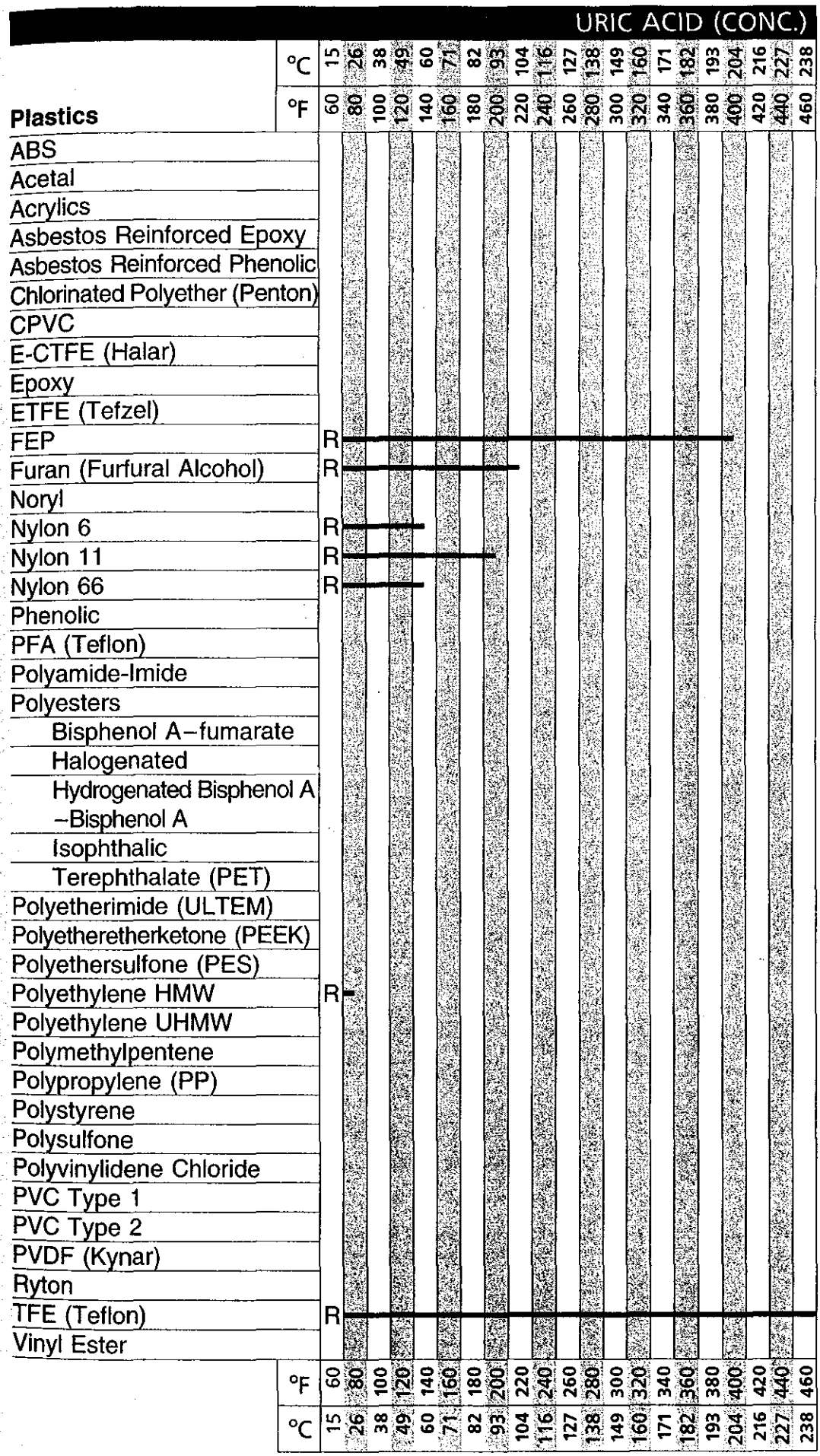

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URIC ACID (CONC.)

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)	R																					
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel	G																										
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron	E																										
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347	E																										
Type 316/316 L	E																										
Type 400 series	G																										
Type 904-L																											
17-4 PH	G																										
20 Cb 3	G																										
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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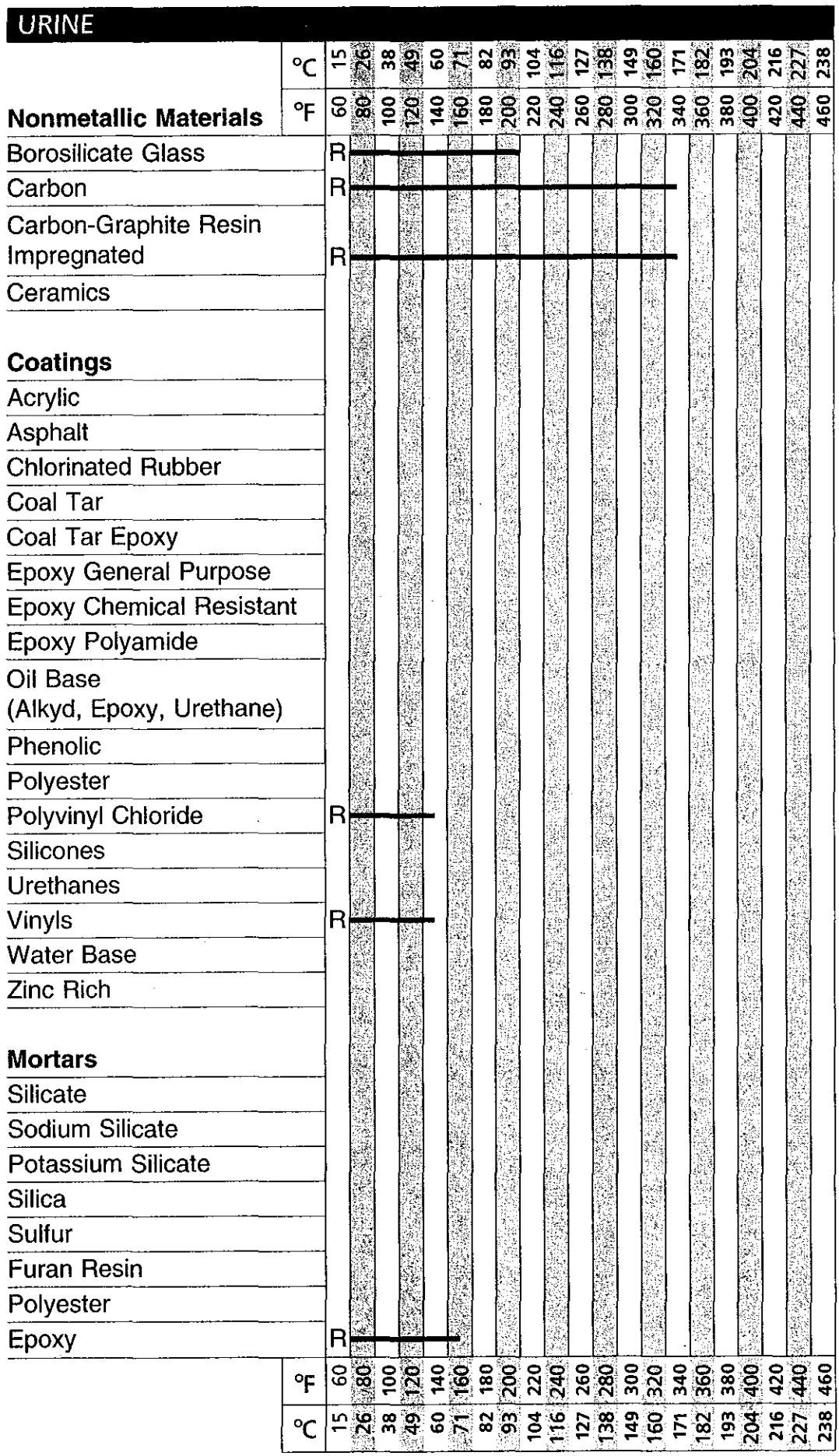
URINE



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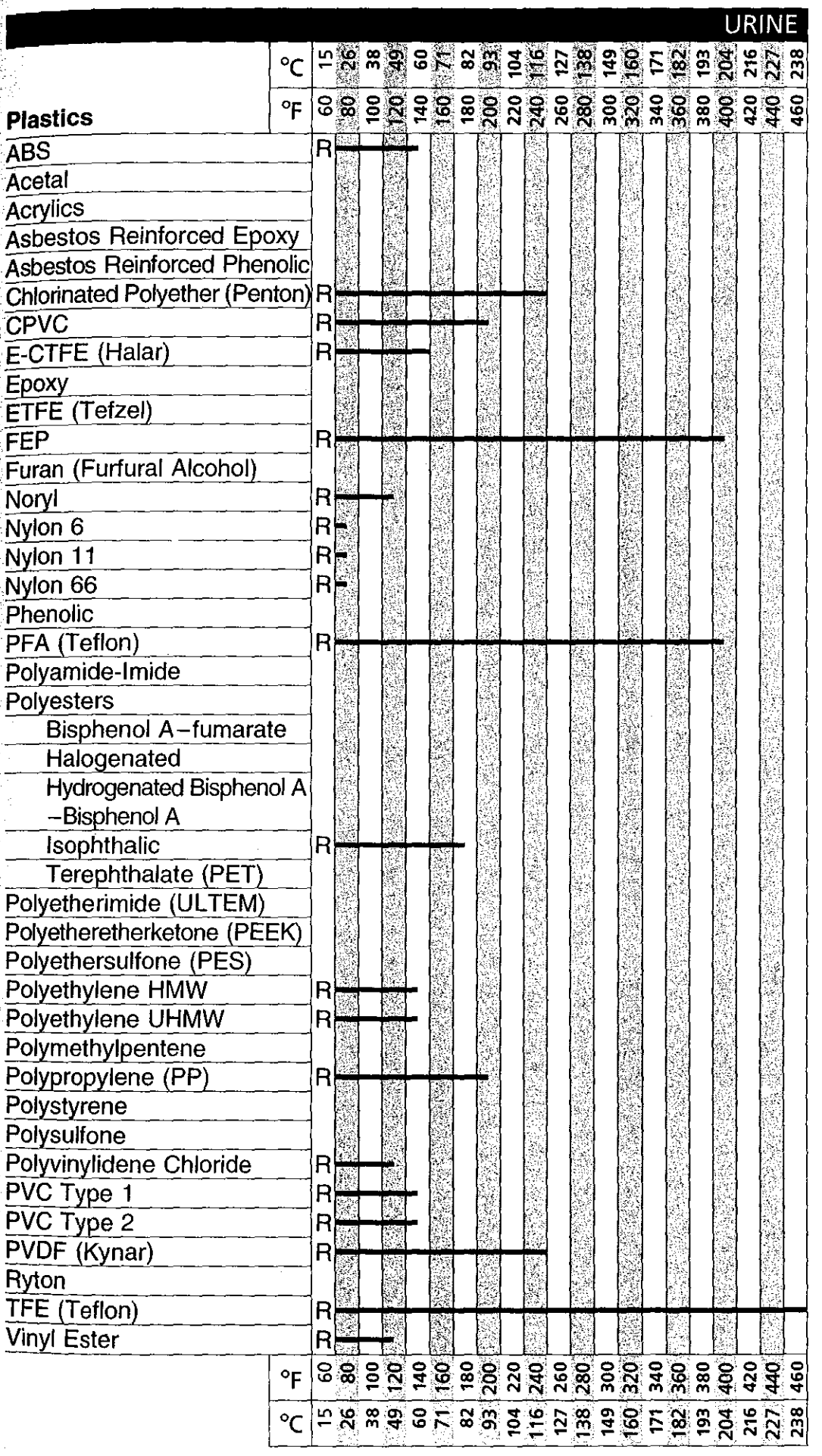

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URINE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))	R																					
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)	R																					
Ethylene-Propylene Terpolymer (EPT)	R																					
FKM (Viton A)	R																					
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)	R																					
Nitrile Buna-N (NBR)	R																					
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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VANADIUM PENTAOXIDE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316	G																										
Type 400 series																											
Type 317/317 L	G																										
17-4 PH																											
20 Cb 3	G																										
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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VANADIUM PENTAOXIDE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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VANADIUM PENTAOXIDE

Plastics	°C	°F
ABS	15–238	60–460
Acetal	15–238	60–460
Acrylics	15–238	60–460
Asbestos Reinforced Epoxy	15–238	60–460
Asbestos Reinforced Phenolic	15–238	60–460
Chlorinated Polyether (Penton)	15–238	60–460
CPVC	15–238	60–460
E-CTFE (Halar)	15–238	60–460
Epoxy	15–238	60–460
ETFE (Tefzel)	15–238	60–460
FEP	15–238	60–460
Furan (Furfural Alcohol)	15–238	60–460
Noryl	15–238	60–460
Nylon 6	15–238	60–460
Nylon 11	15–238	60–460
Nylon 66	15–238	60–460
Phenolic	15–238	60–460
PFA (Teflon)	15–238	60–460
Polyamide-Imide	15–238	60–460
Polyesters	15–238	60–460
Bisphenol A–fumarate	15–238	60–460
Halogenated	15–238	60–460
Hydrogenated Bisphenol A –Bisphenol A	15–238	60–460
Isophthalic	15–238	60–460
Terephthalate (PET)	15–238	60–460
Polyetherimide (ULTEM)	15–238	60–460
Polyetheretherketone (PEEK)	15–238	60–460
Polyethersulfone (PES)	15–238	60–460
Polyethylene HMW	15–238	60–460
Polyethylene UHMW	15–238	60–460
Polymethylpentene	15–238	60–460
Polypropylene (PP)	15–238	60–460
Polystyrene	15–238	60–460
Polysulfone	15–238	60–460
Polyvinylidene Chloride	15–238	60–460
PVC Type 1	15–238	60–460
PVC Type 2	15–238	60–460
PVDF (Kynar)	15–238	60–460
Ryton	15–238	60–460
TFE (Teflon)	15–238	60–460
Vinyl Ester	15–238	60–460

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VANADIUM PENTAOXIDE

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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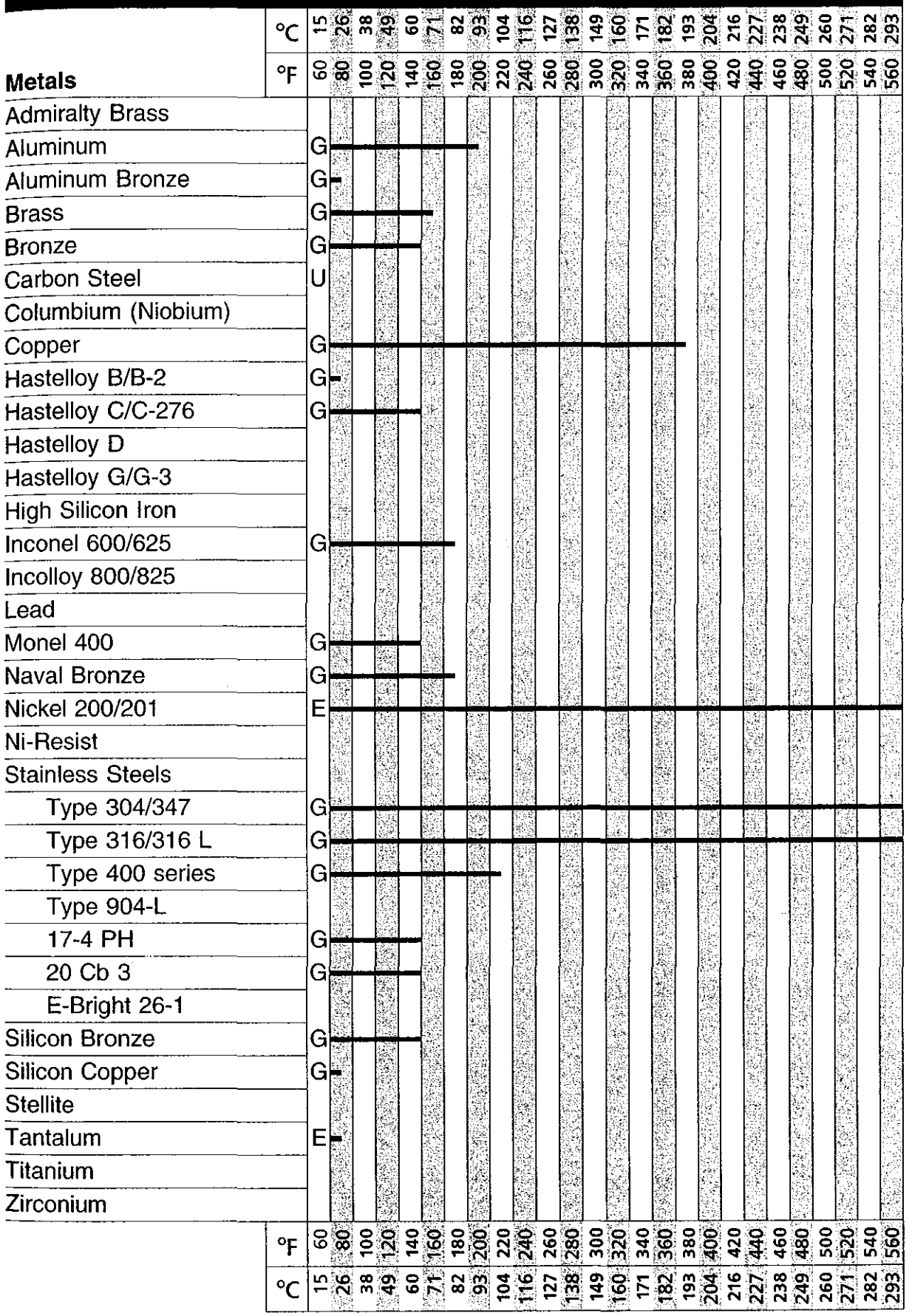

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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VARNISH

	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
Nonmetallic Materials	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated		R	—																			
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride		U																				
Silicones		U																				
Urethanes																						
Vinyls		U																				
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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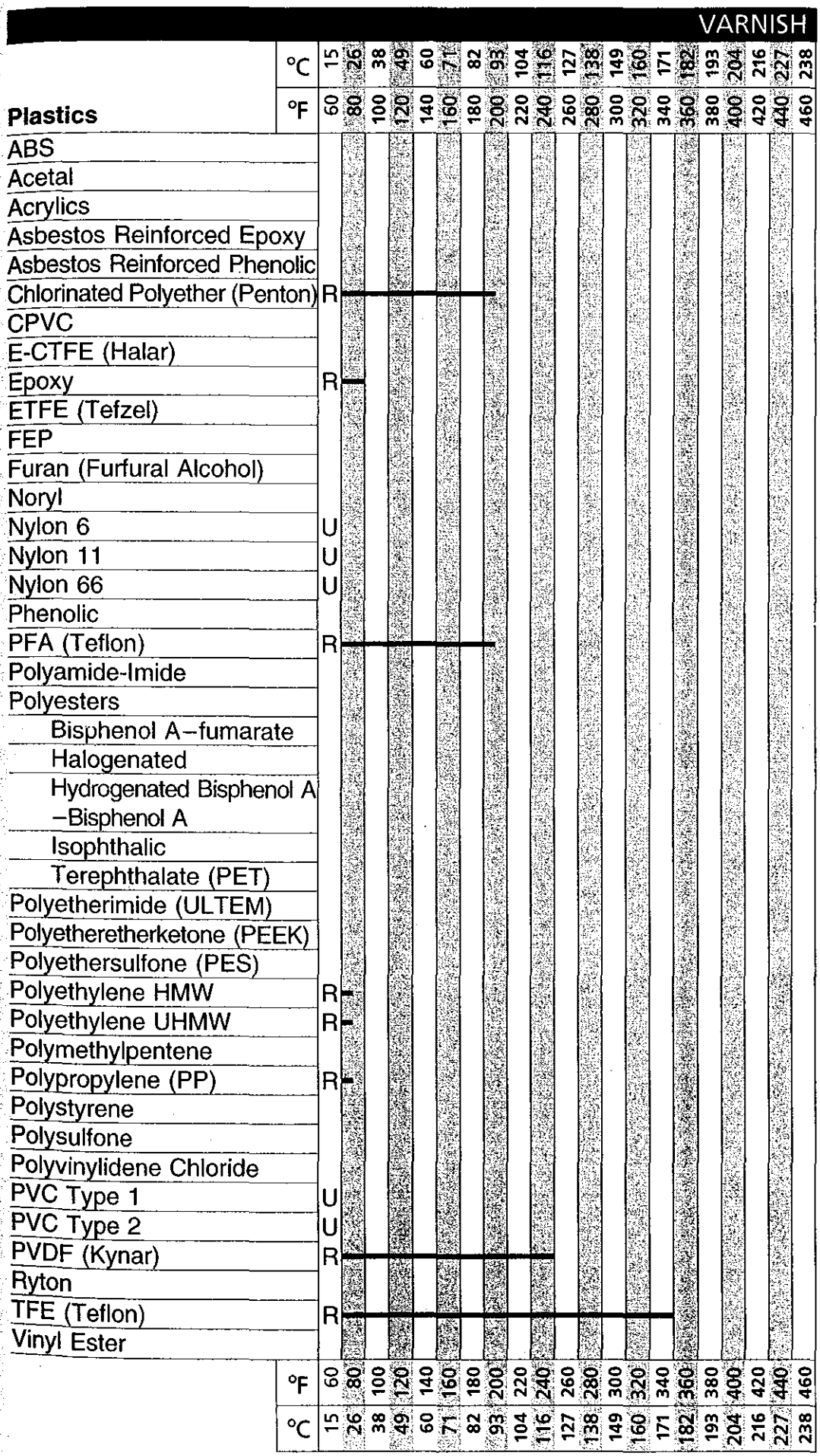

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VARNISH

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)	U																					
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)	R																					
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)	R																					
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)	R																					
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers	U																					
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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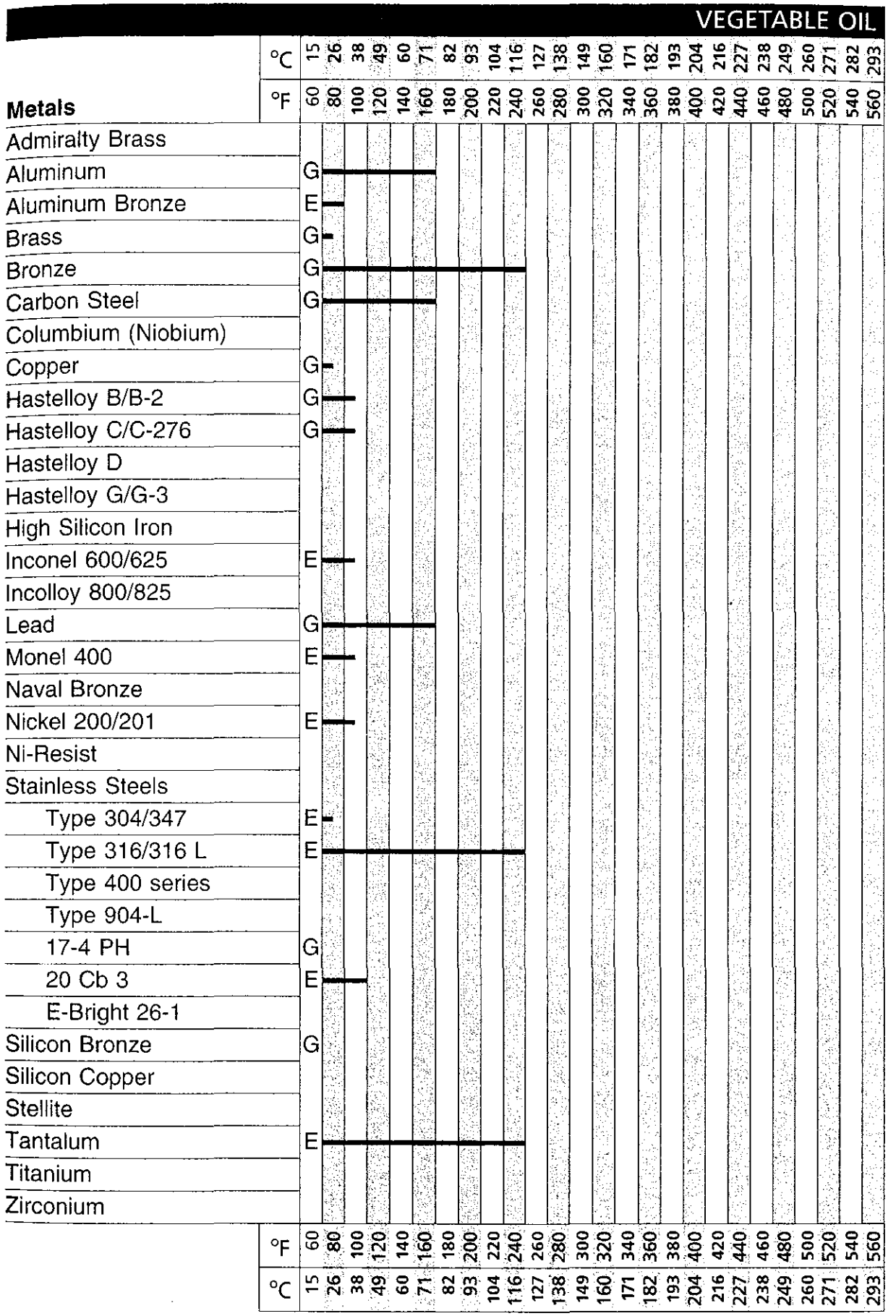

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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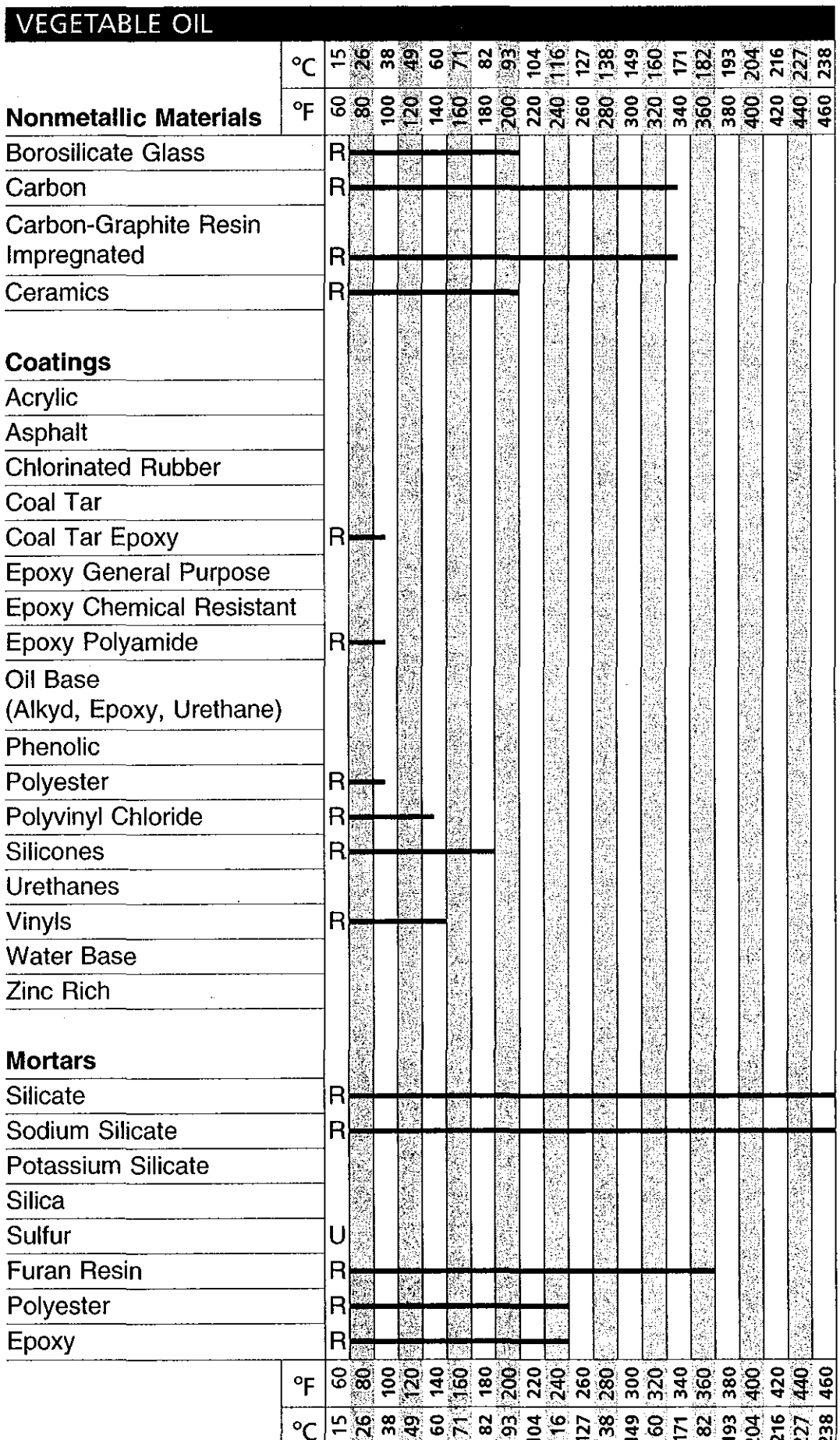

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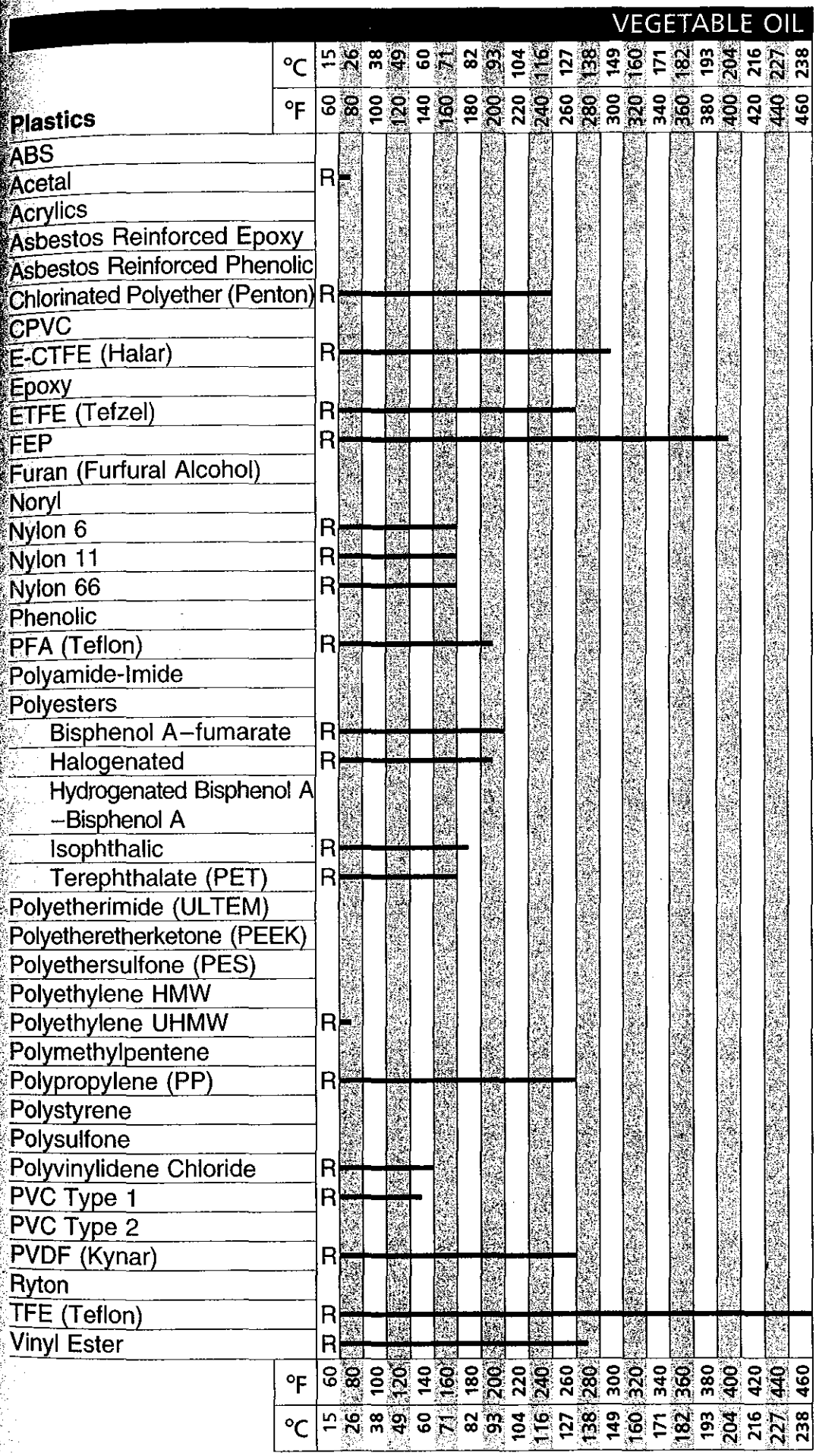

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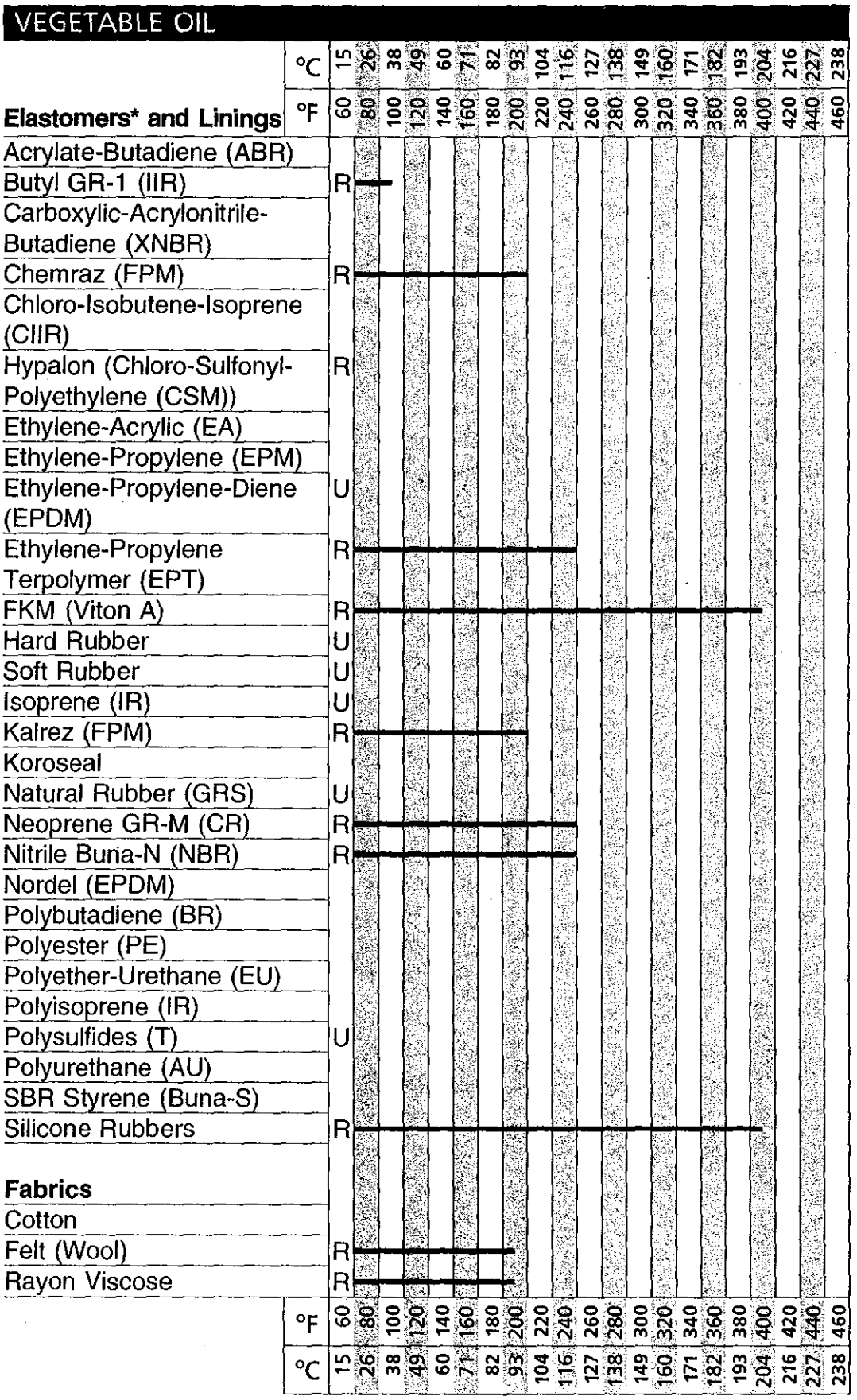

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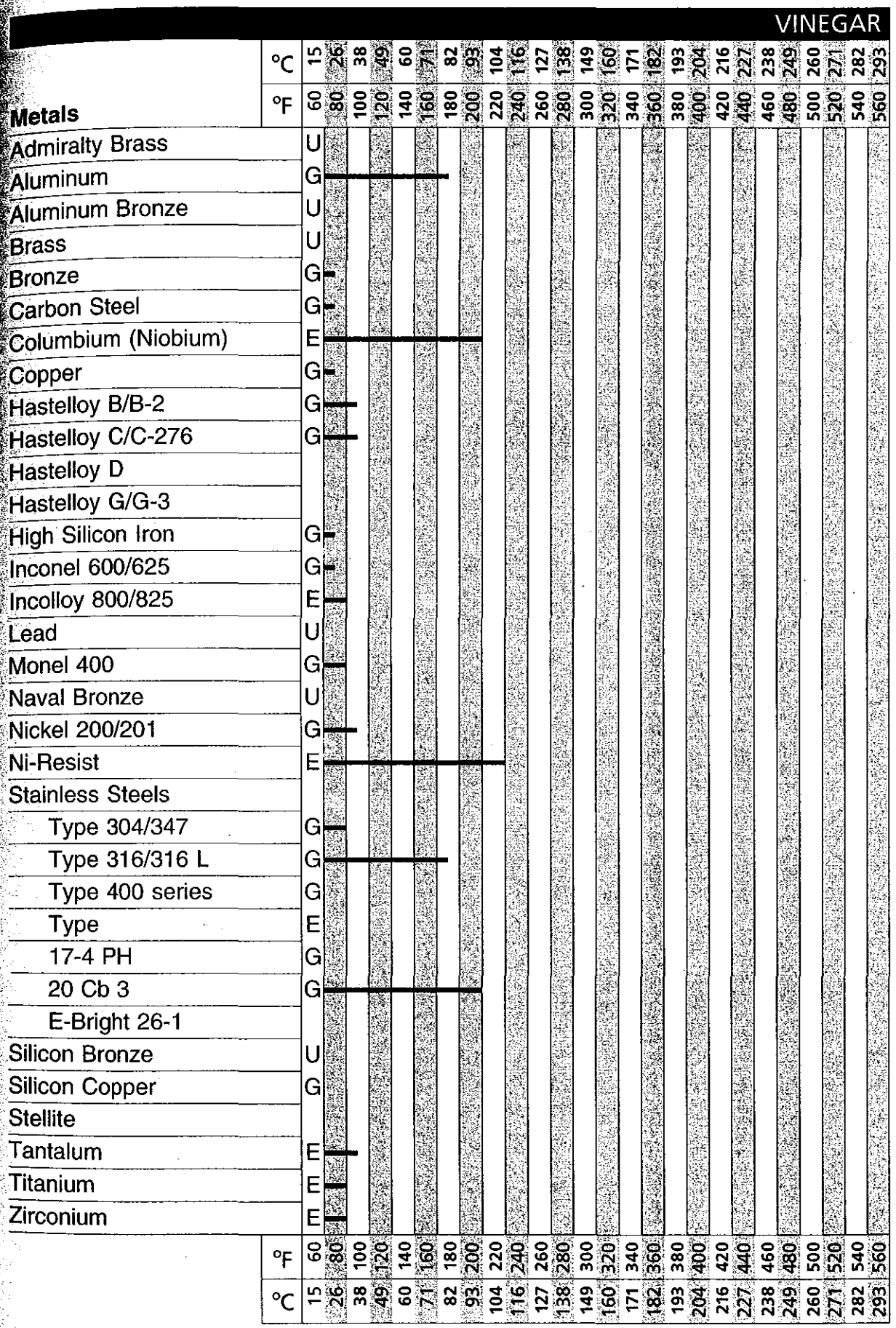

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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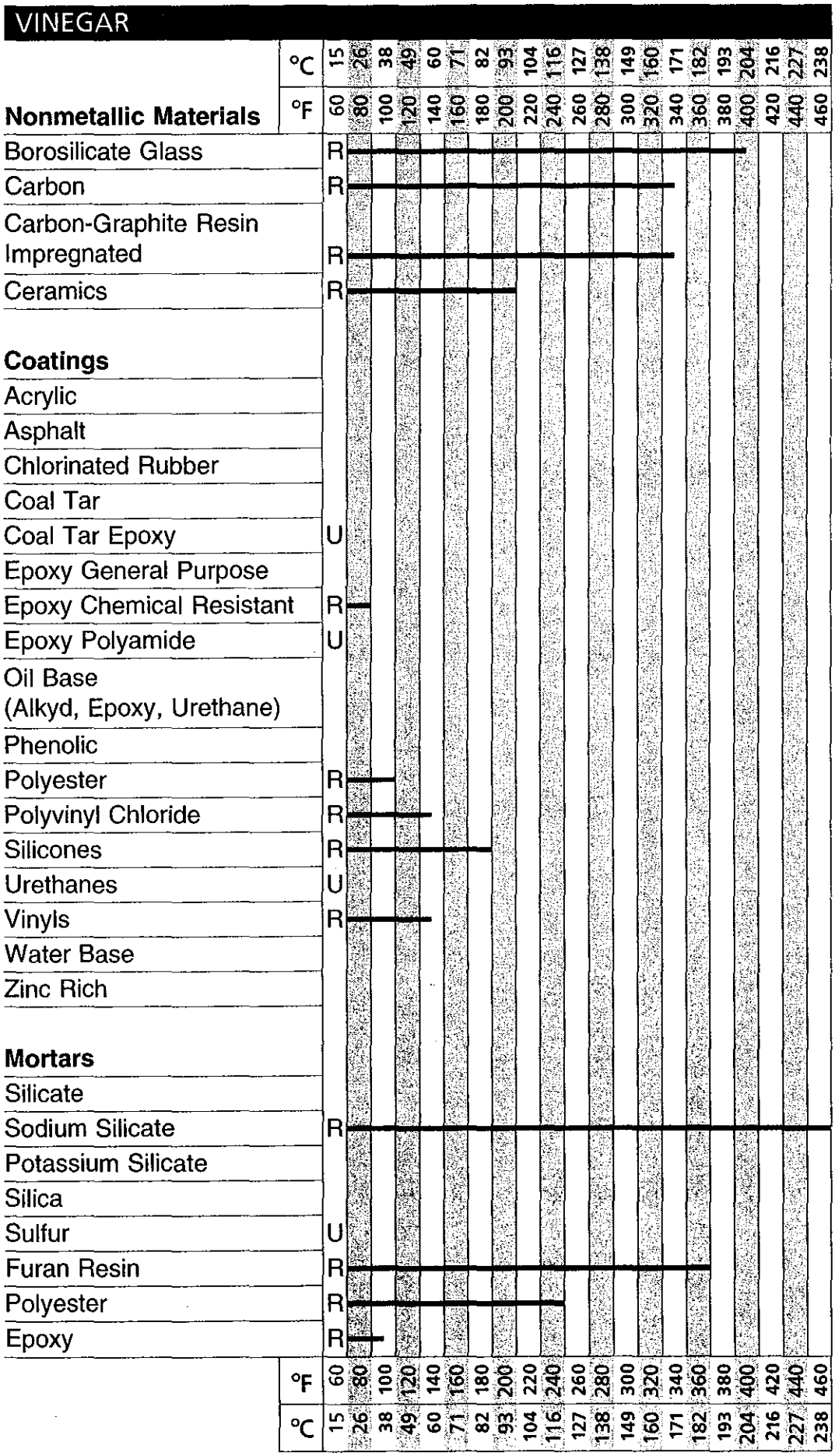
VINEGAR



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VINEGAR

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS		R																				
Acetal		U																				
Acrylics		R																				
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)		R																				
CPVC		R																				
E-CTFE (Halar)		R																				
Epoxy		R				U																
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)		R																				
Noryl		R																				
Nylon 6		R																				
Nylon 11		R																				
Nylon 66		R																				
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate		R																				
Halogenated		R																				
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic		R																				
Terephthalate (PET)		R																				
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		R																				
Polyethylene UHMW		R																				
Polymethylpentene																						
Polypropylene (PP)		R																				
Polystyrene																						
Polysulfone		R																				
Polyvinylidene Chloride		R																				
PVC Type 1		R																				
PVC Type 2		R																				
PVDF (Kynar)		R																				
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester		R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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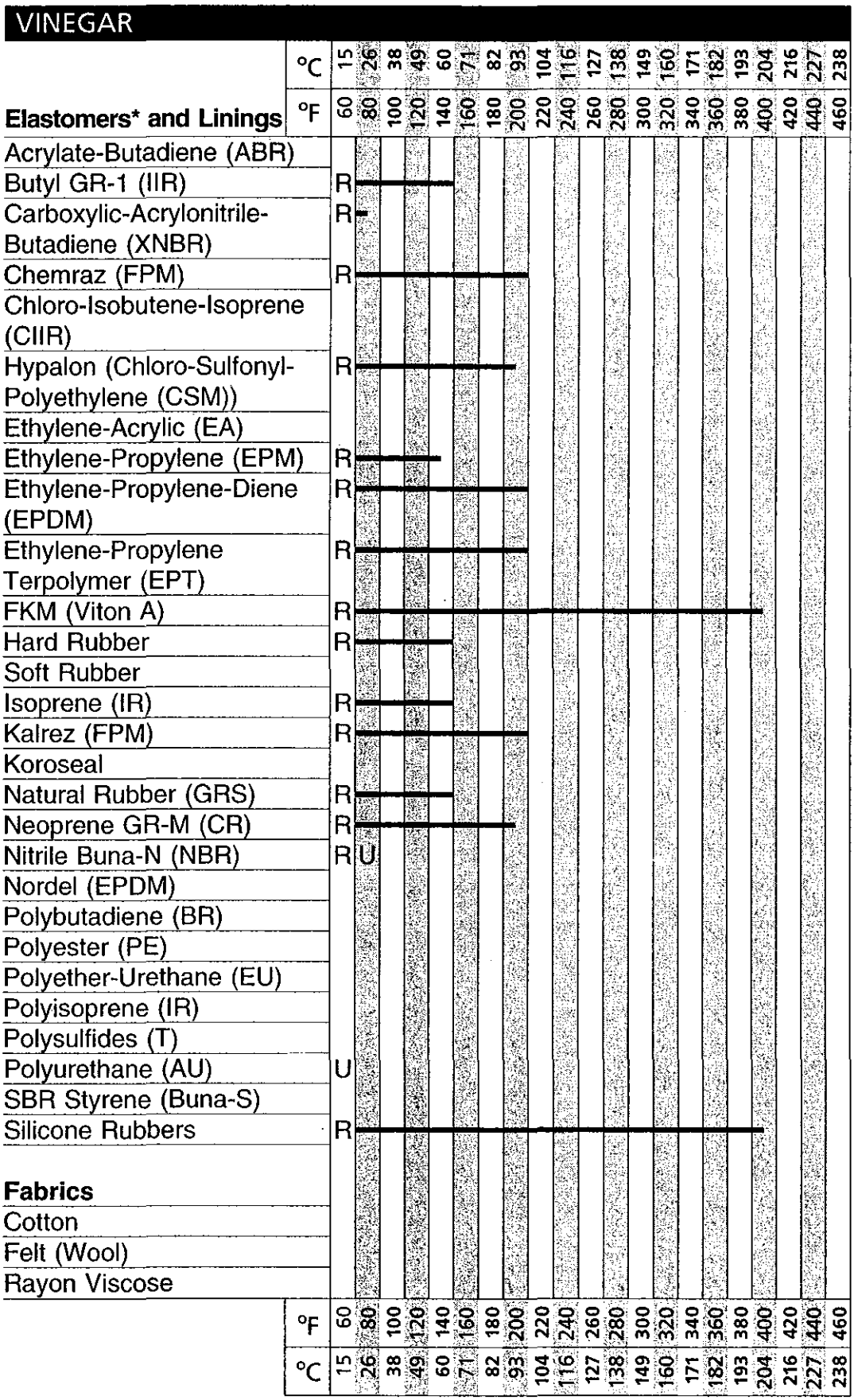
VINEGAR



*See also Nylon 11 under PLASTICS

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VINYL ACETATE

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum		E																									
Aluminum Bronze																											
Brass		G																									
Bronze		G																									
Carbon Steel		G																									
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276		E																									
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Galv. Stl.		G																									
Monel 400		E																									
Naval Bronze		E	S																								
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347		E																									
Type 316/316 L		E						G																			
Type 400 series																											
Type 904-L																											
17-4 PH																											
20 Cb 3		E																									
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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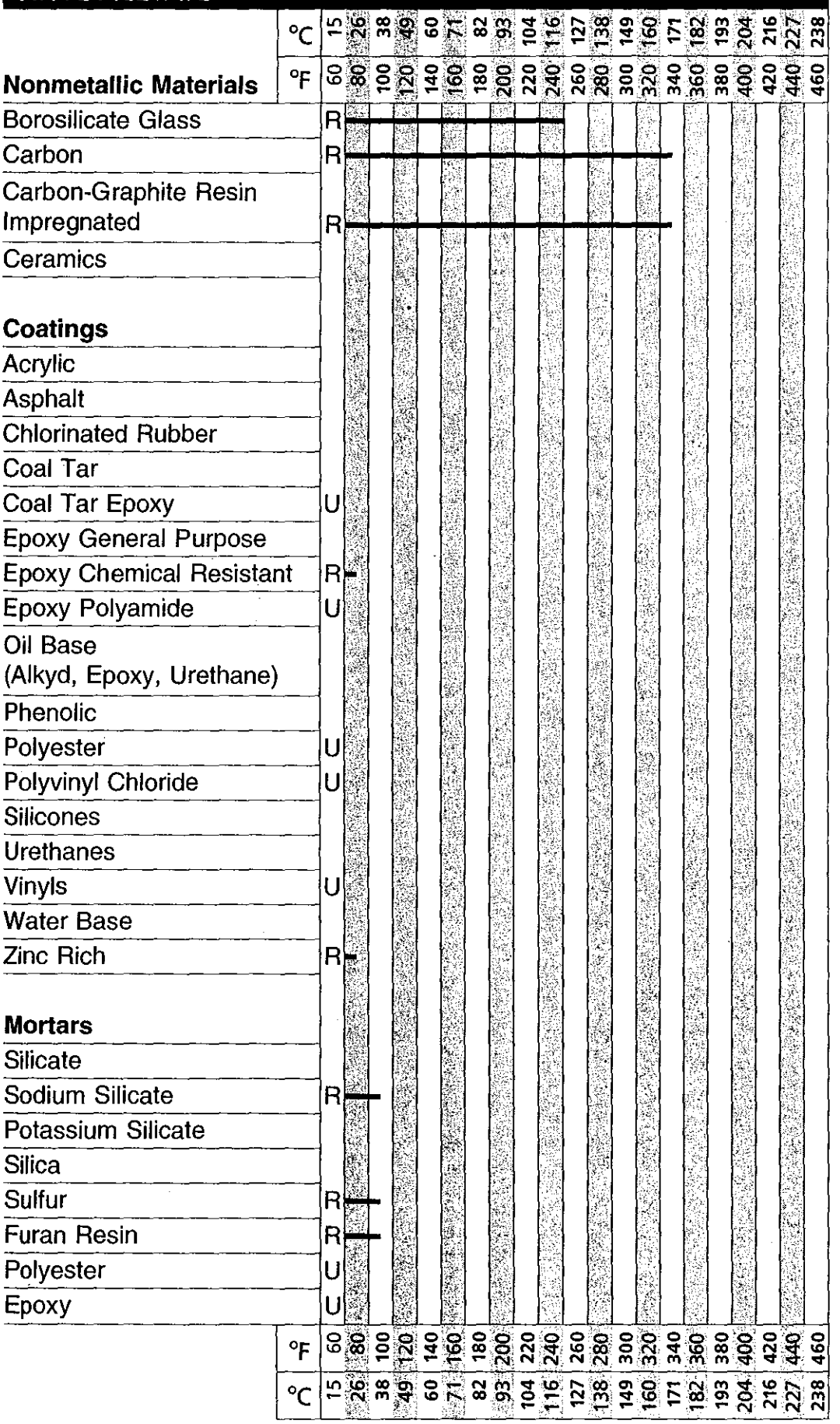
VINYL ACETATE



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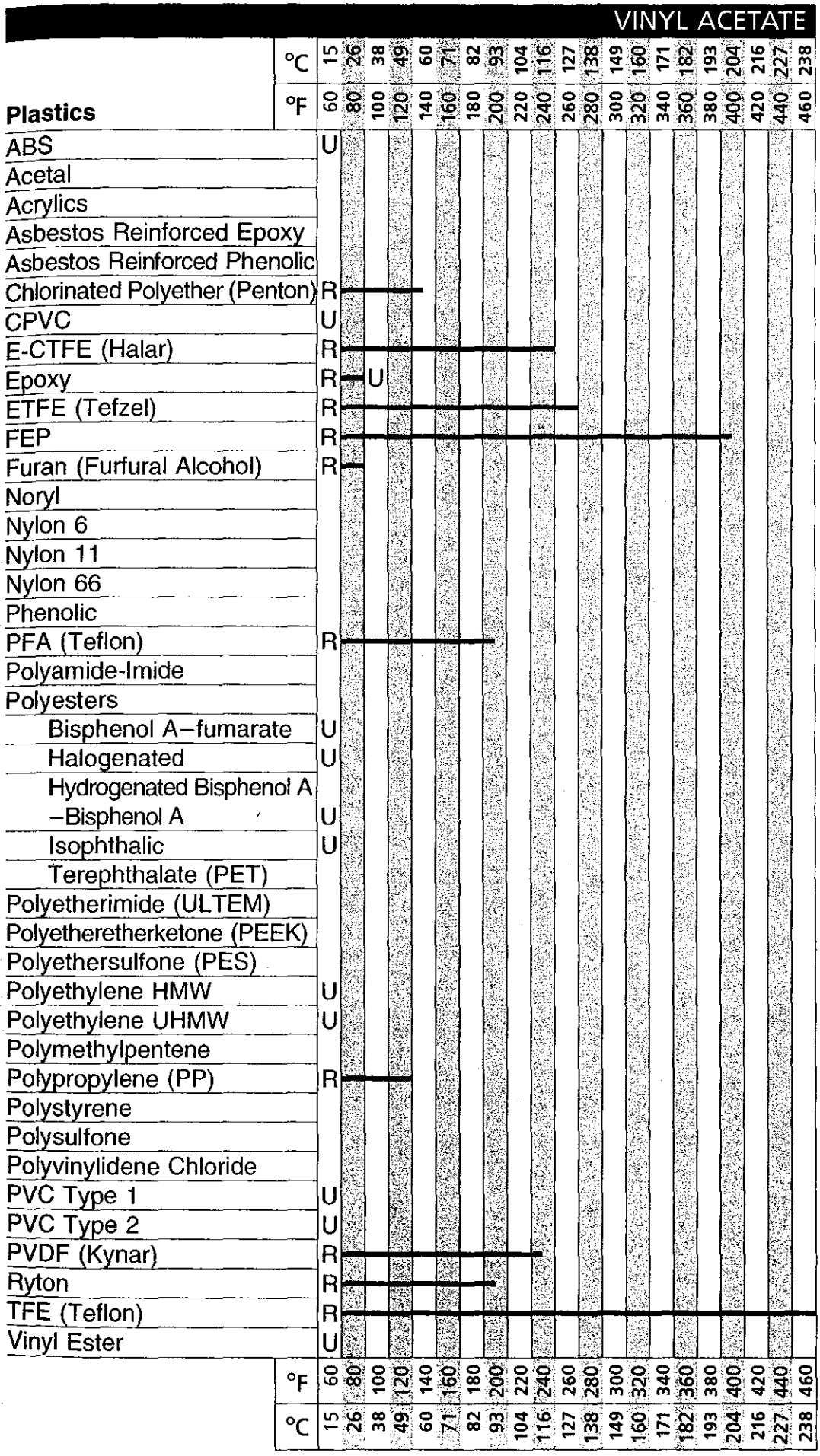
VINYL ACETATE



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VINYL ACETATE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
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Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
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Ethylene-Propylene-Diene (EPDM)	R																				
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FKM (Viton A)	R																				
Hard Rubber																					
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Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)	R																				
Nitrile Buna-N (NBR)	R	U																			
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
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Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)	U																				
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass																											
Aluminum																											
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2	E																										
Hastelloy C/C-276	G																										
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Lead																											
Monel 400	E																										
Naval Bronze																											
Nickel 200/201																											
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	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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VINYL CHLORIDE

Nonmetallic Materials	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																						
Carbon																						
Carbon-Graphite Resin Impregnated																						
Ceramics																						
Coatings																						
Acrylic																						
Asphalt																						
Chlorinated Rubber																						
Coal Tar																						
Coal Tar Epoxy																						
Epoxy General Purpose																						
Epoxy Chemical Resistant																						
Epoxy Polyamide																						
Oil Base (Alkyd, Epoxy, Urethane)																						
Phenolic																						
Polyester																						
Polyvinyl Chloride																						
Silicones																						
Urethanes																						
Vinyls																						
Water Base																						
Zinc Rich																						
Mortars																						
Silicate																						
Sodium Silicate																						
Potassium Silicate																						
Silica																						
Sulfur																						
Furan Resin																						
Polyester																						
Epoxy																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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VINYL CHLORIDE

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
ABS																						
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)																						
FEP																						
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)																						
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW																						
Polyethylene UHMW																						
Polymethylpentene																						
Polypropylene (PP)																						
Polystyrene																						
Polysulfone																						
Polyvinylidene Chloride																						
PVC Type 1																						
PVC Type 2																						
PVDF (Kynar)																						
Ryton																						
TFE (Teflon)																						
Vinyl Ester																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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VINYL CHLORIDE

Elastomers* and Linings	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																					
Butyl GR-1 (IIR)																					
Carboxylic-Acrylonitrile-Butadiene (XNBR)																					
Chemraz (FPM)																					
Chloro-Isobutene-Isoprene (CIIR)																					
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																					
Ethylene-Acrylic (EA)																					
Ethylene-Propylene (EPM)																					
Ethylene-Propylene-Diene (EPDM)	U																				
Ethylene-Propylene Terpolymer (EPT)																					
FKM (Viton A)	R																				
Hard Rubber																					
Soft Rubber																					
Isoprene (IR)																					
Kalrez (FPM)	R																				
Koroseal																					
Natural Rubber (GRS)																					
Neoprene GR-M (CR)																					
Nitrile Buna-N (NBR)	U																				
Nordel (EPDM)																					
Polybutadiene (BR)																					
Polyester (PE)																					
Polyether-Urethane (EU)																					
Polyisoprene (IR)																					
Polysulfides (T)																					
Polyurethane (AU)																					
SBR Styrene (Buna-S)																					
Silicone Rubbers																					
Fabrics																					
Cotton																					
Felt (Wool)																					
Rayon Viscose																					
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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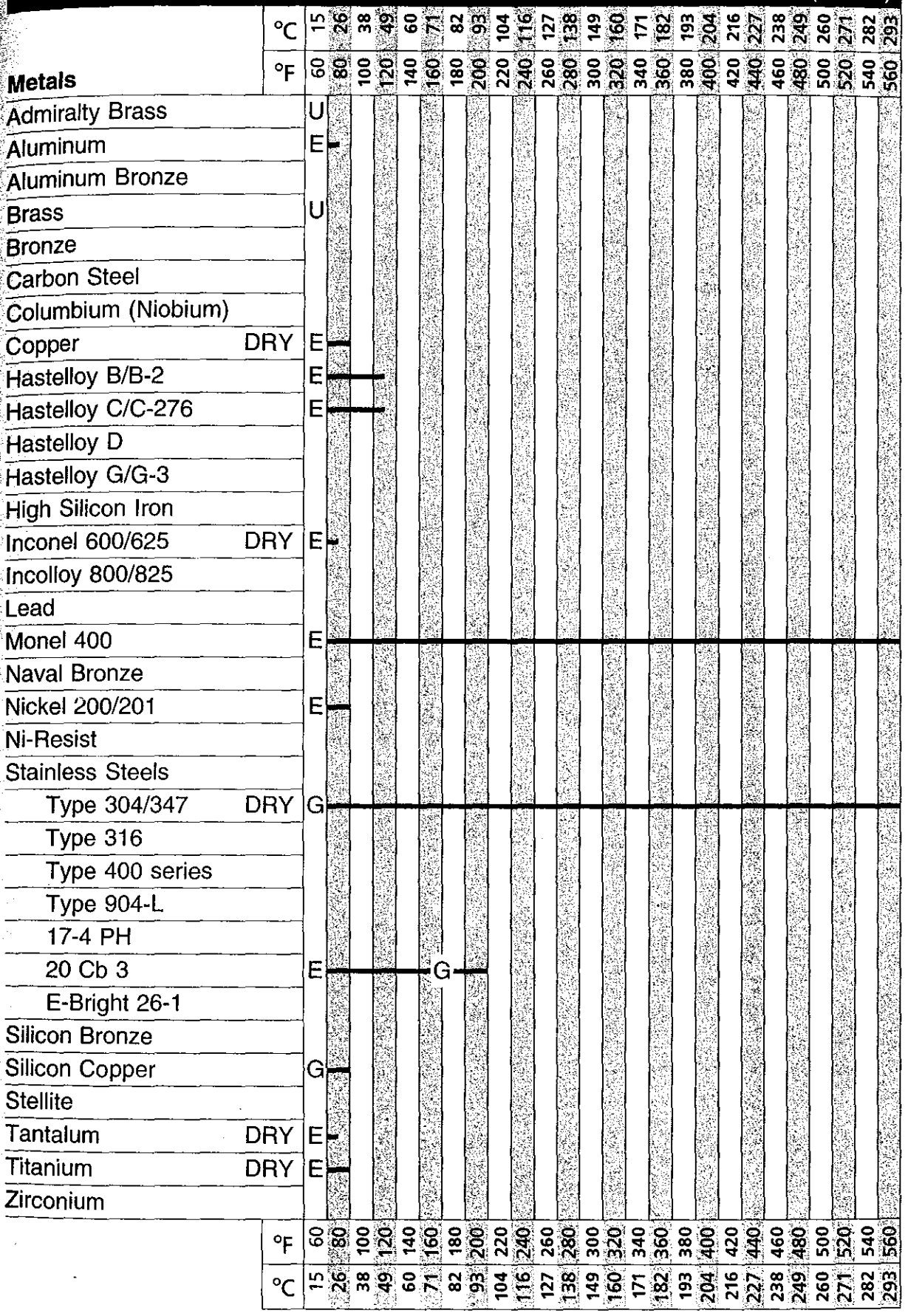

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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VINYL CHLORIDE (RESIN)

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																					
Carbon	R																				
Carbon-Graphite Resin Impregnated																					
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride																					
Silicones																					
Urethanes																					
Vinyls																					
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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VINYL CHLORIDE (RESIN)

Plastics	°C	°F
ABS		
Acetal		
Acrylics		
Polycarbonate	U	
Asbestos Reinforced Phenolic		
Chlorinated Polyether (Penton)		
CPVC		
E-CTFE (Halar)		
Epoxy		
ETFE (Tefzel)	R	
FEP	R	
Furan (Furfural Alcohol)		
Noryl		
Nylon 6		
Nylon 11		
Nylon 66		
Phenolic		
PFA (Teflon)	R	
Polyamide-Imide		
Polyesters		
Bisphenol A–fumarate		
Halogenated		
Hydrogenated Bisphenol A –Bisphenol A		
Isophthalic		
Terephthalate (PET)		
Polyetherimide (ULTEM)		
Polyetheretherketone (PEEK)		
Polyethersulfone (PES)		
Polyethylene HMW		
Polyethylene UHMW		
Polymethylpentene		
Polypropylene (PP)		
Polystyrene		
Polysulfone		
Polyvinylidene Chloride		
PVC Type 1	U	
PVC Type 2	U	
PVDF (Kynar)	R	
Ryton		
TFE (Teflon)	R	
Vinyl Ester		

°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460

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VINYL CHLORIDE (RESIN)

Elastomers* and Linings	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Acrylate-Butadiene (ABR)																						
Butyl GR-1 (IIR)																						
Carboxylic-Acrylonitrile-Butadiene (XNBR)																						
Chemraz (FPM)																						
Chloro-Isobutene-Isoprene (CIIR)																						
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))																						
Ethylene-Acrylic (EA)																						
Ethylene-Propylene (EPM)																						
Ethylene-Propylene-Diene (EPDM)																						
Ethylene-Propylene Terpolymer (EPT)																						
FKM (Viton A)																						
Hard Rubber																						
Soft Rubber																						
Isoprene (IR)																						
Kalrez (FPM)																						
Koroseal																						
Natural Rubber (GRS)																						
Neoprene GR-M (CR)																						
Nitrile Buna-N (NBR)																						
Nordel (EPDM)																						
Polybutadiene (BR)																						
Polyester (PE)																						
Polyether-Urethane (EU)																						
Polyisoprene (IR)																						
Polysulfides (T)																						
Polyurethane (AU)																						
SBR Styrene (Buna-S)																						
Silicone Rubbers																						
Fabrics																						
Cotton																						
Felt (Wool)																						
Rayon Viscose																						
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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VINYLIDINE CHLORIDE RESIN

Metals	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
Admiralty Brass		E																									
Aluminum		E																									
Aluminum Bronze																											
Brass																											
Bronze																											
Carbon Steel																											
Columbium (Niobium)																											
Copper																											
Hastelloy B/B-2																											
Hastelloy C/C-276																											
Hastelloy D																											
Hastelloy G/G-3																											
High Silicon Iron																											
Inconel 600/625																											
Incolloy 800/825																											
Lead																											
Monel 400																											
Naval Bronze																											
Nickel 200/201																											
Ni-Resist																											
Stainless Steels																											
Type 304/347																											
Type 316/316 L																											
Type																											
Type 904-L																											
17-4 PH																											
20 Cb 3																											
E-Bright 26-1																											
Silicon Bronze																											
Silicon Copper																											
Stellite																											
Tantalum																											
Titanium																											
Zirconium																											
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238	249	260	271	282	293

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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VINYLIDINE CHLORIDE RESIN

Nonmetallic Materials	°C 15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F 60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Borosilicate Glass																					
Carbon																					
Carbon-Graphite Resin Impregnated																					
Ceramics																					
Coatings																					
Acrylic																					
Asphalt																					
Chlorinated Rubber																					
Coal Tar																					
Coal Tar Epoxy																					
Epoxy General Purpose																					
Epoxy Chemical Resistant																					
Epoxy Polyamide																					
Oil Base (Alkyd, Epoxy, Urethane)																					
Phenolic																					
Polyester																					
Polyvinyl Chloride																					
Silicones																					
Urethanes																					
Vinyls																					
Water Base																					
Zinc Rich																					
Mortars																					
Silicate																					
Sodium Silicate																					
Potassium Silicate																					
Silica																					
Sulfur																					
Furan Resin																					
Polyester																					
Epoxy																					
°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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VINYLIDINE CHLORIDE RESIN

Plastics	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
Polycarbonate		U																				
Acetal																						
Acrylics																						
Asbestos Reinforced Epoxy																						
Asbestos Reinforced Phenolic																						
Chlorinated Polyether (Penton)																						
CPVC																						
E-CTFE (Halar)																						
Epoxy																						
ETFE (Tefzel)		R																				
FEP		R																				
Furan (Furfural Alcohol)																						
Noryl																						
Nylon 6																						
Nylon 11																						
Nylon 66																						
Phenolic																						
PFA (Teflon)		R																				
Polyamide-Imide																						
Polyesters																						
Bisphenol A–fumarate																						
Halogenated																						
Hydrogenated Bisphenol A –Bisphenol A																						
Isophthalic																						
Terephthalate (PET)																						
Polyetherimide (ULTEM)																						
Polyetheretherketone (PEEK)																						
Polyethersulfone (PES)																						
Polyethylene HMW		U																				
Polyethylene UHMW		U																				
Polymethylpentene		U																				
Polypropylene (PP)		U																				
Polystyrene																						
Polysulfone		U																				
Polyvinylidene Chloride		U																				
PVC Type 1		U																				
PVC Type 2		U																				
PVDF (Kynar)		R																				
Ryton																						
TFE (Teflon)		R																				
Vinyl Ester		R																				
	°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
	°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

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VINYLIDINE CHLORIDE RESIN

Elastomers* and Linings	°F	°C
Acrylate-Butadiene (ABR)		
Butyl GR-1 (IIR)		
Carboxylic-Acrylonitrile-Butadiene (XNBR)		
Chemraz (FPM)		
Chloro-Isobutene-Isoprene (CIIR)		
Hypalon (Chloro-Sulfonyl-Polyethylene (CSM))		
Ethylene-Acrylic (EA)		
Ethylene-Propylene (EPM)		
Ethylene-Propylene-Diene (EPDM)		
Ethylene-Propylene Terpolymer (EPT)		
FKM (Viton A)		
Hard Rubber		
Soft Rubber		
Isoprene (IR)		
Kalrez (FPM)	R	
Koroseal		
Natural Rubber (GRS)		
Neoprene GR-M (CR)		
Nitrile Buna-N (NBR)		
Nordel (EPDM)		
Polybutadiene (BR)		
Polyester (PE)		
Polyether-Urethane (EU)		
Polyisoprene (IR)		
Polysulfides (T)		
Polyurethane (AU)		
SBR Styrene (Buna-S)		
Silicone Rubbers		
Fabrics		
Cotton		
Felt (Wool)		
Rayon Viscose		

°F	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460
°C	15	26	38	49	60	71	82	93	104	116	127	138	149	160	171	182	193	204	216	227	238

*See also Nylon 11 under PLASTICS

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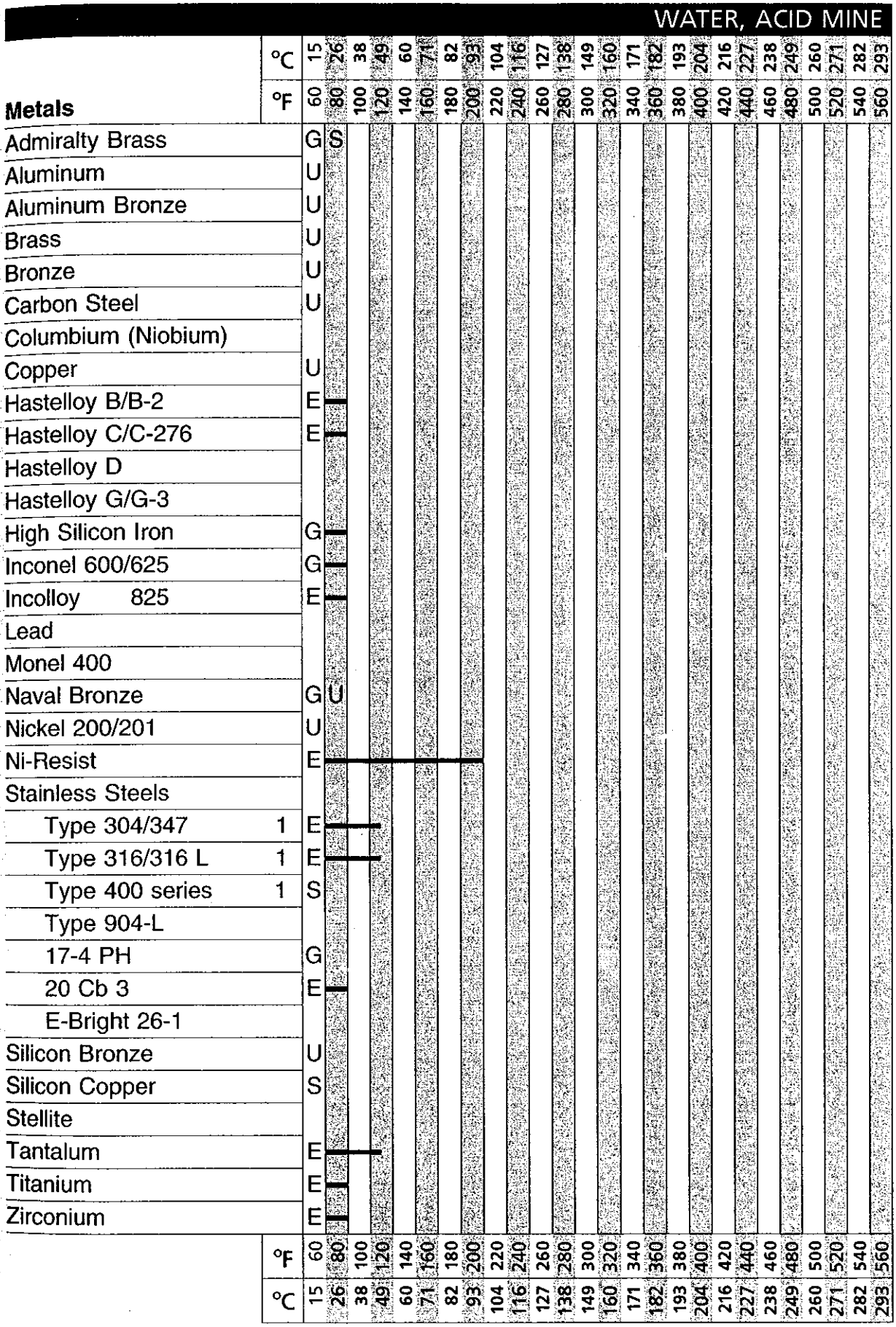

FOR METALS

E = < 2 Mils Penetration/Year; G = < 20 Mils Penetration/Year

S = < 50 Mils Penetration/Year; U = > 50 Mils Penetration/Year

FOR NONMETALLICS

R = Resistant

U = Unsatisfactory

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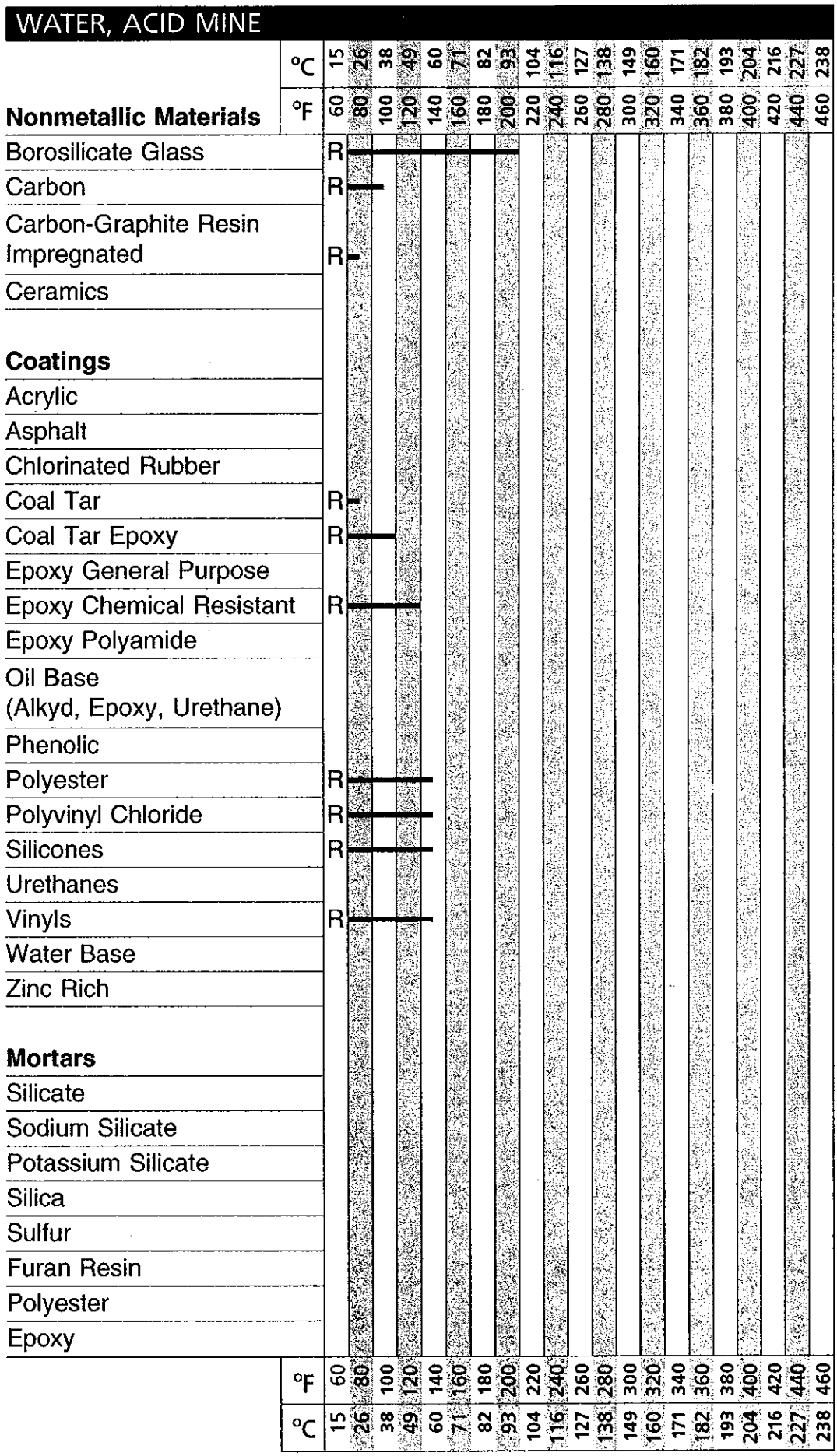
WATER, ACID MINE



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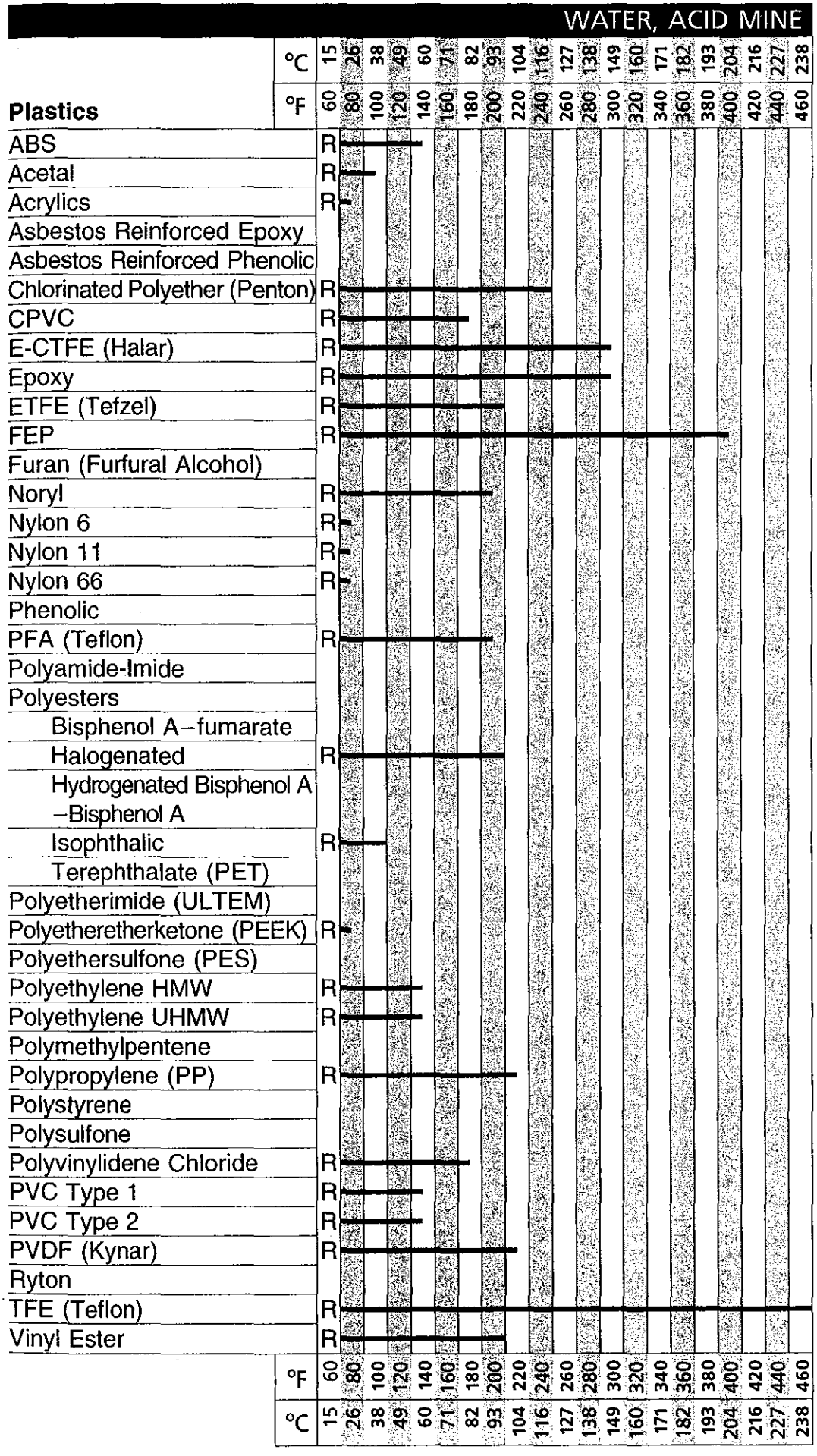

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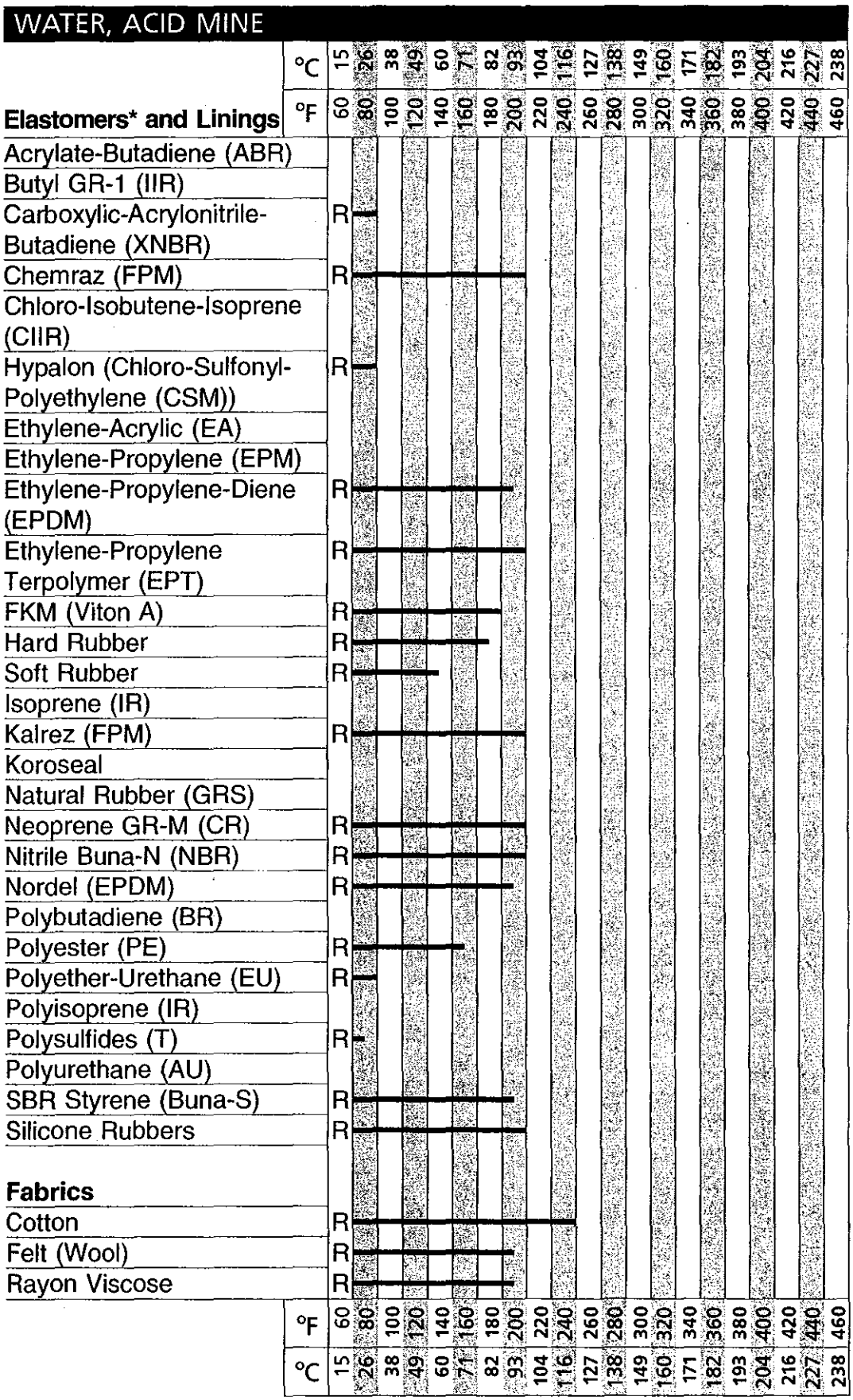
WATER, ACID MINE



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Appendix 1: Chemical Synonyms

Synonym	Listed under
Acetic acid amine	Acetamide
Acetic acid crude	Pyroligneous acid
Acetic ether	Ethyl acetate
Acetol	Diacetone alcohol
Acetyl benzene	Acetophenone
Acetylene tetrachloride	Tetrachloroethane
Almond oil	Benzaldehyde
Aluminum hydrate	Aluminum hydroxide
Aluminum potassium chrome	Chrome alum
Alum potash	Aluminum potassium sulfate
Amino benzene	Aniline
Ammonium fluoride, acid	Ammonium bifluoride
Antimony chloride	Antimony trichloride
Baking soda	Sodium carbonate
Benzene carbonal	Benzaldehyde
Benzene carboxylic acid	Benzoic acid
Benzine	Petroleum ether
Benzol	Benzene
Benzyl ether	Dibenzyl ether
Boracic acid	Boric acid
Bromo-butane	Butyl bromide
Bromomethane	Methyl bromide
Butanol-1	Butyl alcohol
Butanol-2	Butyl alcohol, secondary
Butanoic acid	Butyric acid
Butanone	Methyl ethyl ketone
Butanthiol-1	Butyl mercaptan
Butter of antimony	Antimony trichloride
Butyl phthalate	Dibutyl phthalate
Calcium disulfide	Calcium bisulfide
Calcium sulfide	Lime sulfur
Carbamide	Urea
Carbolic acid	Phenol
Carbon oxychloride	Phosgene
Carbonyl chloride	Phosgene

Synonym	Listed under
Caustic potash	Potassium hydroxide
Caustic soda	Sodium hydroxide
Chlorinated polyphenol	Aroclor
Chlorobenzene	Monochlorobenzene
1-Chloro-butane	Butyl chloride
Chlorodifluoro-methane	Freon F-22
Chloroethane	Ethyl chloride
Chloroethanoic acid	Chloroacetic acid
Chloromethane	Methyl chloride
Chloropentane	Amyl chloride
3-Chloro-propene-1	Allyl chloride
Chlorotoluene	Benzyl chloride
Chromium trioxide	Chromic acid
Coal tar	Creosote
Corn syrup	Glucose
Cupric acetate	Copper acetate
Cupric carbonate	Copper carbonate
Cupric fluoride	Copper fluoride
Cupric nitrate	Copper nitrate
Cupric sulfate	Copper sulfate
Cuprous chloride	Copper chloride
Diacetone	Diacetone alcohol
Dibromoethane	Ethylene bromide
Dibutyl ether	Butyl ether
Dichloroethane	Ethylene dichloride
Dichloroethene	Dichloroethylene
Dichloromethane	Methylene chloride
Diethyl	Butane
Diethylene dioxide	Dioxane
Diethylene di-imide oxide	Morpholine
Dihydroxy benzene	Resorcinol
Dihydroxy ethane	Glycol, ethyleneglycol
Dimethyl benezene	Xylene
Dimethyl polysiloxane	Silicone oil
Dimethyl sulfate	Methyl sulfate
Diphenyl ether	Diphenyl oxide
Dipropyl	Hexane
Dipropyl ether	Isopropyl ether
Dodecyl chloride	Lauryl chloride
Dowtherm	Diphenyl
Epsom salt	Magnesium sulfate
Ethanal	Acetaldehyde
Ethanamide	Acetamide
Ethanoic acid	Acetic acid
Ethanoic anhydride	Acetic anhydride
Ethanonitrile	Acetonitrile
Ethanol	Ethyl alcohol
Ethanoyl chloride	Acetyl chloride
Ethoxy ethanol	Cellosolve
Ethylene chloride	Ethylene dichloride
Ethyl ether	Diethyl ether
Fluorosilicic acid	Hydrofluorosilicic acid

Synonym	Listed under
Formalin	Formaldehyde
Furfuraldehyde	Furfural
Furfurol	Furfural
Glucose	Dextrose, corn syrup
Glycerol	Glycerine
Glycol	Ethylene glycol
Glycol ether	Diethylene glycol
Glycol methyl ether	Methyl cellosolve
Hexamethylene	Cyclohexane
Hexamethylene tetramine	Hexamine
Hexandioic acid	Adipic acid
Hexose	Dextrose
Hexyl alcohol	Hexanol
Hydrogen iodide	Hydriodic acid
Hydroxy benzoic acid	Salicylic acid
Hypo photographic solution	Sodium thiosulfate
Isopropyl benzene	Cumene
Ligroin	Petroleum ether
Lime	Calcium oxide
Lime sulfur	Calcium sulfide
Lithic acid	Uric acid
Marsh gas	Methane
Methanal	Formaldehyde
Methane sulfonic acid	Methyl sulfonic acid
Methanoic acid	Formic acid
Methanol	Methyl alcohol
Methyl benzene	Toluene
Methyl chloroform	Trichloroethane
Methyl cyanide	Acetonitrile
Methyl ether	Dimethyl ether
Methyl phenol	Cresol
Methyl phenol ketone	Acetophenone
Methyl phthalate	Dimethyl phthalate
Methyl propane-2	Butyl alcohol, tertiary
Methyl sulfonic acid	Methane sulfonic acid
Nitrochloroform	Chloropicrin
Nitrogen oxide, tri-	Nitrous acid
Octanoic acid	Caprylic acid
Oil of mirbane	Nitrobenzene
Oil of wintergreen	Methyl salicylate
Oxalic nitrile	Cyanogen
Phenyl amine	Aniline
Phenyl bromide	Bromobenzene
Phenyl carbinol	Benzyl alcohol
Phenyl chloride	Chlorobenzene
Phenyl cyanide	Benzonitrile
Phenyl ethane	Ethyl benzene
Phosphine	Hydrogen phosphide
Pimelic ketone	Cyclohexanone
Pinene	Dipentene
Polyphenylene sulfide	Ryton
Propanoic acid	Propionic acid

Synonym	Listed under
Propanol	Propyl alcohol
Propanone	Acetone
Propanyl alcohol	Allyl alcohol
Propenoic acid	Acrylic acid
Propyl acetate	Isopropyl acetate
Prussic acid	Hydrocyanic acid
Pyrogallol	Pyrogallic acid
Red oil	Oleic acid
Salammoniac	Ammonium chloride
Sodium borate, tetra	Borax
Sodium phosphate, dibasic	Disodium phosphate
Starch gum	Dextrin
Sugar of lead	Lead acetate
Sulfoanthraquinone	Anthraquinone sulfuric acid
Sulfuric chlorohydrin	Chlosulfonic acid
Tannin	Tannic acid
Tetrachloroethylene	Perchlorethylene
Tetrachloromethane	Carbon tetrachloride
Tetrahydronaphthalene	Tetralin
Toluol	Toluene
Trichloroacetic aldehyde	Chloral hydrate
Trichloromethane	Chloroform
Trihydroxy benzene	Pyrogallic acid
Trihydroxy benzoic acid	Gallic acid
Trinitrophenol	Petrolatum
Vaseline	Picric acid
Vinyl cyanide	Acrylonitrile
Water glass	Sodium silicate

Appendix 2: Cross-Reference of Trade Names to Generic Names

Trade name/designation	Generic name
Adiprene[a]	Urethane (AU)
Bayprene[b]	Polychloroprene (CR)
Baysilone[b]	Silicone rubber (SI)
Baytec[b]	Urethane (AU)
Blue-sil[n]	Silicone rubber (SI)
Buna-85	Polybutadiene (BR)
Buna-CB[b]	Polybutadiene (BR)
Buna-N	Butadiene-acrylonitrile (NBR)
Buna-S	Butadiene-styrene-elastomer (SBR)
Chemraz[j]	Perfluoroelastomers (FPM)
Cohrplastic[o]	Silicone rubber (SI)
Conathane[p]	Urethane (AU)
CSM	Chlorosulfonated polyethylene
Cycolac[ac]	Acrylonitrile-butadiene-styrene (ABS)
Duracryn[a]	Thermoplastic elastomer (TPE)
Dutral[r]	Ethylene-propylene-diene (EPDM)
Flexsorb[q]	Thermoplastic elastomer (TPE)
Fluorel[f]	Fluoroelastomers (FKM)
Foraflon[f]	Polyvinylidene fluoride (PVDF)
Futura-thane[k]	Urethane (AU)
Geolast[r]	Thermoplastic elastomer (TPE)
GR-1	Butyl rubber (IIR)
Green-sil[n]	Silicone rubber (SI)
GR-S	Butadiene-styrene elastomer (SBR)
Halar[i]	ECTFE
Halon-ET[i]	Ethylene-tetrafluorethylene (ETFE)
Hypalon[a]	Chlorosulfonated polyethylene (CSM)
Hytrel[a]	Polyester elastomer (PE)
Kalar[s]	Butyl rubber (IIR)
Kalrez[a]	Perfluoroelastomer (FPM)
Kel-F[f]	Perfluoroelastomer (FPM)
Kodapak[t]	Thermoplastic elastomer (TPE)
Kodar[t]	Polyester elastomer (PE)
Kraton-D[c]	Styrene-butadiene-styrene rubber (SBS)
Kraton-G[c]	Styrene-ethylene-butylene-styrene rubber (SEBS)
Kynar[g]	Polyvinylidene fluoride (PVDF)
Lennite[ad]	Ultra high molecular weight polyethylene (UHMW)
Milkon[af]	Polyphenylene sulfide
NBR	Butadiene-acrylonitrile rubber
Neoprene[a]	Polycloroprene (CR)
Nordel[a]	Ethylene-propylene-diene monomer (EPDM)
Noryl[aa]	Modified phenylene oxide
Nylon[a]	Polyamide

Trade name/designation	Generic name
Nytek[u]	Butadiene-acrylonitrile (NBR) rubber
Parshield[m]	Silicone rubber (SI)
Pellethane[v]	Urethane (AU)
Petbunan[b]	Butadiene-acrylonitrile (NBR) rubber
Plaskon[y]	Polyamide
Propylux[ab]	Polypropylene
Pure-CMC[n]	Urethane (AU)
Rilsan[e]	Polyamide
Royalene[h]	Ethylene-propylene-diene (EPDM) rubber
Ryton[ae]	Polyphenylene sulfide
Santoprene[r]	Thermoplastic elastomer (TPE)
Technoflon[i]	Fluoroelastomer (FKM)
Tefzel[a]	Ethylene-tetrafluorethylene (ETFE)
Texin[b]	Urethane (AU)
Thermalux[ag]	Polysulfone
Thiokol[d]	Polysulfide (ST) (FA)
Ultem[l]	Polyetherimide
Urane[w]	Urethane (AU)
Vamac[a]	Ethylene-acryllic elastomer (EA)
Victrex[z]	Polyether sulfone (PES series)
Victrex[z]	Polyetherether ketone (PEEK series)
Viton[a]	Fluoroelastomer (FKM)
Vydyne[r]	Polyamide
Zurcon[x]	Thermoplastic elastomer (TPE)

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Appendix 3: Plating Solution Composition

Brass
3% Copper, 1% zinc, and 5.6% sodium
3% Cyanide
Sodium carbonate

Cadmium cyanide
3% Cadmium oxide
10% Sodium cyanide
1.2% Sodium hydroxide

Chrome 25%
25% CrO_3
12% Sulfuric acid
Water

Chrome 40%
40% CrO_3
12% Sulfuric acid
Water

Copper cyanide
10.5% Copper
14% Sodium cyanide
6% Rochelle salts

Gold
22.8% Potassium ferrocyanide
0.2% Potassium gold cyanide
0.8% Sodium cyanide
Water to make 1 gallon

Iron
45% $FeCl_2$
20% $FeSO_4$

[Iron]
15% $CaCl_2$
11% $(NH_4)_2SO_4$

Lead
8% Lead
0.8% Fluoboric acid
0.4% Boric acid
Water to make 1 gallon

Nickel
11% Nickel sulfate
2% Nickel chloride
1% Boric acid
86% Water

Silver
4% Silver
7% Potassium cyanide
5% Sodium cyanide
2% Potassium carbonate

Tin
7% Tin
18% Stannous fluoborate
9% Fluoboric acid
2% Boric acid

Zinc
9% Zinc cyanide
9% Sodium hydroxide
4% Sodium cyanide

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about the author . . .

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