

Polymer Selection Guide Chart



Base Polymer - Common Name				Natural Rubber	Synthetic Rubber	Neoprene	Nitrile (High)	Nitrile (Med.High)	SBR	Butyl	Urethane	Hypalon	EPDM	Fluorocarbon	Silicone				
Chemical Name				Polyisoprene	Synthetic Polyisoprene	Chloroprene	Butadiene Acrylonitrile	Butadiene Acrylonitrile	Styrene Butadiene	Isobutylene Isoprene	Polyester / Polyether	Chlorosulfonated Polyethylene	Ethylene Propylene	Fluorinated Hydrocarbon	Polysiloxane				
ASTM D-2000 Classification				AA	AA	BC, BE	BF, BG, BK	BF, BG	AA, BA	AA, BA	BG	CE	CA	HK	FC, FE, GE				
Coefficient of Thermal Expansion - 10-5 Per F (Gum)				37	37	34	39	39	37	32	27	27	32	88	45				
Weight of Base Polymer		lb/in3		0.033	0.033	0.045	0.036	0.036	0.034	0.033	0.045	0.043	0.031	0.067	0.040				
		Specific Gravity		0.92	0.91	1.25	1.00	1.00	0.94	0.92	1.25	1.18	0.86	1.86	1.1 - 1.6				
Original Physical Properties @ 70 F	Durometer Range, Shore A			20 - 100	30 - 90	20 - 95	20 - 95	20 - 95	30 - 100	40 - 90	35 - 100	45 - 100	30 - 90	55 - 90	25 - 90				
	Tensile Strength, PSI			3500	3500	3000	3000	3000	3000	3000	6000	3000	2500	2000	1500				
	Elongation, %			700	650	600	600	600	600	850	750	500	600	300	700				
	Compression Set			A	A	B	B	B	B	C-B	D	C-B	B-A	B-A	B-A				
	Resilience			A	A	A	B	B	B	C	C-A	C	B	C	D-A				
	Permeability Coef.-Nitrogen, 10-8 cm2 sec-1 atm-1			6.12	6.12	0.89	0.18	0.31	4.8	0.25	0.95 / 16	0.7 TO 0.9	6.4	0.2	200				
	Electrical Resistivity (Polymer)			A	A	C	D-C	D-C	A	A	B	B	A	B	A				
	Creep, Drift, or Strain Relaxation			A	B	B	B	B	A	C	C-A	C	C-B	B	C-A				
Overall Properties	Mechanical Properties			Impact Strength		A	A	B	C	C	A	B	B-A	B	B	D-C			
				Abrasion Resistance		A	B	A	A	A	A	C	A	B	B	C-B			
				Tear Resistance		A	A	B	B	B	C	B	A	B	C	B	C-B		
				Cut Growth		A	A	B	B	B	B	A	A	B	B	B	C-B		
				Temperature Data			(Hot) Tensile Strength, % Decrease		212 F	-32	-44	-50	-50	-55	-44	-57	-56	-57	-49
	350 F	-84	NA						-74	-75	-76	-72	-87	-83	-82	-78	-87	-41	
	(Hot) Elongation, % Decrease		212 F				+17	+6	-35	-30	-35	-25	-10	-32	-49	-21	-33	-29	
			350 F				-33	NA	-45	-57	-60	-47	-32	-54	-69	-48	-63	-48	
	Strain Relaxation at 212 F						B	B	B	B	B	B	C	D	C	C-B	B-A	A	
	Heat Aging at 212 F						B-C	B-C	B-A	B	B	B	B-A	B	B-A	A	A	A	A
	Flame Resistance						D	D	B-A	D-C	D	D	D	D	B-A	D	A	A	A
	Low Temperature		Stiffening - F				-20 T -50	-20 TO -50	+10 TO -50	+30 TO -20	0 TO -40	0 TO -50	-10 TO -40	-10 TO -30	-30 TO -50	-20 TO -50	+10 TO -10	-60 TO -180	
			Brittle Point - F		-80	-80	-85	-40	-85	-80	-80	-60 TO -200	-70	-90	-60	-90 TO -180			
	Environmental			Weather - Sunlight Aging			D	NR	B	D	D	A	A	A	A	A	A		
				Oxidation			B	B	A	B	C	C	A	B	A	A	A	A	
				Ozone Cracking			NR	NR	A	C	C	NR	A	A	A	A	A	A	
				Radiation			B	C-B	B	B	B	B	B	B	B	B	C-B	C-B	
				Water			A	A	B	A	B	B-A	A	C-B	B	A	A	A	
	General			Steam			B	B	B	C-B	C-B	C	B-A	D	B	A	B	C-B	
				Alkali Dilute / Concentrated			A/C-B	C-B/C-B	A/A	B/B	B/B	C-B/C-B	A/A	C/D	A/A	A/A	A	A/A	
				Acid Dilute / Concentrated			A/C-B	C-B/C-B	A/A	B/B	B/B	C-B/C-B	A/A	C/D	A/A	A/A	B/C	B/C	
				Ketones, Oxygenated Solvents			B	B	C	D	D	B	A	D	B	B-A	NR	B-C	
				Chlorinated Hydrocarbons, Degreasers			NR	NR	D	C-B	C	NR	NR	C-B	D	NR	A	NR	
				Aliphatic Hydrocarbons, Kerosene, etc.			NR	NR	C	A	A	NR	NR	B	C	NR	A	D-C	
				Aromatic Hydrocarbons, Benzol, Toluol, etc.			NR	NR	B	B-A	B	NR	NR	C	B	NR	A	NR	
				LP Gases, Fuel Oils			NR	NR	B	A	A	NR	NR	C-B	B	NR	A	C	
				Alcohols			B-A	B	A	C-B	C-B	B	B-A	B	A	B-A	C-A	C-B	
				Brake Fluids, Non-Petroleum Base			B-A	B	C	NR	NR	B-A	B	NR	C	B-A	C	A	
				Synthetic Lubricants - Diester			NR	NR	D	B-A	D	NR	NR	D	D	NR	A	NR	
				Animal and Vetable Oils			D-B	D-B	B	B	B	D-B	B-A	A	B	B	A	A	
				Hydraulic Fluids			Petroleum Base			NR	NR	D-C	B-A	C-B	NR	NR	B	C-B	NR
	Water Glycol						B-A	B-A	B	C	B	B	B-A	C-B	B	A	A	A	
	Silicate Ester						B-A	B-A	B	B	B	B-A	NR	B	B-A	A	NR		
	Phosphate Ester						B	B	C	D	D	B	A	NR	C	A (to 300F)	B-A	B	
	Lbricating Oils			High Aniline (190 +)			NR	NR	B	B	A	NR	NR	A	NR	A	C		
				Low Aniline Point			NR	NR	A	A	A	NR	NR	B	B	NR	A	B	
	Refrigerants			Ammonia			B	B	A	B	B	B	D	B	B	NR	A		
				Fluorinated			R-12, 13, 22	R-12, 13, 22	R-11,12,13,21,22	R-11, 12, 13	R-11, 12, 13	R-12, 13, 22	R-12, 13, 22	R-12	R-11, 12, 13, 22	R-12, 13, 22	R-11, 12 13	NR	
				Methyl Chloride			D	D	NR	NR	NR	D	C	NR	NR	D	B	NR	
	Refrigerants + Oil			Fluorinated			NR	NR	R-11, 12, 22	R-11, 12	R-11, 22	NR	NR	R-12, -13/NR	R-11, 12, 22	NR	R-11, 12	NR	
Taste				C-B	C-B	C-B	C-B	C-B	C-B	C-B	B	C-B	B	C-B	B				
Odor				B-A	B	C-B	B	B	B	B	B	B	B	B	B				
Non-Staining				A	A	B-A	D-C	C-B	D-B	B	B	A	B	C-B	A				
Bonding to Rigid Materials				A	A	B-A	B-A	B-A	A	C-A	C-B	A	C-B	C-B	B-A				

A = Excellent B = Good C = Fair D = Use with caution NR = Not recommended