



SVERIGES STANDARDISERINGSKOMMISSION

SVENSK STANDARD SIS 05 59 00-1967

Rostgrader hos stålytor och noggrannhetsgrader vid stålytors förbehandling för rostskyddsmålning

Rostgrade von Stahloberflächen und Güteklassen für die Vorbereitung von Stahloberflächen für Rostschutzanstriche

Pictorial surface preparation standards for painting steel surfaces

Grados de herrumbre en superficies de acero y grados de preparación de estas superficies para la aplicación de pintura anticorrosiva

Degrés de rouille des surfaces d'acier et degrés de soins lors du traitement préalable de ces surfaces pour la peinture anticorrosive

Степени исходной ржавости стальных поверхностей и степени тщательности их предварительной обработки перед предохраняющей от ржавчины покраской



KORROSIONSinSTITUTET



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Approved and issued by

SWEDISH STANDARDS INSTITUTION
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Swedish Standard SIS 05 59 00 -- 1967



Approved by
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STEEL STRUCTURES PAINTING COUNCIL
4400 Fifth Avenue, Pittsburg 13, Pa. USA
SSPC Visual Standard SSPC-Vis 1



DANISH STANDARDS ASSOCIATION
Aurehøjvej 12, Copenhagen Hellerup, Denmark
Danish Standard DS 2019



STANDARDS ASSOCIATION OF AUSTRALIA
Standards House, 80-86 Arthur Street,
North Sydney, N.S.W., 2060 Australia



JUGOSLOVENSKI ZAVOD ZA STANDARDIZACIJU
Beograd, Cara Urosa 54, Jugoslavija
JUS C.T7.301

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Guide To Visual Standard No. 1

Guide To Pictorial Surface Preparation Standards For Painting Steel Surfaces

SSPC STEEL STRUCTURES
PAINTING COUNCIL

November 1, 1982

Steel Structures GUIDE TO VISUAL Guide to Pictorial Surface Preparation

The pictorial standard, Vis 1, described below was prepared by the Swedish IVA Corrosion Committee with input from the Steel Structures Painting Council and has been jointly approved by the Steel Structures Painting Council, the American Society for Testing and Materials, and the Swedish Standards Association. Copies of the pictorial standard can be obtained from any one of these three associations.

1. Scope

1.1 This guide *only describes* the pictorial standard and does not constitute the standard. The pictorial standard when used in conjunction with the SSPC surface preparation specifications gives only an approximation of the final surface condition. These visual standards should be considered a supplement to, and not a substitute for, surface preparation specifications.

2. Description

2.1 The pictorial surface preparation standard consists of a series of color prints which represent various conditions of unpainted steel surfaces prior to and after surface preparation.

2.2 The standard illustrates four initial rustgrades before surface preparation and covers the range from intact mill scale to badly rusted and pitted steel. These rustgrades are:

- A Steel surface covered completely with adherent mill scale with little, if any, rust.
- B Steel surface which has begun to rust, and from which the mill scale has begun to flake.
- C Steel surface from which the mill scale has rusted away or from which it can be scraped, but with little pitting visible.
- D Steel surface on which the mill scale has rusted away and where pitting is visible.

2.3 The standard also illustrates surfaces prepared by hand tool, power tool, and blast cleaning. The various grades of thoroughness of surface preparation are represented in Table 1. This table also shows the approximate correlation between the SSPC surface preparation specifications and the photographic standard, SSPC-Vis 1. For each of the four rustgrades defined, the standard addresses six degrees of cleanliness. The first two degrees are designated "St" for hand and power tool cleaning while the last four are designated "Sa" for blast cleaning.

Painting Council

STANDARD NO. 1

Standards for Painting Steel Surfaces

2.4 Steel surfaces will show variations in shades, color, tone, pitting, flaking, mill scale, etc. These variations should be considered and compensated for when making comparison with the photographic standard.

2.5 This pictorial standard should not be used as a substitute for complete surface preparation specifications, since it is based upon appearance only and does not attempt to deal with other necessary factors such as surface profile, removal of contaminants, degree of removal of rust or impurities, permissible cleaning procedures, equipment, rust back, etc.

3. Procedures

3.1 Select the photograph(s) of unprepared surfaces (A, B, C, or D) that most closely represent(s) the appearance of the steel to be cleaned. NOTE: Occasionally the material to be cleaned will contain more than one of the initial surface conditions.

3.2 Determine the method of surface preparation that is specified (e.g., hand tool cleaning — SSPC-SP 2, white metal blast cleaning — SSPC-SP 5, etc.).

3.3 Use Table 1 to determine which photograph depicts the finished surface. For example, if the initial surface condition is rusted (C) and commercial blast cleaning (SSPC-SP 6) is specified, use photograph C Sa 2.

3.4 Compare the prepared surface with the photograph selected in Section 3.3 to evaluate the cleaning. NOTE: Steel surfaces will show variances in color, shading, etc., both before and after cleaning. Therefore *the photographs can be used only as a guide* and one can not expect an exact correlation when comparing a photograph to the surface.

4. Inspection

4.1 When this guide is used as part of a specification or procurement document, all work supplied shall be subject to timely inspection by the purchaser or his authorized representative. The contractor shall correct such work or replace such material as is found defective. In case of dispute the arbitration or settlement procedure established in the procurement documents, if any, shall be followed. If no arbitration or settlement procedure is established, the procedure specified by the American Arbitration Association shall be used.

TABLE 1

Degree of Cleaning	Adherent Mill Scale A	Rusting Mill Scale B	Rusted C	Pitted and Rusted D
Initial Surface Condition	A Sa 0	B St 0 B Sa 0	C St 0 C Sa 0	D St 0 D Sa 0
Manual Cleaning: Thorough Hand Tool Cleaning SSPC-SP 2	(1)	B St 2	C St 2	D St 2
Manual Cleaning: Very Thorough Power Tool Cleaning SSPC-SP 3	(1)	B St 3	C St 3	D St 3
Blast Cleaning: Light Brush-Off Blast Cleaning SSPC-SP 7	(1)	B Sa 1	C Sa 1	D Sa 1
Blast Cleaning: Thorough Commercial Blast Cleaning SSPC-SP 6	(1)	(2)	C Sa 2	D Sa 2
Blast Cleaning: Very Thorough Near-White Blast Cleaning SSPC-SP 10	<u>A Sa 2-1/2</u>	B Sa 2-1/2	C Sa 2-1/2	D Sa 2-1/2
Blast Cleaning: Extremely Thorough (3) White Metal Blast Cleaning SSPC-SP 5	A Sa 3	B Sa 3	C Sa 3	D Sa 3

(1) No photograph available.

(2) The photograph (through the 1982 printing) corresponding with "B Sa 2" shows dark areas that could be interpreted as millscale and is not recommended as an illustration of SSPC-SP 6, "Commercial Blast Cleaning."

(3) The photographs (1978 through 1982 printing) illustrating "A Sa 3," "B Sa 3," and "C Sa 3" do not adequately illustrate the surface texture of typically blast-cleaned steel.

4.2 The procurement documents covering work or purchase should establish the responsibility for testing and for any required affidavit certifying full compliance with the specification.

5. Notes

5.1 While every precaution is taken to insure that all information furnished in SSPC guides is as accurate, complete, and useful as possible, the SSPC cannot assume responsibility nor incur any obligation resulting from the use of any materials, paints, or methods specified therein, or of the guide itself.

Pictorial surface preparation standard for painting steel surfaces

Foreword

The effective life of a coating of anti-corrosive paint applied to a steel surface is to a very large extent dependent on how thoroughly the surface has been prepared prior to painting. It is also important to be able to specify clearly the quality of preparation required in each particular case.

Accordingly a Standard has been approved, specifying four *grades of rusting* and a number of *preparation grades*, each establishing a quality grade of preparation prior to protective painting required on a steel surface in a stated rust grade. These grades are presented in this Standard as a series of prints, which provide a clearer and more rapidly appreciated definition than a verbal description.

The present edition of SIS 05 59 00 differs from the previous one therein that a new preparation grade, Sa 2^{1/2}, has been introduced. Experience has proved that often it is not necessary to remove mill scale, rust etc so thoroughly as prescribed by the grade Sa 3. The preparation grade 2^{1/2} is in many cases quite sufficient and involves a most considerable saving as compared to Sa 3.

In the previous edition of this Standard some of the colour-prints were inserted twice. By excluding one of each doubled print and the prints B St 1, C St 1 and D St 1 which have proved to be of slight practical value the total number of prints has been reduced from 30 to 24, despite the addition of the new preparation grade Sa 2^{1/2}. Moreover, the descriptive text accompanying the prints has been re-edited and changed accordingly.

The Standard has been prepared by the Swedish Corrosion Institute in cooperation with the American Society for Testing and Materials, ASTM, and Steel Structures Painting Council, SSPC, USA. In the specifications relating to preparation of surfaces prior to painting, the SSPC and SIS designations correspond as follows:

SSPC-Vis 1	SIS 05 59 00
SSPC-SP5	A Sa 3, B Sa 3, C Sa 3 and D Sa 3
SSPC-SP10	A Sa 2 ^{1/2} , B Sa 2 ^{1/2} , C Sa 2 ^{1/2} and D Sa 2 ^{1/2}
SSPC-SP6	B Sa 2, C Sa 2 and D Sa 2
SSPC-SP7	B Sa 1, C Sa 1 and D Sa 1

Scope

This Standard refers to

surfaces of hot-rolled steel in four different **rust grades** (A, B, C and D)
the same surfaces prepared to two **grades of surface quality** (St 2 and St 3) **by manual scraping and wire-brushing** — machine brushing — grinding — etc.

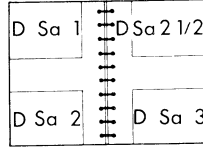
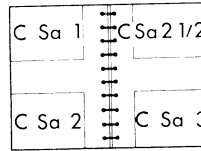
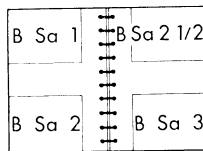
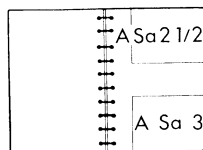
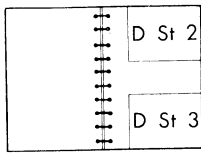
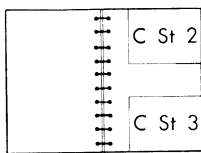
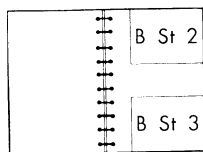
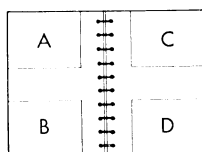
the same surfaces prepared to four **grades of surface quality** (Sa 1, Sa 2, Sa 2½ and Sa 3) **by blasting** with various abrasives.

Examples: A steel surface originally corresponding to rust grade B, which has been scraped or brushed to preparation grade 2 is designated B St 2.

A steel surface originally corresponding to rust grade B, which has been prepared by blast cleaning to preparation grade 2½ is designated B Sa 2½.

The standardized rust and preparation grades are defined by colour prints representing a full scale view of part of a surface.

The rust and preparation grades are illustrated in the following order.





Rust grades

- A Steel surface covered completely with adherent mill scale and with little if any rust.
- B Steel surface which has begun to rust and from which the mill scale has begun to flake.
- C Steel surface on which the mill scale has rusted away or from which it can be scraped, but with little pitting visible to the naked eye.
- D Steel surface on which the mill scale has rusted away and on which considerable pitting is visible to the naked eye.

Preparation grades. Scraping and wire-brushing

It is assumed that prior to treatment the steel surface has been cleaned of dirt and grease, and that the heavier layers of rust have been removed by chipping.

- St 2 Thorough scraping and wire-brushing — machine brushing — grinding — etc. The treatment shall remove loose mill scale, rust and foreign matter. Finally, the surface is cleaned with a vacuum cleaner, clean dry compressed air or a clean brush. It should then have a faint metallic sheen. The appearance shall correspond to the prints designated St 2.
- St 3 Very thorough scraping and wire-brushing — machine brushing — grinding — etc. Surface preparation as for St 2, but much more thoroughly. After removal of dust, the surface shall have a pronounced metallic sheen and correspond to the prints designated St 3.

Preparation grades. Blast cleaning

It is assumed that prior to treatment the steel surface has been cleaned of dirt and grease, and that the heavier layers of rust have been removed by chipping.

- Sa 1 Light blast cleaning. Loose mill scale, rust and foreign matter shall be removed. The appearance shall correspond to the prints designated Sa 1.
- Sa 2 Thorough blast cleaning. Almost all mill scale, rust and foreign matter shall be removed. Finally, the surface is cleaned with a vacuum cleaner, clean dry compressed air or a clean brush. It shall then be greyish in colour and correspond in appearance to the prints designated Sa 2.

- Sa 2^{1/2}** Very thorough blast cleaning. Mill scale, rust and foreign matter shall be removed to the extent that the only traces remaining are slight stains in the form of spots or stripes. Finally, the surface is cleaned with a vacuum cleaner, clean dry compressed air or a clean brush. It shall then correspond in appearance to the prints designated Sa 2^{1/2}.
- Sa 3** Blast cleaning to pure metal. Mill scale, rust and foreign matter shall be removed completely. Finally, the surface is cleaned with a vacuum cleaner, clean dry compressed air or a clean brush. It shall then have a uniform metallic colour and correspond in appearance to the prints designated Sa 3.

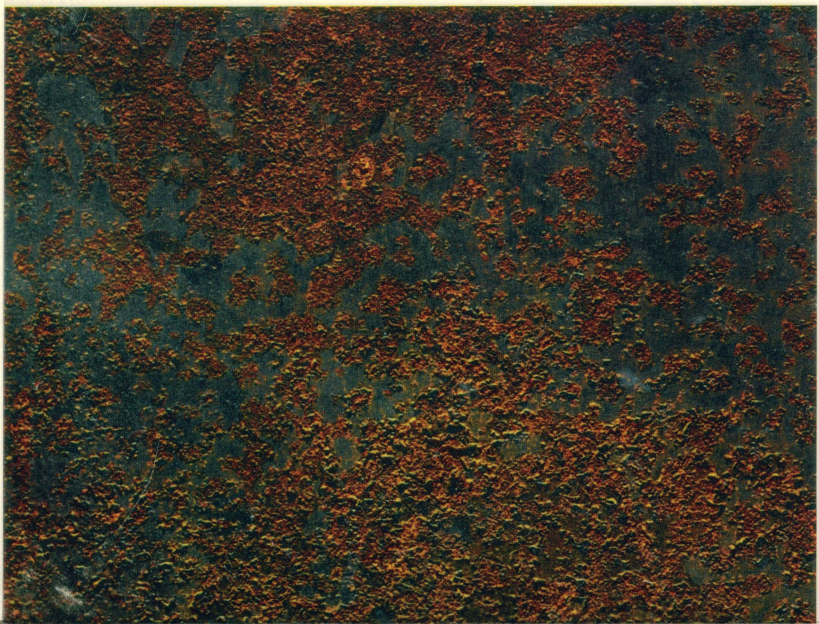
NOTE

All prints of this edition are identical to those of the 1978 edition. In 1978, new prints were introduced for A Sa 3, B Sa 3 and C Sa 3, prints which in essential respects correspond closer to the appearance of a steel surface after «blast cleaning to pure metal».



A

B

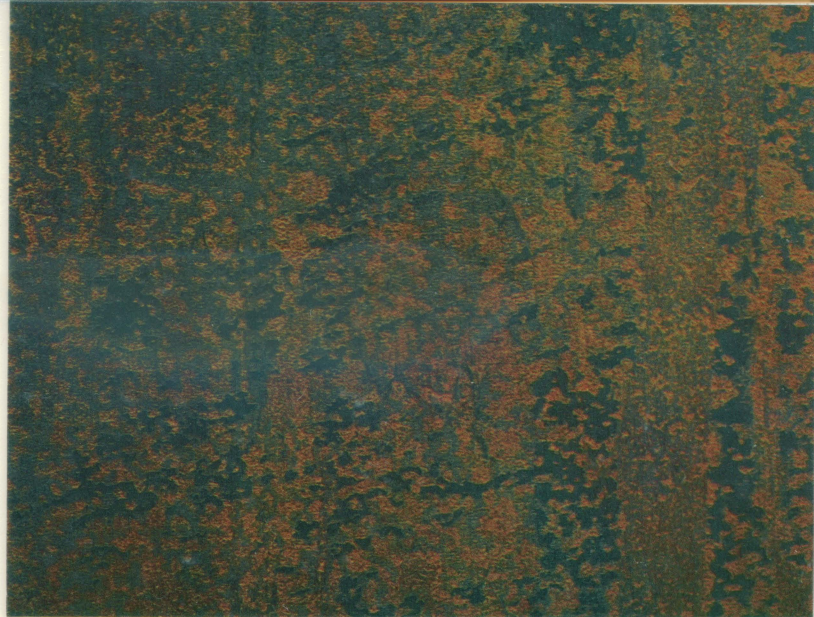




C



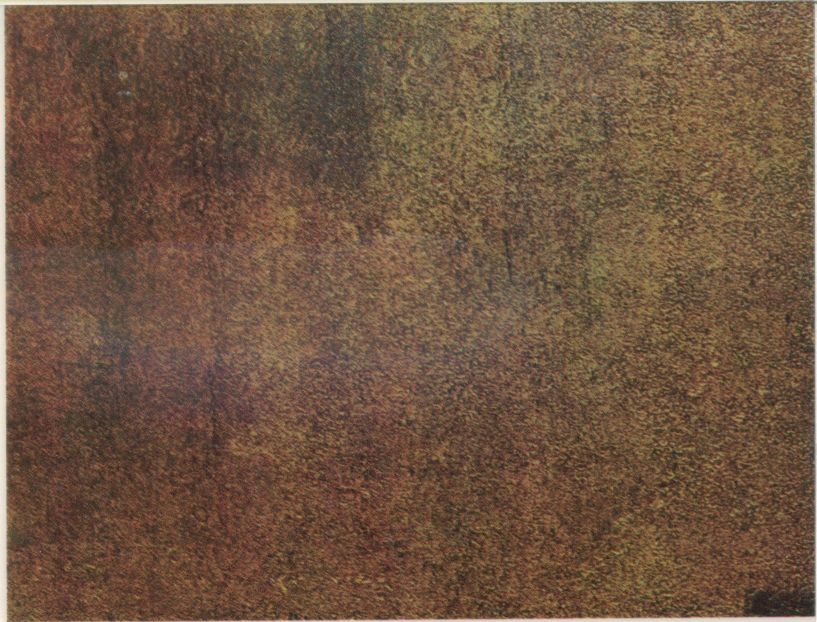
D



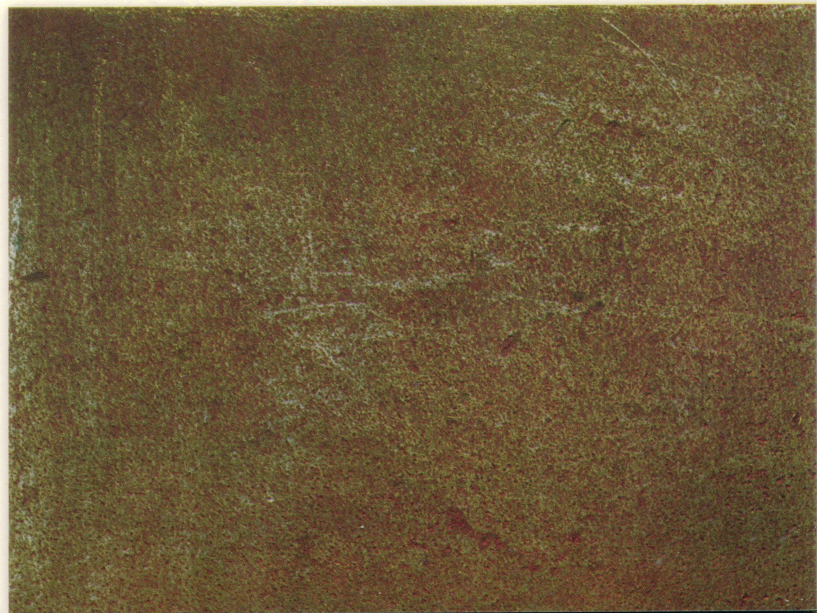
B St 2



B St 3



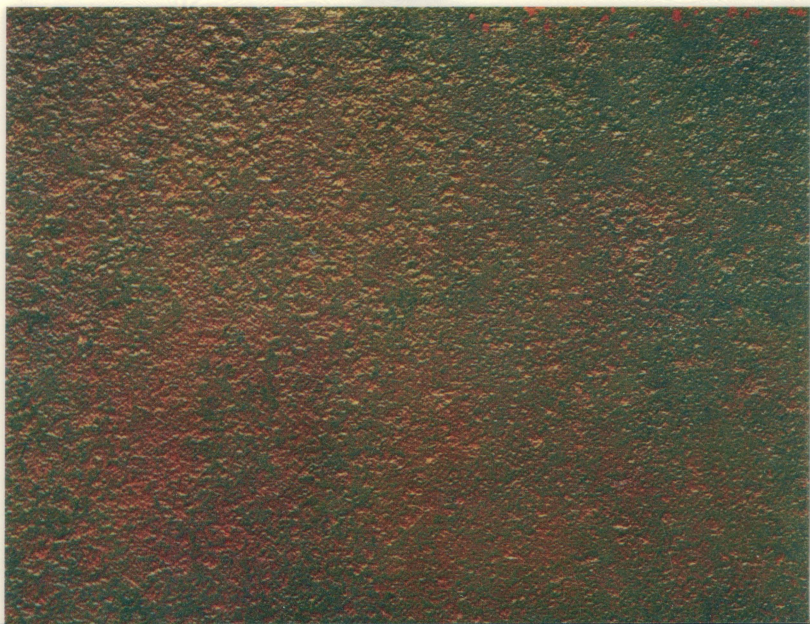
C St 2



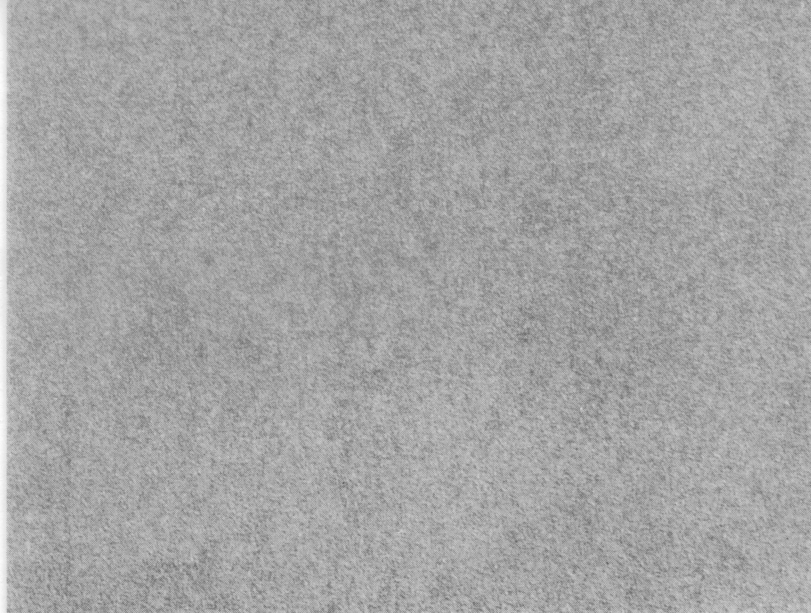
C St 3



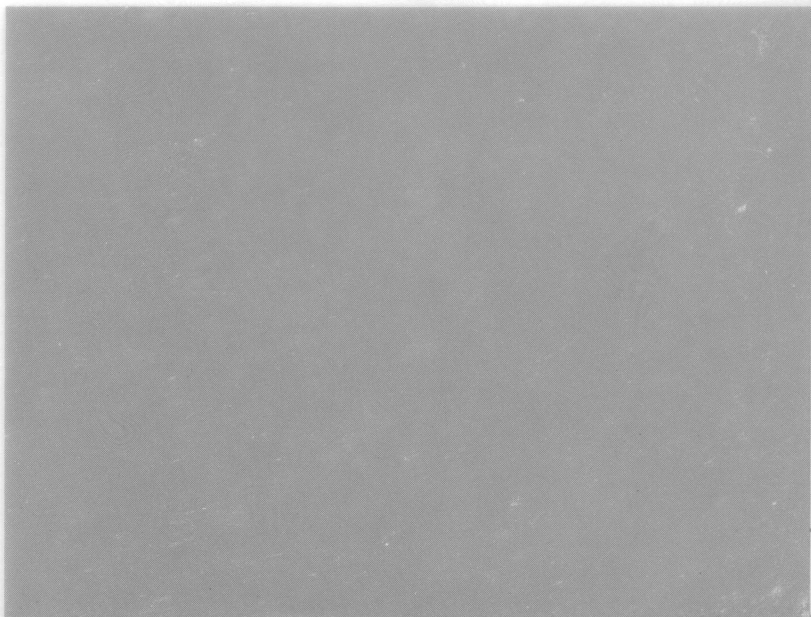
D St 2



D St 3



A Sa 2½

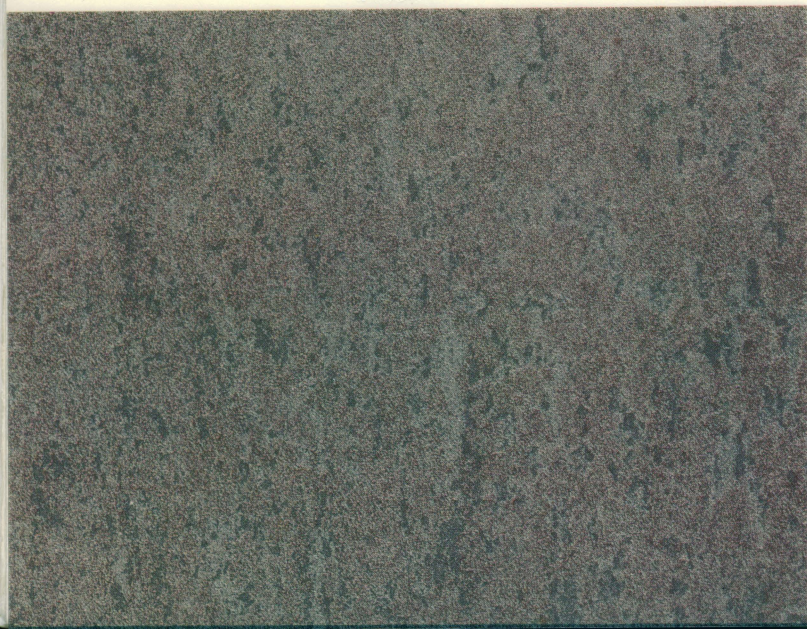


A Sa 3



B Sa 1

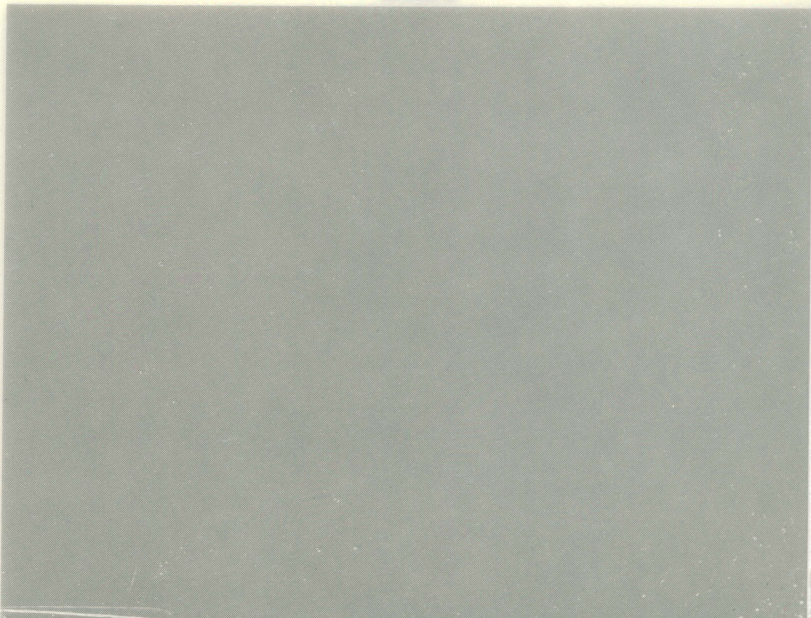
B Sa 2





B Sa 2½

B Sa 3

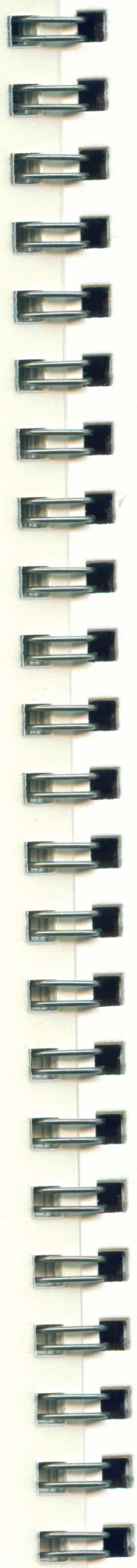


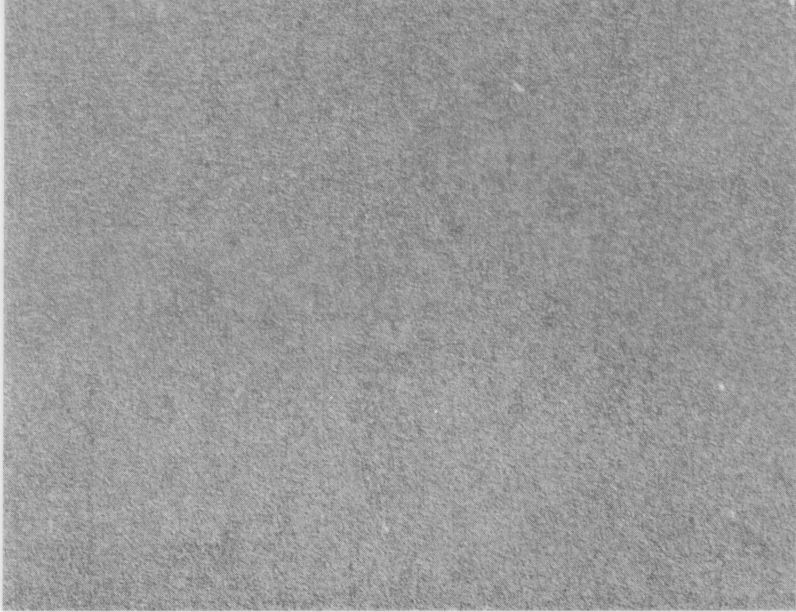


C Sa 1



C Sa 2

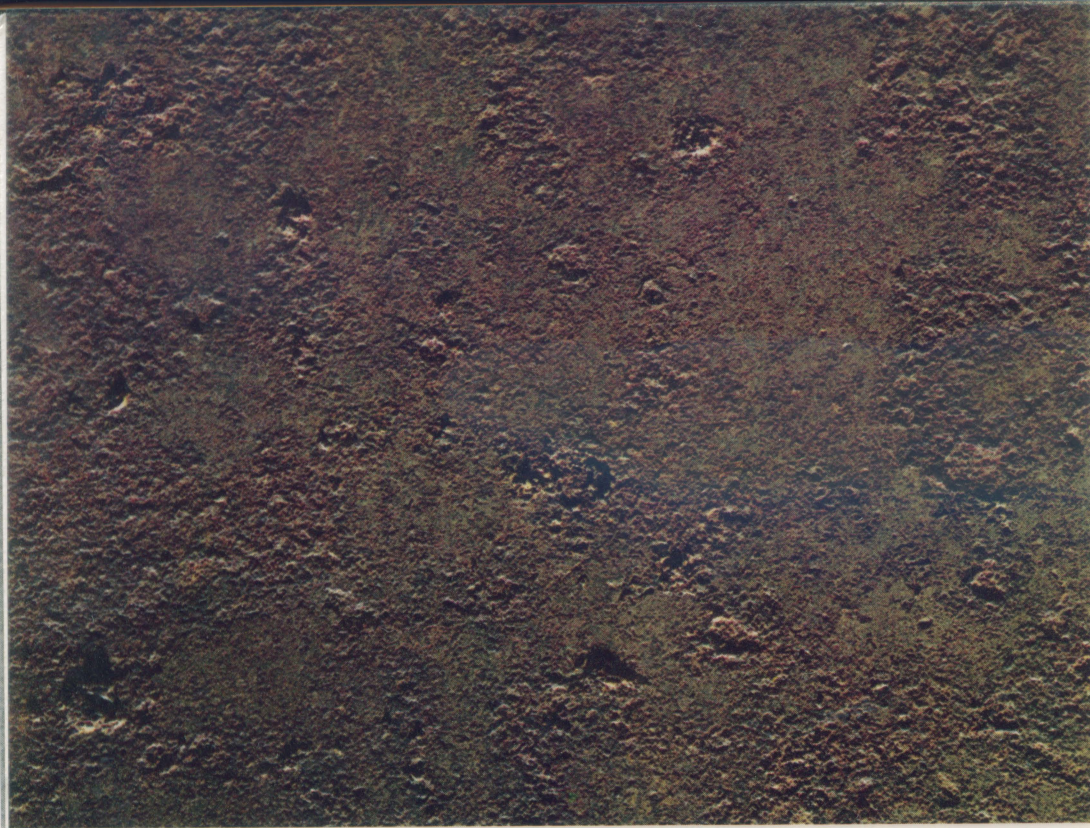




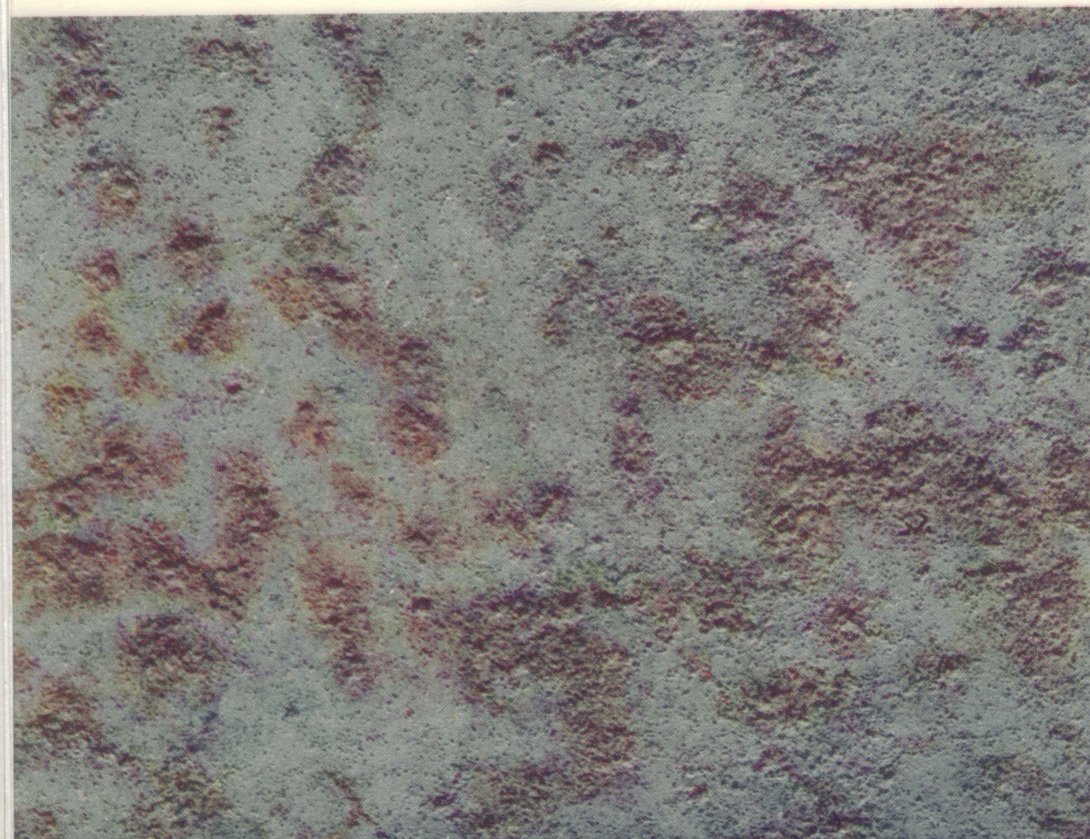
C Sa 2¹/₂

C Sa 3





D Sa 1



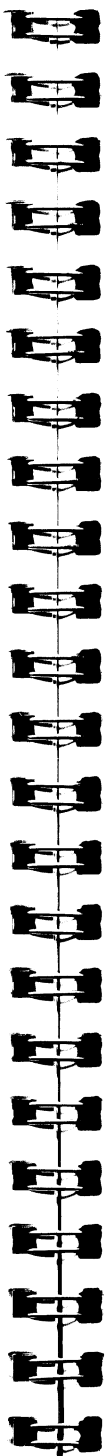
D Sa 2



D Sa 2½



D Sa 3



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The colour reproductions in Patented Photo-Print process

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