

SSPC-VIS 1-89

**VISUAL STANDARD FOR
ABRASIVE BLAST CLEANED
STEEL**

(STANDARD REFERENCE PHOTOGRAPHS)

GUIDE AND STANDARD



**STEEL STRUCTURES
PAINTING COUNCIL**

CONFORMS WITH ASTM D 2200

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GUIDE TO SSPC-VIS 1-89

VISUAL STANDARD FOR ABRASIVE BLAST CLEANED STEEL (STANDARD REFERENCE PHOTOGRAPHS)

1. SCOPE

This Guide describes the use of standard reference photographs depicting the appearance of previously unpainted hot-rolled carbon steel prior to and after abrasive blast cleaning. These photographs are intended to be used to supplement the written SSPC blast cleaning surface preparation specifications. As the written specifications are the primary means to determine conformance with blast cleaning requirements, the photographs shall not be used as a substitute for these specifications. (See Note 7.1)

2. DESCRIPTION

The standard consists of a series of 1:1 (actual size) color photographs which represent various conditions of unpainted steel surfaces prior to and after surface preparation by abrasive blast cleaning.

3. REFERENCE STANDARDS

3.1 The standards referenced in this Guide are listed in Section 3.3 and form a part of this Guide.

3.2 The latest issue, revision or amendment of the reference standards in effect on the date of invitation to bid shall govern unless otherwise specified.

3.3 STEEL STRUCTURES PAINTING COUNCIL (SSPC) SPECIFICATIONS:

SSPC-SP 5	White Metal Blast Cleaning
SSPC-SP 6	Commercial Blast Cleaning
SSPC-SP 7	Brush-Off Blast Cleaning
SSPC-SP 10	Near-White Metal Blast Cleaning
SSPC-VIS 1-89	Visual Standard for Abrasive Blast Cleaned Steel (Standard Reference Photographs)

4. CONDITIONS DEPICTED

4.1 The standard (SSPC-Vis 1-89) illustrates four initial rust grades before surface preparation and covers the range from intact mill scale to rusted and pitted steel. These rust grades are:

Rust Grade A	Steel surface completely covered with adherent mill scale; little or no rust visible.
Rust Grade B	Steel surface covered with both mill scale and rust.
Rust Grade C	Steel surface completely covered with rust; little or no pitting visible.
Rust Grade D	Steel surface completely covered with rust; pitting visible.

4.2 The standard illustrates surfaces prepared by abrasive blast cleaning using sand. The various degrees of cleaning represented are:

SSPC-SP 7	Brush-Off Blast Cleaning
SSPC-SP 6	Commercial Blast Cleaning
SSPC-SP 10	Near-White Blast Cleaning
SSPC-SP 5	White Metal Blast Cleaning

4.3 Photographs illustrative of some variations in color, texture, and general appearance that can result from the choice of abrasives are provided in an Appendix to the standard (see also Note 7.2). The Appendix is provided for information only and does not constitute a part of the standard. The Appendix photographs represent adherent mill scale (Rust Grade A) blast cleaned to white metal (SSPC-SP 5) by various non-metallic and metallic abrasives. The variations in appearance are depicted only for white metal; however, these same variations must be considered when assessing steel prepared to other degrees of cleaning.

5. PROCEDURES

5.1 Select the photograph of the rust grade (A, B, C, or D) that most closely represents the appearance of the steel to be cleaned. The steel to be cleaned may contain more than one of the initial rust grades.

5.2 Determine the degree of cleaning that is specified (SSPC-SP 7, SSPC-SP 6, SSPC-SP 10, or SSPC-SP 5).

5.3 Use Table 1 to determine which photograph depicts the finished surface. For example, if the initial rust grade is "C" and commercial blast cleaning (SSPC-SP 6) is specified, use photograph C SP 6.

5.4 Compare the prepared surface with the photograph selected in Section 5.3 to evaluate the degree of cleaning.

5.5 This visual standard shall be used only in conjunction with the written SSPC surface preparation specifications, as it is based upon appearance only and does not address other factors necessary for compliance with the written specification. Steel surfaces show variations in texture, shade, color, tone, pitting, flaking, mill scale, etc., which should be considered when making comparison with the reference photographs.

6. DISCLAIMER

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

7. NOTES

7.1 Although prepared from unpainted steel, the photographs may also be suitable for depicting the appearance of painted steel after blast cleaning.

7.2 The photographs of non-metallic abrasives in the Appendix illustrate the range of appearance produced by non-metallic abrasives as a class. Among the abrasives included in this class are silica sand, olivine sand, garnet, flint shot, copper slag, coal slag, and nickel slag. The abrasive used for each photograph is *not* specifically identified because wide variations in appearance were observed among the abrasives within a given generic class (e.g., copper slag).

A similar set of photographs illustrates the range of appearance produced by metallic abrasives as a class, which includes steel shot, steel grit and combinations and modifications of these two abrasive media.

7.3 SSPC-Vis 1-89 is a new publication, and is comprised of new photographs prepared by SSPC to comply with the written SSPC abrasive blast cleaning standards. The previous Vis-1, prepared in conjunction with the Swedish Standards Institution (SIS), has been revised by the International Organization for Standardization (ISO) and is available from SIS or SSPC as ISO Standard 8501-1/SIS SS 05 59 00 (1988).

TABLE 1

Degree of Cleaning	A 100% Adherent Mill Scale	B Mill Scale and Rust	C 100% Rust	D 100% Rust With Pits
Brush-Off Blast Cleaning (SSPC-SP 7)	¹	B SP 7	C SP 7	D SP 7
Commercial Blast Cleaning (SSPC-SP 6)	²	B SP 6	C SP 6	D SP 6
Near-White Blast Cleaning (SSPC-SP 10)	A SP 10	B SP 10	C SP 10	D SP 10
White Metal Blast Cleaning (SSPC-SP 5)	A SP 5 ³	B SP 5	C SP 5	D SP 5

¹ Standard photograph not provided due to wide variations in appearance possible when brush-off blast cleaning adherent mill scale.

² No photograph available because this condition cannot normally be attained when removing adherent mill scale.

³ The photographs contained in the Appendix depict the appearance of surfaces blast-cleaned with alternate abrasives (see Note 7.2).

- Alternate non-metallic abrasives: A SP 5-N1, A SP 5-N2, A SP 5-N3
- Alternate metallic abrasives: A SP 5-M1, A SP 5-M2, A SP 5-M3

8. ACKNOWLEDGEMENTS

This standard was prepared by the SSPC Surface Preparation Steering Committee, under Chairman Kenneth A. Trimber and SSPC Director Bernard R. Appleman. Committee members included:

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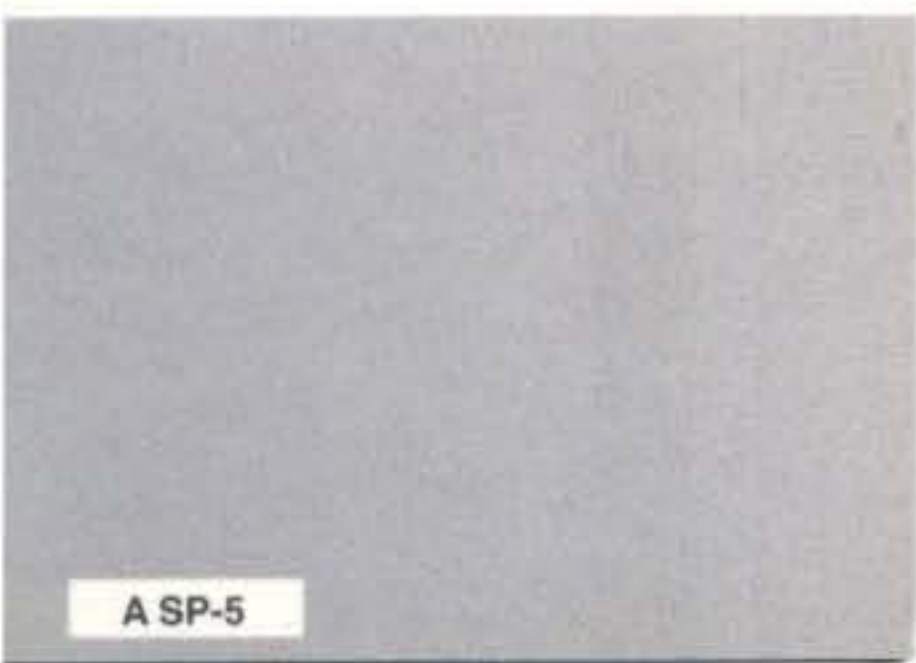




Rust Grade **A**



A SP-10



A SP-5





B SP-6



B SP-10



B SP-5

A rectangular sample of a material with a dark, mottled, and heavily textured surface, characteristic of rust. The color is a mix of dark brown, black, and some lighter brown spots. A small white label is positioned in the bottom-left corner.

Rust Grade **C**

A rectangular sample of a material with a dark, mottled, and heavily textured surface, similar to the one above but with slightly different tonal values. A small white label is positioned in the bottom-left corner.

C SP-7



C SP-6

This micrograph shows a dense, granular surface texture. The grains are small and irregularly shaped, packed closely together. The overall color is a dark, mottled grey.



C SP-10

This micrograph displays a surface with a more pronounced, elongated granular texture compared to CSP-6. The grains appear slightly larger and more oriented, giving it a more fibrous or layered appearance. The color is a medium grey.



C SP-5

This micrograph shows a surface with a very fine, uniform granular texture. The grains are much smaller and more consistent in size than those in the other two samples. The color is a light, uniform grey.

A rectangular sample of a dark, heavily textured surface, likely rusted metal, showing a dense, granular appearance with various shades of dark brown and black.

Rust Grade D

A rectangular sample of a dark, heavily textured surface, similar to the one above, showing a dense, granular appearance with various shades of dark brown and black.

D SP-7



D SP-6

This micrograph shows a dark, granular surface with a fine, irregular texture. The particles appear small and densely packed, creating a rough, uneven appearance. The lighting is somewhat uneven, with slightly brighter areas towards the center.



D SP-10

This micrograph displays a surface with a more pronounced, irregular texture than DSP-6. The granules are slightly larger and more varied in shape, giving it a more rugged appearance. The overall color is a dark, mottled grey.



D SP-5

This micrograph shows a surface with a very fine, uniform texture. The granules are much smaller and more consistent in size compared to the other two samples, resulting in a smoother, more homogeneous appearance. The color is a light, uniform grey.



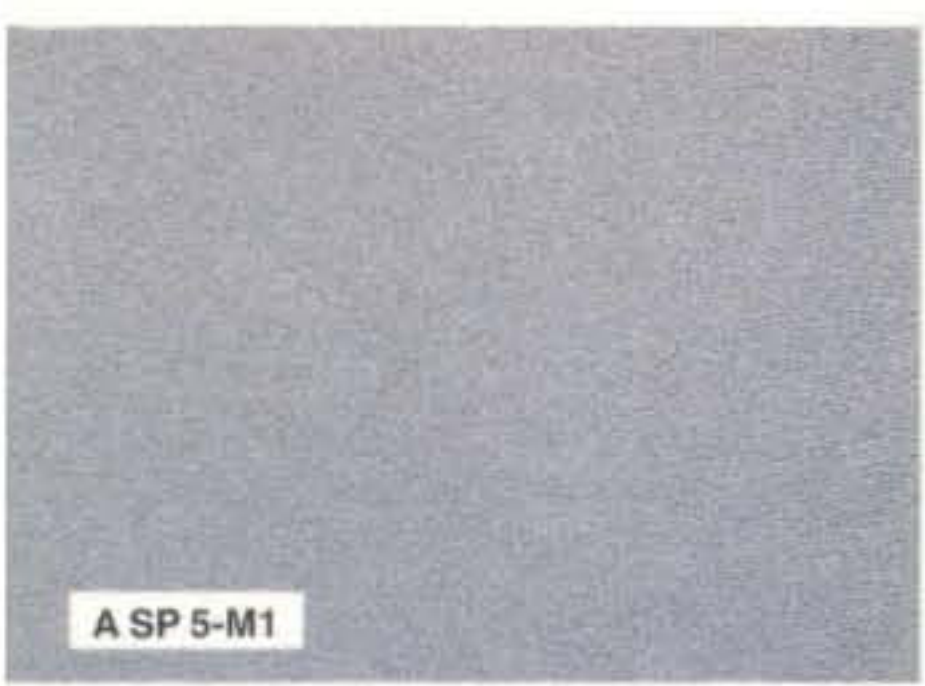
A SP 5-N1



A SP 5-N2



A SP 5-N3



A SP 5-M1

This micrograph shows a dense, granular texture with a fine, irregular pattern of small, light-colored particles against a darker background. The overall appearance is that of a highly textured surface or a microscopic view of a material with a complex internal structure.



A SP 5-M2

This micrograph displays a similar granular texture to the first sample, but with slightly larger and more distinct particles. The distribution of the light-colored granules appears somewhat more uniform than in the first image, though still maintaining a dense, textured appearance.



A SP 5-M3

This micrograph shows a granular texture where the particles are noticeably larger and more rounded than in the previous two samples. The light-colored granules are more prominent and have a more defined shape, suggesting a different material composition or processing condition.