

SSPC: The Society for Protective Coatings

GUIDE TO SSPC-VIS 3

Guide and Reference Photographs for Steel Surfaces Prepared by Power- and Hand-Tool Cleaning

1. Scope

This guide describes the use of reference photographs depicting the appearance of unpainted, painted, rusted, and welded hot-rolled carbon steel prior to and after power and hand tool cleaning. These photographs are intended to be used to supplement the written SSPC power and hand tool surface preparation standards. Due to variations in the condition of the steel to be cleaned, and the type and operation of the tool used, the appearance of the cleaned surface will vary, therefore, the written standards are the primary means to determine conformance with hand and power tool cleaning requirements. The photographs shall not be used as a substitute for the written standards (see Section 5.4.2).

2. Description

The reference photographs consist of color photographs that represent various conditions of unpainted, painted, rusted, and welded steel surfaces prior to and after power- and hand-tool cleaning. Each photograph provides one possible illustration of the minimum acceptable level of cleanliness defined by the corresponding written standard.

3. Referenced Standards

3.1 SSPC STANDARDS:

SP 2	Hand Tool Cleaning
SP 3	Power Tool Cleaning
SP 11	Power Tool Cleaning to Bare Metal
SP 15	Commercial Grade Power Tool Cleaning

4. Conditions Depicted

4.1 INITIAL CONDITIONS: The standard (SSPC-VIS 3) illustrates seven initial surface conditions before surface preparation (see Notes 7.1 and 7.2).

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

Condition D	Steel surface completely covered with rust; pitting visible.
Condition E	Previously painted steel surface; light-colored paint applied over blast-cleaned surface, paint mostly intact.
Condition F	Previously painted steel surface; zinc-rich paint applied over blast-cleaned steel, paint mostly intact.
Condition G	Painting system applied over mill scale bearing steel; system thoroughly weathered, thoroughly blistered, or thoroughly stained.

4.2 END CONDITION: The standard illustrates surfaces prepared by several hand and power tools. The various degrees of cleaning and tools represented are:

SSPC-SP 2	Hand Tool Cleaning by hand wire brush (SP 2).
SSPC-SP 3	Power Tool Cleaning by power wire brush (SP 3/PWB).
SSPC-SP 3	Power Tool Cleaning by sanding disk (SP 3/SD).
SSPC-SP 11	Power Tool Cleaning to Bare Metal by non-woven disks followed by rotary flaps or needle gun to impart a profile.
SSPC-SP 11	Power Tool Cleaning to Bare Metal by non-woven disks to restore the previously existing profile (see Note 7.3 and photographs E SP 11R and F SP 11R).
SSPC-SP 15	Commercial Grade Power Tool Cleaning by non-woven disks followed by rotary flaps or needle gun to impart a profile (SP 15).

5. Procedures

5.1 Determine initial condition of steel as follows:

5.1.1 If the steel has not been previously painted, proceed to Section 5.1.2. If it has been painted, proceed to Section 5.1.3.

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

5.1.3 Select the photograph of the condition (E, F, or G) that most closely represents the appearance of the previously painted steel to be cleaned. The steel to be cleaned may contain more than one initial condition.

5.2 Determine the condition and tools to be evaluated as follows:

5.2.1 If hand tool cleaning (SSPC-SP 2) has been specified, use the photographs with the designation SP 2.

5.2.2 If power tool cleaning (SSPC-SP 3) has been specified, determine which of the following tools were used: power wire brush (use the photographs designated SP 3/PWB) or sanding disk (use the photographs designated SP 3/SD).

5.2.3 If commercial grade power tool cleaning (SSPC-SP 15) has been specified, use the photographs designated SP 15. An existing profile can be restored if it meets the minimum 1 mil (25 micrometer) requirement, or the required profile can be produced by using either a rotary flap peening assembly or 2-mm needle gun (see Note 7.3).

5.2.4 If power tool cleaning to bare metal (SSPC-SP 11) has been specified, determine if the intent was to produce a profile (5.2.4.1) or to restore (re-expose) an existing profile (see Section 5.2.4.2). If this cannot be determined, go to 5.2.4.1.

5.2.4.1 If no profile exists or the profile condition is unknown, use the photographs designated SP 11. The profile required by SSPC-SP 11 can be produced by using either a rotary flap peening assembly or 2-mm needle gun.

5.2.4.2 If there is an existing profile to be restored (re-exposed), use the photographs designated SP 11 (Power Tool Cleaning to Bare Metal by Non-woven Disks Followed by Rotary Flaps or Needle Gun to Impart a Profile) or SP 11R (Power Tool Cleaning to Bare Metal by Non-Woven Disks to Restore [Re-Expose] Profile). It is possible to achieve SSPC-SP 11 using non-woven disks alone if a minimum 1 mil (25 micrometer) profile is restored (see Note 7.3).

5.3 Select reference photographs as follows:

5.3.1 Refer to Table 1 to determine which photograph depicts the finished surface.

5.3.2 If SSPC-SP 3 has been specified, use the photograph that most closely corresponds to the type of power tool used (e.g., use SP3/PWB for tools similar to a power wire brush, or SP3/SD for tools similar to a sanding disc or grinding wheel).

5.4 Determine conformance with photographs as follows:

5.4.1 Compare the prepared surface with the photographs selected in Section 5.3 to evaluate the degree of cleaning and its conformance with the standard (SSPC-VIS 3).

5.4.2 These reference photographs shall be used only in conjunction with the written SSPC surface preparation specifications, as the reference photographs are based upon appearance only and do 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 a comparison with the reference photographs.

6. Disclaimer

6.1 While every precaution is taken to ensure that all information furnished in SSPC guides and standards is as accurate, complete, and useful as possible, SSPC cannot assume responsibility nor incur any obligation resulting from the use of any materials, coatings, or methods specified herein, or of the guide or standard itself.

6.2 This guide does not attempt to address problems concerning safety associated with its use. The user of this guide, as well as the user of all products or practices described herein, is responsible for instituting appropriate health and safety practices and for insuring compliance with all governmental regulations.

7. Notes

7.1 Conditions A, B, C, and D are "new construction" surface conditions. Conditions E, F, and G are "maintenance" surface conditions. Conditions E and F represent surfaces having aged coatings originally applied over blast cleaned steel. Condition G represents surfaces having aged coatings originally applied over mill scale bearing steel. Although many surfaces encountered in practice may not closely correspond to conditions E, F, or G, careful extrapolation of the photographs can still aid in determining conformance with the cleaning requirements.

7.2 Weld seams have been included with Conditions A, B, C, D, and F to depict the appearance of welds cleaned by power and hand tools prior to painting.

7.3 When restoring a previously existing profile, one should ensure that the surface meets the SSPC-SP 11 and SSPC-SP 15 requirements for a 1 mil (25 micrometer) minimum profile.