

SSPC: The Society for Protective Coatings

SURFACE PREPARATION STANDARD

Abrasive Blast Cleaning of Concrete and Cementitious Materials

SSPC-SP CAB-3 – Brush Blast Cleaning

Foreword

This standard is one of a set of three standards that define levels of surface cleanliness for concrete substrates prepared using abrasive blast cleaning. The cleanliness levels are based on 1) the extent of removal of the existing coating and 2) the extent to which surface air voids are opened. Brush Blast Cleaning (SSPC-SP CAB-3), defines the lowest level of cleanliness. The other two standards in the set, Intermediate Blast Cleaning (SSPC-SP CAB-2), and Thorough Blast Cleaning (SSPC-SP CAB-1), define higher levels of concrete cleanliness. All three levels of cleanliness require complete removal of all unsound surface materials, all efflorescence and all laitance, and are summarized in Table 1.

See Section 2 of this standard for the full definition of Brush Blast Cleaning.

In this standard, the terms *shall* and *must* are used to state mandatory requirements. The term *should* is used to state something considered good and is recommended but is not mandatory. The term *may* is used to state something considered optional.

1. Scope

1.1 This standard defines the Brush Blast Cleaning level of surface cleanliness achieved using abrasive blast cleaning. The standard includes requirements for the resulting condition of the surface as determined by visual inspection and materials and procedures used to achieve and verify the resulting condition.

1.2 This standard is limited to requirements for removal of visible surface contaminants from concrete surfaces, and procedures for verification. Requirements for soundness, profiling and repair of the concrete substrate, and any exposed reinforcing steel are beyond the scope of this standard (see Notes 11.1, 11.2, and 11.3).

1.3 The requirements of this standard are applicable to all types of concrete as defined in Section 2.2 (see Note 11.4). If a visual guide or comparator is specified to supplement the written standard, determine the initial condition of the concrete prior to blast cleaning before the blast cleaning commences (see Note 11.5).

1.4 UNITS OF MEASURE: This standard provides both IEEE/ASTM⁽¹⁾ SI 10, “American National Standard for Metric Practice” International System Units (SI) and U.S. Customary units. The measurements are not exact equivalents; therefore, each system must be used independently of the other. Where both sets of units are shown, SI units are presented first, with approximate U.S. Customary values shown in parentheses.

2. Definition

2.1 BRUSH BLAST CLEANING: The surface of a concrete substrate that has been brush blast cleaned, when viewed without magnification, shall be free of all visible deposits of oil, grease, mildew, form release agents, dust, efflorescence, laitance, concrete spatter, and other

⁽¹⁾ ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959, phone int+1-610-832-9500. For referenced ASTM standards, visit the ASTM website <<http://www.astm.org>>

TABLE 1
COMPARISON OF DEGREES OF CONCRETE ABRASIVE BLAST CLEANING

	Unsound Surface, Efflorescence, Laitance	Opening of Surface Air Voids	Existing Coating	Notes
Thorough Blast Cleaning	Remove All	Fully Opened	Remove All	Full removal and uniform profiling of the surface
Intermediate Blast Cleaning	Remove All	Not Required	Remove Most	Remove all existing coating except for that remaining in surface air voids and uniform profiling of the surface
Brush Blast Cleaning	Remove All	Not Required	Remove Loose	Uniform profiling of the surface

This standard, developed by the SSPC C.7.3 Concrete Surface Preparation Committee, was first issued in December 2019

visible contaminants capable of being removed by abrasive blast cleaning. The entire surface shall be uniformly and completely abraded and profiled by abrasive media. Surface air voids (also called bugholes) need not be opened. Loose curing compounds, loose coating, and other loose surface layers shall be removed by abrasive blast cleaning and shall be considered loose if they can be removed by using a dull putty knife as described in Section 8.5.

2.2 OTHER TERMS USED IN THIS STANDARD

CONCRETE: For the purposes of this standard, the term *concrete* shall refer to all types of cementitious substrates, including cast-in-place, precast and prestressed concrete substrates, and shotcrete, cementitious grouts, overlayments and underlayments.

DULL PUTTY KNIFE (for use as an inspection tool): A commercially manufactured straight flexible metal blade with these characteristics: width – approximately [~]40 to 75 mm (1-1/2 to 3 in); length – ~75 to 125 mm (3 to 5 in); thickness – ~760 to 1270 μ m (30 to 50 mils); flexibility – able to be bent by hand around an 28- to 33-cm (11- to 13-inch) diameter mandrel (or pipe or bucket) and return to its original shape without permanent deformation.

FORM TIE HOLES: Openings left in concrete after tie-rods securing forms in place are removed. Same as “tie-rod holes” or “snap-tie holes.”

PROFILE: (*noun*) The topographic contour of the concrete surface as measured or as compared to a replica sample. (*verb*) To roughen the surface of a substrate by abrasive blast cleaning.

SUBSTRATE: Cementitious material that makes up the structure being abrasive blast cleaned.

SURFACE: The top of the substrate being abrasive blast cleaned.

SURFACE AIR VOID: Small regular or irregular cavities, usually not exceeding 15 mm (0.60 in) in diameter, resulting from entrapment of air bubbles in the surface of formed concrete during placement and consolidation (sometimes called a “bughole”).

3. Additional Technical Considerations

3.1 Acceptable variations in appearance that do not affect surface cleanliness as defined in Section 2.1 include variations caused by the color of the concrete, the type and size of aggregates used, surface finishing techniques, original surface profile and condition, abrasive media utilized, and differences resulting from the blast pattern.

3.2 ICRI⁽²⁾ 310.2R CSP (concrete surface profile) comparators or other visual guides are often used to supplement the written definition. In any dispute, the written definition set forth in this standard shall take precedence over reference photographs and comparators.

4. Associated Documents

4.1 The dates of the referenced standards in effect at the time of publication of this standard shall govern unless otherwise specified. Documents marked with an asterisk (*) are not requirements of this standard.

4.2 When a conflict between the requirements of any of the cited referenced standards and this standard occurs, the requirements of this standard shall prevail.

4.3 SSPC STANDARDS AND JOINT STANDARDS

SSPC-AB 1	Mineral and Slag Abrasives
SSPC-AB 2	Cleanliness of Recycled Ferrous Metallic Abrasives
SSPC-AB 3	Ferrous Metallic Abrasives
SSPC-AB 4	Recyclable Encapsulated Abrasive Media
SSPC-SP COM	Surface Preparation Commentary
* SSPC-SP 13/ NACE No. 6	Surface Preparation of Concrete
* SSPC-TR 5/ ICRI 710.1/ NACE 02203	Design, Installation, and Maintenance of Protective Polymer Flooring Systems for Concrete
* SSPC-PA 7	Applying Thin Film Coatings to Concrete
* SSPC-PA 14	Application of Thick Film Polyurea and Polyurethane Coatings to Concrete and Steel Using Plural-Component Equipment

4.4 ASTM INTERNATIONAL STANDARD TEST METHODS

ASTM D4258	Standard Practice for Surface Cleaning of Concrete for Coating
ASTM D4285	Standard Method for Indicating Oil or Water in Compressed Air
* ASTM D7682	Standard Test Method for Replication and Measurement of Concrete Surface Profiles Using Replica Putty
ASTM F21	Standard Test Method for Hydrophobic Surface Films by the Atomizer Test
ASTM F22	Standard Test Method for Hydrophobic Surface Films by the Water-Break Test

⁽²⁾ International Concrete Repair Institute (ICRI), 10600 West Higgins Road, Suite 607 Rosemont, IL 60018. Phone: 847-827-0830 <www.icri.org>