

SSPC: The Society for Protective Coatings

ABRASIVE STANDARD NO. 2

Cleanliness of Recycled Ferrous Metallic Abrasives

1. Scope

1.1 This standard contains requirements for the cleanliness of recycled ferrous metallic blast cleaning abrasives (the "work mix") used for the removal of coatings, paints, scale, rust and other foreign matter from steel or other surfaces. Laboratory and field testing procedures to determine conformance to the requirements of the standard are also included.

2. Description

2.1 FERROUS METALLIC ABRASIVES: Ferrous metallic abrasives are used for blast cleaning steel and other surfaces in field and shop locations. The inherent value of ferrous metallic abrasives is their ability to be recycled many times. The recycled abrasive must be cleaned to remove abrasive fines and debris, including paint, rust, mill scale, and other contaminants generated during the blast cleaning of steel or other surfaces.

2.2 RECYCLED ABRASIVE WORK MIX: The work mix develops during blast cleaning and recycling and is composed of new media and, recycled clean media that meets the requirements of Sections 4.1 through 4.6 of this standard. The new abrasive being added may consist of shot, grit, or a mix of shot and grit.

3. Referenced Standards

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

3.1.1 If there is a conflict between the requirements of any of the cited referenced standards and this standard, the requirements of this standard shall prevail.

3.2 SSPC: THE SOCIETY FOR PROTECTIVE COATINGS STANDARD

PA 17	Procedure for Determining Conformance to Steel Profile/Surface Roughness/ Peak Count Requirements
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3.3 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS:¹

D3335	Test Method for Low Concentrations of Lead, Cadmium and Cobalt in Paint by Atomic Absorption Spectroscopy
D4940	Test Method for Conductimetric Analysis of Water Soluble Ionic Contaminants of Blasting Abrasives
D7393	Standard Practice for Indicating Oil in Abrasives

4. Requirements for Recycled Work Mix Abrasives

4.1 Unless otherwise specified, the recycled work mix shall meet the requirements of Sections 4.2 through 4.6 prior to first use at each jobsite. The work mix shall meet the requirements of Sections 4.4, 4.5, and 4.6 when tested thereafter at 12-hour intervals or once per work shift, whichever is shorter. Nonconforming work mix shall not be used, shall be removed from equipment and shall be disposed of in accordance with federal, state, and local regulations and project specification requirements (see Notes 6.1, 6.2 and 6.3).

4.2 The abrasive material as supplied shall comply with all applicable Federal, state/provincial and local regulations. Material Safety Data Sheets shall be furnished for all abrasive materials supplied (see Note 6.4).

4.3 LEAD CONTENT: The maximum lead content of the work mix shall be 0.1% by weight (1000 parts per million [ppm]). Collect a single random sample of approximately 115 grams [g] (1/4 pound [lb]) of the work mix for testing according to requirements of ASTM D3335.

4.4 WATER-SOLUBLE CONTAMINANTS: A single random sample of approximately 300 milliliters (10 fluid ounces) of cleaned work mix shall be tested for conductivity in accordance with ASTM D4940. The conductivity of the abrasive work mix shall not exceed 1000 micromhos/cm (1 mho = 1 siemen). The test shall be performed once every 12 hours or once every work shift, whichever period is shorter (see Notes 6.2 and 6.3).

¹ ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959. For referenced ASTM standards, visit the ASTM website, www.astm.org, or contact ASTM Customer Service at service@astm.org. For Annual Book of ASTM Standards online information, refer to the standard's Document Summary Page on the ASTM website.

4.5 OIL CONTENT: A single random sample of the abrasive work mix shall be tested in accordance with ASTM D7393. There shall be no evidence of oil in the water used for the test, either on the surface or as an emulsion. The test results shall be reported; however since the test is being performed on a recycled work mix, reporting the abrasive manufacturer and batch/lot number, and size designation as required by ASTM D7393 is not a requirement of SSPC-AB 2.

4.6 PARTICLE SIZE DISTRIBUTION: The particle size distribution of the clean work mix shall be capable of achieving and maintaining the profile within the specified range as determined by the procedure in SSPC-PA 17. (See Note 6.5 and subsections and Appendix A for examples of specification language for optional tests that may be used to assess the particle size distribution and determine the amount of nonabrasive residue.) New shot, grit, or a mix of shot and grit shall be added periodically to the work mix to maintain the specified profile range.

5. Disclaimer

5.1 This is a consensus standard developed by SSPC: The Society for Protective Coatings. While every precaution is taken to ensure that all information furnished in SSPC standards is as accurate, complete and useful as possible, SSPC cannot assume responsibility nor incur any obligation resulting from the use of any materials or methods specified therein, or of the standard itself.

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

6. Notes

Notes are not requirements of this standard.

6.1 Spent abrasives may contain hazardous paint and other foreign matter. Disposal, storage, and handling of spent abrasives shall be performed in compliance with all applicable Federal, state/provincial, and local regulations and project requirements.

6.2 If non-compliant work mix is detected during continuous recycling, blasting and handling equipment should be checked for residual contamination after removal of the contaminated media. Following cleaning, new compliant media should be fed through the equipment and again tested for compliance with requirements of SSPC-AB 2 before production work resumes.

6.3 The limitation for abrasive conductivity is based on pressure immersion testing and accelerated outdoor exposure tests performed by SSPC.²

6.4 Special precautions may be needed to avoid exceeding permissible exposure limits (PELs) when removing hazardous materials. Conform to all safety and regulatory requirements based on the applicable federal, state and local requirements.

6.5 Examples of Specification Language: The examples in Notes 6.5.1 and 6.5.2 may be used if the test for non-abrasive residue or the preparation of a test area is desired. Italicized language between square brackets provides options for the specifier.

6.5.1 The cleaned work mix shall meet the requirements of SSPC-AB 2, including testing for non-abrasive residue in accordance with the procedure described in the Appendix to SSPC-AB 2 [prior to first use/at other specified frequency].

6.5.2 The cleaned work mix shall meet the requirements of SSPC-AB 2. Within 15 minutes after the start of surface preparation [daily/other specified frequency] a test area measuring at minimum 61 x 61 centimeters (2 x 2 feet) shall be prepared and shall meet specified requirements for [surface cleanliness/surface dust/surface profile range]. The test area shall be accepted by the [facility owner's representative] prior to continuation of production.

Appendix: Procedure for Determining Amount of Non-Abrasive Residue in Work Mix (nonmandatory unless specified by procurement documents)

This procedure requires

- Two empty plastic or paper cups capable of holding 100-gram "grab" samples
- A scale accurate to 0.10 gram (0.0035 oz.) with a "tare" function.
- A sheathed magnet (a magnet enclosed by a plastic sheath, see Figure A1).

Step 1: Label one cup A and the other B. Tare the weight of Cup A. If the scale does not have a "tare" function, weigh and record the weight of Cup A, the weight of Cup A is subtracted from the measured weight in Step 8 before determining if the requirements of the standard have been met.

Step 2: Using Cup A, obtain a "grab" sample taken at random from the cleaned work mix. The sample weight shall be approximately 100 g (3.5 oz.). Weigh the sample on the scale. Subtract the weight of the cup if the scale does not have a "tare" function. Record the weight of the sample to the nearest 0.1g.

Step 3: Spread the material over a clean surface of approximately 0.1 square meter [m²] (1 square foot [ft²]).

Step 4: Place the sheathed magnet in contact with the spread "grab" sample from Cup A. The magnet must remain in contact with the bottom of the interior surface of the plastic sheath. Note: Care must be taken not to pick up too much

² SSPC report 91-07, Effect of Surface Contaminants on Coating Life, (June 1991).