SSPC-AB 2
May 1, 1996
Editorial Changes September 1, 2000

SSPC: The Society for Protective Coatings

ABRASIVE SPECIFICATION NO. 2

Cleanliness of Recycled Ferrous Metallic Abrasives

1. Scope

1.1 This specification covers the requirements for cleanliness of recycled ferrous metallic blast cleaning abrasives used for the removal of coatings, paints, scale, rust and other foreign matter from steel or other surfaces.

1.2 Requirements are given for lab and field testing of recycled ferrous metallic abrasives work mix.

1.3 Recycled ferrous metallic abrasives are intended for use in field or shop abrasive blast cleaning of steel or other surfaces.

2. Description

2.1 FERROUS METALLIC ABRASIVES: Ferrous metallic abrasives are used for blast cleaning steel and other surfaces. 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 abrasive additions and recycled abrasive. The new abrasive being added may consist of shot, grit, or a mix of shot and grit.

3. Reference Standards

3.1 The standards referenced in this specification are listed in Section 3.4 and form a part of this specification.

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

3.3 If there is a conflict between the requirements of any of the cited reference standards and this specification, the requirements of this specification shall prevail.

3.4 AMERICAN SOCIETY FOR TESTING AND MATERIALS (ASTM) STANDARDS:

D 3335	Test Method for Low Concentrations of Lead, Cadmium, and Cobalt in Paint by Atomic Absorption Spectroscopy
D 4940	Test Method for Conductimetric Analysis of Water Soluble Ionic Contaminants of Blasting Abrasives
E 11	Specification for Wire Cloth Sieves for Testing Purposes

4. Requirements for Recycled Work Mix Abrasives

4.1 NON-ABRASIVE RESIDUE: Using the procedure defined in Section 5.1, the non-abrasive residue shall not exceed 1% by weight of the work mix sample taken for testing.

4.2 LEAD CONTENT: The maximum lead content of the work mix shall be 0.1% by weight (1000 ppm) when tested in accordance with Section 5.2.

4.3 WATER-SOLUBLE CONTAMINANTS: The conductivity of the abrasive shall not exceed 1000 micromhos/cm. (See Note 9.1.)

4.4 OIL CONTENT: The abrasive sample in water shall show no presence of oil, either on the surface of the water or as an emulsion in the water when examined visually after standing for 10 minutes.

4.5 FAILURE TO MEET REQUIREMENTS: Should the recycled ferrous metallic abrasive fail to meet the requirements of Sections 4.1, 4.2, 4.3, or 4.4, it must be recleaned until it meets these requirements.

5. Testing Procedure

5.1 PROCEDURE FOR DETERMINING NON-ABRASIVE RESIDUE IN WORK MIX

5.1.1 Collect a minimum of three representative samples (approximately 450 grams [1 lb] each) of the work mix. The three samples shall be collected at three different times during each reclamation cycle, or during an 8-hour period.

5.1.2 Combine the samples collected as described in Section 5.1.1 and split into approximately 115 g (1/4 lb) samples.

5.1.3 Add approximately 115 g (1/4 pound) to a 203 mm (8-inch) diameter #100 sieve, per ASTM E 11, and screen the abrasive for one minute.

5.1.4 Spread the screened portion (>#100 sieve per ASTM E 11) over a clean surface of approximately 0.1 m^2 (1 ft^2).

5.1.5 Place a magnet in a plastic sheath or cylinder as shown in Figure 1. The magnet must be in contact with the bottom of the interior surface of the plastic sheath.

5.1.6 Place the sheathed magnet in contact with the screened portion of the abrasive. Note: Care must be taken not to pick up too much magnetic material at one time. Non-magnetic particles can get trapped in the magnetic particles.

5.1.7 While keeping the magnet in contact with the interior surface of the plastic sheath, move the sheathed magnet over a pre-weighed collection vessel.

5.1.8 Raise the magnet from the bottom of the plastic sheath, thus depositing the collected magnetic fraction into the pre-weighed collection vessel.

5.1.9 Return the sheathed magnet to the screened portion of the abrasive and repeat steps described in Sections 5.1.7 and 5.1.8 until no more magnetic material is retrieved from the screened portion of the abrasive.

5.1.10 Combine the non-magnetic residue remaining after the procedure described in Section 5.1.4 and <#100 sieve fines from the procedure described in Section 5.1.3 and weigh to the nearest 0.05 g. If the combined weight of non-magnetic material plus <#100 sieve fines is greater than 1% of the total weight of the initial sample from Section 5.1.3, then the working mix should shall be recleaned until it meets the requirement of Section 4.1.

5.2 LEAD CONTENT: A representative sample of cleaned, work mix ferrous metallic abrasive shall be tested for lead in accordance with ASTM D 3335.

5.3 WATER SOLUBLE CONTAMINANTS: A representative sample of cleaned, work mix ferrous metallic abrasive shall be tested for conductivity in accordance with ASTM D 4940.

5.4 OIL CONTENT: Examine the solution used in Section 5.3 before filtering. There shall be no presence of oil either on the surface of the water or as an emulsion.

6. Quality Control

6.1 The testing for non-abrasive residue (Section 4.1), water soluble contaminants (Section 4.3) and oil content (Section 4.4) shall be performed and documented daily unless otherwise specified or agreed upon between the contracting parties.

6.2 The testing for total lead content of the work mix using the method defined in Section 5.2 shall be performed weekly unless otherwise specified or agreed upon between the contracting parties. Alternately, testing frequency can be based on operating hours or number of abrasive recycles. For new steel, or if the steel is not covered with a lead-based paint, Section 5.2 may be disregarded.

7. Health and Safety Requirements

7.1 The abrasive material as supplied shall comply with all applicable federal, state and local regulations.

7.2 Material Safety Data Sheets shall be furnished for all abrasive materials supplied.

7.3 When lead or other hazardous materials are being removed, special precautions are needed to protect the workers and to avoid exceeding the permissible exposure limits (PEL) for the hazardous dust.

8. Disclaimer

8.1 While every precaution is taken to ensure that all information furnished in SSPC specifications 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 specification itself.

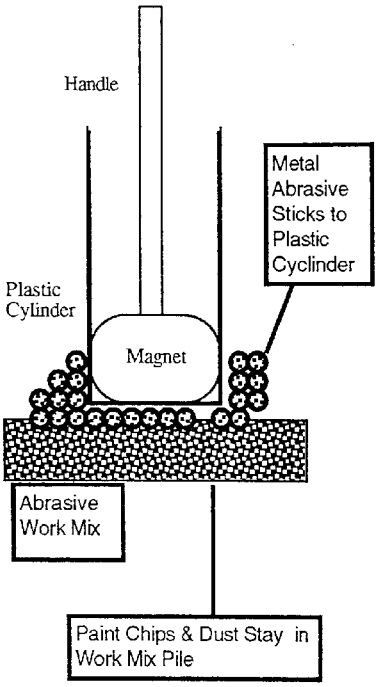

Figure 1: Separating Metallic Abrasive from the Work-Mix Using a Sheathed Magnet.

9. Notes

Notes are not requirements of this specification.

9.1 The limitation for abrasive conductivity is based on pressure immersion testing and accelerated outdoor exposure tests performed by SSPC and the National Shipbuilding Research Program.

9.2 Because spent abrasives may contain hazardous paint and other foreign matter, disposal of abrasives shall be performed in compliance with all applicable federal, state, and local regulations.