

SSPC: The Society for Protective Coatings

ABRASIVE SPECIFICATION NO. 3

Ferrous Metallic Abrasive

1. Scope

1.1 This specification covers the requirements for ferrous metallic abrasive for the removal of rust, mill scale, paint, or other surface coating system by blast cleaning.

1.2 This specification covers previously unused abrasive material. It does not address cleanliness of recycled abrasive processed through field or shop abrasive blast cleaning units. Requirements for recycled ferrous metallic abrasive is covered in SSPC-AB 2.

2. Description and Use

2.1 Ferrous metallic abrasive can have two basic particle shapes: (1) spherical or round for shot; and (2) angular or irregular for grit, as defined in Sections 4.1.3.1 and 4.1.3.2.

2.2 The size designations and specifications for shot and grit are given in Tables 1 and 2 (see Note 7.2).

2.3 ABRASIVE CLASS: Ferrous metallic abrasive is divided into two classes.

2.3.1 Class 1 – Steel Abrasive: Steel abrasive is characterized by low carbon content. Steel abrasive is not as hard as iron abrasive, and hence is more durable.

2.3.2 Class 2 – Iron Abrasive: Iron abrasive is characterized by high carbon content and hardness typically over 55 R_c. The particle shape requirements for iron grit are less stringent than those for steel grit.

2.4 ABRASIVE SELECTION: The owner/specification writer may define the abrasive class, shape, size, and hardness to meet the job requirements.

3. Referenced Standards

3.1 The latest issue, revision, or amendment of the referenced standards in effect at the time of the bid solicitation shall govern, unless otherwise specified.

3.2 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.

3.3 SSPC STANDARD

AB 2 Cleanliness of Recycled Ferrous Metallic Abrasive

3.4 ASTM INTERNATIONAL STANDARDS¹

- C 128** Test Method for Density and Relative Density (Specific Gravity) and Absorption of Fine Aggregate
- C 136** Test Method for Sieve Analysis of Fine and Coarse Aggregates
- D 4940** Test Method for Conductimetric Analysis of Water-Soluble Ionic Contamination of Blasting Abrasives
- E 11** Specification for Wire-Cloth and Sieves for Testing Purposes
- E 350** Test Methods for Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron
- E 384** Test Method for Microindentation Hardness of Materials
- E 1019** Test Methods for Determination of Carbon, Sulfur, Nitrogen, and Oxygen in Steel and in Iron, Nickel, and Cobalt Alloys

3.5 SOCIETY OF AUTOMOTIVE ENGINEERS (SAE) STANDARD²

- J444** Cast Shot and Grit Size Specifications for Peening and Cleaning

4. Requirements

4.1 PHYSICAL PROPERTIES

4.1.1 Size Classification: The abrasive shall be tested in accordance with Section 5.2.1 and shall meet the size requirements for each size specified as defined in Table 1 for shot or Table 2 for grit.

4.1.2 Hardness: Abrasive hardness shall be tested in accordance with Section 5.2.4 and shall meet the specified hardness requirements (see Notes 7.2 and 7.3).

4.1.3 Particle Shape (see Note 7.4)

¹ASTM International, 100 Barr Harbor Drive, West Conshohocken, PA 19428-2959; <http://www.astm.org>

TABLE 1
METALLIC SHOT SIZE SPECIFICATIONS

Screen No ASTM E 11	Screen Opening (inches)*	Screen Opening (mm)*	SHOT SIZE										
			780	660	550	460	390	330	280	230	170	110	70
7	0.1110	2.80	all pass	—	—	—	—	—	—	—	—	—	—
8	0.0937	2.36	—	all pass	—	—	—	—	—	—	—	—	—
10	0.0787	2.00	85% min.**	—	all pass	all pass	—	—	—	—	—	—	—
12	0.0661	1.70	97% min	85% min.	—	5% max.	all pass	—	—	—	—	—	—
14	0.0555	1.40	—	97% min.	85% min	—	5% max.	all pass	—	—	—	—	—
16	0.0469	1.18	—	—	97% min	85% min.	5% max.	all pass	—	—	—	—	—
18	0.0394	1.00	—	—	—	96% min.	85% min.	5% max.	all pass	all pass	—	—	—
20	0.0331	0.850	—	—	—	—	96% min.	85% min.	10% max.	all pass	—	—	—
25	0.0278	0.710	—	—	—	—	—	85% min.	10% max.	—	—	—	—
30	0.0234	0.600	—	—	—	—	—	96% min.	85% min.	10% max.	all pass	—	—
35	0.0197	0.500	—	—	—	—	—	—	96% min.	—	all pass	—	—
40	0.0165	0.425	—	—	—	—	—	—	97% min.	85% min.	10% max.	all pass	—
45	0.0139	0.355	—	—	—	—	—	—	—	97% min.	—	10% max	—
50	0.0117	0.300	—	—	—	—	—	—	—	—	80% min.	—	—
80	0.0070	0.180	—	—	—	—	—	—	—	—	90% min.	80% min.	—
120	0.0049	0.125	—	—	—	—	—	—	—	—	—	90% min.	90% min.

* Screen opening sizes and screen numbers with maximum and minimum cumulative percentages allowed on corresponding screens. NOTE: These sizes correspond to those in SAE J444 Cast Shot and Grit Size Specifications for Peening and Cleaning.

** All percentages refer to weight percent.