

SSPC: The Society for Protective Coatings

ABRASIVE STANDARD NO. 3

Ferrous Metallic Abrasive

1. Scope

1.1 This standard contains the requirements for ferrous metallic abrasive used for the removal of rust, mill scale, paint, or other surface coating systems by blast cleaning (see Note 7.1).

1.2 This standard 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 are contained 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 HR_C. The particle shape requirements for iron grit are less stringent than those for steel grit.

2.4 Units of Measure: This standard makes use of both the IEEE/ASTM SI 10⁽¹⁾, “American National Standard for Metric Practice” International System Units (SI) and U.S. Customary units. The measurements may not be exact equivalents; therefore, each system shall be used independently of the 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>>

3. Referenced Standards

3.1 The dates of the referenced standards in effect at the time of publication of this standard shall govern unless otherwise specified.

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

3.3 SSPC STANDARD

SSPC-AB 2 Cleanliness of Recycled Ferrous Metallic Abrasive

3.4 ASTM INTERNATIONAL STANDARDS

ASTM A751 Standard Test Methods, Practices, and Terminology for Chemical Analysis of Steel Products

ASTM C128 Standard Test Method for Relative Density (Specific Gravity) and Absorption of Fine Aggregate

ASTM C136 Standard Test Method for Sieve Analysis of Fine and Coarse Aggregates

ASTM D4940 Standard Test Method for Conductimetric Analysis of Water-Soluble Ionic Contamination of Blast Cleaning Abrasives

ASTM D7393 Standard Practice for Indicating Oil in Abrasives

ASTM E11 Standard Specification for Woven Wire-Test Sieve Cloth and Test Sieves

ASTM E350 Standard Test Methods for Chemical Analysis of Carbon Steel, Low-Alloy Steel, Silicon Electrical Steel, Ingot Iron, and Wrought Iron

ASTM E384 Standard Test Method for Microindentation Hardness of Materials

TABLE 1
METALLIC SHOT SIZE SPECIFICATIONS^(A)

Screen No. ASTM E11	Screen Opening (inches) ^(B)	Screen Opening (mm) ^(B)	SHOT SIZE										
			780	660	550	460	390	330	280	230	170	110	70
7	0.1110	2.80	0% max ^(C)	---	---	---	---	---	---	---	---	---	---
8	0.0937	2.36	---	0% max	---	---	---	---	---	---	---	---	---
10	0.0787	2.00	85% MIN	---	0% max	0% max	---	---	---	---	---	---	---
12	0.0661	1.70	97% MIN	85% MIN	---	5% max	0% max	---	---	---	---	---	---
14	0.0555	1.40	---	97% MIN	85% MIN	---	5% max	0% max	---	---	---	---	---
16	0.0469	1.18	---	---	97% MIN	85% MIN	---	5% max	0% max	---	---	---	---
18	0.0394	1.00	---	---	---	96% MIN	85% MIN	---	5% max	0% max	---	---	---
20	0.0331	0.850	---	---	---	---	96% MIN	85% MIN	---	10% max	0% max	---	---
25	0.0278	0.710	---	---	---	---	---	96% MIN	85% MIN	---	10% max	---	---
30	0.0234	0.600	---	---	---	---	---	---	96% MIN	85% MIN	---	0% max	---
35	0.0197	0.500	---	---	---	---	---	---	---	97% MIN	---	10% max	---
40	0.0165	0.425	---	---	---	---	---	---	---	---	85% MIN	---	0% max
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

^(A) Information in this table is reprinted with permission from SAE International.

^(B) Screen opening sizes and screen numbers with maximum and 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.

^(C) All percentages refer to weight percent.

ASTM E1019 Standard Test Methods for Determination of Carbon, Sulfur, Nitrogen, and Oxygen in Steel and in Iron, Nickel, and Cobalt Alloys by Various Combustion and Fusion Techniques

3.5 SAE INTERNATIONAL STANDARD⁽²⁾

SAE 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 ASTM C136 and shall meet the size requirements for each size specified as defined in Table 1 for shot or Table 2 for grit (see Note 7.3).

4.1.2 Hardness: Abrasive hardness shall be tested in accordance with Section 5.2.2 and shall meet the specified hardness requirements (see Notes 7.3 and 7.4).

⁽²⁾ SAE International, 400 Commonwealth Drive, Warrendale PA 15096. Phone: 724-776-4841. Available from <www.http://standards.sae.org>