



Designation: D4940 – 15

Standard Test Method for Conductimetric Analysis of Water Soluble Ionic Contamination of Blast Cleaning Abrasives¹

This standard is issued under the fixed designation D4940; the number immediately following the designation indicates the year of original adoption or, in the case of revision, the year of last revision. A number in parentheses indicates the year of last reapproval. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reapproval.

1. Scope

1.1 This test method describes a procedure for assessing blast cleaning abrasives for the presence of conductive-potential, ionic contaminants by determining the total concentration of water soluble conductive species using a conductivity test.

1.2 This test method does not identify the ionic species present nor provide quantitative results on each species.

1.3 This test method is based on a volume comparison among abrasives of similar sizes. A volume comparison is more closely related to surface area of the abrasives than is a weight comparison.

1.4 The values stated in SI units are to be regarded as standard. No other units of measurement are included in this standard.

1.5 *This standard does not purport to address all of the safety concerns, if any, associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*²

D1193 Specification for Reagent Water

E832 Specification for Laboratory Filter Papers

2.2 *Other Standard:*

ISO 11127-6 Preparation of Steel Substrates before Application of Paints and Related Products - Test Methods for

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.46 on Industrial Protective Coatings.

Current edition approved Dec. 1, 2015. Published December 2015. Originally approved in 1989. Last previous edition approved in 2010 as D4940 – 10. DOI: 10.1520/D4940-15.

² 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* volume information, refer to the standard's Document Summary page on the ASTM website.

Non-Metallic Blast Cleaning Abrasives - Part 6: Determination of Water-Soluble Contaminants by Conductivity Measurement³

2.3 *SSPC: The Society for Protective Coatings:*⁴

SSPC-AB 1 Mineral and Slag Abrasives

SSPC-AB 2 Cleanliness of Recycled Ferrous Metallic Abrasive

SSPC-AB 3 Ferrous Metallic Abrasive

SSPC-AB 4 Recyclable Encapsulated Abrasive Media

3. Summary of Test Method

3.1 Abrasive and pure water are combined into a slurry that is stirred to leach the soluble salts from the abrasive. This slurry is filtered and conductance of the filtrate is measured. The conductivity, which is related to the concentration of soluble ionic materials contaminating the abrasive, is calculated from the conductance and the cell constant.

4. Significance and Use

4.1 Abrasive media may contain ionic contamination naturally (for example, beach sand), from manufacturing (quenching with contaminated water), transportation, storage or use (in the case of abrasive that is reused). Ionic contamination on the abrasive may transfer to the surface during abrasive blast cleaning, resulting in potential osmotic blistering, accelerated underfilm corrosion and premature coating failure.

4.2 This test method describes a shop/field procedure for assessing the level of conductive species on an abrasive.

4.3 Abrasive standards published by SSPC (AB) and ISO 11126 provide tolerance levels for water soluble contaminants of the abrasive.

5. Apparatus

5.1 *Conductivity Bridge and Cell*—Any commercial conductivity bridge and conductivity cell typically having a range

³ Available from American National Standards Institute (ANSI), 25 W. 43rd St., 4th Floor, New York, NY 10036, <http://www.ansi.org>.

⁴ Available from Society for Protective Coatings (SSPC), 40 24th St., 6th Floor, Pittsburgh, PA 15222-4656, <http://www.sspc.org>.