This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.

Designation: D4752 – 20

Standard Practice for Measuring MEK Resistance of Ethyl Silicate (Inorganic) Zinc-Rich Primers by Solvent Rub[1]

This standard is issued under the fixed designation D4752; 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 practice describes a solvent rub technique for assessing the MEK resistance of ethyl silicate (inorganic) zinc-rich primers. The MEK resistance of some two-component ethyl silicate zinc-rich primers has been shown to correlate well with the cure of the primer as determined by diffuse reflectance infrared spectroscopy.[2] The technique can be used in the laboratory, field, or in the fabricating shop. Practice D5402 is the preferred method for organic coatings.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.* Specific hazard statements are given in Section 6. Consult supplier's Safety Data Sheet(s) for specific hazard information relating to the solvent used.

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*[3]

D740 Specification for Methyl Ethyl Ketone

D4138 Practices for Measurement of Dry Film Thickness of Protective Coating Systems by Destructive, Cross-Sectioning Means

D5402 Practice for Assessing the Solvent Resistance of Organic Coatings Using Solvent Rubs

D7091 Practice for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to Ferrous Metals and Nonmagnetic, Nonconductive Coatings Applied to Non-Ferrous Metals

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *double rub, n*—the act of rubbing a solvent saturated cloth in one complete forward and backward motion over a coated surface.

4. Significance and Use

4.1 Ethyl silicate zinc-rich primers cure by the reaction of the vehicle with moisture, thereby providing a binder for the zinc. As relative humidity and temperature vary, so does the rate of cure. A certain minimum degree of cure is necessary prior to topcoating. It has been shown that the degree of cure of ethyl silicate zinc-rich primers can be measured by the chemical changes occurring using diffuse reflectance infrared spectroscopy.[2] This solvent rub test has been shown to correlate well with the infrared spectroscopic results of some two-component ethyl silicate inorganic zinc systems.

4.2 The degree of cure rating (Resistance Rating in Table 1) required prior to the application of specific topcoats must be agreed upon before the practice is used.

5. Reagents and Materials

5.1 *Methyl Ethyl Ketone* (MEK), in accordance with Specification D740.

5.2 *100 % Cotton, Shop Cloth,* approximately 300 by 300 mm (12 by 12 in.) contrasting in color to the primer to be evaluated.

5.3 *Squeeze Bottle.*

5.4 *Proper Safety Equipment,* as determined from the solvent SDS, for example, solvent resistant gloves, respirator.

[1] This practice 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.

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[2] Starr, T. L., Henton, L. E., Lewis, W. S., and Rideout, F. A., "Improved Field Reliability of High Performance Coating Systems: Phase II—Develop Procedures and Criteria in Critical Performance Areas," available from SSPC: The Society for Protective Coatings, 800 Trumbull Drive, Pittsburgh, PA 15205, www.sspc.org.

[3] 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.

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