Designation: F2524 – 06 (Reapproved 2013)

Standard Practice for Determination of Volatile Content for Formed-in-Place Gaskets (FIPG) Silicone Adhesives and Sealants for Transportation Applications[1]

This standard is issued under the fixed designation F2524; 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 covers the quantitative determination of the volatile matter evolved during the curing process of silicone adhesives and sealants for transportation applications.

1.2 The values stated in SI units are to be regarded as the standard. The values 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 and health practices and determine the applicability of regulatory limitations prior to use.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D4230 Test Method of Measuring Humidity with Cooled-Surface Condensation (Dew-Point) Hygrometer

E145 Specification for Gravity-Convection and Forced-Ventilation Ovens

3. Terminology

3.1 *Definitions:*

3.1.1 *FIPG by-products, n*—chemicals that are released during the curing process.

3.1.2 *formed-in-place gaskets (FIPG), n*— one- or two-component adhesive or sealant applied wet, uncured, to a joint surface where the mating parts are assembled before the curing process is complete.

3.1.2.1 *Discussion*—When fully cured, it forms a barrier to media migration across the joint.

3.1.3 *multicomponent FIPG, n*—FIPG that is packaged in two or more parts, which are combined before application, and upon combination, a coreactant from one part of the adhesive chemically reacts, at ambient conditions, with a coreactant from another part of the FIPG.

3.1.4 *radiation-cured FIPG, n*—FIPG that contains unreacted monomers or oligomers that are polymerized by exposure to radiation such as ultraviolet (UV) or microwave.

3.1.4.1 *Discussion*—Cure conditions and equipment must be specified by FIPG manufacturer and shall be used in place of the humidity cure activation. Conditions and equipment shall be detailed in the final report.

3.1.5 *volatile content, n*—Low molecular weight chemicals, left unbound by the cured sealant system, which are released into the ambient atmosphere.

4. Summary of Practice

4.1 This practice is used to determine the volatile content of silicone adhesives and sealants upon curing for transportation applications.

5. Significance and Use

5.1 The quantity of volatile components in FIPG silicone adhesive and sealant by-products can be established by this test method. This test method does not identify the components.

6. Apparatus

6.1 *Humidity Chamber with Temperature Controller*—A forced ventilation oven conforming to the requirements for Type IIA in Specification E145 with humidity control capability. The oven should be capable of maintaining a temperature of 40 ± 1°C.

6.1.1 The oven shall be equipped with a National Institute of Standards and Technology (NIST) traceable calibrated thermometer or thermocouple.

6.1.2 The oven temperature shall be controlled by an accurate, reliable thermoregulator, maintaining the set point within ±1.0°C or better.

6.1.3 The inside of the oven shall be free of contamination or surface deposits. Stainless steel oven liner should be used to reduce corrosion caused by continued exposure to decomposition gases.

[1] This practice is under the jurisdiction of ASTM Committee F03 on Gaskets and is the direct responsibility of Subcommittee F03.50 on Analytical Test Methods.

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[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.