



Designation: D 5282 – 98

Standard Test Methods for Compatibility of Construction Material with Silicone Fluid Used for Electrical Insulation¹

This standard is issued under the fixed designation D 5282; 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 These test methods cover screening for the compatibility of construction materials with silicone fluid for use in electrical equipment.

1.2 The values stated in SI units are to be regarded as the standard.

1.3 *This standard does not purport to address all of the safety problems, 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:

- D 92 Test Method for Flash and Fire Points by Cleveland Open Cup²
- D 445 Test Method for Kinematic Viscosity of Transparent and Opaque Liquids²
- D 664 Test Method for Acid Number of Petroleum Products by Potentiometric Titration²
- D 877 Test Method for Dielectric Breakdown Voltage of Insulating Liquids Using Disk Electrodes³
- D 924 Test Method for Dissipation Factor (or Power Factor) and Relative Permittivity (Dielectric Constant) of Electrical Insulating Liquids³
- D 974 Test Method for Acid and Base Number by Color-Indicator Titration²
- D 1169 Test Method for Specific Resistance (Resistivity) of Electrical Insulating Liquids³
- D 2129 Test Method for Color of Clear Electrical Insulating Liquids (Platinum-Cobalt Scale)³
- D 2225 Test Methods for Silicone Fluids Used for Electrical Insulation³
- D 4559 Test Method for Volatile Matter in Silicone Fluid³
- D 4652 Specification for Silicone Fluid Used for Electrical Insulation³

¹ These test methods are under the jurisdiction of ASTM Committee D27 on Electrical Insulating Liquids and Gases and are the direct responsibility of Subcommittee D27.06 on Chemical Test.

Current edition approved Oct. 10, 1998. Published January 1999. Originally published as D 5282 – 92. Last previous edition D 5282 – 98.

² *Annual Book of ASTM Standards*, Vol 05.01.

³ *Annual Book of ASTM Standards*, Vol 10.03.

3. Significance and Use

3.1 The magnitude of the changes in the electrical properties of the silicone fluid is of importance in determining the contamination of the fluid by the test specimen.

3.2 Physical and chemical changes in the fluid, such as color and acidity, also indicate solubility or other adverse effects of the test specimen on the fluid.

3.3 Physical changes of the test specimen, such as hardness, swelling, and discoloration, show the effect of the fluid on the test specimen and are used to determine the suitability of the material for use in silicone fluid.

3.4 A material meeting the criteria recommended does not necessarily indicate suitability for use in electrical equipment. Other properties must also be considered. Additionally, certain materials containing additives may meet the requirements of these test methods yet be unsatisfactory when subjected to longer-term evaluations.

3.5 These test methods may be used as a guide for testing the compatibility of materials for silicone fluids other than 50 cSt poly-dimethyl siloxane fluid, but different criteria for judgment may be necessary.

4. Apparatus -8284-d1f9dea43cbf/astm-d5282-98

4.1 Sample-Handling Apparatus:

4.1.1 *Oven*, forced draft, adjustable to $120 \pm 1^\circ\text{C}$, and a drying oven, adjustable to $105 \pm 5^\circ\text{C}$.

4.1.2 *Glass Containers*, 1-L, fitted with glass or aluminum foil covers.

NOTE 1—Other materials have been found to be suitable as covers.

4.1.3 *Fritted Glass Dispersion Tube* (coarse).⁴

4.2 Sample-Testing Apparatus:

4.2.1 *Tensile Strength*—As specified in appropriate test method.

4.2.2 *Hardness*—As specified in appropriate test method.

4.2.3 *Dimensional Change*—Micrometer and caliper.

4.2.4 *Weight Change*—Analytical balance.

5. Reagents

5.1 Dry Nitrogen Gas

⁴ Fisher Catalog No. 11-138, available from Fisher Scientific, 711 Forbes Ave., Pittsburgh, PA 15219-4785.