Designation: D5349 – 95 (Reapproved 2012)

Standard Test Method for Determination of the Moisture and Volatile Content of Sulfonated and Sulfated Oils by Hot-Plate Method[1]

This standard is issued under the fixed designation D5349; 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 covers the determination of the percentage of water and other compounds volatile at about 100°C existing in a sample of sulfonated or sulfated oil, or both, by rapid evaporation. This test method is applicable only to sulfonated and sulfated oils that do not contain the following: mineral acids, free sulfonic acids or free sulfuric acid esters, ammonia, acetic acid or similar volatile acids, alkali hydroxides, carbonates, acetates or similar salts that may react with oleic acid at elevated temperatures liberating volatile acids, or glycerin, diethylene glycol, xylene, or other compounds of similar volatility. This test method was derived from Test Methods D500, Sections 10 through 14.

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

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]

D500 Test Methods of Chemical Analysis of Sulfonated and Sulfated Oils

3. Significance and Use

3.1 This test method is intended to determine the moisture and volatile content of fats, oils, and fatliquors used in the softening and stuffing of leather.

4. Apparatus

4.1 The apparatus required consists of a glass-stoppered weighing flask, a glass beaker, and a suitable thermometer.

4.1.1 *Weighing Flasks,* any suitable glass-stoppered weighing flask of 10 to 15-mL capacity.

4.1.2 *Beaker,* Griffin low-form glass beaker with an approximate capacity of 150 mL and a diameter of about 5 cm.

4.1.3 *Heat Source*—The source of heat may be either an electric hot plate with or without asbestos paper or board cover, or an open flame under a suitable asbestos board and a wire gauze (to spread the heat).

4.1.4 *Thermometer,* graduated from 90 to 150°C, about 3 in. in length, and substantially constructed.

5. Reagents

5.1 *Desiccating Agent*—Any suitable desiccating agent may be used.

NOTE 1—Recent investigations seem to indicate that calcium chloride is unreliable as a laboratory desiccating agent.

5.2 *Oleic Acid.*

6. Procedure

6.1 Weigh approximately 5 g of oleic acid into the beaker and insert the thermometer. Heat the oleic acid gradually, while stirring with the thermometer, until the temperature reaches 130°C. Place the beaker in an oven at 105 to 100°C for 15 min, cool in a desiccator, and weigh. Repeat the heating over the hot plate and in the oven until two successive weighings differ by less than 1.5 mg.

6.2 Place about 6 g of the sample in the weighing flask and determine the weight accurately. Transfer the sample to the beaker (containing the oleic acid and the thermometer) and weigh the flask again. Heat the mixture exactly as in the taring of the beaker as described in 6.1. The loss in weight is equivalent to the moisture in the sample.

7. Calculation

7.1 Calculate the percentage of moisture and volatile matter in the sample as follows:

$$\text{Moisture and volatile matter, } \% = (A/B) \times 100 \quad (1)$$

[1] This test method is under the jurisdiction of ASTM Committee D31 on Leather and is the direct responsibility of Subcommittee D31.08 on Fats and OilsThis test method was developed in cooperation with the American Leather Chemists Assn. (Method H 41–1957).

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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.