



Standard Test Method for Determination of the Solidification Point of Fatty Acids Contained in Animal, Marine, and Vegetable Fats and Oils¹

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1. Scope

1.1 This test method covers determination of the solidification point of fatty acids contained in animal, marine, and vegetable fats and oils.

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 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.* See 6.2 and 6.7 for additional information.

2. Referenced Documents

2.1 ASTM Standards:

- D 473 Test Method for Sediment in Crude Oils and Fuel Oils by the Extraction Method²
- D 4057 Practice for Manual Sampling of Petroleum and Petroleum Products³
- D 4177 Practice for Automatic Sampling of Petroleum and Petroleum Products³

3. Significance and Use

3.1 This test method is intended to cover determination of the solidification point of fatty acids contained in animal, marine, and vegetable fats and oils used in the softening and stuffing of leather, as well as those used in the manufacture of products for such purpose.

4. Apparatus

- 4.1 *Griffin Low-Form Beaker*, 2-L capacity.
- 4.2 *Wide Mouth Bottle*—Capacity of 450 mL, height of 190 mm, and inside diameter of neck of 38 mm.
- 4.3 *Test Tubes*—Length of 100 mm and diameter of 25 mm, with or without rim. These tubes may have an etched mark

extending around the tube at a distance of 57 mm from the bottom to show the height to which the tube is to be filled.

4.4 *Saponification Vessel*—A 750- or 1000-mL flask.

4.5 *Stirrer*, 2- to 3-mm outside diameter, with one end bent in the form of a loop of 19-mm outside diameter. Glass, nichrome, stainless steel, or monel wire shall be used. The upper end can be formed to accommodate hand stirring or for attachment to a mechanical stirrer.

4.6 *Laboratory Thermometer*, 0 to 150°C.

4.7 *Titer Test Thermometer*—Specifications for thermometer used in titer test determinations:

4.7.1 *Type*—Etched stem glass.

4.7.2 *Liquid*—Mercury.

4.7.3 *Filling Above Liquid*—Evacuated or nitrogen gas.

4.7.4 *Temperature Range*—2° to +68°C.

4.7.5 *Subdivisions*—0.2°C.

4.7.6 *Total Length*—385 to 390 mm.

4.7.7 *Stem Diameter*—6 to 7 mm.

4.7.8 *Stem Construction*—Plain or lens front. The cross section of the lens front type shall be such that it will pass through an 8 mm ring gage but will not enter a 5 mm slot gage.

4.7.9 *Bulb Diameter*—5.5 mm to not greater than that of stem.

4.7.10 *Bulb Length*—15 to 25 mm.

4.7.11 *Bulb Construction*—Corning normal or equally suitable thermometric glass.

4.7.12 *Distance from Bottom of Bulb to - 2° Mark*—50 to 60 mm.

4.7.13 *Distance from 68° Mark to Top of Thermometer*—20 to 35 mm.

4.7.14 *Length of Unchanged Capillary Between the Highest Graduation and the Expansion Chamber*—10 mm.

4.7.15 *Expansion Chamber*—To permit heating to at least 85°C.

4.7.16 *Top Finish*—Glass ring.

4.7.17 *Longer Graduation Lines*—At each 1° mark.

4.7.18 *Graduations*—Numbered at zero and each multiple of 2°.

4.7.19 *Immersion*—45 mm, a line shall be etched around the stem 45 mm from the bottom of the bulb.

4.7.20 *Special Marking on Thermometer*—A.O.C.S. Titer Test.

¹ This test method is under the jurisdiction of ASTM Committee D-31 on Leather and is the direct responsibility of Subcommittee D31.08 on Fats and Oils. This test method was developed in cooperation with the American Leather Chemists Assn. (Methods H 10 and H 17-1957).

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

³ *Annual Book of ASTM Standards*, Vol 05.02.