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Standard Test Method for Congealing Point of Petroleum Waxes, Including Petrolatum¹

This standard is issued under the fixed designation D 938; 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.

This standard has been approved for use by agencies of the Department of Defense.

1. Scope

1.1 This test method covers determination of the congealing point of petroleum waxes, including petrolatum.

1.2 The values stated in inch-pound 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 and health practices and determine the applicability of regulatory limitations prior to use.*

NOTE 1—This test method is an alternative to Test Method D 127D 127. Results obtained are usually lower than the results obtained by Test Method D 127D 127 – IP 133, the amount of the deviation varying with the nature of the petroleum wax.

2. Referenced Documents

2.1 *ASTM Standards:*

D 127D 127 Test Method for Drop Melting Point of Petroleum Wax Including Petrolatum²

E 1 Specification for ASTM Thermometers³

3. Terminology

3.1 *Definition:*

3.1.1 *congealing point, n*— of petroleum wax, that temperature at which molten petroleum wax, when allowed to cool under prescribed conditions, ceases to flow.

4. Summary of Test Method

4.1 A sample of wax is melted and a droplet is made to adhere to the bulb of a thermometer. Using a prewarmed flask

as an air jacket, the droplet on the bulb is allowed to cool at a fixed rate until it congeals. The congealing point is observed as the temperature at which the droplet ceases to flow as the thermometer is turned.

5. Significance and Use

5.1 Congealing point is a wax property that is of interest to many petroleum wax consumers. The procedure described here measures the temperature at which a sample being cooled develops a “set” or resistance to flow. At that temperature, the wax may be at or close to the solid state, or it may be semisolid and quite unctuous, depending on the composition of the wax or petrolatum being tested. In the case of petrolatums, congealing property is associated with the formation of a gel structure as the sample cools.

6. Apparatus

6.1 *Thermometer*, having the following range and conforming to the requirements prescribed in Specification E 1E 1 or in the specifications for IP Standard Thermometers:

Temperature Range	Thermometer	Number
20 to 100°C	ASTM	IP
68 to 213°F	...	18C
	54F	18F

6.2 *Erlenmeyer Flask*, 125-mL, glass, to serve as a thermometer jacket.

6.3 *Cork or Rubber Stopper*, for attaching the thermometer to the Erlenmeyer flask.

7. Procedure

7.1 Adjust the thermometer through the stopper so that the bottom of the bulb will be 10 to 15 mm above the bottom of the Erlenmeyer flask when the stopper is fitted snugly in the flask. After making this adjustment, remove the thermometer and stopper from the flask, being careful not to change the position of the stopper relative to the thermometer stem.

¹ This test method is under the jurisdiction of ASTM Committee D-2 on Petroleum Products and Lubricants and is the direct responsibility of Subcommittee D02.0M on Petroleum Wax.

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

³ *Annual Book of ASTM Standards*, Vol 14.03.