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Technical Association of Pulp
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Standard Test Method for Melting Point of Petroleum Wax (Cooling Curve)¹

This standard is issued under the fixed designation D87; 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 melting point (cooling curve) of petroleum wax. It is unsuitable for waxes of the petrolatum group, microcrystalline waxes, or blends of such waxes with paraffin wax or scale wax.

NOTE 1—For additional methods used for testing petroleum waxes, see Test Method D127 and Test Method D938. Results may differ, depending on the method used. For pharmaceutical petrolatum, Test Method D127 usually is used.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses after SI units are provided for information only and are not considered 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 ASTM Standards:²

D127 Test Method for Drop Melting Point of Petroleum

Wax, Including Petrolatum

D938 Test Method for Congealing Point of Petroleum Waxes, Including Petrolatum

D6299 Practice for Applying Statistical Quality Assurance and Control Charting Techniques to Evaluate Analytical Measurement System Performance

E1 Specification for ASTM Liquid-in-Glass Thermometers

3. Terminology

3.1 Definitions:

3.1.1 *melting point (cooling curve) of petroleum wax*—temperature at which melted petroleum wax first shows a minimum rate of temperature change when allowed to cool under prescribed conditions.

3.1.1.1 *Discussion*—The so-called “American Melting Point” is arbitrarily 1.65 °C (3 °F) above the Melting Point (Cooling Curve) of Petroleum Wax.

4. Summary of Test Method

4.1 In Procedure A (Manual Method), a specimen of molten wax in a test tube fitted with a thermometer or equivalent temperature measuring device is placed in an air bath, which in turn is surrounded by a water bath held at 16 °C to 28 °C (60 °F to 80 °F). As the molten wax cools, periodic readings of its temperature are taken. When solidification of the wax occurs, the rate of temperature change decreases, yielding a plateau in the cooling curve. The temperature at that point is recorded as the melting point (cooling curve) of the sample.

4.2 In Procedure B, an automatic analyzer is used. As the molten wax cools, the sample temperature decrease is measured every 15 s in 0.01 °C (0.1 °F) readings. The melting point is considered to be reached when five consecutive measurements are constant within a given temperature interval, usually 0.1 °C (0.2 °F).

5. Significance and Use

5.1 Melting point (cooling curve) is a test that is widely used by wax suppliers and consumers. It is particularly applied

¹ This test method is under the jurisdiction of ASTM Committee D02 on Petroleum Products, Liquid Fuels, and Lubricants and is the direct responsibility of Subcommittee D02.10.0A on Physical/Chemical Properties.

In the IP, this test method is under the jurisdiction of the Standardization Committee. This test method was adopted as a joint ASTM-IP standard in 1966.

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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.