

Designation: D 1320 - 73 (Reapproved 1983)¹

An American National Standard
Technical Association of Pulp
and Paper Industry
Tentative Method T 644 m

AMERICAN SOCIETY FOR TESTING AND MATERIALS
1916 Race St., Philadelphia, Pa. 19103

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Standard Test Method for TENSILE STRENGTH OF PARAFFIN WAX¹

This standard is issued under the fixed designation D 1320; 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 method was prepared jointly by the Technical Association of Pulp and Paper Industry and the American Society for Testing and Materials.

¹ NOTE—Section 1.3 and new Section 2 were editorially added and subsequent sections renumbered in November 1983.

1. Scope

1.1 This test method describes a procedure for obtaining an empirical measure of the tensile strength of paraffin wax having a ductility not exceeding approximately $\frac{1}{8}$ -in. (3.2-mm) elongation at the specified temperature and relative humidity of the test, and having ASTM melting points (Method D 87), in the range from approximately 120 to 150°F (49 to 66°C).

NOTE 1—This method may also be used for other types of petroleum waxes, compounded waxes, or waxes with ASTM melting points in excess of 150°F (66°C), provided they are of the same order of ductility, and provided they do not exhibit excessive contraction on cooling the cast specimen. Certain mixtures of paraffin and microcrystalline waxes will give lower tensile strength values when using the silicone mold release compound referred to in footnote 5. While this method may be used for such mixtures, results should not necessarily be considered comparable to values obtained by this test on unmodified crystalline paraffin waxes. For waxes which exhibit excessive contraction, special casting techniques beyond the scope of this test method are required.

1.2 Many purchasers and manufacturers have found tensile strength of the type obtained by this method to be useful as a guide in controlling the over-all quality of paraffin wax. Because the conditions of preparing the sample and applying the load to the test specimen are not necessarily identical with service conditions, the tensile strength values obtained by this method generally cannot be assumed as indicative of the performance which could be expected in service, although some laboratories have observed a correlation in certain applications.

1.3 *This standard may involve hazardous ma-*

terials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

2. Applicable Documents

2.1 ASTM Standards:

A 167 Specification for Stainless and Heat-Resisting Chromium-Nickel Steel Plate, Sheet, and Strip²

D 87 Test Method for Melting Point of Petroleum Wax (Cooling Curve)³

E 1 Specification for ASTM Thermometers⁴

3. Definition

3.1 *tensile strength*—longitudinal stress (ultimate pure tensile load) required to break a representative specimen of specified shape and cross-sectional area.

4. Summary of Method

4.1 A set of six specimens per test sample are cast with a $\frac{1}{4}$ -in.² (1.6-cm²) cross-section mold of specified shape, and aged for 2 h in a room held at 73°F (22.8°C) and a 50 % relative humidity.

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

Current edition approved Aug. 27, 1973. Published October 1973. Originally published as D 1320 - 54 T. Last previous edition D 1320 - 67.

² Annual Book of ASTM Standards, Vol 01.03.

³ Annual Book of ASTM Standards, Vol 05.01.

⁴ Annual Book of ASTM Standards, Vol 05.03.