



Designation: D494 – 11

Standard Test Method for Acetone Extraction of Phenolic Molded or Laminated Products¹

This standard is issued under the fixed designation D494; 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 amount of acetone-soluble matter in molded or laminated phenolic products.

1.2 The values stated in SI units are to be regarded as standard. The values given in parentheses are mathematical conversions to inch-pound units that are provided for information only and are not considered standard.

1.3 *This standard does not purport to address all of the safety problems, 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 similar to ISO 308.

2. Referenced Documents

2.1 *ASTM Standards:*²

D618 Practice for Conditioning Plastics for Testing

D883 Terminology Relating to Plastics

E11 Specification for Woven Wire Test Sieve Cloth and Test Sieves

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

2.2 *ISO Standards:*

ISO 308 Plastics—Phenolic moulding materials—Determination of acetone-soluble matter (apparent resin content of material in the un moulded state)

3. Terminology

3.1 All definitions are in accordance with Terminology D883.

¹ This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.70 on Analytical Methods.

Current edition approved Sept. 1, 2011. Published September 2011. Originally approved in 1946. Last previous edition approved in 2010 as D494 - 04(2010)^{ε1}. DOI: 10.1520/D0494-11.

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.

4. Significance and Use

4.1 For molded phenolic products, acetone extraction shall be considered solely as a quantitative expression of a property normally associated with degree of cure. There is no demonstrably rigorous relation between the optimum mechanical and electrical properties of a well-cured piece and the numerical value of the acetone test. The amount of acetone-soluble matter is affected by: (1) nature of resin and filler, (2) lubricant, (3) molding temperature, (4) length of cure, (5) thickness of the section from which sample is taken, (6) nature of molded piece, (7) technique used in molding, (8) distribution of fines in the material to be extracted, and (9) method of grinding the specimen. These variations under some conditions will cause a difference of 3 to 4 % in acetone-extractable matter. For this reason, the test method shall be used only as a comparative test for measuring undercure.

4.2 For laminated phenolic products, acetone extraction indicates change in stage of cure, change in resin content, change in type of resin used, presence of plasticizers or other acetone-extractable addition agents, and is affected in general by the same factors as stated in 6.1

5. Apparatus

5.1 *Sieves*—The set of sieves used shall consist of sieves Nos. 40 (425- μ m) and 140 (106- μ m), with a cover and receiving pan, conforming to the requirements of Specification E11.

5.2 *Extraction Apparatus*—The apparatus may be of the type shown in Fig. 1, or a Wiley-Richardson type, as shown in Fig. 2. The former type is more suitable for use with small electric hot plates, while the latter is more suitable for use with oil or water baths. In either case, it shall be possible to control the temperature so that the rate of extraction can be regulated accurately.

5.3 *Drying Dishes*—The drying dishes shall be lightweight dishes, approximately 63.5 mm (2½ in.) in diameter and 38.1 mm (1½ in.) in height.

6. Preparation of Sample

6.1 *Precautions*—It is of utmost importance that extreme care shall be taken during the preparation of the sample for

*A Summary of Changes section appears at the end of this standard

