



Standard Test Method for Filler Content of Phenol, Resorcinol, and Melamine Adhesives¹

This standard is issued under the fixed designation D 1579; 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, as part of Federal Test Method Standard No. 175a.

1. Scope *

1.1 This test method is suitable for measuring the filler content of phenol, resorcinol, and melamine resin-base adhesives mixed with hardener or catalyst, that set at room, intermediate, and high temperatures. Results are expressed on the basis of the nonvolatile content of the mixed, liquid adhesive.

1.2 The values stated in SI 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.*

2. Referenced Documents

2.1 *ASTM Standards:*

D 907 Terminology of Adhesives²

D 1582 Test Method for Nonvolatile Content of Liquid Phenol, Resorcinol, and Melamine Adhesives²

3. Terminology

3.1 *Definitions*—Many terms used in this test method are defined in Terminology D 907.

4. Significance and Use

4.1 It is possible to modify the properties of phenol, resorcinol, and melamine-based adhesives by adding fillers to the adhesive and in doing so affect the way the adhesive performs. This test method makes possible accurate determination of these filler levels for purposes of quality control and characterization of the adhesive.

5. Apparatus

5.1 *Erlenmeyer Flask*, or beaker, of 100-mL capacity.

5.2 *Analytical Balance*, accurate to 0.001 g.

5.3 *Circulating-Air Oven*, capable of maintaining a temperature of $105 \pm 1^\circ\text{C}$ ($221 \pm 1.8^\circ\text{F}$).

5.4 *Desiccator*, with drying agent and tray.

5.5 *Sintered Glass Crucible*, of coarse or medium porosity.

6. Sampling

6.1 Except in special cases, take a sample from each component of the adhesive. When possible, use a composite sample of each component chosen from three or more separate containers, chosen at random. Also take samples from containers which appear to be nonrepresentative and test such samples separately. Place the samples immediately in clean, dry, airtight containers, filled to prevent excessive air space above the adhesive and transported to the testing laboratory. Take precautions to reduce evaporation or drying of the adhesive to a minimum. Mix the adhesive in the can thoroughly if there is a tendency for the materials to separate before a sample is taken.

6.2 Test three specimens of each sample, unless otherwise required.

7. Procedure

7.1 Mix the adhesive in accordance with the instructions of the manufacturer.

7.2 *Phenol and Resorcinol Base*—Accurately weigh to the nearest 1 mg approximately 2 g of the freshly mixed adhesive (cut film adhesives into small pieces approximately 13-mm (0.5-in) square before weighing) in a 100-mL beaker or Erlenmeyer flask, add 50-mL of absolute methyl alcohol, and stir the mixture thoroughly for 3 min. Filter the mixture promptly through a previously weighed, sintered glass crucible of coarse or medium porosity and wash the contents of the beaker onto the filter with another 50-mL portion of methyl alcohol. Wash the residue in the crucible with at least 50-mL of boiling distilled water, dry to approximately constant weight at $105 \pm 1^\circ\text{C}$ ($221 \pm 1.8^\circ\text{F}$), cool in a desiccator, and weigh accurately.

7.3 *Melamine Base*—Accurately weigh to the nearest 1 mg approximately 2 g of freshly mixed adhesive in a 100-mL beaker or Erlenmeyer flask, add 50 mL of a cold solution made of 20 parts (by volume) of glacial acetic acid, 20 parts of 95 % ethyl alcohol, and 60 parts of distilled water. Thoroughly stir this mixture for 1 min and add 0.5 g of accurately weighed (to the nearest 1 mg) acid-washed diatomaceous earth which has

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² *Annual Book of ASTM Standards*, Vol 15.06.