



Designation: D 4426 – 96

Standard Test Method for Determination of Percent Nonvolatile Content of Liquid Phenolic Resins Used for Wood Laminating¹

This standard is issued under the fixed designation D 4426; 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 recommended procedure for the determination of the nonvolatile or total solids content of liquid phenolic resins used for wood laminating.

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 of the terms in this test method are defined in Terminology D 907.

3.1.1 *nonvolatile content, n*—the portion of a material that remains after volatile matter has been evaporated under specified ambient or accelerated conditions. (Sometimes called *solids content*.)

3.1.1.1 *Discussion*—The percentage by weight of nonvolatile matter in an adhesive will vary depending on the analytical procedure used. A standard test method must be used to obtain consistent results. Some liquids may remain, depending on the conditions of the test.

3.1.2 *solids content, n*—See *nonvolatile content*.

4. Summary of Test Method

4.1 A weighed sample is oven-dried, cooled in a desiccator, and weighed. The percent nonvolatile content is calculated, based on the amount remaining.

5. Significance and Use

5.1 This test method is intended as a fast and economical determination of the nonvolatile content of liquid phenolic resins used for wood laminating and is useful for general comparative purposes. For greater precision and accuracy, Test Method D 1582 is recommended.

6. Apparatus

6.1 *Disposable Aluminum Foil Dishes*, 60-mm (2.4-in.) diameter by 16-mm (0.60-in.) depth.

NOTE 1—A glass dish may be used if the pH of the resin is greater than ten.

6.2 *Desiccator*, charged with Drierite or equivalent desiccant.

6.3 *Mechanical Convection Oven*.

6.4 *Analytical Balance*, accurate to ± 0.1 mg (0.000002 lb).

6.5 *Eye Droppers, or Dropping Pipettes*, 2-mL capacity.

6.6 *Anemometer*.

6.7 *Stainless Steel Trays*, fabricated 30 gage, 83 by 250 mm (3.25 by 9.8 in.), with 19-mm (0.75-in.) sides and open ends.

6.8 *Modified Oven Shelves*, fitted with fabricated 18-gage 19 by 19-mm (0.75 by 0.75-in.) stainless steel angle stop positioned 108 mm (4.25 in.) from back edge. Shelf-stop ensures consistent solids dish placement and prevents placement at the rear of the oven where airflow is erratic.

6.9 *Laboratory Hotplate*, with heating capacity to 270°C (518°F).

7. Oven Setup and Periodic Check Specifications

7.1 Specifications:

7.1.1 *Intake Port*—6.4 mm (0.25 in.) open.

7.1.2 *Exhaust Port*—6.4 mm (0.25 in.) open.

7.1.3 *Internal Airflow*— 91.4 ± 1 m/min (300 ± 3 ft/min) at 40°C (104°F).

7.1.4 *Temperature*— $125 \pm 1^\circ\text{C}$ ($257 \pm 2^\circ\text{F}$).

7.2 A 6.4-mm (0.25-in.) metal spacer is a convenient tool for setting port openings.

7.3 Measure with Davis-type anemometer placed as close as possible to the geometric center of the cavity with the door shut.

7.4 Set the oven temperature at 125°C (257°F) and record the actual temperature for a period of 2 h. The control range

¹ This test method is under the jurisdiction of ASTM Committee D-14 on Adhesives and is the direct responsibility of Subcommittee D14.30 on Wood Adhesives.

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