



Designation: D1489 – 09

Standard Test Method for Nonvolatile Content of Aqueous Adhesives¹

This standard is issued under the fixed designation D1489; 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.

1. Scope

1.1 This test method covers the determination of the non-volatile content of aqueous adhesives, such as dextrin, starch, casein, and animal gelatin.

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*:²
[D907 Terminology of Adhesives](#)

3. Terminology

3.1 *Definitions*—Many terms in this test method are defined in Terminology [D907](#).

4. Significance and Use

4.1 Adhesive cost is often related to the solids level (non-volatile content).

4.2 This test method can be used to compare the nonvolatile content of various adhesives for adhesive selection and product uniformity.

4.3 This test method is suitable for quality control and research purposes.

¹ This test method is under the jurisdiction of ASTM Committee [D14](#) on Adhesives and is the direct responsibility of Subcommittee [D14.10](#) on Working Properties.

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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.

5. Apparatus and Materials

5.1 *Analytical Balance*, for weighing of specimen, accurate to ± 0.001 g.

5.2 *Laboratory Balance*, for weighing of sample, accurate to ± 0.01 g.

5.3 *Constant-Temperature Oven*, capable of maintaining a temperature of $105 \pm 1^\circ\text{C}$ ($221 \pm 2^\circ\text{F}$).

5.4 *Glass Jar* of sufficient size, 1 L or more, to store sample of adhesive prior to testing. The jar shall be such that it can be sealed to prevent the loss of volatile content during the storage period.

5.5 *Beaker*—of 100 mL capacity.

5.6 *Weighing Bottles*—wide-mouth cylindrical glass weighing bottles, of flat form, about 30 mm in height and 50 mm in diameter, having interchangeable ground-in glass caps.

5.7 *Volumetric Flasks*, of 200-mL capacity, with glass stoppers.

5.8 *Volumetric Pipet*, of 10-mL capacity.

5.9 *Desiccator*, with drying agent and tray.

5.10 *Silica Sand*.

5.11 *Water, Hot*—distilled water heated to at least 80°C .

5.12 *Hot Plate*, used to heat the water.

6. Sampling

6.1 The sample of the adhesive shall be representative of the lot being evaluated. The quantity shall be at least 1.0 L aliquot consisting of a composite taken, when possible, from three or more separate containers chosen at random. Thoroughly mix the sample to uniform consistency. Immediately place the composite sample in an airtight glass jar until tested.

7. Procedure

7.1 Make sure that the sample in the glass jar is of uniform consistency before removing a specimen for testing. Inspect the sample to ensure that there are no signs of settling or separation of the adhesive. If settling or separation are noted, mix the samples thoroughly. Other factors, such as foaming or contamination may require the samples be replaced.