



Designation: D 4500 – 95

Standard Test Method for Determining Grit, Lumps, or Undissolved Matter in Water-Borne Adhesives¹

This standard is issued under the fixed designation D 4500; 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 grit, lumps, or undissolved matter in water-borne adhesives such as starch, dextrin, casein, resin base, and other liquid adhesives, excluding mastics and pressure sensitive adhesives. It is intended to replace Federal Standard 175A Method 4041.

1.2 The values stated in inch-pound units are to be regarded as the standard.

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 3460 Specification for White Watermarked and Unwatermarked Bond, Mimeo, Spirit Duplicator, Xerographic, and Laser Printer Cut-Sized Office Papers³

3. Terminology

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

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *grit*—particles detectable by touch as described in this test method that may be irregular in shape, abrasive, and/or resistant to disintegration; and may or may not be foreign to the adhesive system in which they are found.

4. Summary of Test Method

4.1 White bond paper is coated with a liquid adhesive which is pressed into contact with a glass plate surface to observe for grit, lumps, or undissolved matter in the adhesive.

5. Significance and Use

5.1 This test method determines the presence of gross particulates in an adhesive sample. It is useful for the control of uniformity between lots of an adhesive.

6. Apparatus

6.1 *White Bond Paper*—Sufficient quantity of white bond paper conforming to Grade No. 1, Type I of Specification D 3460.

6.2 *Glass Panels*—Clean and of suitable dimensions.

6.3 *Roller*—A steel roller,⁴ 3.25 ± 0.1 in. (82.5 ± 2.5 mm) in diameter and 1.75 ± 0.05 in. (44.4 ± 1.1 mm) in width covered with rubber approximately 0.25 in. (6 mm) in thickness, having a Shore scale A durometer hardness of 80 ± 5. The surface of the roller is to be a true cylinder, void of concave or convex deviations. The mass of the roller is to be 4.5 ± 0.1 lb. (2041 ± 45 g).

7. Sampling

7.1 Unless otherwise specified in the material specification, test three specimens from each adhesive sample.

8. Test Specimen

8.1 Unless otherwise specified in the material specification, use a test specimen which weighs approximately 10 g.

9. Procedure

9.1 Obtain an adhesive sample and mix according to the manufacturer's recommendations. Using any convenient technique, cover the white bond paper by applying the adhesive at a thickness recommended by the manufacturer or selected by the user. Immediately lay the sheet face down on a glass panel and roll with the roller sufficiently to eliminate air bubbles and wrinkling. Using hand pressure, feel the exposed side of the paper carefully to determine any unevenness caused by grit or undissolved matter.

10. Report

10.1 The report shall include the following information:

¹ This test method is under the jurisdiction of ASTM Committee D-14 on Adhesives and is the direct responsibility of Subcommittee D14.10 on Working Properties.

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

³ *Annual Book of ASTM Standards*, Vol 15.09.

⁴ The roller available from The Pressure Sensitive Tape Council, 104 Wilmot Rd., Suite 201, Deerfield, IL 60015, has been found suitable.