Designation: D 1338 – 99

Standard Practice for Working Life of Liquid or Paste Adhesives by Consistency and Bond Strength[1]

This standard is issued under the fixed designation D 1338; 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 practice covers two procedures applicable to all adhesives having a relatively short working life. It is intended to determine whether the working life conforms to the minimum specified working life of an adhesive required by consistency tests or by bond strength tests, or by both.

1.2 The values stated in SI units are to be regarded as the standard. The values given in parentheses are provided for information purposes 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 897 Test Method for Tensile Properties of Adhesive Bonds[2]

D 906 Test Method for Strength Properties of Adhesives in Plywood Type Construction in Shear by Tension Loading[2]

D 907 Terminology of Adhesives[2]

D 1002 Test Method for Apparent Shear Strength of Single-Lap-Joint Adhesively Bonded Metal Specimens by Tension Loading (Metal-to-Metal)[2]

D 1084 Test Methods for Viscosity of Adhesives[2]

3. Terminology

3.1 *Definitions*—Many terms in this practice are defined in Terminology D 907.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *working life of an adhesive*—the time elapsing between the moment an adhesive is ready for use and the time when the adhesive is no longer usable.

4. Significance and Use

4.1 To determine acceptable working life of an adhesive, two procedures are used. This practice is intended to apply to:

4.1.1 Self-contained liquid or paste adhesives,

4.1.2 Adhesives requiring addition of a catalyst, hardener, filler, thinner, and so forth, or combinations of two or more of these materials just prior to use, and

4.1.3 Powdered or flaked adhesives which are dissolved in water or other solvent and are used as liquid or paste adhesives.

CONSISTENCY PROCEDURE

5. Apparatus

5.1 *Viscometer*—Any means of measuring the viscosity or consistency of the adhesive can be selected, provided that it is suitable for the type of adhesive under test and provided that the results can be expressed in fundamental units.

5.2 *Controlled-Atmosphere Chamber*—Provide an atmosphere of 23 ± 1.1°C (73.4 ± 2°F) and 50 ± 2 % relative humidity. Alternative controlled conditions are permissible, provided the conditions are agreed upon by the purchaser and the manufacturer.

5.3 *Beaker*, of heat-resistant glass,[3] 76 mm (3 in.) in diameter, 102 mm (4 in.) high, and having a capacity of 400 mL.

5.4 *Stirring Rod*, of glass, stainless steel, or other unreactive material.

6. Procedure

6.1 Conduct the consistency test on both the adhesive when freshly prepared and on the adhesive after having been subjected to the working life test.

NOTE 1—An alternative test method to be used with this practice is Test Methods D 1084.

6.2 Precondition the adhesive and all the components at a temperature of 23 ± 1.1°C (73.4 ± 2°F), unless otherwise agreed upon between the purchaser and the manufacturer.

[1] This practice 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] Borosilicate glass is suitable for this purpose.