



Standard Practices for Resistance of Adhesives to Cyclic Laboratory Aging Conditions¹

This standard is issued under the fixed designation D 1183; 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 These practices cover the determination of the resistance of adhesives to cyclic accelerated service conditions by exposing bonded specimens to conditions of high and low temperatures and high and low relative humidities. The extent of degradation is determined from changes in strength properties as a result of exposure to the test conditions (Note 1). It is recognized that no accelerated procedure for degrading materials correlates perfectly with actual service conditions, and that no single or small group of laboratory test conditions will simulate all actual service conditions. Consequently, care must be exercised in the interpretation and use of data obtained in this practice. The test condition, the number of cycles of the test condition to be used, the particular strength property to be used to determine the extent of degradation, and whether test specimens or test panels are to be used, is specified in the material specification.

NOTE 1—These practices/conditions are intended for use with specimens described in the approved ASTM strength test methods for adhesives as follows:

Test Methods D 897, D 903, D 906, D 950, D 1002, D 1062, and Method D 1344.

1.2 The values stated in SI 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 897 Test Method for Tensile Properties of Adhesive Bonds²

D 903 Test Method for Peel or Stripping Strength of Adhesive Bonds²

D 906 Test Method for Strength Properties of Adhesives in Plywood Type Construction in Shear by Tension Loading²

D 907 Terminology of Adhesives²

D 950 Test Method for Impact Strength of Adhesive Bonds²

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

D 1062 Test Method for Cleavage Strength of Metal-to-Metal Adhesive Bonds²

D 1141 Specification for Substitute Ocean Water³

D 1344 Methods of Testing Cross-Lap Specimens for Tensile Properties of Adhesives⁴

3. Terminology

3.1 *Definitions*—Many terms in these practices are defined in Terminology D 907.

4. Significance and Use

4.1 This practice provides information on the resistance to cyclic laboratory aging.

5. Apparatus

5.1 *Circulating Air Ovens*, capable of being controlled at the required temperatures.

5.2 *Rooms, Cabinets, or Desiccators*, with means for controlling the relative humidity of the air in them at the required values.

NOTE 2—The following saturated salt solutions give 85 to 90 % relative humidity:

(1) Potassium chloride at 23°C

(2) Manganous sulfate at 38.5°C

5.3 *Vessels with Water*, for immersion tests.

5.4 *Substitute Ocean Water*, with the following composition (Note 3):

Compound	Concentration, g/L
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¹ These practices are under the jurisdiction of ASTM Committee D14 on Adhesives and are the direct responsibility of Subcommittee D 14.80 on Metal Bonding Adhesives.

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

³ *Annual Book of ASTM Standards*, Vol 11.02.

⁴ Discontinued—see 1986 *Annual Book of ASTM Standards*, Vol 15.06.