Designation: D 1995 – 92 (Reapproved 2004)

Standard Test Methods for Multi-Modal Strength Testing of Autohesives (Contact Adhesives)[1]

This standard is issued under the fixed designation D 1995; 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 These test methods cover procedures by which autohesives can be tested in four commonly practiced stressing modes, namely: compression shear, cleavage, climbing drum peel, and T-peel, and in various combinations of rigid-to-rigid, flexible-to-rigid, and flexible-to-flexible adherends that include wood, aluminum, steel flakeboard, and plastic laminates. Quantitative test methods that involve bond formation by impact are also provided. Three pressure modes are provided: static, roller, and impact. Because there are many types of contact adhesives being used to bond many different materials under widely differing conditions, these test methods are designed to allow the user to select the test mode, coating thickness, temperature and relative humidity conditions, pressure magnitude and mode, open time, and bond-conditioning time.

1.1.1 The bond-formation process used with autohesives is unlike that of all other adhesives and in consequence, testing of autohesives requires methods that are unlike those provided by other ASTM standards. See Annex A1.

1.2 A choice of adherends is available in each test mode. The combination of adherends that can be bonded together is limited to those shown in Appendix X1.

1.3 Methods for application of pressure are available in each test mode. For a particular combination of substrates, the means available for application of pressure are limited to those shown in Appendix X2.

1.4 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

1.5 *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.* Specific precautionary statements are given in 7.5.

2. Referenced Documents

2.1 *ASTM Standards:* [2]

D 905 Test Method for Strength Properties of Adhesive Bonds in Shear by Compression Loading

D 907 Terminology of Adhesives

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

D 1151 Practice for Effect of Moisture and Temperature on Adhesive Bonds

D 1781 Test Method for Climbing Drum Peel Test for Adhesives

D 1876 Test Method for Peel Resistance of Adhesives (T-Peel Test)

D 2651 Guide for Preparation of Metal Surfaces for Adhesive Bonding

E 4 Practices for Force Verification of Testing Machines

3. Terminology

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

3.1.1 *autohesion, n*—adhesion developed by interdiffusion of the molecules of two solid surfaces of the same material and consequent obliteration of the interface between them.

3.1.2 *autohesive, n*—an adhesive possessing the property of autohesion. (Also called contact-bond adhesive and dry-bond adhesive.)

3.1.3 *shear strength, n—in adhesive joint*, the maximum average stress when a force is applied parallel to the joint.

3.1.3.1 *Discussion*—In most adhesive test methods, the shear strength is actually the maximum average stress at failure of the specimen, not necessarily the true maximum stress in the material.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *autohesive (contact) failure, n*—a condition in which no contact appears to have occurred between the two layers of autohesive, as evidence by visual inspection of the specimen after destructive testing.

[1] These test methods are under the jurisdiction of Committee D14 on Adhesives and are the direct responsibility of Subcommittee D14.70 on Construction Adhesives.

Current edition approved April 1, 2004. Published April 2004. Originally approved in 1991. Last previous edition approved in 1992 as D 1995 – 92 (1998)$^{\epsilon 1}$.

[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.

Copyright © ASTM International, 100 Barr Harbor Drive, PO Box C700, West Conshohocken, PA 19428-2959, United States.