



Designation: D3807 – 98 (Reapproved 2012)

Standard Test Method for Strength Properties of Adhesives in Cleavage Peel by Tension Loading (Engineering Plastics-to-Engineering Plastics)¹

This standard is issued under the fixed designation D3807; 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 This test method covers the determination of the comparative cleavage/peel strengths of adhesives for bonding engineering plastics when tested on a standard specimen and under specific conditions of preparation and testing.

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 of the terms used in this test method are defined in Terminology D907.

3.2 *Definitions of Terms Specific to This Standard*:

3.2.1 *semirigid adherend, n*—an adherend that has dimensions and physical properties that permit bending at designated test temperature through any angle up to 30° without breaking or cracking.

4. Significance and Use

4.1 This test method determines strength properties of adhesives in cleavage peel by tension loading. It allows the

¹ This test method is under the jurisdiction of ASTM Committee D14 on Adhesives and is the direct responsibility of Subcommittee D14.40 on Adhesives for Plastics.

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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.

comparative testing of cleavage/peel strengths of bonded engineering thermoplastic adherends.

4.2 Cleavage/peel forces are common in bonded assemblies. This test method gives information as to the performance of substrate/adhesive combinations under cleavage/peel forces.

5. Apparatus

5.1 *Tension Testing Machine*, capable of applying a tensile load having the following prescribed conditions:

5.1.1 Select the machine and loading range so that the maximum load on the specimen falls between 15 and 85 % of the upper limit of the loading range.

5.1.2 Maintain the rate of movement between heads to be essentially constant under fluctuating loads.

NOTE 1—It is difficult to meet this requirement when loads are measured with a spring-type or pendulum-type weighing device. Gear-driven head separation is recommended.

5.1.3 Equip the machine with suitable grips capable of clamping the specimens firmly throughout the tests.

5.1.4 The machine is autographic, giving a chart that can be read in terms of centimetres (inches) of separation as one coordinate and applied load as the other coordinate.

5.1.5 The applied tension as measured and recorded is to be accurate within ± 1 %.

5.2 *Conditioning Room or Desiccators*, capable of maintaining a relative humidity of 50 ± 5 % at $23 \pm 2^\circ\text{C}$.

6. Test Specimen

6.1 Laminated test panels (see Fig. 1) consist of two semirigid adherends properly prepared and bonded together in accordance with the manufacturer's recommendations. Specially prepared test specimens shall be 25.4 mm (1 in.) wide by 177.3 mm (7 in.) long, but bonded only over approximately 76 mm (3 in.) of their length. Test specimens of these same dimensions may also be cut from larger, fully laminated panels.

6.1.1 Direct comparisons of different adhesives are made only when specimen construction and test conditions are identical.

NOTE 2—General purpose ABS (acrylonitrile-butadiene-styrene) molded plaques approximately 6.3 mm (0.25 in.) thick have been found