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Standard Test Method for EVALUATING PEEL STRENGTH OF SHOE SOLE- ATTACHING ADHESIVES¹

This standard is issued under the fixed designation D 2558; 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 peel strength of the adhesive bond on shoe soling materials.

1.2 *This standard may involve hazardous materials, operations, and equipment. This standard does not purport to address all of the safety problems associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.*

2. Summary of Method

2.1 Shoe soling materials are bonded to standard control materials under controlled conditions. The peel strength measurements are made under specified conditions and intervals.

3. Significance and Use

3.1 This method can be used to evaluate the bondability of soling materials, and to evaluate and compare the performance of shoe adhesives on specific soling materials.

4. Description of Terms

4.1 *Heat-Activated Adhesives*—Those adhesives converted by heat into a tacky softened state that will permit them to fuse, coalesce, or weld to a substrate or to another adhesive film under pressure.

4.2 *Peel Strength*—The average load per unit width of bond required to produce progressive separation of two laminated adherends under conditions designated in this method.

4.3 *Shoe Adhesives*—Adhesive systems used to attach shoe soling materials permanently to shoe uppers.

4.4 *Shoe Soling*—Material of elastomeric nature such as synthetic rubber compositions in solid or cellular state or as plastic compositions, for example, the plasticized poly(vinyl chloride) type.

5. Apparatus

5.1 *Tension Test Machine*—The machine and loading range shall be so selected that the maximum load on the specimen falls between 15 and 85 % of the upper limit of the loading range. The rate of movement between heads shall remain essentially constant. The machine shall be equipped with suitable grips capable of clamping the specimens firmly and without slippage throughout the tests. The machine shall be autographic, producing a chart that can be read in terms of inches of separation as one coordinate and applied load as the other coordinate.

5.2 *Source of Infrared Heat* capable of producing temperatures of 225°F (107°C) in the adhesive films within 60 s.

5.3 *Cushioned Pressure Device* with parallel plates capable of exerting 60 psi (4.22 kgf/cm²) uniformly on the adhesive film (see Fig. 1). One plate must be cushioned to provide intimate contact pressure over the entire adherend surface. The pressure device must be capable of operating at reduced pressures with soft or cellular soling materials to minimize distortion of the laminate under pressure.

¹ This test method is under the jurisdiction of ASTM Committee D-14 on Adhesives.

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The basic form of this method was developed by the Rubber Manufacturer's Assn. and the present method is based on the test procedure adopted by the Shoe Division of The Society of the Plastics Industry.