



Standard Test Method for ADHESION RATIO OF POLYETHYLENE FILM¹

This Standard is issued under the fixed designation D 2141; 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.

1. Scope

1.1 This method covers determination of the ratio of the force required to peel a pressure-sensitive adhesive tape from a polyethylene film surface to the force required to peel similar tape from an untreated reference film surface. Conditions under which adhesion of the tape to, and separation of the tape from, the surfaces are to be carried out are specified.

NOTE 1—The values stated in SI units are to be regarded as the standard.

2. Significance

2.1 The ability of polyethylene film to retain most inks, paints, or adhesives in commercial use is dependent primarily on the character of the polyethylene film surface, which can be modified by one of several surface-treating techniques. It may also be dependent on the type and amount of additives present. The force necessary to peel a pressure-sensitive tape from a polyethylene film surface will, subject to limitations outlined below, correlate well with the degree of adhesion of solids deposited from inks, paints, and adhesives to the polyethylene film surface.

2.2 The peel resistance measured in this method is dependent on roll-to-roll variations in, and on the age of, the test tape. For this reason, the values obtained are significant only when related to values obtained with the same roll of tape on an untreated reference film in the same laboratory on the same day.

2.3 Correlation of the force required to remove a pressure-sensitive tape from a poly-

ethylene film surface with affinity of the surface for inks, paints, or other adhesives is also dependent on the absence of undue interference by additives. The possibility should be recognized that a surface might show poor tape adhesion due to a layer of additive but might show good retention of inks, paints, or adhesives containing a solvent for such layer.

3. Apparatus

3.1 *Testing Machine*—A power-driven test-machine of the constant-rate-of-crosshead-movement type.

3.2 *Test Tape*—"Polyken" tape No. 113, black, 12.5 mm ($\frac{1}{2}$ in.) wide.²

3.3 *Backing Tape*—Backing tape similar to the test referred to in 3.2 except for width, which shall be at least 25.4 mm (1 in.).

3.4 *Rubber - Covered Steel Roller*—A steel roller 83 ± 3 mm (3.2 ± 0.1 in.) in diameter and 44.5 ± 1.3 mm (1.75 ± 0.05 in.) in width, covered with rubber approximately 6 mm (0.25 in.) in thickness having a durometer A hardness of 80 ± 5 . The weight of the roller proper which applies pressure to the test specimen shall be 2.00 ± 0.05 kg (4.5 ± 0.1 lb). It shall be so constructed that weight of the handle is not added to the weight of the roller during use. Figure 1 illustrates one construction that accomplishes this.

¹ This method is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D-20.19 on Sheeting.

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² Available from the Kendall Co., 309 W. Jackson Blvd., Chicago, Ill. 60606. It is possible that other tapes might be satisfactory, but this has not yet been established.