Designation: F2252/F2252M – 13ε1

Standard Practice for Evaluating Ink or Coating Adhesion to Flexible Packaging Materials Using Tape[1]

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ε[1] NOTE—Designation was corrected editorially in October 2013.

1. Scope

1.1 This practice describes a means of evaluating ink or coating adhesion to flexible packaging materials. This practice is intended for use on flexible packaging materials whose surfaces are not damaged by the application and removal of tape.

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system may not be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems may result in non-conformance with the standard.

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D3330/D3330M Test Method for Peel Adhesion of Pressure-Sensitive Tape

E171 Practice for Conditioning and Testing Flexible Barrier Packaging

3. Significance and Use

3.1 Poor adhesion of ink or coating to the base substrate can impact the readability of printed materials, affect the functionality of coated materials, or create a source of contamination. This practice provides a means for evaluating the adhesion of ink or coating to a flexible packaging material.

3.2 For purposes of resolving inter-laboratory disagreements, test methods developed from this practice may be improved by defining and controlling the pressure and method of tape application, (for example, using weighted roller), and the speed and angle of tape removal.

3.3 This practice does not address acceptability criteria. These need to be jointly determined by the user and producer of the product.

4. Apparatus

4.1 3M #610 or Sellotape office adhesive tape is commonly used for this procedure, typically 19 to 25 mm (¾ to 1 in.) wide. Whichever tape is chosen should be agreed upon by customer and supplier.

4.1.1 Manufacturers storage and shelf-life recommendations should be followed or acceptability determined through real-time aging and laboratory tests. Test Method D3330/D3330M gives guidance on testing. Again, as stated in 3.3, acceptability criteria is a matter of agreement between customer and supplier.

5. Sampling

5.1 The number of samples tested should be adequate to be predictive of performance. Caution should be taken when eliminating samples with defects as this can bias results.

6. Conditioning

6.1 Conditioning of the samples will depend on the material under evaluation. If conditioning before testing is appropriate, normal, and desirable, refer to E171 for guidance.

6.2 Before testing catalyzed or cured inks or coatings, or both, ensure that the samples have been exposed to the appropriate conditions for sufficient time to allow complete cure.

7. Procedure

7.1 Lay sample to be tested on a flat surface. Sample should lay flat and smooth without wrinkles, creases, or folds.

7.2 Cut a piece of tape long enough to cover the printed or coated area of interest on the sample. For large areas it may be easier to work with several shorter pieces of tape. Handling application and removal of tape is simpler when length of tape does not exceed 12 in.

[1] This practice is under the jurisdiction of ASTM Committee F02 on Flexible Barrier Packaging and is the direct responsibility of Subcommittee F02.20 on Physical Properties.

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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.

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7.3 Apply tape to sample using a smooth even motion without wrinkling tape or sample. Run thumb or forefinger along tape to make sure it is fully adhered, without any bubbles in surface.

7.4 Hold sample flat to surface with one hand, use other hand to peel back tape at an angle of approximately 120 to 150°. Lift tape, pulling back with an even, moderate motion. Typically 305 to 460 mm (12 to 18 in.) per second.

NOTE 1—Varying the amount of time after tape is applied may affect the results.

7.5 Examine the test sample for missing print or coating gaps.

7.6 Examine tape for any ink or coating removed from the test sample. As an aid for visual inspection reference standards may be created and used to determine degree of transfer.

7.7 Record results. Characterize the degree of adhesion using mutually agreed upon references. If multiple colors of ink are present, results may vary by color and may be reported that way. This is a subjective test and operator training is crucial for consistent reporting of test results.

8. Keywords

8.1 adhesion; anchorage; coating; ink; print; tape test

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