



Designation: F 2250 – 03

Standard Practice for Evaluation of Chemical Resistance of Printed Inks and Coatings on Flexible Packaging Materials¹

This standard is issued under the fixed designation F 2250; 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 practice describes the procedure for evaluating the ability of an ink, overprint varnish or coating to withstand chemical exposure. Typical chemicals, which may come in contact with the package, include water, alcohol, acid, etc. The specific chemical and method of choice as well as determination of measurement outcome are left to users to agree upon in joint discussion. Suggestions for ways to measure and collect information are offered in the various methods listed in this practice.

1.2 *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

D 1898 Practice for Sampling of Plastics³

D 4332 Practice for Conditioning Containers, Packages, or Packaging Components for Testing

3. Significance and Use

3.1 Packaging materials may be exposed to chemicals such as water, alcohol, acid, etc. during their life cycle. If it is anticipated that the packaging material will be exposed to a chemical, it is important that the ink or coating, or both, not degrade, soften, or dissolve as a result of that contact.

3.2 The testing included in this practice is applicable to surface printed and coated materials designed to be resistant to a specific chemical.

3.3 The chemicals to be tested should be compatible with (that is, not damage or degrade) the substrate being printed or coated, or both.

3.4 There are four separate methods detailed in this practice. The methods represent increasing degrees of severity from Method A to Method D. Selection of method should be based on the type of exposure anticipated. For example, the pouring method (Method A) is typically used where incidental exposure is anticipated, such as a spill or splash of chemical on the material surface. Method B or C is typically used when chemical resistance is desired depending on the level of exposure (B) and abrasion (C) anticipated. Method D would represent continual contact between the chemical and material and would need to be chemical-proof, (for example, if the package were to be submerged in the chemical and exposed to abrasion over a period of time.)

3.5 This practice does not address acceptability criteria. These need to be jointly determined by the user and producer of the product, based on the type of exposure that is anticipated.

4. Apparatus

4.1 *Method A Apparatus:*

4.1.1 Inclined plane capable of holding material at approximately a 45-degree angle, allowing chemical to be tested to flow easily downward.

4.1.2 Small pouring container or syringe of chemical to be tested.

4.2 *Method B Apparatus:*

4.2.1 Watch glass, sized to cover sample to be tested and easily handled.

4.2.2 Small pouring container or syringe of chemical to be tested.

4.2.3 Timing device.

4.2.4 Absorbent material.

4.3 *Method C Apparatus:*

4.3.1 Cotton swab.

4.3.2 Container of chemical to be tested.

4.4 *Method D Apparatus:*

4.4.1 Watch glass, sized to cover sample to be tested and easily handled.

¹ This practice is under the jurisdiction of ASTM Committee F02 on Flexible Barrier Materials 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.

³ Withdrawn.