



Standard Guide for Evaluation of Coatings Applied to Plastics¹

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1. Scope

1.1 This guide is intended for the evaluation of clear and pigmented coatings designed for use on rigid or semirigid plastic substrates. Coated film and sheeting are not covered by this guide.

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:

- D 522 Test Methods for Mandrel Bend Test of Attached Organic Coatings²
- D 523 Test Method for Specular Gloss²
- D 658 Test Method for Abrasion Resistance of Organic Coatings by Air Blast Abrasive²
- D 822 Practice for Conducting Tests on Paint and Related Coatings and Materials Using Filtered Open-Flame Carbon-Arc Exposure Apparatus²
- D 870 Practice for Testing Water Resistance of Coatings Using Water Immersion²
- D 968 Test Methods for Abrasion Resistance of Organic Coatings by Falling Abrasive²
- D 1308 Test Method for Effect of Household Chemicals on Clear and Pigmented Organic Finishes³
- D 1729 Practice for Visual Evaluation of Color Differences of Opaque Materials²
- D 2199 Test Method for Measurement of Plasticizer Migration from Vinyl Fabrics to Lacquers³
- D 2244 Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates²
- D 2246 Test Method for Finishes on Primed Metallic Substrates for Humidity-Thermal Cycle Cracking²
- D 2247 Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity²
- D 3170 Test Method for Chipping Resistance of Coatings³

D 3359 Test Methods for Measuring Adhesion by Tape Test²

D 3361 Practice for Operating Light- and Water-Exposure Apparatus (Unfiltered Open-Flame Carbon-Arc Type) for Testing Paint, Varnish, Lacquer, and Related Products Using the Dew Cycle²

D 3363 Test Method for Film Hardness by Pencil Test²

D 4060 Test Method for Abrasion Resistance of Organic Coatings by the Taber Abraser²

D 4141 Practice for Conducting Accelerated Outdoor Exposure Tests of Coatings²

D 4587 Practice for Conducting Tests on Paint and Related Coatings and Materials Using a Fluorescent UV-Condensation Light- and Water-Exposure Apparatus²

D 5031 Practice for Conducting Tests on Paints and Related Coatings and Materials Using Enclosed Carbon-Arc Exposure Apparatus²

D 5179 Test Method for Measuring Adhesion of Organic Coatings to Plastic Substrate by Direct Tensile Testing²

3. Significance and Use

3.1 This guide is designed to set up a series of screening tests that will indicate the performance level to be expected of a coating or coating system on a given plastic substrate.

3.2 Plastic substrates vary widely in their acceptance characteristics for a given coating.

NOTE 1—Not all tests apply to all plastics.

3.3 Surface cleaning or preparation prior to application of the coating can be critical to the proper performance of the coating.

4. Test Panels and Panel Preparation

4.1 Unless directed otherwise, conduct performance tests on coatings of specified thickness applied to a normally molded sample of the designated plastic.

4.2 Preparation of test samples shall include any cleaning, metalizing, or priming operations agreed upon between the producer and the user.

4.3 Air-dry or bake the system according to the established schedule and aged as agreed upon between the producer and the user.

5. Effect on Substrates

5.1 Determine the physical properties of the substrate such

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² Annual Book of ASTM Standards, Vol 06.01.

³ Annual Book of ASTM Standards, Vol 06.02.