
1. Scope

1.1 This test method covers determination of the effect of household chemicals on clear and pigmented organic finishes, resulting in any objectionable alteration in the surface, such as discoloration, change in gloss, blistering, softening, swelling, loss of adhesion, or special phenomena.

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:
D609 Practice for Preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Conversion Coatings, and Related Coating Products

3. Summary of Test Method

3.1 Three test methods, each of which is particularly applicable to individual reagents under study, are described as follows:

3.1.1 Spot Test, Covered—The reagent is placed on the test surface and immediately covered with a watch glass.

3.1.2 Spot Test, Open—The test surface is subjected directly to the effect of substance, such as citrus fruit, oils, greases, beverages, etc.

3.1.3 Immersion Test—A suitably prepared panel is immersed in the test reagent.

4. Significance and Use

4.1 Resistance to various liquids used in the home is an important characteristic of organic finishes. These test methods provide the means by which the relative performance of coating systems may be evaluated. It should be recognized that continuous films are necessary for reliable results.

5. Test Panels

5.1 Steel Panels—See Test Method Practice D609.

5.2 Other Metal Panels, as agreed upon by the purchaser and the seller of the finish being tested.

6. Reagents

6.1 The choice of reagent shall be governed by ultimate coating use and by agreement between the purchaser and the seller of the finish being tested. The following reagents are suggested:

6.1.1 Distilled Water, cold.

6.1.2 Distilled Water, hot.

6.1.3 Ethyl Alcohol (50% volume).

6.1.4 Vinegar (3% acetic acid).

6.1.5 Alkali Solution.
6.1.6 Acid Solution.
6.1.7 Soap Solution.
6.1.8 Detergent Solution.
6.1.9 Lighter Fluid and Other Volatile Reagents.
6.1.10 Fruit—Piece of cut fruit, with cut portion placed face down on panel for time agreed upon between the purchaser and the seller.
6.1.11 Oils and Fats—Butter, margarine, lard, shortening, vegetable oils, etc.
6.1.12 Condiments—Mustard, catsup (ketchup).
6.1.13 Beverages—Coffee, tea, cocoa.
6.1.14 Lubricating Oils and Greases.
6.1.15 Other Reagents, as agreed upon between the purchaser and the seller.

7. Procedure

7.1 Panel Preparation—Spot and direct application tests may be carried out on the fabricated article coated with the finishing system under evaluation, if sufficient plane surface is available. For immersion tests and tests where the finished article is not available, select panels in accordance with Methods Practice D609, or prepare special metal panels according to agreement between the purchaser and the seller. If desired, allow the panels to recover for a specified period and examine for return of original properties. In general, it will not be necessary to seal the edges of the applied film.

7.2 Spot Test, Covered—Conduct the test at 73.5 ± 3.5°F (23 ± 2°C) and 50 ± 5% relative humidity, or as agreed upon between the purchaser and the seller. Using a 5-mL pipet graduated in 0.1 mL, pipet onto the horizontal panel 1 mL of the reagents listed in Section 6 and immediately cover with a watch glass. After an interval agreed upon by the purchaser and the seller, wipe the spot clean and examine immediately for effects as listed in 1.1. Frequently used intervals are 15 min, 1 h, and 16 h, or by agreement between the producer and the user. If desired, allow the panel to recover for a specified period, and examine for return of original properties.

7.3 Spot Test, Open—Conduct the test at 73.5 ± 3.5°F (23 ± 2°C) and 50 ± 5% relative humidity, or as agreed upon between the purchaser and the seller. Place a small portion of the reagent on a horizontal panel or surface, with the exception of fruit juices, as mentioned in §6.1.10. After a time interval, as agreed upon between the purchaser and the seller, wipe the spot clean and examine immediately for effects as listed in 1.1. Frequently used intervals are 15 min, 1 h, and 16 h, or by agreement between the producer and the user. If desired, allow the panel to recover for a specified period and examine for return of original properties.

7.4 Immersion—Immerse panels to a depth of 50% in the specified reagents (6.1.1, 6.1.2, 6.1.5, 6.1.6, 6.1.7, and 6.1.8) contained in beakers, at a temperature and length of time agreed upon between the purchaser and the seller. Withdraw the panels, wash with distilled water, and examine immediately for any of the effects listed in 1.1. If desired, allow the panels to recover for a specified period and examine for return of the original properties. In general, it will not be necessary to seal the edges of the applied film. If the reagent effect is noted only around the panel edges, the test should be repeated using a suitable edge sealer. When sealing of edges is required, the selection of the sealer should be a matter of agreement between the purchaser and the seller.

8. Report

8.1 Report the following information:

8.1.1 System and the testing method employed. The test conditions are an important factor in the results obtained and, therefore, should be defined in the report.

8.1.2 The type of the effect, if any (see 1.1).

9. Precision and Bias

9.1 This test is designed to provide a working procedure for examination of the effect of household chemicals on clear and pigmented organic finishes. The effects will be in terms of appearance, which are nonquantitative. Numerical values are not usually obtained for this type. No information is presented about either precision or bias of Test Method D1308 since test results are nonquantitative. A stain test

10. Keywords

10.1 coating; metal; household chemicals; metal; stain test