



Designation: D1308 – 20

Standard Test Method for Effect of Household Chemicals on Clear and Pigmented Coating Systems¹

This standard is issued under the fixed designation D1308; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

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 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.3 *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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.4 *This international standard was developed in accordance with internationally recognized principles on standardization established in the Decision on Principles for the Development of International Standards, Guides and Recommendations issued by the World Trade Organization Technical Barriers to Trade (TBT) Committee.*

2. Referenced Documents

2.1 *ASTM Standards:*²

[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:

¹ This test method is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.55 on Factory Applied Coatings on Preformed Products.

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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.

3.1.1 *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 Practice [D609](#).

5.2 *Other metal panels*, as agreed upon by the purchaser and the seller of the finish being tested.

5.3 *Other substrates*, 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.

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 Practice **D609**, or prepare special metal panels or other coated materials according to agreement between the purchaser and the seller of the finish. Apply the finish according to the method and the schedule prescribed by the user of the lacquer. This schedule includes number of coats, film thickness, and other features. Allow the finished panels to age 1 week at normal room conditions, about 25°C (77°F) and 50 % relative humidity, before testing.

7.2 *Spot Test, Covered*—Conduct the test at $23 \pm 2^\circ\text{C}$ (73.5 \pm 3.5°F) and 50 \pm 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 $23 \pm 2^\circ\text{C}$ (73.5 \pm 3.5°F) and 50 \pm 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, 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 may be assigned if a ranking scale is used. No information is presented about either precision or bias of Test Method D1308 since test results are nonquantitative.

10. Keywords

10.1 coating; household chemicals; metal; stain test

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