Designation: D6189 – 97 (Reapproved 2022)

Standard Practice for Evaluating the Efficiency of Chemical Removers for Organic Coatings[1]

This standard is issued under the fixed designation D6189; 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 The practice evaluates the effectiveness of coatings removers used on clear or pigmented coatings as applied to wood and metal.

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

D823 Practices for Producing Films of Uniform Thickness of Paint, Coatings and Related Products on Test Panels

D3924 Specification for Standard Environment for Conditioning and Testing Paint, Varnish, Lacquer, and Related Materials

E145 Specification for Gravity-Convection and Forced-Ventilation Ovens

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *coatings remover, n*—a product that is formulated for the removal of paint, varnish, lacquer, shellac, or polyurethane top coats, or related coatings, or both.

4. Summary of Practice

4.1 Test panels are coated and force dried. The coatings remover is applied with a brush and the loosened coating is lifted with a plastic scraper after a specified time. Coatings removal efficiency is determined and recorded using a rating scheme of 5 to 0.

5. Significance and Use

5.1 Old coatings, such as paint or related coatings, may have to be removed from a surface before successful recoating can occur. This practice can be used to test the coatings removal efficiency of products designed for such use.

6. Apparatus

6.1 *Forced Draft Oven, Type IB,* in accordance with Specification E145.

6.2 *Paint Brush,* containing nylon/polyester bristles.

6.3 *Plastic Paint Scraper.*

6.4 *Very Fine Garnet Abrasive-Type Sandpaper,* 240 to 220 grade.

6.5 *Stopwatch.*

7. Testing Materials

7.1 *Finished*—is recommended to test coatings removers on a variety of finishes such as latex enamel, alkyd enamel, polyurethane, varnish, shellac, and nitrocellulose lacquer, or as agreed upon between the purchaser and the seller.

7.2 Wood test panels of solid wood or wood laminate such as birch plywood, fir, pine, oak, or walnut. Smooth sawn panels of dimensions not less than 300 mm by 300 mm (12 in. by 12 in.) and 8 mm (5⁄16 in.) thick.

7.3 Steel test panels with dimensions of 150 mm by 300 mm (6 in. by 12 in.) and 0.8 mm (0.032 in.) thick.

[1] This practice is under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and is the direct responsibility of Subcommittee D01.42 on Architectural Coatings.

Current edition approved Dec. 1, 2022. Published December 2022. Originally approved in 1997. Last previous edition approved in 2014 as D6189 – 97 (2014). DOI: 10.1520/D6189-97R22.

[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.

8. Panel Preparation

8.1 *Wood Panel Preparation*—Store the wood panels for a least 6 days under standard conditions as specified in Specification D3924.

8.2 Sand the panels lightly with sandpaper as defined in 6.4 and wipe them clean of debris.

8.3 Coat one side of a panel with a test coating by any method specified in Practices D823 to ensure uniform film thickness, using the manufacturer's recommended coverage rate. Allow the coating to dry overnight under standard conditions as specified in Specification D3924.

8.4 Apply a second coat of the same type of coating of a different color (if pigmented) using the same method. Force dry at 50 °C (120 °F) overnight. Allow the panel to cool to ambient temperature.

8.5 Apply and dry a third coat of the same type of coating as in 8.4.

NOTE 1—Apply clear finishes in two coats following the manufacturers' recommended application instructions under the same drying conditions described in 8.3 and 8.4.

8.6 *Metal Preparation*—Clean the metal panels as described in Procedure D, Practice D609 until panels are free from debris, oily film, and corrosion.

8.7 Apply three coats of the test finish as directed in 8.3, 8.4, and 8.5.

9. Procedure

9.1 Apply coatings remover in accordance with the manufacturer's instructions, using a solvent-resistant brush unless otherwise directed by the manufacturer. Stroke the surface in one direction only. Start the stopwatch after the panel has been fully coated. Leave the panel in the horizontal position during the test.

9.2 Wait 15 min for solvent-borne removers and 60 min for water-borne removers, or at times specified by the manufacturer for the type of coating being removed.

9.3 Scrape the surface with a plastic paint scraper to remove the coating without damaging the substrate.

9.4 Rate the test panel for coatings removal efficiency on a scale from 5 to 0 in accordance with the following:

Rating	Amount of Coatings Removal, %
5	100
4	75
3	50
2	25
1	10
0	No removal

9.5 Rate the effect of the coatings removal on the condition of the substrate on a scale from 5 to 0 in accordance with the following:

Rating	Condition of Substrate
5	No effect
4	Very slight
3	Slight
2	Moderate
1	Considerable
0	Complete Failure

NOTE 2—Typical effects of coatings removal on wooden substrates include grain-raising and an increase in surface roughness. Typical effects on metal substrates include rusting and pitting.

10. Report

10.1 Report the following information:

10.1.1 Brand, color, and lot or batch number of the finish used,

10.1.2 Type of substrate used,

10.1.3 Method of coatings application,

10.1.4 Coatings removal efficiency rating,

10.1.5 Time of removal to the nearest minute, if different from 9.2,

10.1.6 Rating for condition of substrate, and

10.1.7 Report any significant deviations from this practice.

11. Keywords

11.1 coatings, paint and paint strippers; coatings removers; effectiveness of paint removers