



Designation: D 609 – 00

Standard Practice for Preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Conversion Coatings, and Related Coating Products¹

This standard is issued under the fixed designation D 609; 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 covers various types of cold rolled steel panels and the procedures to be followed in their preparation for testing paint, varnish, lacquer, conversion coatings, and related products.

1.2 The procedures are as follows:

Procedure A—Conversion coatings (phosphates, chromates, etc.)

Procedure B—Vapor degreasing

Procedure C—Solvent brushing

Procedure D—Solvent wiping

Procedure E—Alkaline cleaning

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

1.4 *This standard does not purport to address 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:*

A 109 Specification for Steel, Strip, Carbon, Cold-Rolled²

A 366/A366M Specification for Commercial Steel (CS), Sheet, Carbon (0.15 Maximum Percent), Cold-Rolled,²

D 235 Specification for Mineral Spirits (Petroleum Spirits) (Hydrocarbon Drycleaning Solvents)³

3. Summary of Practice

3.1 Several procedures for preparation and cleaning of steel test panels are described as shown in Table 1.

¹ This practice is under the jurisdiction of ASTM Committee D-1 on Paint and Related Coatings, Materials, and Applications and is the direct-responsibility of Subcommittee D01.27 on Accelerated Testing.

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² *Annual Book of ASTM Standards*, Vol 01.03.

³ *Annual Book of ASTM Standards*, Vol 06.04.

4. Significance and Use

4.1 The procedures described in this practice are designed to provide steel panels with a uniform and reproducible surface for testing of paint, varnish, lacquer, conversion coatings, and related products.

5. Test Panels

5.1 Prepare the test panels from rust and stain-free cold-rolled steel as described in 5.2, 5.3, 5.4, and Table 1. The panels shall be made to a size and thickness as agreed upon between the purchaser and seller. Edges shall be smooth and corners rounded. The steel may have been coated at the mill with a suitable rust preventive compound for protection during shipment and storage. However, long-term steel storage with oil on the surface may cause an oil/steel reaction known as oil stain. Since such stains inhibit chemical bonding, the steel selected for panels shall be free of oil stain and other visible processing variation caused by pickling or annealing.

5.2 *Type 1* steel has a matte finish produced by steel mill rolls that have been grit blasted. This finish is typical of cold-rolled steel used for painted surfaces on automobiles, appliances, etc. Such surfaces can be partially characterized by measuring the average peak-to-valley distance and the number of peaks per unit area. However, conversion coating and paint performance on such surfaces may vary because of different oxidation, annealing procedures, and surface conditions.

5.3 *Type 2* steel panels are flat polished (or “ground”) after the steel has been received from the mill. Flat polishing is a method of mechanically grinding the surface with abrasive belts to remove surface contaminants and provide a more uniform and reproducible surface for testing. Flat-polished panels are not representative of the surface on which most coatings are applied, because polishing significantly improves the corrosion resistance performance of coatings by altering the metallurgical nature of the steel substrate. To ensure complete removal of surface contaminants, the original surface shall be completely removed as determined by visual inspection; in any case, a minimum of 7.5 μm (0.3 mils) of surface shall be removed. Care must be used in the operation of the polishing