



Designation: D2485 – 18

# Standard Test Methods for Evaluating Coatings For High Temperature Service<sup>1</sup>

This standard is issued under the fixed designation D2485; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope\*

1.1 These test methods cover the evaluation of the heat-resistant properties of coatings designed to protect steel surfaces exposed to elevated temperatures during their service life. Two test methods are described as follows:

Method A—Interior Service Coatings

Method B—Exterior Service Coatings

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 the safety concerns, if any, associated with its use. It is the responsibility of whoever uses this standard to consult and establish appropriate safety, health, and environmental practices and determine the applicability of regulatory limitations prior to use. Specific hazard statements are given in Section 5.*

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:*<sup>2</sup>

[A36/A36M Specification for Carbon Structural Steel](#)

[A283/A283M Specification for Low and Intermediate Tensile Strength Carbon Steel Plates](#)

[A285/A285M Specification for Pressure Vessel Plates, Carbon Steel, Low- and Intermediate-Tensile Strength](#)

[B117 Practice for Operating Salt Spray \(Fog\) Apparatus](#)

[D522 Test Methods for Mandrel Bend Test of Attached Organic Coatings](#)

[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, Varnish, and Related Products on Test Panels](#)

[D1186 Test Methods for Nondestructive Measurement of Dry Film Thickness of Nonmagnetic Coatings Applied to a Ferrous Base \(Withdrawn 2006\)<sup>3</sup>](#)

[D2200 Practice for Use of Pictorial Surface Preparation Standards and Guides for Painting Steel Surfaces](#)

[G7 Practice for Atmospheric Environmental Exposure Testing of Nonmetallic Materials](#)

## 3. Summary of Test Methods

3.1 Panels suitably coated with the material under test are evaluated under one or both of two test methods depending on the intended usage.

3.1.1 *Test Method A, Interior Service Coatings*—Coated panels are heated for 24 h in a muffle furnace at a temperature agreed upon between the purchaser and the seller. One panel is plunged into water and the other cooled and then subjected to a bend test.

3.1.2 *Test Method B, Exterior Service Coatings*—Coated panels are subjected to temperatures that increase in steps from 205 to 425°C (400 to 800°F). One panel is subjected to salt spray for 24 h, and one is exposed outdoors for 12 months.

3.2 When tests are completed, the panels are examined for evidence of film degradation including rust formation, blistering, loss of adhesion, dulling, and chalking.

## 4. Significance and Use

4.1 Some coating systems are developed for use over steel that is exposed to high temperatures during service life. This method provides an accelerated means of determining the performance of these coating systems. Testing of coatings designed for interior service, and of coatings designed for exterior (weather-exposed) service is included.

<sup>1</sup> These test methods are under the jurisdiction of ASTM Committee D01 on Paint and Related Coatings, Materials, and Applications and are the direct responsibility of Subcommittee D01.27 on Accelerated Testing.

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<sup>2</sup> 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.

<sup>3</sup> The last approved version of this historical standard is referenced on www.astm.org.

\*A Summary of Changes section appears at the end of this standard