



Standard Guide for Laboratory Cyclic Corrosion Testing of Automotive Painted Steel¹

This standard is issued under the fixed designation D 6899; 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 guide is designed to assist in determining the appropriate corrosion test methods for automotive painted steel.

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 requirements prior to use.*

2. Referenced Documents

2.1 ASTM Standards:

- B 117 Practice for Operating Salt Spray (Fog) Apparatus²
- D 16 Terminology for Paint, Related Coatings, Materials and Applications³
- D 609 Practice for Preparation of Cold-Rolled Steel Panels for Testing Paint, Varnish, Conversion Coatings, and Related Coating Products³
- D 823 Practices for Producing Films of Uniform Thickness of Paint, Varnish, and Related Products on Test Panels³
- D 870 Practice for Testing Water Resistance of Coatings Using Water Immersion³
- D 1193 Specification for Reagent Water⁴
- D 1654 Test Method for Evaluation of Painted or Coated Specimens Subjected to Corrosive Environments³
- D 1735 Practice for Testing Water Resistance of Coatings Using Water Fog Apparatus³
- D 2247 Practice for Testing Water Resistance of Coatings in 100 % Relative Humidity³
- D 3170 Test Method for Chipping Resistance of Coatings⁵
- D 6675 Practice for Salt-Accelerated Outdoor Cosmetic Corrosion Testing of Organic Coatings on Automotive Sheet Steel³

G 1 Practice for Preparing, Cleaning and Evaluating Corrosion Test Specimens⁶

G 15 Terminology Relating to Corrosion and Corrosion Testing⁶

G 16 Guide for Applying Statistics to Analysis of Corrosion Data⁶

G 113 Terminology Relating to Natural and Artificial Weathering Tests of Non-Metallic Materials⁷

NOTE 1—Practice D 6675 describes an outdoor accelerated cosmetic corrosion test that uses periodic application of an electrolyte solution to materials exposed at 45 degrees to the horizontal and facing the equator.

2.2 SAE Publications:

SAE J1563 Guidelines for Laboratory Cyclic Corrosion Test Procedures for Painted Automotive Parts⁸

SAE J2334 Cosmetic Corrosion Lab Test⁸

2.3 Other Standards:

GM 9540P General Motors Accelerated Corrosion Test

JASO M610 Cosmetic Corrosion Test Method for Automotive Parts

JIS Z 2371 Methods of Neutral Salt Spray Testing

3. Terminology

3.1 *Definitions*—For definition of terms used in this standard, refer to Terminologies D 16, G 15, and G 113.

4. Significance and Use

4.1 When a laboratory-accelerated test simulates the changing conditions to which automotive finishes are exposed, more realistic corrosion failures are produced.

4.2 Cyclic corrosion tests are effective for evaluating a variety of corrosion mechanisms, such as general, galvanic, crevice, etc. The cyclic corrosion tests make use of many types of environments, such as salt fog (Practice B 117), humidity (Practice D 2247 or Practice D 1735) and dry conditions to

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

Current edition approved July 10, 2003. Published August 2003.

² Annual Book of ASTM Standards, Vol 03.07.

³ Annual Book of ASTM Standards, Vol 06.01.

⁴ Annual Book of ASTM Standards, Vol 11.01.

⁵ Annual Book of ASTM Standards, Vol 06.02.

⁶ Annual Book of ASTM Standards, Vol 03.02.

⁷ Annual Book of ASTM Standards, Vol 14.04.

⁸ Available from Society of Automotive Engineers (SAE), 400 Commonwealth Dr., Warrendale, PA 15096-0001.