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.

Designation: D7356/D7356M – 19

Standard Test Method for Accelerated Acid Etch Weathering of Automotive Clearcoats Using a Xenon-Arc Exposure Device[1]

This standard is issued under the fixed designation D7356/D7356M; 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 test method covers an accelerated exposure test intended to simulate defects in automotive clearcoats caused by acid rain[2] that occur at the Jacksonville, Florida exposure site. Exterior exposures at an acid rain test location in Jacksonville, Florida produce etch defects that range from small pits to 12.7 mm [0.5 in.] in diameter or larger acid-etched spots. The latter type of defect is not produced in other acid-etch tests that only produce pits that are smaller than 6.35 mm [0.25 in.] in diameter.[3]

NOTE 1—Digital images of the acid etch defects produced in outdoor acid-rain exposures and in the accelerated test described in this test method are found in Appendix X1.

1.2 The accelerated test described in this test method uses a xenon-arc light source with daylight filter conforming to the requirements of Practice G155. Specimens are sprayed with a simulated acid rain solution and requires the use of a horizontal, flat specimen array in order to allow the acid rain solution to remain on the test specimens for an extended period of time.

1.3 There is no known ISO equivalent to this test method.

1.4 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are not necessarily exact equivalents; therefore, to ensure conformance with the standard, each system shall be used independently of the other, and values from the two systems shall not be combined.

1.5 *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.*

1.6 *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:*[4]

D1293 Test Methods for pH of Water

D4517 Test Method for Low-Level Total Silica in High-Purity Water by Flameless Atomic Absorption Spectroscopy

G113 Terminology Relating to Natural and Artificial Weathering Tests of Nonmetallic Materials

G147 Practice for Conditioning and Handling of Nonmetallic Materials for Natural and Artificial Weathering Tests

G151 Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use Laboratory Light Sources

G155 Practice for Operating Xenon Arc Light Apparatus for Exposure of Non-Metallic Materials

3. Terminology

3.1 *Definitions*—Definitions applicable to this standard can be found in Terminology G113.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *acid rain, n*—cloud or rain droplets containing pollutants, such as oxides of sulfur and nitrogen, to make them acidic.

3.2.2 *acid rain spots, n*—spots are produced when the sun evaporates standing water on the vehicle's surface.

[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 D01.27 on Accelerated Testing.

Current edition approved Nov. 15, 2019. Published November 2019. Originally approved in 2007. Last previous edition approved in 2013 as D7359 – 13. DOI: 10.1520/D7356_D7356M-19.

[2] The acid etch test method is covered by a patent. Interested parties are invited to submit information regarding the identification of an alternative(s) to this patented item to ASTM International Headquarters. Your comments will receive careful considerations at a meeting of the responsible technical committee,[1] which you may attend.

[3] Brennan, P. J, Marino, M., Boisseau, J. and Campbell, D., Accelerated Acid Etch, Part II: Refined Test Procedure to Reproduce Automotive Acid Etch Provides Improved Lab Practicality and Proven Correlation, FSCT, 2006 FutureCoat Proceedings.

[4] 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.

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

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