SAE INTERNATIONAL

SURFACE VEHICLE STANDARD

J2527™ SEP2017

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Superseding J2527 FEB2004

(R) Performance Based Standard for Accelerated Exposure of Automotive Exterior Materials Using a Controlled Irradiance Xenon-Arc Apparatus

RATIONALE

This document is being revised to remove apparatus specific requirements, update procedures, remove editorial errors, update the graphs and to harmonize with the latest version of SAE J2412.

1. SCOPE

1.1 This SAE Standard specifies the operating procedures for a controlled irradiance, xenon-arc apparatus used for the accelerated exposure of various exterior automotive materials.

1.2 The sample preparation, test durations, and performance evaluation procedures are covered in material specifications of the different automotive manufacturers.

1.3 Any deviation to this test method, such as filter combinations, is to be agreed upon by contractual parties.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of this specification to the extent specified herein. Unless otherwise indicated, the latest issue of SAE publications shall apply.

2.1.1 SAE Publications

Available from SAE International, 400 Commonwealth Drive, Warrendale, PA 15096-0001, Tel: 877-606-7323 (inside USA and Canada) or +1 724-776-4970 (outside USA), www.sae.org.

SAE J1545 Instrumental Color Difference Measurement for Exterior Finishes, Textiles and Colored Trim, Recommended Practice

SAE J2413 Protocol to Verify New Test Apparatus

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
SAE WEB ADDRESS: **http://www.sae.org**

SAE values your input. To provide feedback on this Technical Report, please visit
http://standards.sae.org/J2527_201709

2.1.2 ASTM Publications

Available from ASTM International, 100 Barr Harbor Drive, P.O. Box C700, West Conshohocken, PA 19428-2959, Tel: 610-832-9585, www.astm.org.

ASTM G113 Standard Terminology Relating to Natural and Artificial for Non-Metallic Materials

ASTM G130 Standard Method for Calibration of Narrow and Broad-Band Ultraviolet Radiometers Using a Spectroradiometer

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

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

ASTM G151 Standard Practice for Exposing Nonmetallic Materials in Accelerated Test Devices that Use laboratory Light Sources.

ASTM G156 Standard Practice for Selecting and Characterizing Reference Materials Used to Monitor Consistency of Operating Conditions in an Exposure Test

ASTM D859 Standard Test Method for Silica in Water

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

ASTM D523 Standard Test Method for Specular Gloss

ASTM D660 Standard Test Method for Evaluating Degree of Checking of Exterior Paints

ASTM D714 Standard Test Method for Evaluating Degree of Blistering of Paints

ASTM D2244 Standard Test Method for Calculation of Color Differences from Instrumentally Measured Color Coordinates

ASTM D7869 Standard Practice for Xenon Arc Exposure Test with Enhanced Light and Water Exposure for Transportation Coatings

2.2 Related Publications

The following publications are provided for information purposes only and are not a required part of this SAE Technical Report.

2.2.1 ISO Publications

Copies of these documents are available online at http://webstore.ansi.org/

ISO 4892-1 Plastics—Methods of exposure to laboratory light sources, Part 1, General guidelines

ISO 4892-2 Plastics—Methods of exposure to laboratory light sources, Part 2, Xenon arc sources

2.3 Polystyrene Plastic Weathering Reference Material

Available from Testfabrics, Inc., 415 Delaware Ave., P.O. Box 26, West Pittston, PA 18643, Tel: 570-603-0432, www.testfabrics.com

3. TERMINOLOGY

3.1 BLACK PANEL THERMOMETER, n

3.1.1 A temperature-measuring device, the sensing unit of which is coated with black enamel designed to absorb most of the radiant energy encountered in fade/weathering testing. This is referred to as an un-insulated Black Panel.

3.2 Other Definitions

Definitions applicable to this standard can be found in ASTM G113 and ASTM G151.

4. SIGNIFICANCE AND USE

4.1 This test method is designed to simulate extreme environmental conditions encountered outside a vehicle such as sunlight, heat, and moisture (in the form of humidity, condensation, or rain) for the purpose of evaluating the weathering performance of automotive materials.

5. APPARATUS

5.1 The user is responsible for the approval of the apparatus and for assurance of compliance with the critical test parameters, including the different spectral power distributions (SPDs). This assurance of apparatus compliance may be supplied by the user, manufacturer, or a third party.

NOTE 1: In normal practice, different apparatus (even with the same model number and from the same manufacturer), may give different results. These results depend on sample characteristics and apparatus design. Refer to ASTM G155 sections 4.3 and 4.4 for more information.

NOTE 2: SAE J2413 is a non-mandatory tool that provides methodology to help compare the performance on new apparatus to apparatus specified in a predecessor to this standard and compare conformance to parameters, repeatability, reproducibility, and uniformity data of test apparatus.

5.2 The apparatus employed utilizes a xenon-arc lamp(s) as the source of radiation. The samples shall be mounted in a manner to expose the specimens to the uniform conditions of the test chamber. The apparatus shall have the means to simultaneously and automatically control irradiance, black panel temperature, relative humidity, and chamber temperature.

5.2.1 A more detailed description of the apparatus can be found in ASTM G151 and ASTM G155.

5.3 The apparatus shall have an un-insulated black panel thermometer as described in ASTM G151 unless otherwise agreed upon by contractual parties.

5.4 Manufacturers of exposure apparatus shall assure that the irradiance at any location in the area used for specimen exposures is at least 70% of the maximum irradiance measured in this area.

5.4.1 If irradiance at every position in the area used for specimen exposure is at least 90% of the maximum irradiance, it is not necessary to use periodic repositioning of the specimens during exposure to ensure uniform radiant exposure. While periodic repositioning of the specimens may not be necessary, it is nevertheless good practice in order to be sure that the variability in exposure period is kept to the minimum.