



SURFACE VEHICLE STANDARD

J2230™

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Accelerated Exposure of Automotive Interior Trim Materials Using Outdoor Under-Glass Controlled Sun-Tracking Temperature and Humidity Apparatus

RATIONALE

This standard is being balloted for revision with minor changes. Editorial changes are prescribed by changes to the SAE form and style.

FOREWORD

This document has not changed other than to put it into the new SAE Technical Standards Board Format.

1. SCOPE

- 1.1 This SAE standard specifies operating procedure for the exposure of automotive interior trim materials in an outdoor behind-glass apparatus in which the temperature is controlled in a 24 hour cycle. The humidity is controlled during the dark (night) portion of the cycle.
- 1.2 Specimen preparation, test durations, and performance evaluation procedures are covered in material specifications of the different automotive manufacturers.

2. REFERENCES

2.1 Applicable Documents

The following publications form a part of the specification to the extent specified herein. Unless otherwise indicated, the latest revision 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

2.1.2 AATCC Publications

Available from AATCC, P.O. Box 12215, Research Triangle Park, NC 27709.

AATCC Evaluation Procedure 1 (1987), Gray Scale for Color Change

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2.1.3 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 E824 Standard Method for Transfer of Calibration from Reference to Field Pyranometers

3. DEFINITIONS

3.1 BLACK PANEL THERMOMETER

A temperature-measuring device, the sensing unit of which is a stainless steel panel coated with black material designed to absorb most of the radiant energy encountered in fade/weathering testing.

NOTE: This device provides an estimation of the maximum temperature a specimen may attain during exposure to natural or artificial light.

3.2 BLUE WOOL LIGHTFASTNESS STANDARD

One of a group of dyed fabrics which are sensitive to the amount of light, heat, and moisture to which the blue wool material is exposed. Because of their unstable nature, these materials are also sensitive to the heat and moisture conditions which exist before exposure testing, after exposure testing, and prior to sample measurement.

3.3 CENTER WAVELENGTH

The specified wavelength for bandpass filters; the wavelength midway between the half power points, e.g., 340 nm $\pm$ 2 nm.

3.4 COLOR CHANGE

As used in fade/weathering testing, a change in color of any kind (whether a change in hue, saturation, or lightness).

3.5 HALF POWER BANDPASS

The interval between wavelengths at which transmittance is 50% of peak. (It should not exceed 20 nm for a narrow bandpass filter.)

3.6 IRRADIANCE TOTAL

The rate at which energy is incident on a surface, per unit area (W/m²).

3.7 IRRADIANCE, ULTRAVIOLET

Irradiance integrated over wavelengths 295 to 385 nm (W/m²/nm).

3.8 IRRADIANCE, CENTER WAVELENGTH

Irradiance integrated at wavelength 340 nm $\pm$ 2 nm (W/m²/nm).

3.9 IRRADIATION

See radiant exposure.

3.10 RADIANT EXPOSURE

The accumulated amount of irradiance received during a specified time period per unit area (J/m²). Since irradiance can be measured using a variety of different optical sensors, it is generally recommended that the type of radiant exposure be specified (e.g., radiant exposure from 295 to 385 nm or radiant exposure at 340 nm $\pm$ 2 nm).

3.11 REFERENCE FABRIC

One or more blue wool lightfastness standards selected for exposure as a check on test apparatus and operating conditions.

3.12 REFERENCE PLASTIC

A clear polystyrene plastic standard selected for exposure as a check on a test apparatus and operating conditions.

NOTE: It has not been verified that these reference materials can be used as a check on a test cabinet or operating conditions for outdoor exposure tests due to seasonal variations in ultraviolet spectral distribution, temperature, relative humidity, and time of wetness during the uncontrolled portion of the test.

3.13 SAMPLE, LABORATORY

A portion of material taken to represent the lot sample, the original material, or production lot, and used in the laboratory as a source of test specimens.

3.14 SPECIMEN

A specific portion of a material, laboratory sample, or production lot, upon which a test is performed or which is selected for that purpose.

4. SIGNIFICANCE AND USE

This method is designed to simulate extreme environmental conditions encountered inside a vehicle due to sunlight, heat, and humidity for the purpose of predicting the performance of automotive interior trim materials.

- 4.1 Variation in results may be expected when operating conditions are varied within the accepted limits of this method, or tests are conducted in different geographical locations. Therefore, no reference shall be made to results from the use of this method unless accompanied by a report detailing the specific operating conditions and location in compliance with Section 10.

5. APPARATUS¹

- 5.1 The mounting stand shall be capable of tracking the sun in elevation and rotation with an accuracy of ± 1 degree in order to maintain the front surface of the cabinet normal to the direct beam of the sun (see Figure 1).

¹ Apparatus from Heraeus DSET Laboratories, Inc., 45601 N. 47th Avenue, Phoenix, AZ 85027-7042, or equivalent.

