



Designation: D523 – 14 (Reapproved 2018)

Standard Test Method for Specular Gloss¹

This standard is issued under the fixed designation D523; 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.

This standard has been approved for use by agencies of the U.S. Department of Defense.

1. Scope

1.1 This test method covers the measurement of the specular gloss of nonmetallic specimens for glossmeter geometries of 60, 20, and 85° (**1-7**).²

1.2 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

1.3 *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.*

1.4 *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:*³

D823 Practices for Producing Films of Uniform Thickness of Paint, Coatings and Related Products on Test Panels

D3964 Practice for Selection of Coating Specimens for Appearance Measurements

D3980 Practice for Interlaboratory Testing of Paint and Related Materials (Withdrawn 1998)⁴

D4039 Test Method for Reflection Haze of High-Gloss Surfaces

¹ This test method is under the jurisdiction of ASTM Committee **E12** on Color and Appearance and is the direct responsibility of Subcommittee **E12.03** on Geometry.

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² The boldface numbers in parentheses refer to the list of references at the end of this test method.

³ 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.

⁴ The last approved version of this historical standard is referenced on www.astm.org.

E97 Method of Test for Directional Reflectance Factor, 45-Deg 0-Deg, of Opaque Specimens by Broad-Band Filter Reflectometry (Withdrawn 1991)⁴

E430 Test Methods for Measurement of Gloss of High-Gloss Surfaces by Abridged Goniophotometry

3. Terminology

3.1 *Definitions:*

3.1.1 *relative luminous reflectance factor, n*—the ratio of the luminous flux reflected from a specimen to the luminous flux reflected from a standard surface under the same geometric conditions. For the purpose of measuring specular gloss, the standard surface is polished glass.

3.1.2 *specular gloss, n*—the relative luminous reflectance factor of a specimen in the mirror direction.

4. Summary of Test Method

4.1 Measurements are made with 60, 20, or 85° geometry (**8, 9**). The geometry of angles and apertures is chosen so that these procedures may be used as follows:

4.1.1 The 60° geometry is used for intercomparing most specimens and for determining when the 20° geometry may be more applicable.

4.1.2 The 20° geometry is advantageous for comparing specimens having 60° gloss values higher than 70.

4.1.3 The 85° geometry is used for comparing specimens for sheen or near-grazing shininess. It is most frequently applied when specimens have 60° gloss values lower than 10.

5. Significance and Use

5.1 Gloss is associated with the capacity of a surface to reflect more light in directions close to the specular than in others. Measurements by this test method correlate with visual observations of surface shininess made at roughly the corresponding angles.

5.1.1 Measured gloss ratings by this test method are obtained by comparing the specular reflectance from the specimen to that from a black glass standard. Since specular reflectance depends also on the surface refractive index of the specimen, the measured gloss ratings change as the surface refractive index changes. In obtaining the visual gloss ratings, however, it is customary to compare the specular reflectances of two specimens having similar surface refractive indices.