



Designation: D2457 – 21

Standard Test Method for Specular Gloss of Plastic Films and Solid Plastics¹

This standard is issued under the fixed designation D2457; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope*

1.1 This test method describes procedures for the measurement of gloss of plastic films and solid plastics, both opaque and transparent. It contains four separate gloss angles (**Note 1**):

- 1.1.1 60-deg, recommended for intermediate-gloss films,
- 1.1.2 20-deg, recommended for high-gloss films,
- 1.1.3 45-deg, recommended for intermediate and low-gloss films,
- 1.1.4 85-deg, recommended for intermediate and low gloss films, and
- 1.1.5 75-deg, recommended for plastic siding and soffit.

NOTE 1—The 85-deg, 75-deg, 60-deg, and 20-deg apparatus and method of measurement duplicate those in Test Method **D523** and **D3679**; those for the 45° procedure are similarly taken from Test Method **C346**.

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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

NOTE 2—There is no known ISO equivalent to this standard.

1.3 *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:*²

- C346** Test Method for 45-deg Specular Gloss of Ceramic Materials
- D523** Test Method for Specular Gloss
- D3679** Specification for Rigid Poly(Vinyl Chloride) (PVC) Siding

¹ This test method is under the jurisdiction of ASTM Committee **D20** on Plastics and is the direct responsibility of Subcommittee **D20.40** on Optical Properties.

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² 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.

E284 Terminology of Appearance

E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method

E1347 Test Method for Color and Color-Difference Measurement by Tristimulus Colorimetry

E1349 Test Method for Reflectance Factor and Color by Spectrophotometry Using Bidirectional (45°:0° or 0°:45°) Geometry

E2935 Practice for Conducting Equivalence Tests for Comparing Testing Processes

3. Terminology

3.1 *Definitions*—For definitions of terms used in this test method, see Terminology **E284**.

4. Significance and Use

4.1 Specular gloss is used primarily as a measure of the shiny appearance of films and surfaces. Precise comparisons of gloss values are meaningful only when they refer to the same measurement procedure and same general type of material. In particular, gloss values for transparent films should not be compared with those for opaque films, and vice versa. Gloss is a complex attribute of a surface which cannot be completely measured by any single number.

4.2 Specular gloss usually varies with surface smoothness and flatness. It is sometimes used for comparative measurements of these surface properties.

5. Apparatus

5.1 *Instrumental Components*—Each apparatus (**Note 3**) shall consist of an incandescent light source furnishing an incident beam, means for locating the surface of the specimen, and a receptor located to receive the required pyramid of rays reflected by the specimen. The receptor shall be a photosensitive device responding to visible radiation.

NOTE 3—The 75-, 60-, and 20-deg procedures require apparatus identical to that specified in Test Method **D523**. The 45° procedure requires apparatus like that specified in Test Method **C346**.

5.2 *Geometric Conditions*—The axis of the incident beam shall be at one of the specified angles from the perpendicular to the specimen surface. The axis of the receptor shall be at the mirror reflection of the axis of the incident beam. With a flat piece of polished black glass or other front-surface mirror in

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