



Designation: C584 – 81 (Reapproved 2016)

# Standard Test Method for Specular Gloss of Glazed Ceramic Whitewares and Related Products<sup>1</sup>

This standard is issued under the fixed designation C584; 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 ( $\epsilon$ ) indicates an editorial change since the last revision or reapproval.

## 1. Scope

1.1 This test method covers the determination of 60° specular gloss of glazed ceramic whitewares and related products.

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

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

**D523 Test Method for Specular Gloss**

## 3. Terminology

3.1 *Definitions:*

3.1.1 *specular gloss*—the ratio of reflected to incident light, times 1000, for specified apertures of illumination and reception when the axis of reception coincides with the mirror image of the axis of illumination.<sup>3</sup>

## 4. Significance and Use

4.1 This test method provides a means of establishing specular gloss limits for bright, semi-mat, and mat glazed surfaces. It is realized that specular gloss measurements do not always correlate well with visual rankings of glossiness because specular gloss is only one of several related appearance attributes that produce the sensation of gloss. However, the prescribed test method is of sufficient accuracy for the intended purpose.

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee C21 on Ceramic Whitewares and Related Products and is the direct responsibility of Subcommittee C21.03 on Methods for Whitewares and Environmental Concerns.

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<sup>2</sup> For referenced ASTM standards, visit the ASTM website, [www.astm.org](http://www.astm.org), or contact ASTM Customer Service at [service@astm.org](mailto:service@astm.org). For *Annual Book of ASTM Standards* volume information, refer to the standard's Document Summary page on the ASTM website. DOI: 10.1520/C0584–81R06.

<sup>3</sup> See Illing, A. M., "Comparison of Instrument Measurement and Visual Estimation of Specular Gloss of Glazed Ceramic Tile," *Materials Research & Standards*, Vol 2, No. 2, Feb. 1962, p. 117.

NOTE 1—If a greater degree of distinction between bright glazed surfaces is desired, the 20° geometry instrument will provide it.<sup>4</sup>

## 5. Apparatus

5.1 *Instrumental Components*—The apparatus shall consist of an incandescent light source and lens furnishing an incident beam of rays of required aperture, means for locating the surface of the specimen, and a receptor located to receive the required pyramid of rays reflected from the specimen. The receptor shall be a photosensitive device having maximum response near the middle of the visible region of the specimen.

5.2 *Geometric Conditions*—The axis of the incident beam shall be 60° from the perpendicular to the specimen surface. The axis of the receptor beam shall be coincident with the mirror image of the axis of the incident beam. A flat piece of polished black glass in the specimen position shall form an image of the source in the center of the receptor window. The length of the illuminated area of the specimen shall be equal to not more than one third the distance from the center of this area to the receptor field stop. The axis of the incident beam and the axis of the receptor shall be within 0.1° of the nominal value indicated by the geometry. The dimensions and tolerances of the source and receptor shall be as indicated in **Table 1** (see also Test Method **D523**). The angular dimensions of the receptor field stop are measured from the receptor lens in a collimated-beam type instrument, and from the test surface in a converging-beam type instrument. See **Fig. 1** for a generalized illustration of the dimensions. The tolerances are chosen so that errors of no more than one gloss unit at any point on the scale will result from errors in the source and receptor apertures.<sup>4</sup>

5.3 *Vignetting*—There shall be no vignetting of rays that lie within the field angles specified in **5.2**.

5.4 *Spectral Conditions*—Results should not differ significantly from those obtained with a source-filter photocell combination that is spectrally corrected to yield CIE luminous efficiency with CIE Source C. Since specular reflection is, in

<sup>4</sup> For more complete data see Hammond III, H. K., and Nimeroff, I., "Measurement of Sixty-Degree Specular Gloss," *Journal of Research*, Nat. Bureau Standards, Vol 44, June 1950 ( *RP 2105*); also Hunter, R. S., "Gloss Evaluation of Materials," *ASTM Bulletin*, No. 186, December 1962.