



Designation: D7163 – 05 (Reapproved 2010)

## Standard Test Method for Specular Gloss of Printed Matter<sup>1</sup>

This standard is issued under the fixed designation D7163; 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 procedure for determining the specular gloss of printed matter.

1.2 This test is applicable to prints on any flat substrate including paper, paperboard, metallic foil and plastic produced by any printing process, either in the laboratory or on a production printing press.

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 and health practices and to 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

D528 Test Method for Machine Direction of Paper and Paperboard<sup>3</sup>

D1223 Test Method for Specular Gloss of Paper and Paperboard at 75°<sup>3</sup>

D5039 Test Methods for Identification of Wire Side of Paper<sup>3</sup>

E284 Terminology of Appearance

### 3. Terminology

3.1 *Definitions:*

3.1.1 *gloss, n*—angular selectivity of reflectance, involving surface reflected light, responsible for the degree to which reflected highlights or images of objects may be seen as superimposed on a surface (Terminology E284); surface luster or shine.

3.1.2 *specular gloss, n*—gloss when the angle of viewing is the same as that of the lighting (Terminology E284).

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D01 and is the direct responsibility of Subcommittee D01.56 on Printing Inks.

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<sup>2</sup> 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.

<sup>3</sup> Withdrawn. The last approved version of this historical standard is referenced on www.astm.org.

### 4. Summary of Test Method

4.1 Printed samples are selected that are the same color/shade and uniformly produced at equal optical print density or at known ink film thickness.

4.2 The specimens are placed on a flat surface atop several sheets of the designated backing.

4.3 A calibrated glossmeter is positioned on the specimen in a consistent print direction. The most prevalent glossmeter angle for printed matter is 60 degrees (30 degrees from the plane of the specimen).

4.4 Depending on the size of the print, gloss measurements are made on three to five different positions on each specimen. The mean values from three specimens are averaged for reporting purposes.

### 5. Significance and Use

5.1 Specular gloss is a very important appearance parameter of printed matter. High gloss may be preferred for some purposes such as magazine covers, packaging and advertising, while lower gloss is preferred for minimizing glare, for example, in reading text.

5.2 This method provides a means of determining gloss of prints produced in the laboratory, or to monitor print gloss on a production printing press.

### 6. Apparatus

6.1 *Specular glossmeter*, preferably a multi-angle model having 20, 60, and 85° geometry; alternatively, a single-angle model having 60° or other geometry as agreed upon between producer and user. Table 1 lists recommended angles for various purposes.

6.2 *Reflection-densitometer*, for determining optical print density.

### 7. Materials

7.1 *Unprinted substrate (optional)*, identical to that used for the printed sample.

7.2 *Backing material*, for use during instrumental measurements. By agreement between producer and user, the backing for paper substrates may be a standard matte black or at least three sheets of the unprinted paper; for clear film, a standard black or a standard white.