Designation: D1455 – 17

Standard Test Method for 60° Specular Gloss of Emulsion Floor Polish[1]

This standard is issued under the fixed designation D1455; 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.

1. Scope

1.1 This test method covers the determination of the 60° specular gloss of films of emulsion floor polish after application to a substrate.

NOTE 1—Specular gloss is one of several related appearance attributes that produce the sensation of glossiness. For this reason, specular gloss measurements may not always correlate well with visual rankings of glossiness.

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.*

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]

D523 Test Method for Specular Gloss

D1436 Test Methods for Application of Emulsion Floor Polishes to Substrates for Testing Purposes

3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

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.

4. Significance and Use

4.1 This test method may be used to evaluate the difference in gloss of dried films of emulsion floor polishes when the light reflected at a 60° angle is measured. Extremely high- or low-gloss polishes may not be differentiated at a 60° angle. A20° angle measured in accordance with Test Method D523 may give better definition of gloss.

5. Apparatus

5.1 *Glossmeter*—The instrument and the reference standards shall conform to the requirements prescribed in Test Method D523, using an angle of reflection of 60°.

5.2 *Floor Polish Applicator*—The equipment for application of the floor polish shall conform to the requirements prescribed in Test Methods D1436.

6. Substrates

6.1 Two standard substrates are commonly used; however, commercial types may be used to test specific applications. Better agreement of results can be expected when black glass is used as the substrate, except for those cases where the sample being tested produces a hazy film. Where a hazy film is produced, black glass should not be employed as the substrate. The standard types are as follows:

6.1.1 *Black Glass,*[3,4]having a highly polished plane surface with a refractive index of 1.567.

6.1.2 *Official Vinyl Composition Tile,*[5]new and unused.

7. Procedure

7.1 Apply the floor polish to the substrate in accordance with the procedures described in Test Methods D1436. Method A, using the automatic dip coater, can be expected to give better agreement of results. For comparison of results, the same method of application must be used.

7.2 Determine the specular gloss at 60° in accordance with Test Method D523.

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[1] This test method is under the jurisdiction of ASTM Committee D21 on Polishes and is the direct responsibility of Subcommittee D21.04 on Performance Tests.

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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.

[3] The sole source of supply of black glass known to the committee at this time is L. Perilstein Glass, 2543 Kensington Ave. Phila., PA 19125.

[4] If you are aware of alternative suppliers, please provide this information to ASTM Headquarters. Your comments will receive careful consideration at a meeting of the responsible technical committee, which you may attend.

[5] OVCT tile may be obtained through Armstrong Flooring from various home improvement stores. The following Armstrong tile substrates have been found to perform adequately for this test method: Armstrong Excelon Feature Tile: Black (56790), http://www.armstrong.com/commflooringna/product_details_toolbox_magnify.jsp?item_id=47394.

7.3 Determine the specular of gloss at 20° in accordance with Test Method D523 if the 60° gloss does not give good differentiation between high-gloss samples.

8. Report

8.1 The report shall include the following:

8.1.1 Average specular gloss reading at 60°, and at 20° if a 20° angle was used.

8.1.2 Substrate used,

8.1.3 Method of application of film,

8.1.4 Number of coats applied,

8.1.5 Presence of any specimen where portions of test surface differ in gloss from average by more than 5 % of average,

8.1.6 Name of manufacturer of gloss-meter and model designation, and

8.1.7 Identification of working standard or standards of gloss used.

9. Precision and Bias

9.1 Readings obtained on the same instrument, using films dried on black glass, should be repeatable to within 2.5 % of the magnitude of the readings. Readings obtained on different instruments should be reproducible to within 5 % of the magnitude of the readings.

9.2 Results obtained may be uncertain due to the cumulative effect of several sources of error,[6] that is, difference between the geometric distribution of flux reflected from standards and specimens may bring about uncertainties in the measured gloss, even though the source and receiver apertures are within the tolerances specified. Inaccuracy of reading may result even though the precision of the measurement mechanism is held within the tolerance specified, and lens arrangement and stray reflections from the interior walls of the instrument may cause errors in gloss readings.

10. Keywords

10.1 black glass; emulsion; floor polish; glossmeter; incident light; OVCT; reflections; specular gloss; substrate

[6] For a discussion of these sources of error, see Hammond, III, H. K., and Nimeroff, I., "Measurement of Sixty-Degree Specular Gloss," *Journal of Research*, Nat. Bureau Standards, Vol 44, No. 6, June 1950, p. 585. (*Research Paper RP 2105*). A condensed version of this paper was published in the *ASTM Bulletin*, No. 169, October 1950, p. 54.