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.

Designation: D6290 – 19

Standard Test Method for Color Determination of Plastic Pellets[1]

This standard is issued under the fixed designation D6290; 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 is used for the instrumental measurement of the degree of yellowness (or change of degree of yellowness) under daylight illumination of homogeneous, nonfluorescent, nearly-colorless transparent or nearly-white translucent or opaque plastics. The measurement is made on pellets and based on tristimulus values obtained with a spectrophotometer or colorimeter.

1.2 This test method is applicable to the color analysis of plastic pellets. It is possible that each material will have unique characteristics that determine the color values.

1.3 This procedure outlines a method to determine color measurements, such as Yellowness Index (YI), CIE X, Y, Z, and Hunter L, a, b, or CIE L*, a*, b*.

1.4 The values stated in SI units are to be regarded as the standard. The values given in parentheses are for information only.

1.5 *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 1—This standard and ISO 17223 address the same subject matter but differ in technical content.

1.6 *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]

D883 Terminology Relating to Plastics

D2244 Practice for Calculation of Color Tolerances and Color Differences from Instrumentally Measured Color Coordinates

E179 Guide for Selection of Geometric Conditions for Measurement of Reflection and Transmission Properties of Materials

E284 Terminology of Appearance

E308 Practice for Computing the Colors of Objects by Using the CIE System

E313 Practice for Calculating Yellowness and Whiteness Indices from Instrumentally Measured Color Coordinates

E456 Terminology Relating to Quality and Statistics

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

E1331 Test Method for Reflectance Factor and Color by Spectrophotometry Using Hemispherical Geometry

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 Testing in Laboratory Applications

2.2 *ISO/IEC Standards:*

ISO 17223 Plastics Determination of Yellowness Index and Change in Yellowness Index.

CIE Standard D 001 Colorimetric Illuminants and Observers (Disk) (www.cie.co.at)

3. Terminology

3.1 *Definitions*—Refer to Terminologies D883 and E284 for definitions of terms used in this test method.

4. Significance and Use

4.1 Before proceeding with this test method, refer to the specification of the material being tested. Any test specimen preparation, conditioning, dimensions, or testing parameters, or a combination thereof, covered in the materials specification shall take precedence over those mentioned in this test method. If there are no material specifications, then default conditions apply.

NOTE 2—Some materials, such as polyamide (nylon), can be cooled very differently during the production of the pellets. This variation in the cooling of the pellets can result in different levels of crystallinity in the

[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.

Current edition approved June 1, 2019. Published June 2019. Originally approved in 1998. Last previous edition approved in 2018 as D6290 - 18. DOI: 10.1520/D6290-19.

[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.

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

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