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: D6111 – 19a

Standard Test Method for Bulk Density And Specific Gravity of Plastic Lumber and Shapes by Displacement[1]

This standard is issued under the fixed designation D6111; 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 bulk density and specific gravity of plastic lumber and shapes in their "as manufactured" form. As such, this is a test method for evaluating the properties of plastic lumber or shapes as a product and not a material property test method.

1.2 This test method is suitable for determining the bulk specific gravity or bulk density by immersion of the entire item or a representative cross section in water. This test method involves the weighing of a one piece specimen in water, using a sinker with plastics that are lighter than water. This test method is suitable for products that are wet by, but otherwise not affected by water for the duration of the test.

1.3 Plastic lumber and plastic shapes are currently made predominately from recycled plastics. However, this test method would also be applicable to similar manufactured plastic products made from virgin resins where the product is non-homogeneous in the cross-section.

1.4 The values stated in SI units are to be regarded as standard.

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—There is no known ISO equivalent to this test method.

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]

D618 Practice for Conditioning Plastics for Testing
D883 Terminology Relating to Plastics
D1622/D1622M Test Method for Apparent Density of Rigid Cellular Plastics
D1898 Practice for Sampling of Plastics (Withdrawn 1998)[3]
D5033 Guide for Development of ASTM Standards Relating to Recycling and Use of Recycled Plastics (Withdrawn 2007)[3]
D6108 Test Method for Compressive Properties of Plastic Lumber and Shapes
E1 Specification for ASTM Liquid-in-Glass Thermometers
E12 Terminology Relating to Density and Specific Gravity of Solids, Liquids, and Gases (Withdrawn 1996)[3]
E456 Terminology Relating to Quality and Statistics
E691 Practice for Conducting an Interlaboratory Study to Determine the Precision of a Test Method
E2935 Practice for Conducting Equivalence Testing in Laboratory Applications

3. Terminology

3.1 *Definitions of Terms:*

3.1.1 Definitions of terms applying to this test method appear in Terminology D883 and Guide D5033. For terms relating to precision and bias and associated issues, the terms used in this test method are in accordance with the definitions in Terminology E456.

3.1.2 *density, bulk*—the weight per unit volume of a material including voids inherent in material as tested. (Terminology D883)

3.1.3 *plastic lumber, n*—a manufactured product made primarily from plastic materials (filled or unfilled), typically used as a building material for purposes similar to those of traditional lumber, which is usually rectangular in cross-section. (Terminology D883)

[1] This test method is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.20 on Plastic Lumber (Section D20.20.01).

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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 last approved version of this historical standard is referenced on www.astm.org.

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

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