



# Standard Test Method for Shear Properties of Plastic Lumber and Plastic Lumber Shapes<sup>1</sup>

This standard is issued under the fixed designation D 6435; 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 the mechanical properties of plastic lumber and plastic lumber shapes when loaded in shear at relatively low uniform rates of straining or loading.

1.2 Plastic lumber and plastic lumber shapes are currently made predominately with recycled plastics where the product is nonhomogenous in the cross section. However, this test method would also be applicable to similarly manufactured plastic products made from virgin resins or where the product is nonhomogenous in the cross section.

1.3 The values stated in inch-pound units are to be regarded as the standard. The SI units given in parentheses are for information only.

1.4 *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.*

NOTE 1—There is no similar or equivalent ISO standard.

## 2. Referenced Documents

### 2.1 ASTM Standards:

- D 618 Practice for Conditioning Plastics and Electrical Insulating Materials for Testing<sup>2</sup>
- D 883 Terminology Relating to Plastics<sup>2</sup>
- D 2915 Practice for Evaluating Allowable Properties for Grades of Structural Lumber<sup>3</sup>
- D 4000 Classification System for Specifying Plastic Materials<sup>4</sup>
- D 5033 Guide for the Development of Standards Relating to the Proper Use of Recycled Plastics<sup>5</sup>

<sup>1</sup> This test method is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D20.20 on Plastic Products. Current edition approved June 10, 1999. Published September 1999.

<sup>2</sup> *Annual Book of ASTM Standards*, Vol 08.01.

<sup>3</sup> *Annual Book of ASTM Standards*, Vol 04.10.

<sup>4</sup> *Annual Book of ASTM Standards*, Vol 08.02.

<sup>5</sup> *Annual Book of ASTM Standards*, Vol 08.03.

## E 4 Practices for Force Verification of Testing Machines<sup>6</sup>

## 3. Terminology

### 3.1 Definitions:

3.1.1 *plastic lumber, n*—a manufactured product composed of more than 50 weight percent resin, and in which the product generally is rectangular in cross section and typically supplied in sizes that correspond to traditional lumber board and dimension lumber sizes, that may be filled or unfilled, and that may be composed of single or multiple resin blends.

3.1.2 *plastic lumber shape, n*—a plastic lumber, which generally is not rectangular in cross section.

3.1.3 *resin, n*—a solid or pseudosolid organic material often of high molecular weight, which exhibits a tendency to flow when subjected to stress, usually has a softening or melting range, and usually fractures conchoidally (see Terminology D 883).

3.1.3.1 *Discussion*—In a broad sense, the term is used to designate any polymer that is a basic material for plastics.

3.1.4 *shear stress (nominal)*—the shear force per unit area of the shear surface of the test specimen. It is expressed in force per unit area.

3.2 Additional definitions of terms applying to this test method appear in Terminology D 883 and Guide D 5033.

## 4. Significance and Use

4.1 Shear tests provide information about the shear properties of plastic lumber when employed under conditions approximating those under which the tests are made. For many materials, there may be a specification that requires the use of this test method, but with some procedural-modifications that take precedence when adhering to the specification. Therefore, it is advisable to refer to that material specification before using this test method. Table 1 in Classification D 4000 lists the ASTM materials standards that currently exist.

4.2 Shear properties are limited to shear strength only. In the case of a material that fails in shear by a fracture, the shear strength has a very definite value. In the case of a material that

<sup>6</sup> *Annual Book of ASTM Standards*, Vol 03.01.