



Designation: **D3575—08 D3575 – 14**

# Standard Test Methods for Flexible Cellular Materials Made From Olefin Polymers<sup>1</sup>

This standard is issued under the fixed designation D3575; 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.

*This standard has been approved for use by agencies of the U.S. Department of Defense.*

## 1. Scope

1.1 These test methods apply to flexible closed cell materials made from olefin polymers or blends of olefin polymers with other polymers as defined in Section 3.

1.2 These test methods cover test procedures only. Product requirements are outlined in Specification **D4819**.

1.3 Unless specifically stated otherwise, by agreement between the purchaser and supplier, all tests shall be performed in accordance with the test methods specified in this standard.

1.4 The values stated in SI units are to be regarded as the 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 and health practices and determine the applicability or regulatory limitations prior to use.*

NOTE 1—This standard and ISO 7214 address the same subject matter, but differ in technical content.

## 2. Referenced Documents

2.1 *ASTM Standards:*<sup>2</sup>

**C177** Test Method for Steady-State Heat Flux Measurements and Thermal Transmission Properties by Means of the Guarded-Hot-Plate Apparatus

**C518** Test Method for Steady-State Thermal Transmission Properties by Means of the Heat Flow Meter Apparatus

**D412** Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension

**D624** Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers

**D1056** Specification for Flexible Cellular Materials—Sponge or Expanded Rubber

**D1349** Practice for Rubber—Standard Temperatures for Testing

**D1596** Test Method for Dynamic Shock Cushioning Characteristics of Packaging Material

**D1667** Specification for Flexible Cellular Materials—Poly (Vinyl Chloride) Foam (Closed-Cell)

**D2863** Test Method for Measuring the Minimum Oxygen Concentration to Support Candle-Like Combustion of Plastics (Oxygen Index)

**D4483** Practice for Evaluating Precision for Test Method Standards in the Rubber and Carbon Black Manufacturing Industries

**D4819** Specification for Flexible Cellular Materials Made From Polyolefin Plastics

**E177** Practice for Use of the Terms Precision and Bias in ASTM Test Methods

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

**F355** Test Method for Impact Attenuation of Playing Surface Systems and Materials

## 3. Terminology

3.1 *Definitions of Terms Specific to This Standard:*

3.1.1 *blend*—mixture of olefin polymers with other monomer(s) or polymer(s) in which at least 51 mass percent is the olefin polymer.

<sup>1</sup> These test methods are under the jurisdiction of ASTM Committee **D20** on Plastics and are the direct responsibility of Subcommittee **D20.22** on Cellular Materials - Plastics and Elastomers.

Current edition approved Feb. 1, 2008; Jan. 1, 2014. Published February 2008; January 2014. Originally approved in 1977. Last previous edition approved in 2000 as **D3575 – 00**; **D3575 – 08**. DOI: 10.1520/D3575-08; 10.1520/D3575-14.

<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.

3.1.2 *cellular material, flexible*—a cellular organic polymeric material that will not rupture when a specimen ~~200~~203.2 by ~~25~~25.4 by ~~25~~25.4 mm (8 by 1 by 1 in.) is bent around a ~~25-mm~~25.4-mm (1-in.) diameter mandrel at a uniform rate of one lap in 5 s at a temperature between 18 and 29°C.

3.1.3 *constant compression creep*—the time-dependent change in thickness of a material under a constant compressive stress or compression force.

3.1.4 *olefin polymers*—polymers made by the polymerization of olefins or copolymerization of olefins with other monomers, the olefins being at least 51 mass percent.

#### 4. Summary of Test Methods

4.1 **Table 1** contains a list of all the assigned suffix letters that may be used in describing the cellular products covered by these test methods.

4.2 These test methods do not contain test methods for all the suffix letters listed in **Table 1**. Where the test method is not included, it shall be arranged between the purchaser and supplier.

**TABLE 1 Suffix Letter Designations**

NOTE 1—These suffix letters have been assigned by Subcommittee D11.33 and are consistent with those in Specifications **D1056** and **D1667**.

Suffix Letter	Property	Section
A	Heat resistance	<del>10</del> —17
<u>A</u>	Heat resistance	<u>9</u> —16
B	Compression set under constant deflection	
C	Ozone or weather resistance	
<u>D</u>	Compression deflection	<del>18</del> —25
<u>D</u>	Compression deflection	<u>17</u> —24
<u>E</u>	Oil resistance	
F	Low temperature	
<u>G</u>	Tear resistance	<u>26</u>
<u>G</u>	Tear resistance	<u>25</u>
H	Flex resistance	
I	Not assigned because of similarity to numeral 1	
J	Abrasion resistance	
K	Adhesion capability	
<u>L</u>	Water absorption	<u>27</u> —33
<u>L</u>	Water absorption	<u>26</u> —32
M	Flammability resistance	34
<u>M</u>	Flammability resistance	<u>33</u>
N	Impact resistance	
O	Electrical properties	
P	Staining resistance	
Q	Not assigned because of similarity to letter O	
R1	Resilience	
<u>R2</u>	Energy absorption	<u>35</u>
<u>R2</u>	Energy absorption	<u>34</u>
<u>S</u>	Thermal stability	<u>36</u> —43
<u>S</u>	Thermal stability	<u>35</u> —42
<u>T</u>	Tensile strength and elongation	<u>44</u>
<u>T</u>	Tensile strength and elongation	<u>43</u>
U	Not assigned	
<u>V</u>	Thermal conductivity	<u>45</u> and <u>46</u>
<u>V</u>	Thermal conductivity	<u>44</u> and <u>45</u>
<u>W</u>	Density	<u>47</u> —50
<u>W</u>	Density	<u>46</u> —49
X	Not assigned	
Y	Not assigned	
Z	Special requirements	
<u>AA</u>	Buoyancy	<u>51</u> —57
<u>AA</u>	Buoyancy	<u>50</u> —56
<u>BB</u>	Constant compressive creep	<u>58</u> —65
<u>BB</u>	Constant compressive creep	<u>57</u> —64
<u>CC</u>	Dynamic cushioning	<u>66</u> and <u>67</u>
<u>CC</u>	Dynamic cushioning	<u>65</u> and <u>66</u>
DD	Open cell	
EE	Not assigned	
FF	Water vapor transmission	