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AMERICAN SOCIETY FOR TESTING AND MATERIALS  
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## **Standard Specification for Flexible Cellular Materials—Vinyl Chloride Polymers and Copolymers (Open-Cell Foam)<sup>1</sup>**

This standard is issued under the fixed designation D 1565; 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.

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

*This specification was prepared jointly by the American Society for Testing and Materials and the Society of the Plastics Industry.*

### **1. Scope**

1.1 This specification covers flexible cellular products containing interconnecting cells made of a base material known as poly(vinyl chloride) or copolymers thereof.

1.2 It is intended as a general specification and may need to be supplemented by detailed specifications or methods of test for a particular product, in which case the latter would take precedence. Reference to methods for testing poly(vinyl chloride) foam products should specifically state the particular test or tests desired.

1.3 *This standard does not purport to address all of the safety problems, 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.*

### **2. Referenced Documents**

#### **2.1 ASTM Standards:**

E 145 Specification for Gravity-Convection and Forced-Ventilation Ovens<sup>2</sup>

### **3. Description of Terms Specific to This Standard**

3.1 *vinyl or PVC*—abbreviated terms used to designate poly(vinyl chloride) or copolymers thereof.

3.2 *surface skin*—the smooth skin on a foam formed during manufacture by contact with the mold, cover plate, or air.

3.3 *mechanically blown foam*—a foam made by mechanically mixing a gas into a base material so as to develop a foam structure.

3.4 *chemically blown foam*—a foam made by incorporating a chemical agent into the base material which on heating liberates a gas causing foaming of the base materials.

3.5 *flexible*—a descriptive term applied to a cellular organic polymeric material that will not rupture within 60 s when a specimen 200 by 25 by 25 mm is bent around a 25-mm diameter mandrel at a uniform rate of one lap in 5 s in the form

of a helix at a temperature between 18 and 29°C.

3.6 *cellular material*—a generic term for materials containing many cells (either open, closed, or both) dispersed throughout the mass.

### **4. Classification**

4.1 Grades of vinyl foam are designated by letters that identify the kind of vinyl foam as follows:

4.1.1 VC—Vinyl foam, cored,

4.1.2 VU—Vinyl foam, uncured, and

4.1.3 VO—Vinyl foam, uncured, extra firm.

4.2 Digits following the letters indicate the degree of firmness, the softer grades being identified with the lower numbers and the firmer grades with the higher numbers (see Table 1).

4.3 *Suffix Letters* may be added singly or in combination after any grade designation to indicate additional requirements beyond the basic requirements specified in Table 1. The approved suffix letters and their significance are as follows:

#### **Suffix Letters**

C—Weather Resistance.\*

D—Load Deflection.\*

E—Oil Resistance.\*

F—Low Temperature.\*

G—Tear Resistance.\*

H—Flexing Resistance.

J—Abrasion Resistance.\*

K1—Adhesion to Metal, Made During Moldings.\*

K2—Adhesion, Cemented Bond, Made After Molding.\*

M—Flame Resistance.\*

P—Nonstaining.\*

P1—Compatibility with Other Materials.\*

R—Resilience.\*

W—Density.

Z—Special Requirements.\*

\* Test method and values shall be as agreed upon between the purchaser and the manufacturer.

### **5. Manufacture**

5.1 Foam may be produced in sheet, strip, molded, or specific shapes. The foam articles may be solid or cored. Size, shape, and distribution of cores, if any, shall be at the option of the manufacturer, subject to the approval of the purchaser.

### **6. Material and Workmanship**

6.1 Vinyl foam shall be manufactured from poly(vinyl

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D-20 on Plastics and is the direct responsibility of Subcommittee D20.22 on Cellular Plastics.

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<sup>2</sup> *Annual Book of ASTM Standards*, Vol 14.02.