Designation: D3678 – 14

An American National Standard

Standard Specification for Rigid Poly(Vinyl Chloride) (PVC) Interior-Profile Extrusions[1]

This standard is issued under the fixed designation D3678; 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 specification establishes requirements for the material properties, including dimensional stability and extrusion quality, of rigid, poly(vinyl chloride) (PVC) interior-profile extrusions. Methods for identifying interior-profile extrusions that comply with the requirements of this specification are provided.

1.2 Use of rigid PVC recycled plastic is permitted in accordance with the requirements of Sections 6 and 7.

1.3 Rigid PVC compounds for interior building product applications are covered in Specification D1784.

1.4 Rigid PVC exterior profile extrusions for assembled windows and doors are covered in Specification D4726.

1.5 The text of this standard references notes and footnotes which provide explanatory material. These notes and footnotes (excluding those in Tables and Figures) shall not be considered as requirements of this standard.

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

NOTE 1—Information with regard to application should be obtained from the manufacturers of the profiles.

NOTE 2—There is no known ISO equivalent to this standard.

1.7 The following precautionary caveat pertains only to the test method portion, Section 8, of this specification:*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.*

2. Referenced Documents

2.1 *ASTM Standards:*[2]

D618 Practice for Conditioning Plastics for Testing

D696 Test Method for Coefficient of Linear Thermal Expansion of Plastics Between −30°C and 30°C with a Vitreous Silica Dilatometer

D883 Terminology Relating to Plastics

D1042 Test Method for Linear Dimensional Changes of Plastics Caused by Exposure to Heat and Moisture

D1600 Terminology for Abbreviated Terms Relating to Plastics

D1784 Specification for Rigid Poly(Vinyl Chloride) (PVC) Compounds and Chlorinated Poly(Vinyl Chloride) (CPVC) Compounds

D2152 Test Method for Adequacy of Fusion of Extruded Poly(Vinyl Chloride) (PVC) Pipe and Molded Fittings by Acetone Immersion

D3892 Practice for Packaging/Packing of Plastics

D4726 Specification for Rigid Poly(Vinyl Chloride) (PVC) Exterior-Profile Extrusions Used for Assembled Windows and Doors

D4968 Guide for Annual Review of Test Methods and Specifications for Plastics

D7209 Guide for Waste Reduction, Resource Recovery, and Use of Recycled Polymeric Materials and Products

E631 Terminology of Building Constructions

3. Terminology

3.1 *General*—Defintions are in accordance with Terminology D883 or Terminology E631 and abbreviations with Terminology D1600, unless otherwise indicated.

4. Significance and Use

4.1 The purpose of this specification is to establish on a national basis, a recognized standard of quality for rigid

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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.

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

poly(vinyl chloride) (PVC) interior-profile extrusions for interior use other than cellular products, piping, tubing, and window and door profiles used in finished building products. The information contained in this standard is intended to be helpful to producers, distributors, and users, and to promote understanding between buyers and sellers. It is also intended to serve as the basis for requirements on finished interior building products which are either made from or employ rigid PVC profile extrusions in their construction.

5. Classification

5.1 This standard covers three classes of rigid PVC interior-profile extrusions as follows:

Class 1—Normal impact
Class 2—Intermediate impact
Class 3—High impact

6. Materials and Manufacture

6.1 This specification covers profile extrusions made from plastics conforming to the requirements of Specification D1784. Class 1 extrusions shall meet the requirements specified in Specification D1784 for Class 12454 compound. Class 2 extrusions shall meet the requirements for Class 14323 compound. Class 3 extrusions shall meet the requirements for Class 1-40031-54-0000 compound. Refer to Table 1 in Specification D1784.

6.2 Use of rigid PVC recycled plastic, as defined in Guide D7209 is permitted in this product if all the requirements in the sections on Materials and Manufacture (Section 6), and on Physical Requirements (Section 7) are met by the extrusions containing PVC recycled plastic.

6.3 All Class compounds shall have a minimum coefficient of linear expansion of 10×10^{-5} cm/cm/°C (5.5×10^{-5} in./in./°F).

NOTE 3—Non-PVC materials may be used as a capstock.

6.4 *Rework Material*—Clean, homogeneous PVC rework material or rework material containing PVC capstock generated from the manufacturer's own production of the same class compound is permitted for use by the same manufacturer provided that the extruded profiles meet all the requirements of this specification. Clean principally PVC rework material containing non-PVC capstock is permitted for use only in the substrate of a capstocked product by the same manufacturer, providing that the extruded profiles meet all of the requirements of this specification.

6.5 The PVC compound in extruded section shall maintain uniform color and be free of any visual surface or structural changes, such as peeling, chipping, cracking, flaking, or pitting.

7. Physical Requirements

7.1 *Dimensions*—The size, thickness, and dimensional tolerances of the interior-profile extrusions shall be as agreed upon between the supplier and purchaser.

7.2 *Dimensional Stability*—The dimensional stability of the interior-profile extrusions shall be determined in the extrusion direction in accordance with 8.5. Extrusions over 1.02 mm (0.040 in.) in thickness shall have a maximum shrinkage of 2.2 %; those of 1.02-mm (0.040-in.) thickness or less shall have a 3.0 % maximum shrinkage.

7.3 *Extrusion Quality*—The extrusion quality of Class 1 extrusions shall be determined by immersion in anhydrous acetone in accordance with the requirements of 8.6. Specimens of extrusions having not more than 25 % surface attack shall be considered as adequately fused and of satisfactory quality. The extrusion qualities of Class 2 and Class 3 extrusions shall be as agreed upon between the supplier and purchaser.

8. Test Methods

8.1 *General*—Use the inspection and test procedures contained in this section to determine the conformance of products to the requirements of this specification. Each producer or distributor who represents his products as conforming to this specification may utilize statistically based sampling plans that are appropriate for each particular manufacturing process, but shall keep such essential records as are necessary to document with a high degree of assurance his claim that all of the requirements of this specification have been met. Additional sampling and testing of the product, as may be agreed upon between supplier and purchaser, is not precluded by this section.

8.2 *Visual Inspection*—Visually examine the interior-profile extrusions to determine their compliance with the requirements of 6.5.

8.3 *Conditioning of Specimens*—Condition the test specimens in accordance with Procedure A of Practice D618, except that the minimum conditioning time shall be 24 h.

8.4 *Test Conditions*—Conduct the tests the Standard Laboratory Atmosphere of 23 ± 1°C (73.4 ± 1.8°F) and 50 ± 10 % relative humidity, unless otherwise specified in the applicable test method.

8.5 *Dimensional Stability*—Determine the dimensional stability in accordance with Test Method D1042, except that the test cycle shall consist of heating the specimens for 30 min in a uniformly heated oven at a temperature of 82.0 ± 0.6°C (180 ± 1°F).

8.6 *Extrusion Quality*—Determine the extrusion quality in accordance with Test Method D2152, except that the test specimens shall be 25.40 to 50.80 mm (1 to 2 in.) in length and sufficient in number to ensure testing the complete cross section. In the test procedure described, the interior-profile extrusions will normally swell and soften in contact with anhydrous acetone. In some cases there may be surface attack. Disintegration is defined as complete separation of flakes or pieces from the body of the extrusion.

8.7 *Coefficient of Linear Expansion*—Conduct this test in accordance with Test Method D696.

9. Product Marking

9.1 To aid identification of products conforming to all requirements of this specification, producers and distributors shall include a statement of compliance in conjunction with

their name and address on product labels, invoices, sales literature, and the like. The following statement is suggested when sufficient space is available:

"The product conforms to all of the requirements established in ASTM D3678, developed cooperatively with the industry and published by ASTM."

"Full responsibility for the conformance of this product to this specification is assumed by (name and address of producer or distributor)."

9.2 The following abbreviated statement is suggested when available space on labels is insufficient for the full statement:

"Conforms to ASTM D3678 (name and address of producer or distributors)."

9.3 All packing, packaging, and marking provisions of Practice D3892 shall apply to this specification.

10. Packaging

10.1 The interior-profile extrusions shall be packaged in such a manner as to provide reasonable protection against damage in ordinary handling and transportation.

11. Keywords

11.1 building products; extrusion; interior profile extrusions; recycled plastic; rigid poly(vinyl chloride)

SUMMARY OF CHANGES

Committee D20 has identified the location of selected changes to this standard since the last issue (D3678 – 97 (2008)$^{\varepsilon 1}$) that may impact the use of this standard.

(1) Revised humidity requirements from ±5 % to ±10 % to bring in line with Practice D618.