



# Standard Specification for Poly (Vinyl Chloride) (PVC) Gaskets for Drain, Waste, and Vent (DWV), Sewer, Sanitary, and Storm Plumbing Systems<sup>1</sup>

This standard is issued under the fixed designation D5926; 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 specification describes material and physical requirements for nonrigid poly (vinyl chloride) (PVC) preformed molded and spliced gaskets used in mechanical couplings. These couplings are used in gravity flow drain, waste, and vent (DWV), sewer, sanitary, and storm plumbing systems. They include couplings to join similar and dissimilar piping sizes and piping material.

1.2 It is acceptable to use recycled materials in this product in accordance with the requirements in Section 4.

1.3 The values stated in inch-pound units are to be regarded as standard. The values given in parentheses are mathematical conversions to SI units that are provided for information only and are not considered standard.

NOTE 1—There is no known ISO equivalent to this standard.

1.4 The following safety hazards caveat pertains only to the test method portion, Section 7, 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, health, and environmental practices and determine the applicability of regulatory limitations prior to use.*

1.5 *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:<sup>2</sup>

**C717 Terminology of Building Seals and Sealants**

<sup>1</sup> This specification is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.24 on Plastic Building Products.

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<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.

- D412 Test Methods for Vulcanized Rubber and Thermoplastic Elastomers—Tension**
- D471 Test Method for Rubber Property—Effect of Liquids**
- D573 Test Method for Rubber—Deterioration in an Air Oven**
- D618 Practice for Conditioning Plastics for Testing**
- D624 Test Method for Tear Strength of Conventional Vulcanized Rubber and Thermoplastic Elastomers**
- D746 Test Method for Brittleness Temperature of Plastics and Elastomers by Impact**
- D883 Terminology Relating to Plastics**
- D1149 Test Methods for Rubber Deterioration—Cracking in an Ozone Controlled Environment**
- D1203 Test Methods for Volatile Loss From Plastics Using Activated Carbon Methods**
- D1600 Terminology for Abbreviated Terms Relating to Plastics**
- D2240 Test Method for Rubber Property—Durometer Hardness**
- D2287 Classification System and Basis for Specification for Nonrigid Vinyl Chloride Polymer and Copolymer Molding and Extrusion Compounds**
- D3892 Practice for Packaging/Packing of Plastics**
- D4968 Practice for Annual Review of Test Methods and Specifications for Plastics**
- D6147 Test Method for Vulcanized Rubber and Thermoplastic Elastomer—Determination of Force Decay (Stress Relaxation) in Compression**
- D7209 Guide for Waste Reduction, Resource Recovery, and Use of Recycled Polymeric Materials and Products (Withdrawn 2015)<sup>3</sup>**

## 3. Terminology

3.1 *General*—Definitions are in accordance with Terminologies **C717**, **D883**, and **D1600**, unless otherwise indicated.

### 3.2 Definitions of Terms Specific to This Standard:

3.2.1 *flash*—the excess material protruding from the surface of a molded article at the mold junction.

<sup>3</sup> 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

#### 4. Materials and Manufacture

4.1 This specification covers preformed gaskets made principally from virgin nonrigid PVC molding compound conforming to the requirements of Specification **D2287** for general purpose, electrical requirements excluded class PVC 30267, 40366 or 50465. Refer to Table 1 in Specification **D2287**.

4.1.1 This class compound has the following material property requirements:

4.6 The compound manufacturer shall certify in writing to the gasket manufacturer that the compound supplied meets all the requirements of this specification.

#### 5. Requirements

5.1 *Dimensions*—Gaskets shall conform to the dimensions and dimensional tolerances as agreed upon between the supplier and the purchaser. All dimensions shall be compatible

**TABLE 1 Material Property Requirements**

Properties Tested	ASTM Method	Requirement		
Durometer hardness, A scale	Test Method <b>D2240</b>	55 to 64	65 to 74	75 to 84
Tensile strength, min, psi (MPa)	Test Method <b>D412</b>	1000 (6.9)	1285 (8.8)	1575 (10.8)
Volatile loss at 105°C, max, %	Test Method <b>D1203</b>	6.0	6.0	6.0
Brittleness temperature, max	Test Method <b>D746</b>	−40°C	−30°C	−20°C
Heat Aging :	Test Method <b>D573</b>			
Hardness increase, max, pts. Shore A		10	10	10
Loss in tensile strength, max, %		25	25	25
Loss in elongation, max, %		35	35	35
Water Absorption, Weight increase,max, %	Test Method <b>D471</b>	20	20	20
Ozone Resistance, No Cracks at 2 times Magnification	Test Method <b>D1149</b>	No Cracks	No Cracks	No Cracks
Oil Immersion in IRM 903 Oil:	Test Method <b>D471</b>			
Max volume increase, %		10	10	10
Max volume decrease, %		50	50	50
Tear Strength, min, lbf/in. (N/cm)	Test Method <b>D624</b>	150	150	150
Stress Relaxation, Min. % Force Retention	Test Method <b>D6147</b>	30	30	30

4.2 The molding compound shall have a minimum percent elongation by Test Method **D412** of 250 %.

4.3 The molding compound shall have a minimum tear strength by Test Method **D624** of 150 lb/in. (268.5 N/cm).

4.4 Recycled materials, as defined in Guide **D7209**, shall meet all the requirements in Sections 4 and 5 when used in this product.

4.5 Qualification testing for material physical requirements shall be conducted by the material manufacturer on the specific compound supplied and not on the molded gaskets, since the physical properties do not change on molding.

NOTE 2—The material manufacturer shall reassess the need for requalification of the specific compound supplied any time the compound formulation is changed or the PVC resin or any compound ingredient is changed.

with the dimensions and tolerances of the specific piping materials and sizes to which it is designed to join.

5.2 *Spliced Gaskets, Stretch Test*—The splice shall withstand the splice test in 7.1 with no visible separation or peeling.

5.2.1 The observance of any peeling or separation in a spliced seam shall be followed by immediate correction of the temperature/time functions in the heat welding operation.

5.3 Gaskets selected for sampling (6.1) shall meet all dimensional requirements (5.1) and workmanship requirements (5.4).

5.4 *Workmanship:*

5.4.1 The surface of preformed gaskets shall be smooth and free from pitting, cracks, blisters, air marks, or any other imperfections that have the potential to affect product performance in service.

5.4.2 Neither the flash thickness nor the flash extension shall exceed  $\frac{1}{32}$  in. (1 mm).

## 6. Sampling

6.1 Sample using a statistically acceptable procedure.

6.2 A shift of production on a molding line shall be considered as a unit of manufacture for sampling purposes.

6.3 Spliced gasket production shall be sampled at a level of 100 % of total spliced units produced during the trimming and inspection operation.

## 7. Test Methods

7.1 *Spliced Gasket Stretch Test*—Gasket specimens shall be stretched during the seam trimming operation by inverting the spliced section  $180^\circ$ , while carefully inspecting the seam for separation and peeling and the seam area for workmanship imperfections (5.4.1).

7.2 The physical properties enumerated herein shall be determined on the non-rigid PVC compound in accordance with the following methods:

7.2.1 *Test Specimens*—Unless otherwise specified, test specimens shall be prepared of sheets  $0.075 \pm 0.010$  in. ( $1.9 \pm 0.2$  mm) thick. Specimens shall be of the shape and dimensions specified in the individual test methods.

7.2.2 *Conditioning*—Test specimens of non-rigid PVC plastics shall be conditioned in accordance with Procedure A of Practice **D618**.

7.2.3 Unless otherwise specified, tests shall be conducted in the standard laboratory atmosphere of  $23 \pm 2^\circ\text{C}$  ( $73 \pm 4^\circ\text{F}$ ) and  $50 \pm 10\%$  relative humidity.

7.2.4 *Durometer Hardness*—Test Method **D2240** using a 15 s interval as described in 9.2 of that method.

7.2.5 *Tensile Strength and Percent Elongation*—Test Methods **D412**, using specimens prepared with Die C.

7.2.6 *Volatile Loss*—Test Method **D1203** using Method A, except that the test temperature shall be  $105^\circ\text{C}$ .

7.2.7 *Brittleness Temperature*—Test Method **D746**, using Procedure A.

7.2.8 *Tear Strength*—Test Method **D624**, using Die C.

7.2.9 *Heat Aging*—Test Method **D573** for 96 h at  $70 \pm 2^\circ\text{C}$  ( $158 \pm 4^\circ\text{F}$ ).

7.2.10 *Water Absorption*—Test Method **D471** for 7 days at  $70 \pm 2^\circ\text{C}$  ( $158 \pm 4^\circ\text{F}$ ).

7.2.11 *Ozone Resistance*—Test Method **D1149**, using test specimen A for 100 h at  $40 \pm 2^\circ\text{C}$  ( $104 \pm 4^\circ\text{F}$ ) with ozone concentration of 1.5 ppm.

7.2.12 *Oil Immersion*—Test Method **D471** for 70 h at  $100 \pm 2^\circ\text{C}$  ( $212 \pm 4^\circ\text{F}$ ).

7.2.13 *Stress Relaxation*—Test Method **D6147**, using Method B, and test specimen as defined in section 7.1.2 of **D6147**. The test temperature and duration shall be 168 h at  $23 \pm 2^\circ\text{C}$  ( $73 \pm 4^\circ\text{F}$ ).

## 8. Certification

8.1 The gasket manufacturer shall keep appropriate production and testing records, including certification documentation from the PVC compound producer, required to certify, when requested by the purchaser, that the product meets all requirements of this specification.

## 9. Product Marking

9.1 Each gasket shall be marked with the manufacturers name or trademark, or both.

9.2 The type and size of pipe for which the gasket is intended or the manufacturer's product identification shall be marked on or attached to each gasket.

9.3 All gaskets shall be marked with the designation ASTM D5926 showing compliance to this specification.

## 10. Packaging and Package Marking

10.1 *Packaging*—The gaskets shall be packaged in standard commercial containers so constructed as to ensure acceptance by common or other carriers for safe transportation at the lowest rate to the point of delivery, unless otherwise specified in the contract or order.

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

## 11. Keywords

11.1 DWV piping gaskets; pipe couplings; plumbing gaskets; poly(vinyl chloride) (PVC); recycle usage; sanitary piping gaskets; sewer piping gaskets; storm piping gaskets

## SUMMARY OF CHANGES

Committee D20 has identified the location of selected changes to this standard since the last issue (D5926 – 15) that may impact the use of this standard. (December 1, 2020)

(1) Five year review. Reapproved without changes.

 **D5926 – 15 (2020)**

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