

Standard Specification for Polypropylene (PP) Siding¹

This standard is issued under the fixed designation D7254; 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 and test methods for materials, impact strength, appearance, surface flame spread, and windload resistance of siding products manufactured from polypropylene material. Methods of indicating compliance with this specification are also provided.

1.2 The use of polypropylene recycled plastic in this product shall be in accordance with the requirements in Section 4.

1.3 Siding produced to this specification shall be installed in accordance with manufacturer's installation instructions for the specific product to be installed.

NOTE 1—Information with regard to siding maintenance shall be obtained from the manufacturer.

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

1.5 The following precautionary caveat pertains to the test method portion only, Section 6 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.*

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

2. Referenced Documents

2.1 ASTM Standards:²

D883 Terminology Relating to Plastics

D1435 Practice for Outdoor Weathering of Plastics

D1600 Terminology for Abbreviated Terms Relating to Plastics

D3679 Specification for Rigid Poly(Vinyl Chloride) (PVC) Siding

¹ 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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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.

D3892 Practice for Packaging/Packing of Plastics

D4101 Specification for Polypropylene Injection and Extrusion Materials

D4226 Test Methods for Impact Resistance of Rigid Poly(Vinyl Chloride) (PVC) Building Products

D5033 Guide for Development of ASTM Standards Relating to Recycling and Use of Recycled Plastics (Withdrawn 2007)³

D5206 Test Method for Windload Resistance of Rigid Plastic Siding

E84 Test Method for Surface Burning Characteristics of Building Materials

E631 Terminology of Building Constructions

G147 Practice for Conditioning and Handling of Nonmetallic Materials for Natural and Artificial Weathering Tests

2.2 ASCE Standard:

ASCE 7-02 Minimum Design Loads for Buildings and Other Structures⁴

3. Terminology

3.1 Definitions are in accordance with Terminologies D883, D1600, and E631, unless otherwise specified.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *polypropylene siding*—a shaped material, made principally from polypropylene homopolymer, or copolymer, which in some cases may contain fillers and/or reinforcements, that is used to clad exterior walls of buildings.

3.2.2 *self-supporting specimen*—a specimen that remains in place by its own structural characteristics both before and during the fire test.

3.2.3 *temperate northern climate*—in weather testing, a North American metropolitan area testing site located within 73 to 100° W longitude and 37 to 45° N latitude.

4. Materials and Manufacture

4.1 The siding shall be made principally of polypropylene compound, prepared from polypropylene homopolymer or copolymer.

³ The last approved version of this historical standard is referenced on www.astm.org.

⁴ Available from American Society of Civil Engineers (ASCE), 1801 Alexander Bell Dr., Reston, VA 20191.

4.2 Where polypropylene recycled plastic as defined in Guide **D5033** is used, the siding containing the polypropylene recycled plastic shall meet all the requirements in the sections on Terminology (Section 3), on Materials and Manufacture (Section 4), and on Physical Requirements (Section 5).

4.3 The polypropylene compound shall be compounded so as to provide the heat stability and weather exposure stability required for the siding market application.

5. Physical Requirements

5.1 *Color*—The color of the siding shall be within the defined color parameters for the specific color agreed upon between the purchaser and the seller.

5.2 *Impact Resistance*—Siding shall have a minimum impact strength of 35 in-lbf when tested in accordance with 6.2.

5.3 *Weathering*—The siding shall be free of any visual surface or structural changes such as peeling, chipping, cracking, flaking, or pitting when tested in accordance with 6.3.

5.4 *Windload Resistance*—The siding panel(s) shall be able to withstand a minimum static test pressure of 15.73 lbf/ft² (753 Pa) when tested in accordance with 6.4.

5.4.1 The static pressure of 15.73 lbf/ft² (753 Pa) was established to withstand structural loading conditions that occur in 110 mph (177 km/h) wind-zone areas for elevations of 30 ft (9.1 m) and less in exposure category B, and is equivalent to 29.12 lbf/ft² (1394 Pa) design pressure.

5.4.1.1 The design-pressure values can be negative (suction loads) or positive. The negative values are the largest in magnitude and are the values used for this specification.

5.4.1.2 Refer to **Annex A1** for an explanation of how the negative design pressure was established and for applications where the effective negative design pressure as specified in ASCE 7-02 is greater than 29.12 lbf/ft² (1394 Pa) (for example, wind-zone areas greater than 110 mph (177 km/h) or elevations above 30 ft (9.1 m), or exposures other than exposure category B)

5.5 *Surface Flame Spread*—The siding shall exhibit a flame spread index not exceeding 200 when tested in accordance with 6.5.

6. Test Methods

6.1 *General*—The inspection and test procedures contained in this section are used to determine the conformance of products to the requirements of this specification.

NOTE 3—Each producer who represents its products as conforming to this specification typically uses statistically based sampling plans that are appropriate for each manufacturing process to verify ongoing compliance. Specifications for quality control programs are beyond the scope of this standard specification. Additional sampling and testing of the product, as agreed upon between the purchaser and the manufacturer, are not precluded by this section.

6.2 *Impact Resistance:*

6.2.1 *Conditioning and Test Conditions*—Condition the test specimen in accordance with Specification **D4101** and test under those conditions unless otherwise specified herein. Conditioning time for tests shall be at least 4 hours.

6.2.2 *Impact Test*—Test impact resistance of siding in accordance with Test Method **D4226**, Procedure A, impactor head configuration H.25. Increments of 4 in.-lb (for example, 0.5 in. height increments with an 8 lb falling weight) shall be used. Minimum sample dimensions shall be 1.5 by 1.5 inch. Samples shall be tested with the normally exposed surface facing up.

6.3 *Weatherability*—Expose test specimens with a plywood backing at an angle of 45° South in the northern hemisphere in accordance with Practices **D1435** and **G147** for two years in at least three widely different climatic areas. Test sites shall be located in a hot, dry climate, such as Phoenix, AZ; a hot, humid climate such as Miami, FL; and a temperate, northern climate such as Cleveland, OH or Louisville, KY.

6.3.1 Specimens shall be a minimum of 2 by 3¾ in. (51 by 95 mm).

6.3.2 Samples shall be representative of the product to be evaluated. Samples shall be taken either from commercial products or from laboratory samples. Laboratory samples shall be produced in the same manner as the commercial products to be evaluated.

NOTE 4—Production of laboratory samples in the same manner includes use of the same method of forming the product. For example, if the commercial product is extruded, the laboratory specimen shall be extruded; if the commercial product is injection molded, the laboratory specimen shall be injection molded, and so forth.

6.4 *Windload Resistance*—Conduct the test on windload resistance of the finished siding in accordance with Test Method **D5206**.

6.5 *Surface Flame Spread*—Conduct the test on surface flame spread characteristics in accordance with Test Method **E84**. The test specimen shall either be self-supporting by its own structural characteristics or held in place by added supports along the test specimen surface.

7. Packaging and Package Marking

7.1 The siding shall be packed in such a manner as to provide reasonable protection against damage in ordinary handling, transportation, and storage.

7.2 Provisions of Practice **D3892** shall apply to this specification.

7.3 To aid identification of polypropylene siding 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. Use the following statement, or equivalent, when sufficient space is available: “This polypropylene siding conforms to all the requirements established in ASTM Specification D7254 developed cooperatively with the industry and published by ASTM. Full responsibility for the conformance of this product to the specification is assumed by (name and address of producer or distributor).”

7.4 Use the following abbreviated statement, or equivalent, when available space on labels is insufficient for the full statement: “Conforms to ASTM Specification D7254-XX (name and address of producer or distributor).”