



Designation: D 6712 – 01

Standard Specification for Ultra-High-Molecular-Weight Polyethylene (UHMW-PE) Solid Plastic Shapes¹

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INTRODUCTION

This specification is intended to be a means of defining Ultra-High-Molecular-Weight² Polyethylene (UHMW-PE) solid plastic shapes for commercial use.

1. Scope

1.1 This specification covers requirements and test methods for the material and properties of solid plastic shapes manufactured from UHMW-PE.

1.2 The properties included in this specification are those required for the compositions covered and are derived from molded samples or fabricated from sheet, rod and profiles. Requirements necessary to identify particular characteristics important to specialized applications may be described by using the classification system given in Section 4.

1.3 This specification allows for the use of recycled plastics (as defined in Guide D 5033).

1.4 The values are stated in SI units and are regarded as the standard in all property tables. For reference purposes, English units are also included in Table S-UHMW-PE and Table A.

1.5 The following precautionary caveat pertains only to the test method portions 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 requirements prior to use.*

NOTE 1—There is no ISO equivalent standard.

2. Referenced Documents

2.1 ASTM Standards:

- D 618 Practice for Conditioning Plastics for Testing³
- D 638 Test Method for Tensile Properties of Plastics³

¹ This specification is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.20 on Plastic Products (Section D20.20.02).

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² Ultra High Molecular Weight refers to a polyethylene resin meeting the requirements of Specification D 4020.

³ Annual Book of ASTM Standards, Vol 08.01.

D 883 Terminology Relating to Plastics³

D 1600 Terminology for Abbreviated Terms Relating to Plastics³

D 3892 Practice for Packaging/Packing of Plastics⁴

D 4000 Classification System for Specifying Plastic Materials⁴

D 4020 Specification for Ultra-High-Molecular-Weight Polyethylene Molding and Extrusion Materials⁴

D 5033 Guide for Development of ASTM Standards Relating to Recycling and Use of Recycled Plastic⁵

2.2 ISO Standard:

ISO 11542-2 Ultra-High-Molecular Weight Polyethylene (PE-UHMW) Moulding Materials—Part 2: Preparation of Test Specimens and Determination of Properties

3. Terminology

3.1 Definitions:

3.1.1 For definitions of other technical terms pertaining to plastics used in this specification, see Terminology D 883, D 1600, or Guide D 5033.

3.2 Definitions of Terms Specific to This Standard:

3.2.1 *additive, n*—any material added to the polymer such as processing aids, stabilizers, and colorants.

3.2.2 *recycled-plastic shape, n*—a product made from up to 100 % post-consumer material.

3.2.3 *regrind (plastic), n*—a product or scrap such as edge trim that have been reclaimed by shredding and granulating for use in-house.

3.2.4 *rod, n*—an extruded solid cylindrical shape with a minimum diameter of $\frac{1}{16}$ in.

3.2.5 *sheet, n*—flat stock greater than 10 mils thickness.

3.2.6 *solid plastic shape, n*—a product of various geometries made up of UHMW-PE, such as sheet, rod, and so forth.

⁴ Annual Book of ASTM Standards, Vol 08.02.

⁵ Annual Book of ASTM Standards, Vol 08.03.