



Designation: D7611/D7611M – 21

Standard Practice for Coding Plastic Manufactured Articles for Resin Identification¹

This standard is issued under the fixed designation D7611/D7611M; 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 reappraisal. A superscript epsilon (ϵ) indicates an editorial change since the last revision or reappraisal.

1. Scope*

1.1 This practice stipulates the types, names, and sizes of Codes for those material types specified in [Table 1](#).

1.2 The values stated in either SI units or inch-pound units are to be regarded separately as standard. The values stated in each system are likely not to be exact equivalents; therefore, each system shall be used independently of the other. Combining values from the two systems is likely to result in non-conformance with the standard.

1.3 *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.*

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

1.4 *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:*²

[D3418 Test Method for Transition Temperatures and Enthalpies of Fusion and Crystallization of Polymers by Differential Scanning Calorimetry](#)

[D4020 Specification for Ultra-High-Molecular-Weight Polyethylene Molding and Extrusion Materials](#)

¹ This practice is under the jurisdiction of ASTM Committee D20 on Plastics and is the direct responsibility of Subcommittee D20.95 on Recycled Plastics.

Current edition approved Dec. 1, 2021. Published January 2022. Originally approved in 2010. Last previous edition approved in 2020 as D7611/D7611M – 20. DOI:10.1520/D7611_D7611M-21.

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.

2.2 *ASTM Adjuncts:*

Adjunct to D7611/D7611M Standard Practice for Coding Plastic Manufactured Articles for Resin Identification³

3. Terminology

3.1 *Definitions:*

3.1.1 *Resin Identification Code (RIC Code)*—a molded, imprinted or raised symbol or wording that consists of an equilateral triangle, a Resin Identification Number, and an Abbreviated Term for polymeric material.

4. Significance and Use

4.1 Resin Identification Codes are used solely to identify the plastic resin used in a manufactured article. The intended manufactured articles include, but are not limited to, packaging.

4.1.1 [Fig. 1](#) and [Table 1](#) present the appropriate information on the way the RIC is to be incorporated onto the product and the available resin identification designations.

4.2 Resin Identification Codes are not “recycle codes.” The Resin Identification Code is, though, an aid to recycling. The use of a Resin Identification Code on a manufactured plastic article does not imply that the article is recycled or that there are systems in place to effectively process the article for reclamation or re-use. The term “recyclable” or other environmental claims shall not be placed in proximity to the Code.

4.3 This practice is based upon the system developed in 1988 by the Society of the Plastics Industry, Inc (SPI). It is possible that some states or countries will have incorporated the original SPI practice into statute or regulation. In those situations, that statute or regulation takes precedence over this standard.















4.4 This practice shall only apply to new tooling. Existing molds that already incorporate older versions of the SPI RIC may be modified, but modification is not required.

4.5 Assign number for manufactured items, not for adhesives or coatings. Do not code labels for resin of the label.

³ Available from ASTM International Headquarters. Order Adjunct No. [ADJD761114-EA](#). Original adjunct produced in 2010. Adjunct last revised in 2014.

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

TABLE 1 Resin Identification Codes

Resin Identification Number	Resin	Resin Identification Code –Option A	Resin Identification Code –Option B
1	Poly (ethylene terephthalate)	 1 PETE	 01 PET
2	High density polyethylene	 2 HDPE	 02 PE-HD
3	Poly (vinyl chloride)	 3 V	 03 PVC
4	Low density polyethylene	 4 LDPE	 04 PE-LD
5	Polypropylene	 5 PP	 05 PP
6	Polystyrene	 6 PS	 06 PS
7	Other resins	 7 OTHER	 07 0

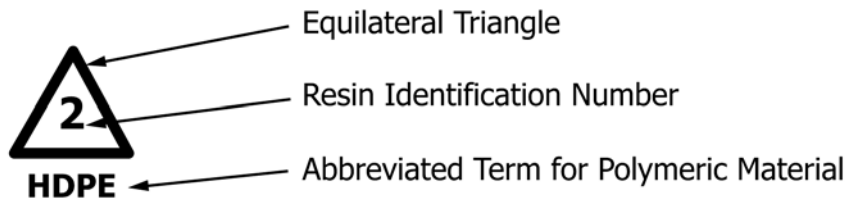


FIG. 1 Example of a Resin Identification Marker

4.6 Section 6 addresses the process to add new numbers to the Resin Identification Code.

5. Requirements

5.1 The Code is to be molded, formed or imprinted on the manufactured article.

5.2 The Code shall be clear and legible.

5.3 The size of the Code shall normally equal or exceed 12 mm [$\frac{1}{2}$ in.] in height and width.

NOTE 2—For small parts or components, it is not always possible to conform to these size requirements. In these cases, it is important to maximize the size and legibility of the Code.

5.4 The Code shall be placed in an inconspicuous location on the manufactured article, such as the bottom or the back, where it will not be obvious to the consumer at the point of purchase so it does not influence the consumer's buying decision.

5.5 The Code shall be as shown in Table 1. Option A is commonly found in North America. Option B is often found internationally. Either option is acceptable.

5.6 The numbering system within the equilateral triangle shall correspond to the generic class of resins shown in Table 1.

5.7 The Code with the Resin Identification Number “1” and the Abbreviated Term “PETE” or “PET” is reserved for manufactured articles produced from thermoplastic polyesters made from terephthalic acid (or dimethyl terephthalate) and monoethylene glycol wherein the sum of terephthalic acid (or dimethyl terephthalate) and monoethylene glycol reacted constitutes at least 90 percent of the mass of monomer reacted to form the polymer. Polyethylene terephthalate, PETE or PET, resins must exhibit a melting peak temperature between 225°C and 255°C when tested in accordance with procedure 10.1 in Test Method D3418 when heating the sample at a rate of 10°C/minute.

5.8 The Code with the Resin Identification Number “2” and the Abbreviated Term “HDPE” is reserved for manufactured articles produced from thermoplastic polyethylene plastics and exhibit a non-foamed, unfilled, resin-only portion of the structure density of 0.941 g/cm³ or greater, measured or calculated. With ethylene always the majority monomer, other alpha olefin comonomers are permitted as minority monomer components. HDPE articles are permitted to contain minority amounts of other thermoplastic polyolefin plastics. Ultra-high molecular weight polyethylene, UHMWPE, materials as defined in Specification D4020, are excluded as #2 HDPE.

5.9 The Code with the Resin Identification Number “3” and the Abbreviated Term “V” is reserved for manufactured articles produced from vinyl chloride resins generally referred to as poly(vinyl chloride) or PVC.

5.10 The Code with the Resin Identification Number Code “4” and the Abbreviated Term “LDPE” is reserved for manufactured articles produced from thermoplastic polyethylene plastics and exhibit a non-foamed, unfilled, resin-only portion of the structure density of less than 0.941 g/cm³, measured or calculated. With ethylene always the majority monomer, other alpha olefin comonomers are permitted as minority monomer components. Articles of LLDPE, VLDPE, and MDPE are grouped with LDPE as #4. LDPE articles are permitted to contain minority amounts of other thermoplastic polyolefin plastics.

5.11 The Code with the Resin Identification Number “5” and the Abbreviated Term “PP” is reserved for manufactured articles produced from thermoplastic propylene plastics with or without ethylene-propylene rubber (EPR). PP can be homopolymer, random copolymers, or heterophasic (impact) copolymers with EPR intimately distributed within the matrix. Heterophasic copolymers are often erroneously referred to as block copolymers. Propylene is always the majority monomer. PP articles are permitted to contain minority amounts of other thermoplastic polyolefin plastics.

5.12 The Code with the Resin Identification Number “6” and the Abbreviated Term “PS” is reserved for manufactured articles produced from plastics made with styrene monomer constituting at least 60 % by weight of the plastic used to make the items. PS can include amorphous homopolymer of styrene (GPPS), styrene butadiene block or graft copolymers, and high impact polystyrene (HIPS). Article form, cellular or solid, does not alter the RIC designation. Resin Identification Number “6” and Abbreviated Term “PS” does not include styrene butadiene thermoset rubber or acrylonitrile butadiene styrene (ABS) copolymers or other copolymers including acrylonitrile.

5.13 The Code with the Resin Identification Number “7” and the Abbreviated Term “OTHER” is reserved for manufactured articles produced from any polymer chemistry not described by any other Code.

6. Addition of Code Numbers

6.1 Assign numbers sequentially from the last assigned integer number with no subsets.

6.2 Do not assign new numbers for resins already included as members of a previous number code other than “7.”