



Standard Practice for Generic Marking of Plastic Products¹

This standard is issued under the fixed designation D 1972; 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 covers a system for uniform marking of products that have been fabricated from polymeric materials. Provision for the process or processes to be used for marking is outside the scope of this practice.

NOTE 1—Precise details of the marking, for example, the minimum size of the item to be marked, the size of the lettering, and the appropriate location of the marking, may be the subject to agreement between the manufacturer and the user.

1.2 The abbreviated terms used are to provide generic identification of the polymer(s).

1.3 This practice is especially pertinent for use with durable plastic components of products. This practice is not intended to supplant, replace, or in any way interfere with the requirements found in legislation for marking or labeling of packaging.

1.4 *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—In many respects, this practice is similar to ISO 11469.

2. Referenced Documents

2.1 ASTM Standards:

D 883 Terminology Relating to Plastics²

D 1600 Terminology for Abbreviated Terms Relating to Plastics²

D 3935 Specification for Polycarbonate (PC) Unfilled and Reinforced Material³

D 4000 Classification System for Specifying Plastic Materials³

2.2 ISO Standards:

ISO 472:1988, Plastics—Vocabulary⁴

ISO/DIS 1043-1:1995, Plastics—Symbols and Abbreviated Terms—Part 1: Basic Polymers and Their Special Characteristics⁴

ISO 1043-2:1991 Plastics—Symbols—Part 2: Fillers and

Reinforcing Materials⁴

ISO 1043-3:1988 Plastics—Symbols—Part 3: Plasticizers⁴
ISO/DIS 1043-4: 1996 Plastics—Symbols—Part 4: Flame Retardants⁴

ISO 1087:1990 Terminology—Vocabulary⁴

ISO 8604:1988 Plastics—Prepregs—Definition of Terms and Symbols for Designations⁴

ISO 11469:1993 Plastics—Generic Identification and Marking of Plastics Products⁴

3. Terminology

3.1 *Definitions:* Definitions are in accordance with Terminology D 883 unless otherwise specified.

3.2 *Definitions of Terms Specific to This Standard:*

3.2.1 *abbreviated term*—a term resulting from the omission of any part of a term while designating the same concept. (See ISO 1087.)

3.2.2 *Discussion*—“Abbreviated term” is a general term that includes abbreviations, initialisms, and acronyms (initialisms that can be pronounced as a word). International Standard definitions for each of these terms is included in ISO 1087.

3.2.3 *bulk molding compound (BMC)*—a product composed of thoroughly mixed resins and chopped reinforcing fibers with or without particulate fillers, supplied in mass form, capable of being molded under heat and pressure. (See ISO 8604.)

3.2.4 *matrix polymer*—the continuous phase in a polymeric blend or alloy.

3.2.5 *plastic products*—articles or stock shapes of plastic materials intended for useful purposes.

3.3 *Abbreviations*—Abbreviated terms used in this practice are from Terminology D 1600 and ISO 1043.

4. Significance and Use

4.1 This marking system is to provide assistance in identification of products for making subsequent decisions as to handling, recycling, or disposal.

4.2 The system is based on standard abbreviated terms relating to plastics published in the ISO 1043 series of standards and in ASTM D 1600.

4.3 A system for expanded generic marking is described in nonmandatory Appendix X1.

5. System for Marking Products

5.1 Plastic products may be marked at some place on the surface with the abbreviated term(s) set between the punctuation marks “>” and “<” (greater-than or less-than signs,

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² *Annual Book of ASTM Standards*, Vol 08.01.

³ *Annual Book of ASTM Standards*, Vol 08.02.

⁴ Available from American National Standards Institute, 11 W. 42nd St., 13th Floor, New York, NY 10036.

sometimes referred to as reversed angled brackets). For example, for products made from acrylonitrile-butadiene-styrene polymer use:

>ABS<

5.2 Products made from polymer blends or alloys may be marked with the appropriate abbreviated terms for the constituent polymers that are present in a concentration of more than one percent with the main component of the matrix in first place followed by the other components in descending order according to their mass fractions, separated by one or more plus signs and set off as described in 5.1.

5.2.1 *Example*—For an alloy of polycarbonate and acrylonitrile-butadiene-styrene in which the polycarbonate is the matrix polymer with the acrylonitrile-butadiene-styrene being dispersed therein use the identification:

>PC + ABS<

5.3 Products made from compositions containing a single filler, reinforcing, or other modifying material in a concentration of more than one percent by mass shall be marked with the abbreviated term for the polymer, followed by a dash, then the abbreviated term or symbol for the additive, according to the appropriate part of ISO 1043, with its percentage by mass, arranged as shown in the example and set off as described in 5.1.

5.3.1 *Example*—For a polypropylene containing 30 mass percentage of mineral powder use:

>PP – MD30<

5.4 Products made from compositions containing a mixture of fillers, reinforcing agents, or other additives such as flame retardants, plasticizers, etc. in which the concentration of individual additives is more than one percent by mass, may be marked to show the presence of these additives preferably by use of parentheses as shown in the examples. Presence of a flame retardant is indicated by “FR”. The “FR” should be followed by the code number to identify the flame retardant as shown in Example 2.

5.4.1 *Example 1*—For a polyamide 66 containing a mixture of 15 mass percentage of mineral powder (MD) and 25 mass percentage of glass fiber (GF) use the identification:

>PA66 – (GF25 + MD15)<

or:

>PA66 – (GF + MD)40<

5.4.2 *Example 2*—For the composition of Example 1 that also contains red phosphorus as a flame retardant use the identification shown as follows. The code for red phosphorus is from ISO/DIS 1043-4.

>PA66 – (GF25 + MD15) – FR(52)<

5.4.3 *Example 3*—For a BMC with 50 mass percentage of filler (MD) and 25 mass percentage of glass fibers (GF) use the identification:

>UP (MD50 + GF25)<

5.5 Products that comprise two or more plastic components, some of which are not readily visible, shall be marked so that the primary visible material is identified first, by the system specified in 5.1, followed by identification of the other material(s) with the individual identification(s) separated by a comma. The main component by mass is identified by underlining.

5.5.1 *Example*—For a product made of three components, the visible one is a thin coating of poly(vinyl chloride) over a polyurethane containing an insert of acrylonitrile-butadiene-styrene that is the major component by mass, use:

>PVC, PUR, ABS <

5.6 *Method of Marking*—The marking may be made either during molding by having the appropriate symbol included in the mold design, or by embossing, or by melt imprinting, or by other legible and indelible marking of the polymer.

6. Products That Require an Explicit Identification of the Material Used to Make the Product

6.1 In some situations, safety considerations or needs for effective identification of the material require a level of detail beyond that described in Section 5 or feasible with the expanded generic marking system described in Appendix X1. To meet this need an enhanced system is described in Appendix X2.

7. Keywords

7.1 identification; marking; plastics; recycling

APPENDIXES

(Nonmandatory Information)

X1. EXPANDED SYSTEM FOR GENERIC MARKING OF PLASTIC PRODUCTS

X1.1 When a more detailed description of the plastic is needed, an expanded system may be used that permits a more detailed description of the polymer. For plastics described by standard specifications using Classification D 4000 format or any other line call-out system, the line call-out should be used. Simply add an additional line to include this call-out information.

X1.1.1 *Example*—For a computer housing made from a

flame-resistant polycarbonate molding composition containing less than one mass percentage of flame retardant and release agent, having a melt flow rate between 12 and 20, and a UL flammability rating of V-0 at 1.60 mm and using the principles of Classification D 4000 and a material standard (in this example Specification D 3935) the expanded marking would be:

>PC – FR<

X2. ENHANCED MARKING SYSTEM

X2.1 An occasional need for explicit detailed identification of the material used to make a plastics product is mentioned in Section 6. To meet this need, the marking systems described in Section 5 and Appendix X1 may be enhanced by including on the second line an optional additional explicit commercial identification of the material used to make the product.

X2.1.1 *Example*—For the computer housing described in the example of Appendix X1, it is desired to have an explicit identification of the material used to make the product. For this situation use:

>PC – FR<

Made from XXX – YYY PC0123FL410

where XXX-YYY may be a material number or a commercial identification of the resin used to make the product, or

both. The identification may be a brand name, a company's commercial code name, a trademark, or similar detail. Use of a registered trademark in the identification shall require a standard indication of its status as intellectual property and should include the generic for the trademark. If this enhanced marking system is used, the primary marking preferably shall include information provided for in the expanded generic marking system described in Appendix X1 as shown in the example previously given.

NOTE X2.1—"Made from ... resin" needs to be used with the commercial identification in order to emphasize that the state of the product may not be fully identical to the original material it is made from, since changes to the material may have occurred due to processing conditions, surface finishing, imprinting, labeling, or through alterations during its use.

SUMMARY OF CHANGES

Committee D-20 has identified the location of selected changes to this practice since the last issue that may impact the use of this practice:

D 1972 – 97:

- (1) Added Section 3, the required section on terminology.
- (2) In Section 5, added some examples including thermoset materials.
- (3) Reworded some of the paragraphs to bring the terminology into conformance with standards.
- (4) In Appendix X1, added optional provision for an expanded generic marking system.

(5) Added a new Appendix X2, an optional system designed to provide a standard way of providing explicit identification of the material used to make a product.

(6) Deleted Table 1 and added reference to appropriate standards, rather than duplicate the partial list of abbreviated terms from Terminology D 1600 or ISO 1043 that had been included.

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