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GB/T 16288-2008

Replacing GB/T 16288-1999

Marking of Plastics Products

塑料制品的标志

**(ISO 11469:2000,
Generic identification and marking of plastics products, MOD)**

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Standardization Administration of the People's Republic of China.**

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Foreword

This Standard modifies and adopts ISO 11469:2000 "Plastics - Generic identification and marking of plastics products".

This Standard makes some content expansion and editorial modifications when adopting ISO 11469:2000. The relevant clauses are marked with vertical single-lines at the page-margin.

The main differences between this Standard and ISO 11469:2000 are as follows:

— Replace the foreword of the international standard with national foreword of China;

— Add five national standards of China in the normative references;

— Add seven terms and definitions of plastic products;

— Add the composition, figures and names, functional explanation and supplemental explanation of markings;

— Add marking figures and names in Table 1;

— Add the abbreviated terms, names and code numbers of plastics in Appendix A.

This Standard replaces GB/T 16288-1996 "Marking for Plastic Packing Products Recycling".

The main changes between this Standard and GB/T 16288-1996 are as follows:

— Standard name is changed from "Marking for Plastic Packing Products Recycling" into "Marking of Plastics Products";

— The scope is changed from plastic packing products into plastic products;

— The labels equivalently adopt that of ISO 11469:2000;

— Add the requirements on symbols and markings of plastics for food use and medical use;

— Add the requirements on functional explanation and supplemental explanation.

Appendix A of this Standard is normative.

This Standard was proposed by and shall be under the jurisdiction of China Machinery Industry Federation.

Main drafting organizations of this Standard: Institute of Plastics Processing &

Application of Light Industry (IPPA), China Plastics Processing Industry Association (CPPIA), Foshan Plastics Group Co., Ltd., Ningbo Lisi Plastic & Rubber Co., Ltd., and Ningbo Tianan Biologic Material Co., Ltd.

Main drafting staffs of this Standard: Weng Yunxuan, Liao Zhengpin, Chen Jiaqi, Shi Yacheng, Chen Qian, and Li Lixin.

The previous edition replaced by this Standard is as follows:

— GB/T 16288-1996.

Marking of Plastics Products

1 Scope

This Standard specifies a marking system for plastics products. The system covers the dimension, colors, quantity and setting location of marking.

Provision for the process method or processing to be used for marking is out of the scope of this Standard.

Note: The marking system is intended to help identify plastics products for subsequent decisions concerning handling waste recovery or disposal.

2 Normative References

The following normative documents contain provisions which, through reference in this text, constitute provisions of this Standard. For dated references, subsequent amendments or revisions of these publications do not apply. However, parties who enter into agreement based on this Standard are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies.

GB/T 1844.1-1995 Symbols of plastics and resins - Part 1: Basic polymers and their special characteristics (neq ISO 1043-1:1987)

GB/T 1844.2-1995 Symbols of plastics and resins - Part 2: Fillers and reinforcing materials (neq ISO 1043-2:1987)

GB/T 1844.3-1995 Symbols of plastics and resins - Part 3: Plasticizers (neq ISO 1043-3:1987)

GB/T 2035-1996 Terms and definitions for plastics (eqv ISO 472:1988)

GB/T 16903.1-1997 Rules for the presentation of graphical symbols - Graphical symbols for use on graphical signs - Part 1: Creation of graphical signs

ISO 1043-1 Plastics - Symbols and abbreviated terms - Part 1: Basic polymers and their special characteristics

ISO 1043-2 Plastics - Symbols and abbreviated terms - Part 2: Fillers and reinforcing materials

ISO 1043-3 Plastics - Symbols and abbreviated terms - Part 3: Plasticizers

ISO 1043-4 Plastics - Symbols and abbreviated terms - Part 4: Flame retardants

3 Terms and Definitions

For the purpose of this Standard, the terms and definitions given in GB/T 2035-1996 AND the following terms and definitions apply.

3.1 Reworked plastics

Thermoplastic products that are prepared from trimmings or rejected moldings that has been reprocessed in a fabricator' plant, after having been previously processed in a plant by moulding, extrusion, etc.

Note: In many speculations the use of reworked material is limited to clean plastic that meets the requirements specified for the virgin material and yields a product essentially equal in quality to one made from only virgin material.

3.2 Rerecycled plastics

Thermoplastic products that are prepared from discarded plastics which have been cleaned and ground.

Note: Rerecycled plastics may or may not be reformulated by the addition of fillers, plasticizers, stabilizers, pigments, etc.

3.3 Repeatable used plastics

Plastic products that can be multiple-reused after formed, and their properties meet the requirements of relevant standards.

3.4 Recoverable plastics

Plastic products that can be recovered and reworked after discarded.

3.5 Non-recoverable plastics

Plastic products that do not allow to recycle and reprocess.

3.6 Food using plastics

Plastic products that contact with food, such as: tablewares, dishwares, production pipelines, conveyer belts, packing materials, etc.

3.7 Medicine using plastics

Plastic products that are used for extracorporeal medical treatment or embedded in the human body.

Example 1: For a polypropylene containing 30 % by mass-fraction of mineral powder (PD), use

>PP-MD30<

For compositions with a mixture of fillers or reinforcing agents or both, the marking to show the presence of these additives shall be between parentheses.

Example 2: For a polyamide 66 containing a mixture of 15 % by mass-fraction of mineral powder and 25 % by mass-fraction of glass fibre, use

>PA66-(GF25+MD15)< or >PA66-(GF+MD)40<

Example 3: For a thermoset moulding compound based on unsaturated polyester with 50 % by mass-fraction of mineral powder (MD) and 25 % by mass-fraction of glass fibre (GF), use

>UP (MD50+GF25)< or >UP-(MD+GF)75<

5.6.4.2 Plasticizers

Compositions containing plasticizers shall be marked with the abbreviated term for the polymer followed by a hyphen, then the symbol "P" followed by the abbreviated term of the plasticizer in parentheses and set out as described in 5.6.1, as given in GB/T 1844.3-1995.

Example: For a PVC containing dibutyl phthalate as plasticizer, use

>PVC-P(DBP)<

5.6.4.3 Flame retardants

Compositions containing flame retardants shall be marked with the abbreviated term for the polymer followed by a hyphen, then the symbol "FR" followed by the code number of the flame retardant in parentheses and set out as described in 5.6.1, as given in ISO 1043-4:1998.

Example: For a polyamide 66 containing a mixture of 15 % by mass-fraction of mineral powder and 25 % by mass-fraction of glass fibre and, additionally, red phosphorus (52) as a flame retardant, use

>PA66-(GF25+MD15)FR(52)< or >PA66-(GF+MD)40FR(52)<

5.6.4.4 Products with two or more components difficult to separate

Products that comprise two or more 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 5.6.1, followed by identification of the other materials with the individual identifications separated by a comma. The main component by mass-fraction shall be

identified by underlining.

Example: For a product made of three components, the visible one being 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<

5.6.4.5 Recoverable plastics

Compositions containing recoverable plastic products or recoverable plastics shall be marked together with the abbreviated term for the polymer followed by a hyphen, then the symbol "R" followed by the abbreviated term of the recoverable plastics in parentheses and set out as described in 5.6.1.

Example 1: For a polypropylene product containing 30 % by mass-fraction of recoverable polypropylene, use

>PP-PP(R)30<

For compositions with a mixture of recoverable plastic products, the marking to show the presence of these additives shall be between parentheses.

Example 2: For a polyethylene containing a mixture of 15 % by mass-fraction of PP and 25 % by mass-fraction of PE, use

>PE-(PE(R)25+PP(R)15)<

5.7 Marking size

Markings shall be designed in accordance with the requirements of GB/T 16903.1-1997, or reduced or amplified in corresponding proportion according to the actual requirements.

5.8 Marking colour

General colour is black, other striking colours can also be used, all of them shall be free from fading or shedding. The colour of moulding plastic products marking may be the same as plastic products.

5.9 Method of marking

Moulding, printing or spraying methods may be available, however, marking method shall not influence the property of plastic products.

5.10 Quantity of marking

Generally, one marking for a product, quantity of marking may be increased if necessary.

5.11 Position of marking

Marking position shall be in accordance with the requirements of product standard. Generally, marking is located at the obvious position of plastic products. In the case of plastic products are difficult or unable to set out, the marking may be set out on their packaging.

Appendix A

(Normative)
List of Material Terms, Corresponding Abbreviated Terms and Code Numbers

List of material terms, corresponding abbreviated terms and code numbers are shown in Table A.1.

Table A.1 List of Material Terms, Corresponding Abbreviated Terms and Code Numbers

Materials terms	Abbreviated terms	Code numbers
Poly(ethylene terephthalate)	PET	01
Polyethylene, high density	PE-HD	02
Poly(vinyl chloride)	PVC	03
Polyethylene, low density	PE-LD	04
Polypropylene	PP	05
Polystyrene	PS	06
Acrylonitrile-butadiene plastic	AB	07
Acrylonitrile-butadiene-acrylate plastic	ABAK	08
Acrylonitrile-butadiene-styrene plastic	ABS	09
Acrylonitrile-chlorinated polyethylene-styrene	ACS	10
Acrylonitrile-(ethylene-propylene-diene)-styrene plastic	AEPDS	11
Acrylonitrile-methyl methacryate plastic	AMMA	12
Acrylonitrile-stytene-acrylate plastic	ASA	13
Cellulose acetate	CA	14
Cellulose acetate butyrate	CAB	15
Cellulose acetate propionate	CAP	16
Cellulose formaldehyde	CEF	17
Cresol-formaldehyde resin	CF	18
Carboxymethyl cellulose	CMC	19
Cellulose nitrate	CN	20
Cycloolefin copolymer	COC	21
Cellulose propionate	CP	22
Cellulose triacetate	CTA	23
Ethylene-propylene plastic	E/P	24
Ethylene-acrylic acid plastic	EAA	25
Ethylene-butyl acrylate plastic	EBAK	26
Ethyl cellulose	EC	27
Ethylene-ethyl acrylate plastic	EEAK	28
Ethylene-methacrylic acid plastic	EMA	29
Epoxide; epoxy resin or plastic	EP	30
Ethylene-tetranuoroethylene plastic	ETFE	31

Polyethylene, medium density	PE-MD	73
Poly (ethylene naphthalate)	PEN	74
Poly (ethylene oxide)	PEOX	75

Table A.1 (continued)

Materials terms	Abbreviated terms	Code numbers
Poly (ethylene succinate)	PES	76
Polyesterurethane	PESTUR	77
Polyethersulfone	PESU	78
Polyethylene, ultra high molecular weight	PE-UHMW	79
Polyetherurethane	PEUR	80
Polyethylene, very low density	PE-VLD	81
Phenol-formaldehyde resin	PF	82
Perfluoro alkoxyl alkane resin	PFA	83
Poly (glycolic acid)	PGA	84
Polyhydroxyalkanoic or polyhydroxyalkanoates	PHA	85
Polyhydroxybutyric acid or polyhydroxybutyrate	PHB	86
Poly-(hydroxybutyrate-eo-hydroxyvalerate)	PHBV	87
Polyimide	PI	88
Polyisobutylene	PIB	89
Polyisocyanurate	PIR	90
Polyketone	PR	91
Polylactic acid or polylactide	PLA	92
Polyrnethacrylimide	PMI	93
Poly(methyl methacrylate)	PMMA	94
Poly-N-methylmethacrylimide	PMMI	95
Poly-4-methylpentene-1	PMP	96
Poly-α-methylstyrene	PMS	97
Polyoxymethylene; polyacetal; polyformaldehyde	POM	98
Carbon dioxide and propylene copolymer	PPC	99
Poly(p-dioxanone)	PPDO	100
Poly(phenylene ether)	PPE	101
Polypropylene, expandable	PP-E	102
Polypropylene, high impact	PP-HI	103
Poly(propylene oxide)	PPOX	104
Poly(phenylene sulfide)	PPS	105
Poly(phenylene sulfone)	PPSU	106
Polystyrene, expandable	PS-E	107
Polystyrene, high impact	PS-HI	108
Polysulfone	PSU	109
Poly tetrafluoroethylene	PTFE	110
Poly(tetramethylene adipate/terephthalate)	PTMAT	111
Poly(trimethylene terephthalate)	PTT	112
Polyurethane	PUR	113

Poly(vinyl acetate)	PVAC	114
Poly(vinyl alcohol)	PVAL	115
Poly(vinyl butyral)	PVB	116

Table A.1 (continued)

Materials terms	Abbreviated terms	Code numbers
Poly(vinyl chloride), chlorinated	PVC-C	117
Poly(vinyl chloride), unplasticized	PVC-U	118
Poly(vinylidene chloride)	PVDC	119
Poly(vinylidene fluoride)	PVDF	120
Poly(vinyl fluoride)	PVF	121
Poly(vinyl formal)	PVFM	122
Poly-N-vinylcarbazole	PVK	123
Poly-N-vinylpyrrolidone	PVP	124
Styrene-acrylonitrile plastic	SAN	125
Styrene-butadiene plastic	SB	126
Silicone plastic	SI	127
Styrene-maleic anhydride plastic	SMAH	128
Styrene-α-methylstyrene plastic	SMS	129
Urea-formaldehyderesin	UF	130
Unsaturated polyester resin	UP	131
Vinyl chloride-ethylene plastic	VCE	132
Vinyl chloride-ethylene-methyl acrylate plastic	VCEMAK	133
Vinyl chloride-ethylene-vinyl acrylate plastic	VCEVAC	134
Vinyl chloride-methyl acrylate plastic	VCMAK	135
Vinyl chloride-methyl methacrylate plastic	VCMMA	136
Vinyl chloride-octyl acrylate plastic	VCOAK	137
Vinyl chloride-vinyl acetate plastic	VCVAC	138
Vinylchloride-vinylidene chloride plastic	VCVDC	139
Vinyl ester resin	VE	140
Note: For the marking of material terms with code numbers, the code number may be omitted or expressed with abbreviated terms; abbreviated terms as given in GB/T 1844.1~1844.4-1995.		

END

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