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Plastics — Generic identification and marking of plastics products

Plastiques — Identification générique et marquage des produits en matière plastique

ICS: 83.080.01

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ISO/CEN PARALLEL PROCESSING

This draft has been developed within the International Organization for Standardization (ISO), and processed under the **ISO lead** mode of collaboration as defined in the Vienna Agreement.

This draft is hereby submitted to the ISO member bodies and to the CEN member bodies for a parallel five month enquiry.

Should this draft be accepted, a final draft, established on the basis of comments received, will be submitted to a parallel two-month approval vote in ISO and formal vote in CEN.

To expedite distribution, this document is circulated as received from the committee secretariat. ISO Central Secretariat work of editing and text composition will be undertaken at publication stage.

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 11469 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 1, *Terminology*.

This second/third/... edition cancels and replaces the first/second/... edition (), [clause(s) / subclause(s) / table(s) / figure(s) / annex(es)] of which [has / have] been technically revised.

Plastics — Generic identification and marking of plastics products

1 Scope

1.1 This International Standard specifies a system of uniform marking of products that have been fabricated from plastics materials. Provision for the process or processes to be used for marking is outside the scope of this standard.

NOTE Precise details of the marking, e.g. the minimum size of the item to be marked, the size of the lettering, the appropriate location of the marking, are subject to agreement between the manufacturer and the user.

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

1.3 Generic identification of the plastics is provided by the symbols and abbreviated terms given in ISO 1043, parts 1 to 4.

NOTE If more detailed information for material identification is needed, additional marking of plastics products can be applied as defined in the appropriate product standard.

1.4 This International Standard is not intended to supplant, replace or in any way interfere with requirements for labelling found in legislation.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this International Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this International 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. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 472, *Plastics — Vocabulary*.

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*.

ISO 1087:1990, *Terminology — Vocabulary*.

3 Terms and definitions

For the purposes of this International Standard, the terms and definitions given in ISO 472 and the following terms and definitions apply.

3.1 Abbreviated term

term resulting from the omission of any part of a term while designating the same concept [ISO 1087:1990]

3.2 Plastics products

articles or stocks shapes of plastic materials for any type of application

4 Symbols and abbreviated terms

The symbols and abbreviated terms given in ISO 1043-1, ISO 1043-2, ISO 1043-3 and ISO 1043-4 shall be used for this International Standard. If an appropriate symbol or abbreviated term is not included in any of the parts of ISO 1043, such a symbol or abbreviated term from any available national or international standard shall be used. Based on the rule of symbol "REC" for polymer in ISO 1043-1, a similar rule is applied to a product with two or more components when it is regarded as a single recyclate.

5 Requirements

5.1 Marking system

5.1.1 Marking of products

If plastics products are marked, they shall be marked at some place on the surface with the appropriate standard symbol(s) or abbreviated term(s) set between the punctuation marks ">" and "<".

NOTE ">" and "<" are "greater than" and "less than" signs, respectively, often referred to in this context as reversed angled brackets.

5.1.2 Single-constituent products

Products made from a single polymer or copolymer shall be marked as specified in 5.1.1.

EXAMPLE 1 For acrylonitrile-butadiene-styrene polymer use

>ABS<

EXAMPLE 2 If plastic recyclate is included with the minimum amount x , the symbol "(REC)" is an option

>ABS< When the specific claim regarding recyclate is not intended to be declared.

>ABS(REC)< When the specific claim regarding recyclate is intended to be declared without specifying amount.

>ABS(REC x)< When the specific claim regarding recyclate with specific amount is intended to be declared.

5.1.3 Polymer blends or alloys

Products of polymer blends or alloys shall be marked with the appropriate abbreviated terms for the constituent polymers, with the main component 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 out as described in 5.1.1.

EXAMPLE 1 For an alloy of polycarbonate and acrylonitrile-butadiene-styrene in which the polycarbonate is the main polymer with the acrylonitrile-butadiene-styrene being dispersed therein, use

>PC+ABS<

EXAMPLE 2 If a specific claim of recycling content has to be declared, capital letters REC shall be followed by a number indicating the minimum percentage of 30 by mass

>PC+ABS(REC30)<

5.1.4 Compositions with special additives

5.1.4.1 Fillers or reinforcing agents

Compositions with a single filler or reinforcing material shall be marked with the abbreviated term for the polymer, followed by a hyphen, then the abbreviated term or symbol for the additive, in accordance with ISO 1043-2, with its percent by mass, arranged as shown in the examples and set out as described in 5.1.1.

EXAMPLE 1 For a polypropylene containing 30 % by mass of mineral powder, use

>PP-MD30<

EXAMPLE 2 For a high impact polystyrene containing 20 % by mass of glass fibre, use

>PS-HI-GF20<

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 (curved brackets) as shown in examples 2 and 3.

EXAMPLE 3 For a polyamide 66 containing a mixture of 15 % by mass of mineral powder and 25 % by mass of glass fibre, use

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

EXAMPLE 4 For a thermoset moulding compound based on unsaturated polyester with 50 % by mass of mineral powder (MD) and 25 % by mass of glass fibre (GF), use

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

5.1.4.2 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, as given in ISO 1043-3.

EXAMPLE For a PVC containing dibutyl phthalate as plasticizer, use

>PVC-P(DBP)<

5.1.4.3 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, as given in ISO 1043-4.

EXAMPLE 1 For a polyamide 66 containing a mixture of 15 % by mass of mineral powder and 25 % by mass of glass fibre and, additionally, red phosphorus (52) as a flame retardant, use

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

EXAMPLE 2 If a specific claim of recycling content has to be declared, capital letters REC shall be followed by a number indicating the minimum percentage of 30 by mass

>PA66-(GF25+MD15)FR(52)(REC30)< or >PA66-(GF+MD)40FR(52) (REC30)<

5.1.4.4 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 5.1.1, followed by identification of the other material(s) with the individual identification(s) separated by a comma. The main component by mass 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<

5.2 Method of marking

The marking shall be made

- _ either during moulding by having the appropriate symbol included in the mould design;
- _ or by embossing, by melt imprinting or by other legible and indelible marking of the polymer.