INTERNATIONAL STANDARD

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Third edition
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Plastics — Symbols and abbreviated terms —

Part 1: Basic polymers and their special characteristics

Plastiques — Symboles et termes abrégés —

Partie 1: Polymères de base et leurs caractéristiques spéciales

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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 3.

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 part of ISO 1043 may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 1043-1 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 1, *Terminology*.

This third edition cancels and replaces the second edition (ISO 1043-1:1997), which has been technically revised.

ISO 1043 consists of the following parts, under the general title *Plastics — Symbols and abbreviated terms*:

— *Part 1: Basic polymers and their special characteristics*

— *Part 2: Fillers and reinforcing materials*

— *Part 3: Plasticizers*

— *Part 4: Flame retardants*

Annexes A and B of this part of ISO 1043 are for information only.

Plastics — Symbols and abbreviated terms —

Part 1:
Basic polymers and their special characteristics

1 Scope

This part of ISO 1043 provides abbreviated terms for the basic polymers used in plastics, symbols for components of these terms, and symbols for special characteristics of plastics. It includes only those abbreviated terms that have come into established use and its aim is both to prevent the occurrence of more than one abbreviated term for a given plastic and to prevent a given abbreviated term being interpreted in more than one way.

NOTE 1 For symbols for fillers and reinforcing materials, see ISO 1043-2, for plasticizers see ISO 1043-3, and for flame retardants see ISO 1043-4. Nomenclature for rubbers and latices is given in ISO 1629, *Rubber and latices — Nomenclature.* Nomenclature for thermoplastic elastomers is given in ISO 18064, *Thermoplastic elastomers — Abbreviated terms and nomenclature* (to be published).

NOTE 2 Guidance for the preparation of new abbreviated terms is given in informative annex A, and reference lists of symbols for the components of plastics terms used to form the abbreviated terms for plastics are given in informative annex B.

2 Normative reference

The following normative document contains provisions which, through reference in this text, constitute provisions of this part of ISO 1043. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 1043 are encouraged to investigate the possibility of applying the most recent edition of the normative document 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*

3 Terms and definitions

For the purposes of this part of ISO 1043, the terms and definitions given in ISO 472 and the following term and definition apply.

3.1
abbreviated term
term resulting from the omission of any part of a term while designating the same concept

4 Use of symbols and abbreviated terms

4.1 Abbreviated terms for homopolymeric, copolymeric and natural polymeric materials are given in clause 5, and symbols for special characteristics are given in clause 6. Examples of the use of abbreviated terms are given in clause 7.

4.2 To distinguish the essential molecular characteristics within a given generic type of plastics material, additional symbols, with guidance for their use, are provided. The use of symbols for describing properties that can only be ascertained subjectively should be avoided since this can lead to confusion.

4.3 The abbreviated terms are primarily intended to be a convenient shorthand for chemical names in publications and other written matter. They are not intended for the selection of materials. The abbreviated terms also are useful for indicating the type of basic polymer in materials and products, e.g. ABS moulding material, PA film, PE sheeting and PVC pipe.

4.4 Only capital letters shall be used for symbols and abbreviated terms.

4.5 The first appearance of an abbreviated term in a text shall be enclosed in parentheses and shall be preceded by the term written in full.

4.6 The rules of the International Union of Pure and Applied Chemistry (IUPAC) for source-based names of polymers recommend to use brackets when “poly” is followed by more than one word, in order to avoid ambiguity. This practice is followed in this part of ISO 1043, but in common usage the enclosing marks are often omitted.

4.7 No attempt is made formally to systematize a shorthand terminology of polymers. Terminology and formulae designations for scientific literature in the field of natural and synthetic polymers have been elaborated by the Commission on Macromolecular Nomenclature of IUPAC. Any abbreviated terms published by this Commission are, in general, the same as in this part of ISO 1043.

5 Abbreviated terms for homopolymeric, copolymeric and natural polymeric materials

For some plastics materials additional abbreviated terms that are often being used are included in this table. In each case the abbreviated terms given in the left column are the preferred abbreviated terms. Other abbreviated terms in use should be transformed to the preferred abbreviated terms in the foreseeable future.

Abbreviated term	Term for material
AB	acrylonitrile-butadiene plastic
ABAK	acrylonitrile-butadiene-acrylate plastic; preferred term for **ABA**
ABS	acrylonitrile-butadiene-styrene plastic
ACS	acrylonitrile-chlorinated polyethylene-styrene; preferred term for **ACPES**
AEPDS	acrylonitrile-(ethylene-propylene-diene)-styrene plastic; preferred term for **AEPDMS**
AMMA	acrylonitrile-methyl methacrylate plastic
ASA	acrylonitrile-styrene-acrylate plastic
CA	cellulose acetate
CAB	cellulose acetate butyrate
CAP	cellulose acetate propionate
CEF	cellulose formaldehyde
CF	cresol-formaldehyde resin
CMC	carboxymethyl cellulose
CN	cellulose nitrate
COC	cycloolefin copolymer
CP	cellulose propionate
CTA	cellulose triacetate
EAA	ethylene-acrylic acid plastic
EBAK	ethylene-butyl acrylate plastic; preferred term for **EBA**
EC	ethyl cellulose
EEAK	ethylene-ethyl acrylate plastic; preferred term for **EEA**
EMA	ethylene-methacrylic acid plastic
EP	epoxide; epoxy resin or plastic
E/P	ethylene-propylene plastic; preferred term for **EPM**
ETFE	ethylene-tetrafluoroethylene plastic
EVAC	ethylene-vinyl acetate plastic; preferred term for **EVA**

EVOH	ethylene-vinyl alcohol plastic
FEP	perfluoro(ethylene-propylene) plastic; preferred term for **PFEP**
FF	furan-formaldehyde resin
LCP	liquid-crystal polymer
MABS	methyl methacrylate-acrylonitrile-butadiene-styrene plastic
MBS	methyl methacrylate-butadiene-styrene plastic
MC	methyl cellulose
MF	melamine-formaldehyde resin
MP	melamine-phenol resin
MSAN	α-methylstyrene-acrylonitrile plastic
PA	polyamide
PAA	poly(acrylic acid)
PAEK	polyaryletherketone
PAI	polyamidimide
PAK	polyacrylate
PAN	polyacrylonitrile
PAR	polyarylate
PARA	poly(aryl amide)
PB	polybutene
PBAK	poly(butyl acrylate)
PBD	1,2-polybutadiene
PBN	poly(butylene naphthalate)
PBT	poly(butylene terephthalate)
PC	polycarbonate
PCCE	poly(cyclohexylene dimethylene cyclohexanedicarboxylate)
PCL	polycaprolactone
PCT	poly(cyclohexylene dimethylene terephthalate)
PCTFE	polychlorotrifluoroethylene
PDAP	poly(diallyl phthalate)
PDCPD	polydicyclopentadiene
PE	polyethylene
PE-C	polyethylene, chlorinated; preferred term for **CPE**
PE-HD	polyethylene, high density; preferred term for **HDPE**
PE-LD	polyethylene, low density; preferred term for **LDPE**
PE-LLD	polyethylene, linear low density; preferred term for **LLDPE**
PE-MD	polyethylene, medium density; preferred term for **MDPE**
PE-UHMW	polyethylene, ultra high molecular weight; preferred term for **UHMWPE**
PE-VLD	polyethylene, very low density; preferred term for **VLDPE**
PEC	polyestercarbonate
PEEK	polyetheretherketone
PEEST	polyetherester
PEI	polyetherimide
PEK	polyetherketone
PEN	poly(ethylene naphthalate)
PEOX	poly(ethylene oxide)
PESTUR	polyesterurethane
PESU	polyethersulfone
PET	poly(ethylene terephthalate)
PEUR	polyetherurethane
PF	phenol-formaldehyde resin
PFA	perfluoro alkoxyl alkane resin
PI	polyimide
PIB	polyisobutylene
PIR	polyisocyanurate
PK	polyketone
PMI	polymethacrylimide
PMMA	poly(methyl methacrylate)

PMMI	poly-*N*-methylmethacrylimide
PMP	poly-4-methylpent-1-ene
PMS	poly-α-methylstyrene
POM	polyoxymethylene; polyacetal; polyformaldehyde
PP	polypropylene
PP-E	polypropylene, expandable; preferred term for **EPP**
PP-HI	polypropylene, high impact; preferred term for **HIPP**
PPE	poly(phenylene ether)
PPOX	poly(propylene oxide)
PPS	poly(phenylene sulfide)
PPSU	poly(phenylene sulfone)
PS	polystyrene
PS-E	polystyrene, expandable; preferred term for **EPS**
PS-HI	polystyrene, high impact; preferred term for **HIPS**
PSU	polysulfone
PTFE	polytetrafluoroethylene
PTT	poly(trimethylene terephthalate)
PUR	polyurethane
PVAC	poly(vinyl acetate)
PVAL	poly(vinyl alcohol), preferred term for **PVOH**
PVB	poly(vinyl butyral)
PVC	poly(vinyl chloride)
PVC-C	poly(vinyl chloride), chlorinated; preferred term for **CPVC**
PVC-U	poly(vinyl chloride), unplasticized; preferred term for **UPVC**
PVDC	poly(vinylidene chloride)
PVDF	poly(vinylidene fluoride)
PVF	poly(vinyl fluoride)
PVFM	poly(vinyl formal)
PVK	poly-*N*-vinylcarbazole
PVP	poly-*N*-vinylpyrrolidone
SAN	styrene-acrylonitrile plastic
SB	styrene-butadiene plastic
SI	silicone plastic
SMAH	styrene-maleic anhydride plastic; preferred term for **S/MA** or **SMA**
SMS	styrene-α-methylstyrene plastic
UF	urea-formaldehyde resin
UP	unsaturated polyester resin
VCE	vinyl chloride-ethylene plastic
VCEMAK	vinyl chloride-ethylene-methyl acrylate plastic; preferred term for **VCEMA**
VCEVAC	vinyl chloride-ethylene-vinyl acetate plastic
VCMAK	vinyl chloride-methyl acrylate plastic; preferred term for **VCMA**
VCMMA	vinyl chloride-methyl methacrylate plastic
VCOAK	vinyl chloride-octyl acrylate plastic; preferred term for **VCOA**
VCVAC	vinyl chloride-vinyl acetate plastic
VCVDC	vinyl chloride-vinylidene chloride plastic
VE	vinyl ester resin

6 Symbols for indication of special characteristics

The abbreviated terms for the basic polymers may be supplemented by up to four symbols (see the list below) to differentiate between or among modifications of the polymer, if desired. The supplementary symbol(s) shall be placed after the abbreviated term of the basic polymer, separated by a hyphen, with no spacing before or after the hyphen. **No symbol shall be placed in front of the abbreviated term for the basic polymer.**

Symbols indicating special characteristics

Symbol	Meaning
A	acid (modified)
A	amorphous, atactic
B	biaxial
B	block
B	brominated
C	chlorinated
C	crystalline, isotactic
D	density
E	elastomer
E	expanded; expandable
E	epoxidised
F	flexible
F	fluorinated
F	fluid
G	glycol (modified)
H	high
H	homo
I	impact
L	linear
L	low
M	medium
M	molecular
N	normal
N	novolak
O	orientated
P	plasticized
P	thermoplastic
R	raised
R	random
R	resol
R	rigid
S	saturated
S	sulfonated
S	syndiotactic
S	thermosetting
T	temperature (resistance)
T	toughened
U	ultra
U	unplasticized
U	unsaturated
V	very
W	weight
X	crosslinked; crosslinkable
PVC-U	poly(vinyl chloride), unplasticized; preferred term for UPVC