
**Plastics — Symbols and abbreviated
terms —**

Part 2:
Fillers and reinforcing materials

Plastiques — Symboles et termes abrégés —

Partie 2: Charges et matériaux de renforcement

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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 1043-2 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 1, *Terminology*.

This third edition cancels and replaces the second edition (ISO 1043-2:2000), which has been revised to include both modified and new symbols, in particular the following: “A” instead of “R” for aramid, in accordance with common use; “ME” for metal, to distinguish it from “M” for mineral; “EM” for endless-strand mat; “CM” for chopped-strand mat; “LF” for long fibres and “NF” for nanofibres.

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*

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Plastics — Symbols and abbreviated terms —

Part 2: Fillers and reinforcing materials

1 Scope

This part of ISO 1043 specifies uniform symbols for terms referring to fillers and reinforcing materials. It includes only those symbols that have come into established use, and its main aim is both to prevent the occurrence of more than one symbol for a given filler or reinforcing material and to prevent a given symbol being interpreted in more than one way.

NOTE For symbols and abbreviated terms for basic polymers and their special characteristics, see ISO 1043-1, for plasticizers see ISO 1043-3, and, for flame retardants, see ISO 1043-4.

2 Use of the symbols

2.1 The symbols for fillers and reinforcing materials are specified in Subclause 3.1 and the symbols for their form and/or structure are specified in Subclause 3.2.

2.2 Only capital letters shall be used, except for chemical symbols.

2.3 The type of filler or reinforcing material shall be represented by the first letter and its physical form or structure by the second letter.

NOTE There are exceptions requiring the use of one or more further letters, as indicated in Tables 1 and 2.

EXAMPLE 1 GF is the symbol for glass in the form of fibre.

EXAMPLE 2 GCM is the symbol for glass in the form of chopped-strand mat.

2.4 Mixtures of materials or forms may be indicated by combining the relevant symbols using a “+” sign and enclosing the whole in parentheses.

There should be no space before or after the “+” sign.

EXAMPLE (GF+MD) is the symbol for a mixture of glass fibres (GF) and mineral powder (MD).

2.5 The further information required for metals shall be indicated by the chemical symbol in parentheses.

EXAMPLE MED(Al) is the symbol for aluminium powder.

3 Symbols

3.1 Fillers and reinforcing materials

The symbols for fillers and reinforcing materials are specified in Table 1.

Table 1 — Symbols for fillers and reinforcing materials

Symbol	Material ^a
A	aramid ^b
B	boron
C	carbon
D	alumina trihydrate
E	clay
G	glass
K	calcium carbonate
L	cellulose
M	mineral
ME	metal ^c
N	natural organic (cotton, sisal, hemp, flax, etc.)
P	mica
Q	silica
S	synthetic organic (e.g. finely divided PTFE, polyimides or thermoset resins) ^d
T	talcum
W	wood
X	not specified
Z	others not included in this list

^a The materials may be further defined, for example by their chemical symbols or by additional symbols defined in the relevant International Standard.

^b Aramid was previously defined by the symbol "R", but "A" is in common use.

^c In the case of metals (ME), the type(s) of metal shall be indicated by means of the relevant chemical symbol(s).

^d A specific material may be further defined.

3.2 Form or structure

The symbols for the form or structure of fillers and reinforcing materials are specified in Table 2.

Table 2 — Symbols for the form or structure of fillers and reinforcing materials

Symbol	Form or structure
B	beads, spheres, balls
C	chips, cuttings
CM	chopped-strand mat
D	finer, powder
EM	continuous (endless) strand mat
F	fibre
G	ground
H	whiskers
K	knitted fabric
L	layer
LF	long fibres
M	mat (thick)
N	non-woven (fabric, thin)
NF	nanofibres
NT	nanotubes
P	paper
R	roavings
S	flakes
T	twisted or braided fabric, cord, tube
V	veneer
W	woven fabric
X	not specified
Y	yarn
Z	others not included in this list

Bibliography

- [1] ISO 1043-1, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*
- [2] ISO 1043-3, *Plastics — Symbols and abbreviated terms — Part 3: Plasticizers*
- [3] ISO 1043-4, *Plastics — Symbols and abbreviated terms — Part 4: Flame retardants*

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