
**Plastics — Symbols and abbreviated
terms —**

**Part 4:
Flame retardants**

*Plastiques — Symboles et termes abrégés —
Partie 4: Ignifuges*

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ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 1, *Terminology*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 249, *Plastics*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 1043-4:1998), which has been technically revised. It also incorporates the Amendment ISO 1043-4:1998/Amd 1:2016.

The main changes compared to the previous edition are as follows:

- code numbers 26, 27, 53, 54, and 55 have been added.

A list of all parts in the ISO 1043 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Plastics — Symbols and abbreviated terms —

Part 4: Flame retardants

1 Scope

This document provides uniform symbols for flame retardants added to plastics materials.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at <https://www.electropedia.org/>

3.1

flame retardant

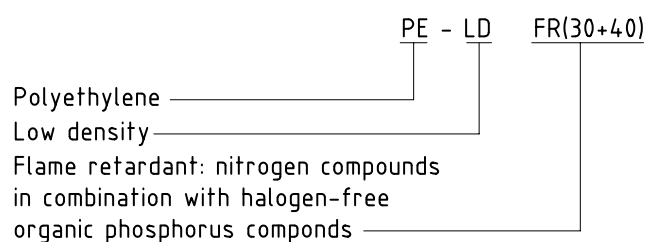
substance that markedly retards the propagation of a flame

Note 1 to entry: Included are flame retardants that are incorporated in prepolymers.

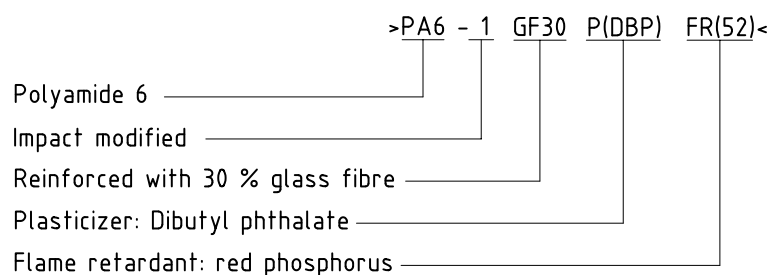
4 Application of symbols

The symbols are written with the abbreviated term “FR”, in capital letters, followed, without a space, by a two-digit code number enclosed in parentheses and selected, as appropriate, from the list given in [Clause 5](#). Only flame retardants exceeding a mass fraction of 1 % have to be identified. These symbols are used in addition to the symbols for a plastics material derived from ISO 1043-1, ISO 1043-2 and ISO 1043-3.

EXAMPLE 1:



EXAMPLE 2:



5 Code numbers for flame retardants

The code numbers are grouped according to the chemical composition of the flame retardant.

NOTE Additional materials are coded as required and forms amendments to this document.

Halogenated compounds:

Code

- | | |
|----------|--|
| 10 | aliphatic/alicyclic chlorinated compounds |
| 11 | aliphatic/alicyclic chlorinated compounds in combination with antimony compounds |
| 12 | aromatic chlorinated compounds |
| 13 | aromatic chlorinated compounds in combination with antimony compounds |
| 14 | aliphatic/alicyclic brominated compounds (excluding hexabromocyclododecane) |
| 15 | aliphatic/alicyclic brominated compounds (excluding hexabromocyclododecane) in combination with antimony compounds |
| 16 | aromatic brominated compounds (excluding brominated diphenyl ether and biphenyls) |
| 17 | aromatic brominated compounds (excluding brominated diphenyl ether and biphenyls) in combination with antimony compounds |
| 18 | polybrominated diphenyl ether |
| 19 | polybrominated diphenyl ether in combination with antimony compounds |
| 20 | polybrominated biphenyls |
| 21 | polybrominated biphenyls in combination with antimony compounds |
| 22 | aliphatic/alicyclic chlorinated and brominated compounds |
| 23 | hexabromocyclododecane (HBCD) |
| 24 | hexabromocyclododecane (HBCD) with antimony compounds |
| 25 | aliphatic fluorinated compounds |
| 26 | aliphatically brominated block copolymer or that containing antimony compounds |
| 27 | brominated bisphenol alkyl ether or that containing antimony compounds |
| 28 to 29 | not allocated |

Nitrogen compounds:

Code

30 nitrogen compounds (confined to melamine, melamine cyanurate, urea)

31 to 39 not allocated

Organic phosphorus compounds:

Code

40 halogen-free organic phosphorus compounds

41 chlorinated organic phosphorus compounds

42 brominated organic phosphorus compounds

43 to 49 not allocated

Inorganic phosphorus compounds:

Code

50 ammonium orthophosphates

51 ammonium polyphosphates

52 red phosphorus

53 hypophosphites

54 organic ammonium phosphate

55 organic ammonium polyphosphate

56 to 59 not allocated

Metal oxides, metal hydroxides, metal salts:

Code

60 aluminium hydroxide

61 magnesium hydroxide

62 antimony (III) oxide

63 alkali-metal antimonate

64 magnesium/calcium carbonate hydrate

65 to 69 not allocated

Boron and zinc compounds:

Code

70 inorganic boron compounds

71 organic boron compounds

72	zinc borate
73	organic zinc compounds
74	not allocated

Silica compounds:

Code

75	inorganic silicon compounds
76	organic silicon compounds (silicones)
77 to 79	not allocated

Code

80	graphite
81 to 89	not allocated

Code

90 to 99	not allocated
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