INTERNATIONAL STANDARD

ISO 1043-4

Second edition
2021-07

Plastics — Symbols and abbreviated terms —

Part 4: Flame retardants

Plastiques — Symboles et termes abrégés —

Partie 4: Ignifuges

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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.

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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).

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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.

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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/

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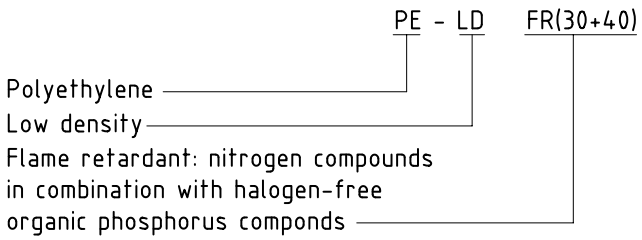
3.1
flame retardant
substance that markedly retards the propagation of a flame

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:



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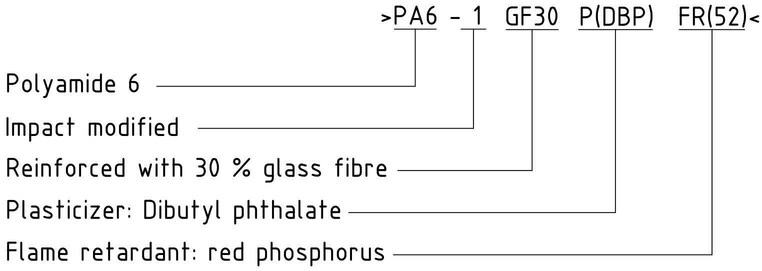
EXAMPLE 2:



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

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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

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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

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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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Bibliography

[1] ISO 1043-1, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics*

[2] ISO 1043-2, *Plastics — Symbols and abbreviated terms — Part 2: Fillers and reinforcing materials*

[3] ISO 1043-3, *Plastics — Symbols and abbreviated terms — Part 3: Plasticizers*

[4] ISO 11469, *Plastics — Generic identification and marking of plastics products*

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