

DRAFT INTERNATIONAL STANDARD

ISO/DIS 1043-4

ISO/TC 61/SC 1

Secretariat: **BSI**

Voting begins on:
2020-08-03

Voting terminates on:
2020-10-26

Plastics — Symbols and abbreviated terms —

Part 4: Flame retardants

Plastiques — Symboles et abréviations —

Partie 4: Ignifuges

ICS: 83.080.01; 83.040.30

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Reference number
ISO/DIS 1043-4:2020(E)

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Published in Switzerland

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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 on 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 the following URL: [Foreword – Supplementary information](#)

International Standard ISO 1043-4 was prepared by Technical Committee ISO/TC 61, *Plastics*, Subcommittee SC 1, *Terminology*.

This second edition cancels and replaces the first edition (ISO 1043-4:1998), 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*

Plastics — Symbols and abbreviated terms —

Part 4: Flame retardants

1 Scope

This part of ISO 1043 provides uniform symbols for flame retardants added to plastics materials. The symbols are written with the abbreviated term “FR” and one or more succeeding code numbers as given in [Clause 5](#). They are used in addition to the symbols for the plastics materials, for plastics material designation and for identification and marking of plastics products.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 1043. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 1043 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

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*

3 Terms and Definition

For the purposes of this part of ISO 1043, the following definition applies:

3.1

flame retardant

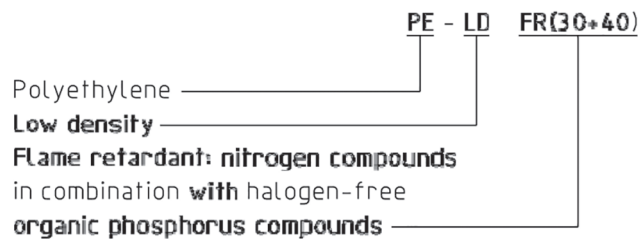
A substance that markedly retards the propagation of a flame.

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

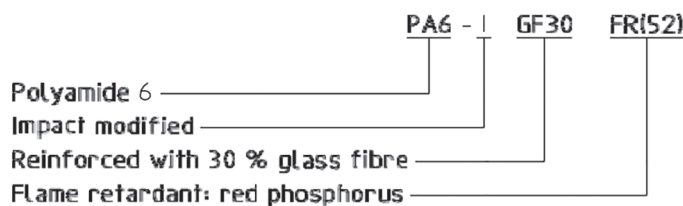
4 Application of symbols

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 1 % (*m/m*) have to be identified. These symbols are used in addition to the symbols for a plastics material derived from parts 1, 2 and 3 of ISO 1043.

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 will be coded as required and will form amendments to this part of ISO 1043.

Halogenated compounds:

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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
- 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

24	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

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 (silicons)
77 to 79	not allocated

Code

80	graphite
81 to 89	not allocated

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Code

90 to 99	not allocated
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