

Plastics — Symbols and abbreviated terms —

Part 4: Flame retardants

The European Standard EN ISO 1043-4:1999 has the status of a
British Standard

ICS 01.040.83; 83.040.30

National foreword

This British Standard is the English language version of EN ISO 1043-4:1999. It is identical with ISO 1043-4:1998.

The UK participation in its preparation was entrusted to Technical Committee PRI/10, Terminology for rubbers and plastics, which has the responsibility to:

- aid enquirers to understand the text;
- present to the responsible international/European committee any enquiries on the interpretation, or proposals for change, and keep the UK interests informed;
- monitor related international and European developments and promulgate them in the UK.

A list of organizations represented on this committee can be obtained on request to its secretary.

Cross-references

Attention is drawn to the fact that CEN and CENELEC Standards normally include an annex which lists normative references to international publications with their corresponding European publications. The British Standards which implement international or European publications referred to in this document may be found in the BSI Standards Catalogue under the section entitled "International Standards Correspondence Index", or by using the "Find" facility of the BSI Standards Electronic Catalogue.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, the EN ISO title page, page 2, the ISO title page, pages ii to iv, pages 1 to 4 and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

This British Standard, having been prepared under the direction of the Sector Committee for Materials and Chemicals, was published under the authority of the Standards Committee and comes into effect on 15 August 1999

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Amendments issued since publication

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English version

Plastics — Symbols and abbreviated terms —
Part 4: Flame retardants

(ISO 1043-4:1998)

Plastiques — Symboles et abréviations —
Partie 4: Ignifuges
(ISO 1043-4:1998)

Kunststoffe — Kennbuchstaben und
Kurzzzeichen —
Teil 4: Flammschutzmittel
(ISO 1043-4:1998)

This European Standard was approved by CEN on 18 April 1999.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.

CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

The text of the International Standard from Technical Committee ISO/TC 61 “Plastics” of the International Organization for Standardization (ISO) has been taken over as an European Standard by Technical Committee CEN/TC 249 “Plastics”, the secretariat of which is held by IBN.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by November 1999, and conflicting national standards shall be withdrawn at the latest by November 1999.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 1043-4:1998 has been approved by CEN as a European Standard without any modification.

NOTE Normative references to International Standards are listed in Annex ZA (normative).

INTERNATIONAL
STANDARD

ISO
1043-4

First edition
1998-02-15

**Plastics — Symbols and abbreviated
terms —**

Part 4:
Flame retardants

*Plastiques — Symboles et abréviations —
Partie 4: Ignifuges*



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Descriptors: Plastics, flame proofing, retardants, symbols, abbreviations, designation, numeric codes.

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.

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.

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

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.*

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 1043-1:1997, *Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics.*

ISO 1043-2:1988, *Plastics — Symbols — Part 2: Fillers and reinforcing materials.*

ISO 1043-3:1996, *Plastics — Symbols and abbreviated terms — Part 3: Plasticizers.*

3 Definition

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

3.1

flame retardant

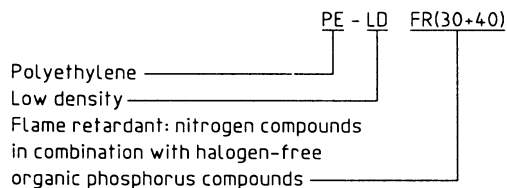
a substance that markedly retards the propagation of a flame

NOTE Included are flame retardants that are incorporated in prepolymers.

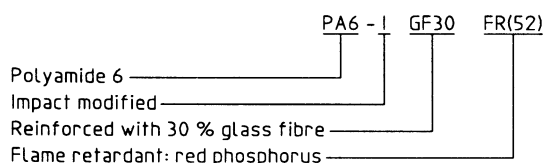
4 Application of symbols

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:

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 |
| 15 | aliphatic/alicyclic brominated compounds 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 <u>and</u> brominated compounds |
| 23, 24 | not allocated |
| 25 | aliphatic fluorinated compounds |
| 26 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 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 silica compounds |
| 76 | organic silica compounds |
| 77 to 79 | not allocated |

Code

| | |
|----------|---------------|
| 80 | graphite |
| 81 to 89 | not allocated |

Code

| | |
|----------|---------------|
| 90 to 99 | not allocated |
|----------|---------------|

Annex ZA (normative)

Normative references to international publications with their relevant European publications

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies.

| Publication | Year | Title | EN | Year |
|-------------|------|--|---------------|------|
| ISO 1043-1 | 1997 | <i>Plastics — Symbols and abbreviated terms — Part 1: Basic polymers and their special characteristics</i> | EN ISO 1043-1 | 1999 |
| ISO 1043-3 | 1996 | <i>Plastics — Symbols and abbreviated terms — Part 3: Plasticizers</i> | EN ISO 1043-3 | 1999 |

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