



SLOVENSKI STANDARD

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Prenosni gasilniki – 7. del: Lastnosti, zahteve za obnašanje v uporabi in preskusne metode

Portable fire extinguishers - Part 7: Characteristics, performance requirements and test methods

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Tragbare Feuerlöscher - Teil 7: Eigenschaften, Löschleistung, Anforderungen und Prüfungen

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Extincteurs d'incendie portatifs - Partie 7: Caractéristiques, performances et méthodes d'essai

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This European Standard was approved by CEN on 5 March 2003.

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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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN 3-7:2004) has been prepared by Technical Committee CEN/TC 70 "Manual means of firefighting equipment", the secretariat of which is held by AFNOR.

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of an identical text or by endorsement, at the latest by July 2004, and conflicting national standards shall be withdrawn at the latest by July 2004.

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

This document will supersede EN 3-1:1996, EN 3-2:1996, EN 3-4:1996 and EN 3-5:1996.

EN 3 consists of the following parts, under the general title "Portable fire extinguishers":

- Part 1: Description, duration of operation, class A and B fire test
- Part 2: Tightness, dielectric test, latching test, special provisions
- Part 3: Construction, resistance to pressure, mechanical tests
- Part 4: Charges, minimum required fire
- Part 5: Specification and supplementary tests
- Part 6: Provisions for the attestation of conformity of portable fire extinguishers in accordance with EN 3-1 to EN 3-5
- Part 7¹⁾: Characteristics, performance requirements and test methods
- Part 8²⁾: Construction resistance to pressure and mechanical tests for extinguishers with a maximum allowable pressure equal or lower than 30 bar
- Part 9²⁾: Additional requirements for CO₂ extinguishers
- Part 10³⁾: Provisions for the attestation of conformity for portable fire extinguishers

Annexes A, B, C, D, E, F, G, H, I, J, and K, are normative.

This document includes a Bibliography.

1) In preparation. EN 3-7 updates and amends EN 3-1, EN 3-2, EN 3-4 and EN 3-5. On publication of EN 3-7 these will be withdrawn.

2) In preparation. EN 3-8 and 3-9 update and amend EN 3-3. On publication of these, EN 3-3 will be withdrawn.

3) EN 3-10 updates and amends EN 3-6. On publication of EN 3-10, EN 3-6 will be withdrawn.

1 Scope

This standard specifies the characteristics, performance requirements and test methods for portable fire extinguishers.

Reference to the suitability of an extinguisher for use on gaseous fires (class C fires) are at the manufacturer's discretion, but are applied only to powder type extinguishers which have gained a class B or class A and class B rating.

Suitability of extinguishers for use on class D fires (fires involving flammable metals) is outside the scope of this standard in respect of test fires. However, extinguishers claiming class D suitability are covered in all other respects by the requirements in this standard for powder extinguishers.

NOTE The extinction of a metal fire presents a situation so specific (in terms of the metal itself, its form, the configuration of the fire etc.) that it is not possible to define a representative standard fire for the purposes of testing. The efficiency of extinguishers on class D fires needs to be established on a case by case basis.

2 Normative references

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 (including amendments).

EN 2, *Classification of fires.*

ISO 9227, *Corrosion tests in artificial atmospheres — Salt spray tests.*

ISO 657-1, *Hot-rolled steel sections — Part 1: Equal-leg angles — Dimensions.*

ISO 4470, *Sawn timber — Determination of the average moisture content of a lot.*

Farbregister RAL-841-GL.

3 Terms and definitions

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

3.1

fire extinguisher

appliance containing an extinguishing medium which can be expelled by the action of internal pressure and be directed on to a fire

NOTE This pressure can be stored pressure or pressure produced by the release of an auxiliary gas from a cartridge.

3.2

portable fire extinguisher

fire extinguisher which is designed to be carried and operated by hand and which in working order has a mass of not more than 20 kg

NOTE Throughout this standard it is referred to as an "extinguisher"

**3.3
clean agent**

electrically non-conducting, volatile, or gaseous fire extinguishing medium that does not leave a residue upon evaporation

NOTE Examples are fluorocarbons (FCs), perfluorocarbons (PFCs) and fluoroiodocarbons (FICs).

**3.4
halon**

agent that contains as primary components one or more organic compounds containing one or more of the elements fluorine, chlorine, bromine, or iodine

**3.5
body**

shell of the extinguisher not fitted with its accessories but fitted with all its welded/brazed parts

**3.6
extinguishing medium**

substance contained in the extinguisher which causes extinction of a fire

**3.7
charge**

mass or volume of the extinguishing medium contained in the extinguisher, expressed as a volume (in litres) for water based extinguishers and as a mass (in kilograms) for other extinguishers

**3.8
water based extinguisher**

extinguisher containing water or water with additive

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NOTE This includes foam extinguishers.

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**3.9
powder extinguisher**

extinguisher containing fire extinguishing powder

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**3.10
carbon dioxide extinguisher**

extinguisher containing carbon dioxide

**3.11
halon extinguisher**

extinguisher containing halon

**3.12
clean agent extinguisher**

extinguisher containing a clean agent

**3.13
duration of operation**

time during which the extinguishing medium is discharged, without any interruption in the discharge and with the valve fully opened not including discharge of the residual propellant gas

**3.14
residual charge**

mass of medium remaining after continuous complete discharge including all propellant gas

3.15**maximum pressure at maximum operating temperature, $P(T_{\max})$ (Pressure experimentally measured)**

pressure measured in the extinguisher after stabilisation during at least 24 h at maximum operating temperature (which is ≥ 60 °C) and for cartridge operated extinguishers, the maximum pressure is the maximum pressure recorded for 0,5 s during a period of three minutes, excluding the first second after release of the propellant gas.

3.16 T_{\max}

maximum operating temperature declared by the manufacturer (see 7.4.1)

3.17 T_{\min}

minimum operating temperature declared by the manufacturer (see 7.4.1)

4 General**4.1 Description of a portable fire extinguisher**

4.1.1 A portable fire extinguisher is described by the type of extinguishing medium it contains. At present, there are:

— water based, including foam, extinguishers (see Note 1);

— powder type extinguishers;

— carbon dioxide type extinguishers;

— halon type extinguishers (see Note 2);

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— clean agent extinguishers.

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NOTE 1 Water based extinguishers can be produced with or without a low freeze depressant.

Water based extinguishers, including foam, containing different proportions of low freeze depressant shall be treated as separate and distinct models for the purposes of testing the range of operating temperatures (see 7.4.2) and electrical conductivity (see clause 9), and fire rating tests. All other requirements relating to the design and construction of water based extinguishers are applicable to all models irrespective of content.

NOTE 2 Attention is drawn to European Council Regulation 2037/2000 concerning the use of halons.

4.1.2 A portable fire extinguisher consists of the following components:

a) body (see 3.5);

b) body fittings, which are fixed to or screwed onto the body, and include at least the following:

— control device(s) (see 4.2, 4.3 and 10.1);

— hose assembly (see 4.4) and/or horns and/or nozzles;

— head assembly. This also constitutes the main closure (see 6.3);

— operating device (see 4.3).

NOTE The head assembly, operating device and control device(s) can be separate or may be incorporated in a single unit.

c) media (see 4.1.1):

4.2 Control of discharge

Portable fire extinguishers shall be fitted with a self-closing control valve to enable the discharge to be interrupted temporarily (see 10.6).

4.3 Operating position

Extinguishers shall operate without being turned over to an inverted position. The operating device of an extinguisher shall be located on the top of the extinguisher. A control device at the end of the hose shall be permitted. Hand wheel controls of the valve on external propellant cartridges shall be located on the top 60 % of the extinguisher body.

4.4 Hose assembly

Extinguishers having a mass of extinguishing medium greater than 3 kg, or a volume of extinguishing medium greater than 3 l shall be provided with a discharge hose.

The length of the flexible section of the hose assembly shall be 400 mm or greater.

When an extinguisher having a mass of extinguishing medium less than or equal to 3 kg, or a volume of extinguishing medium less than or equal to 3 l is fitted with a discharge hose, the hose assembly shall have a minimum overall length of 250 mm.

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4.5 Propellants

Only propellants listed in Table 1 or mixtures thereof, shall be used. The maximum water content shall be as specified in Table 1, except when used in stored pressure water based extinguishers. Tracers may be added to the propellant to facilitate leakage detection, but the tracer need not be indicated in the marking.

Table 1 — Permitted propellants

Propellant	Maximum water content mass fraction, %
Air	0,006
Argon	0,006
Carbon dioxide	0,015
Helium	0,006
Nitrogen	0,006

4.6 Stored pressure extinguishers

Stored pressure extinguishers, except carbon dioxide, shall have a means of checking the presence of pressure, see clause 8 and clause 11.

5 Testing of portable fire extinguishers

Extinguishers for testing shall be stored for at least 24 h at a temperature of (20 ± 5) °C before the tests are carried out and shall be maintained within this temperature range until tested. Tests shall be carried out within 5 min of its removal from storage.

Powder extinguishers shall be subjected to the compaction procedure given in Annex K before the storage period preceding the duration of operation test and the control valve test, and before the fire performance test. Water based extinguishers shall be subjected to the compaction procedure according to Annex K only before the storage period preceding the duration of operation test.

6 Nominal charges, filling tolerances and minimum fire performance

6.1 Nominal charges

Nominal charges of portable fire extinguishers shall be equal to one of the values given in Tables 3 to 8 according to the nature of the extinguishing medium.

6.2 Filling tolerances

The actual charge of the extinguisher shall be equal to the nominal charge within the tolerances given in Table 2.

Table 2 — Filling tolerances

Extinguishing medium	Relative tolerance %
Powder	
1 kg	± 5
2 kg	± 3
≥ 3 kg	± 2
All other media	0

6.3 Design of the filling opening

The filling opening, except for portable carbon dioxide fire extinguishers, shall have a minimum diameter of:

- 20 mm for extinguishers with a charge of less than or equal to 3 kg or 3 l;
- 25 mm for extinguishers with a charge of more than 3 kg or 3 l.

6.4 Minimum fire ratings

6.4.1 General

Fire classes are defined in EN 2.

The minimum fire ratings are specified in Tables 3 to 8, according to the type of extinguishing medium and the charge.

Fire performance shall be tested in accordance with clause 15, and the extinguisher shall attain a class A rating, a class B rating or both as specified in the relevant table, in accordance with the rating claimed by the manufacturer.

EXAMPLE A powder extinguisher for which the manufacturer wishes to claim class A and class B ratings achieves, for the size with a 9 kg charge, a minimum fire rating of 27A and 144B.

Clean agent extinguishers shall have a minimum fire rating of 5A and/or 21B for extinguishers with charges in the range 1 kg, 2 kg, 3 kg, 4 kg, 6 kg, 9 kg and 12 kg.

6.4.2 Ratings for class A fires

Fire ratings of extinguishers for class A fires are given in Tables 3 and 4.

NOTE The numbers in the first column of each table refer to the size of the test fire (see Annex I).

Table 3 — Fire ratings, minimum duration of operation and nominal charges for powder extinguishers

Fire rating	Minimum duration of operation s	Nominal permitted charges kg
5A	6	1
8A	6	1, 2
13A	9	1, 2, 3, 4
21A	9	1, 2, 3, 4, 6
27A	9	1, 2, 3, 4, 6, 9
34A	12	1, 2, 3, 4, 6, 9
43A	15	1, 2, 3, 4, 6, 9, 12
55A	15	1, 2, 3, 4, 6, 9, 12

Table 4 — Fire ratings, minimum duration of operation and nominal charges for water based extinguishers, including foam extinguishers

Fire rating	Minimum duration of operation s	Nominal permitted charges l
5A	6	2, 3
8A	9	2, 3, 6
13A	9	2, 3, 6, 9
21A	9	2, 3, 6, 9
27A	12	2, 3, 6, 9
34A	15	2, 3, 6, 9
43A	15	2, 3, 6, 9
55A	15	2, 3, 6, 9

6.4.3 Ratings for class B fires

Minimum fire ratings of extinguishers for class B fires are given in Tables 5, 6, 7 and 8.

NOTE The numbers in the first column of each table refer to the size of the test fire (see Annex I).

Table 5 — Fire ratings, minimum duration of operation and nominal charges for powder extinguishers

Fire rating	Minimum duration of operation	Nominal permitted charges
	s	kg
21B	6	1
34B	6	1, 2
55B	9	1, 2, 3
70B	9	1, 2, 3, 4
89B	9	1, 2, 3, 4
113B	12	1, 2, 3, 4, 6
144B	15	1, 2, 3, 4, 6, 9
183B	15	1, 2, 3, 4, 6, 9, 12
233B	15	1, 2, 3, 4, 6, 9, 12

Table 6 — Fire ratings, minimum duration of operation and nominal charges for water based extinguishers, including foam extinguishers

Fire rating	Minimum duration of operation	Nominal permitted charges
	s	kg
34B	6	2
55B	9	2, 3
70B	9	2, 3
89B	9	2, 3
113B	12	2, 3, 6
144B	15	2, 3, 6
183B	15	2, 3, 6, 9
233B	15	2, 3, 6, 9