

**Brand och räddning – Handbrandsläckare –**  
Del 7: Egenskaper, funktionskrav och  
provningmetoder

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

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English Version

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

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

Tragbare Feuerlöscher - Teil 7: Eigenschaften, Leistungsanforderungen und Prüfungen

This European Standard was approved by CEN on 5 March 2003 and includes Amendment 1 approved by CEN on 30 June 2007.

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EN 3-7:2004+A1:2007 (E)

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## EN 3-7:2004+A1:2007 (E)

### Foreword

This document (EN 3-7:2004+A1:2007) has been prepared by Technical Committee CEN/TC 70 "Manual means of firefighting equipment", the secretariat of which is held by AFNOR.

This document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by February 2008 and conflicting national standards shall be withdrawn at the latest by February 2008.

This document includes Amendment 1, approved by CEN on 2007-06-30.

This document supersedes EN 3-7:2004.

The start and finish of text introduced or altered by amendment is indicated in the text by tags  $\boxed{A_1}$   $\boxed{A_1}$ .

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

$\boxed{A_1}$  *deleted text*  $\boxed{A_1}$

- *Part 6<sup>1)</sup>: Provisions for the attestation of conformity of portable fire extinguishers in accordance with EN 3 part 1 to part 5*
- *Part 7: Characteristics, performance requirements and test methods*
- *Part 8: Additional requirements to EN 3-7 for the construction, resistance to pressure and mechanical tests for extinguishers with a maximum allowable pressure equal or lower than 30 bar*
- *Part 9: Additional requirements to EN 3-7 for pressure resistance of CO<sub>2</sub> extinguishers*
- *Part 10<sup>2)</sup>: Provisions valuating the conformity of a portable fire extinguisher to EN 3 part 7*

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

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1) EN 3-6 will be superseded by EN 3-10.

2) EN 3-10 will update and amend EN 3-6. EN 3-10 will supersede EN 3-6.

## 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.

**A1** It is considered hazardous for powder and carbon dioxide fire extinguishers to be used on Class F fires. For this reason powder and carbon dioxide fire extinguishers are excluded for conformance with regard to Class F in this European Standard. **A1**

**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.

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### 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, water with additive or wet chemical

NOTE This also includes foam. 

### 3.9

#### **powder extinguisher**

extinguisher containing fire extinguishing powder

### 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  $\geq 60$  °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  $\text{A}_1$  and wet chemical  $\text{A}_1$  extinguishers (see Note 1);
- powder type extinguishers;
- carbon dioxide type extinguishers;
- halon type extinguishers (see Note 2);
- clean agent extinguishers.

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);

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— 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.

**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  $(20 \pm 5)$  °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
	- 5

### 6.3 Design of the filling opening, excluding carbon dioxide fire extinguishers

The filling opening 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.

The main closure of the filling opening, intended to be removed during service or maintenance, shall be provided with an automatic means of venting any residual pressure from the extinguisher. The initial venting of any residual pressure shall occur when the means of securing the closure, or pressure retaining part, is disengaged by not more than one third of full engagement. 

### 6.4 Minimum fire ratings

#### 6.4.1 General

Fire classes are defined in EN 2.