BS EN 1866-2:2014

BSI Standards Publication

Mobile fire extinguishers

Part 2: Requirements for the construction, pressure resistance and mechanical tests for extinguishers, with a maximum allowable pressure equal to or lower than 30 bar, which comply with the requirements of EN 1866-1

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National foreword

This British Standard is the UK implementation of EN 1866-2:2014. Together with BS EN 1866-1:2007 and BS EN 1866-3:2013 it supersedes BS EN 1866:2005, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee FSH/2, Fire extinguishers.

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

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Mobile fire extinguishers - Part 2: Requirements for the construction, pressure resistance and mechanical tests for extinguishers, with a maximum allowable pressure equal to or lower than 30 bar, which comply with the requirements of EN 1866-1

Extincteurs d'incendie mobiles - Partie 2: Exigences pour la construction, la résistance à la pression et les essais mécaniques des extincteurs conformes aux exigences de l'EN 1866-1, dont la pression maximale admissible est inférieure ou égale à 30 bar

Fahrbare Feuerlöscher - Teil 2: Anforderungen an die konstruktive Ausführung, Druckfestigkeit und mechanischen Prüfungen für Feuerlöscher mit einem Höchstdruck kleiner gleich 30 bar, die den Anforderungen von EN 1866-1 entsprechen

This European Standard was approved by CEN on 20 March 2014.

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Foreword

This document (EN 1866-2:2014) has been prepared by Technical Committee CEN/TC 70 “Manual means of fire fighting 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of an identical text or by endorsement, at the latest by November 2014 and conflicting national standards shall be withdrawn at the latest by November 2014.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document, with EN 1866-1 and EN 1866-3, supersedes EN 1866:2005.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive 97/23/EC.

For relationship with EU Directive 97/23/EC, see informative Annex ZA, which is an integral part of this document.

This European Standard EN 1866 consists of the following parts under the general title “Mobile fire extinguishers”:

— *Part 1: Characteristics, performance and test methods;*

— *Part 2: Requirements for the construction, pressure resistance and mechanical tests for extinguishers with a maximum allowable pressure equal to or lower than 30 bar, which comply with the requirements of* EN 1866-1*;*

— *Part 3: Requirements for the assembly, construction and pressure resistance of CO_2 extinguishers which comply with the requirements of* EN 1866-1.

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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies the rules of design, type testing, manufacturing and inspection during manufacturing of mobile fire extinguishers with metallic bodies, which comply with the requirements of EN 1866-1, as far as pressure resistance is concerned.

This part applies to mobile fire extinguishers of which the maximum allowable pressure PS is lower than or equal to 30 bar and containing non-explosive, non-flammable, non-toxic and non-oxidizing fluids or powder.

This European Standard does not apply to carbon dioxide fire extinguishers.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 3-7:2004+A1:2007, *Portable fire extinguishers - Part 7: Characteristics, performance requirements and test methods*

EN 1866-1:2007, *Mobile fire extinguishers - Part 1: Characteristics, performance and test methods*

EN 10204:2004, *Metallic products - Types of inspection documents*

EN 13134, *Brazing - Procedure approval*

EN 13445-1, *Unfired pressure vessels - Part 1: General*

EN 13445-2, *Unfired pressure vessels - Part 2: Materials*

EN 13445-3:2009, *Unfired pressure vessels - Part 3: Design*

EN 13445-4, *Unfired pressure vessels - Part 4: Fabrication*

EN 13445-5, *Unfired pressure vessels - Part 5: Inspection and testing*

EN ISO 9017, *Destructive tests on welds in metallic materials - Fracture test (ISO 9017)*

EN ISO 9606-1, *Qualification testing of welders - Fusion welding - Part 1: Steels (ISO 9606-1)*

EN ISO 9606-2, *Qualification test of welders - Fusion welding - Part 2: Aluminium and aluminium alloys (ISO 9606-2)*

EN ISO 4892-2, *Plastics - Methods of exposure to laboratory light sources - Part 2: Xenon-arc lamps (ISO 4892-2)*

EN ISO 10297, *Transportable gas cylinders - Cylinder valves - Specification and type testing (ISO 10297)*

EN ISO 13585, *Brazing - Qualification test of brazers and brazing operators (ISO 13585)*

EN ISO 14732, *Welding personnel - Qualification testing of welding operators and weld setters for mechanized and automatic welding of metallic materials (ISO 14732)*

EN ISO 15609-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure specification - Part 1: Arc welding (ISO 15609-1)*

EN ISO 15614-1, *Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 1: Arc and gas welding of steels and arc welding of nickel and nickel alloys (ISO 15614-1)*

EN ISO 15614-2, *Specification and qualification of welding procedures for metallic materials - Welding procedure test - Part 2: Arc welding of aluminium and its alloys (ISO 15614-2)*

EN ISO 4126-2, *Safety devices for protection against excessive pressure - Part 2: Bursting disc safety devices (ISO 4126-2)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 1866-1:2007 and the following apply.

3.1
mobile fire extinguisher
portable fire extinguisher with a total mass > 20 kg, fitted with wheels to enable the user to manually move and operate the extinguisher

3.2
pressure at maximum operating temperature (pressure experimentally measured)
P_{Tmax}
pressure measured in the extinguisher after stabilization during at least 24 h at maximum operating temperature T_{max} (≥ 60 °C); for cartridge operated extinguishers, the maximum pressure is the maximum pressure recorded for 0,5 s during a period of 3 min, excluding the first 5 s after release of the propellant gas

3.3
maximum allowable pressure (maximum declared pressure)
PS
maximum pressure for which the equipment is designed, as specified by the manufacturer and which is in any case greater than or equal to P_{Tmax}

3.4
bursting pressure
P_r
maximum pressure measured during a bursting test

3.5
fittings
pressure accessories, including operating devices, filling caps, hose assemblies, pressure gauges and pressure indicators

3.6
T_{max}
maximum operating temperature declared by the manufacturer

3.7
T_{min}
minimum operating temperature declared by the manufacturer

4 Symbols and abbreviations

For the purposes of this standard, the following symbols and abbreviations apply:

PS	maximum allowable pressure in bar
PT	test pressure in bar

D	nominal external diameter of the body, or the largest external value of the perpendicular section of the axis, in mm
P_r	bursting pressure in bar
T_{max}	maximum operating temperature, in °C
P_{Tmax}	pressure at maximum operating temperature, in bar
T_{min}	minimum operating temperature, in °C

5 Materials

All materials shall be suitable for the intended use and assemblies shall meet the requirements of EN 1866-1:2007, 7.2 Corrosion tests.

The materials used for pressure bearing parts shall be defined in a detailed specification which forms an integrated part of the design.

This specification shall contain at least detailed descriptions of:

— all raw materials used, including the normal production tolerances;

— the processes used, the process parameters and the normal admissible process tolerances;

— the relevant required material properties after processing.

The materials used for non-pressure bearing parts and accessories of extinguishers shall be compatible with the materials used for the pressure bearing parts.

Plastic components shall fulfil the clauses of Annex B except hoses, pistols and nozzles.

For the materials used in the type testing and type approval, inspection documents in accordance with Annex G shall be provided.

All materials used in the extinguisher assembly shall be compatible with all other components including extinguishing media. Particular attention shall be given to incompatibilities that may result in galvanic corrosion and stress corrosion.

6 Design and prototype testing

6.1 Calculation design method

EN 13445-3:2009, Clause 7 contains recognized calculation methods. If a body of a mobile fire extinguisher is designed in accordance with these recognized calculation methods no burst pressure test is required.

If these recognized calculation methods are used for the design of the body, all relevant aspects from EN 13445 parts 1 to 5 shall be observed.

6.2 Experimental design method

The experimental design method may be used for bodies with a volume up to 200 l.

If a body of a mobile fire extinguisher is designed with an experimental design method, a burst test of the body is required.

The wall thickness of the body shall not be less than the wall thickness given by the formula below.

$$S = \frac{D \times PT}{20 \times R}$$ for the wall thickness of the body (1)

where

S is the wall thickness, in millimetres;

D is the external diameter of the body, in millimetres;

PT is the test pressure, being 1,43 x *PS*, in bar;

R is 80 % of the minimum yield strength of the material specified by the manufacturer, in MPa.

6.3 Prototype testing

6.3.1 Pressure test

6.3.1.1 Test conditions

Two bodies including accessories shall be submitted to the hydrostatic pressure test which shall be carried out using apparatus that permits a regular increase of pressure at a maximum of 2 bar/s up to the moment the test pressure *PT* is reached.

6.3.1.2 Requirements

The test pressure *PT* shall not be less than 1,43 times the maximum allowable pressure *PS*, with a minimum of 20 bar.

The test pressure shall be maintained for a minimum of 30 s and the body shall remain tight.

After the test, the volume of the body shall not increase by more than 1 %.

6.3.2 Burst test

6.3.2.1 Test conditions

If the body is not designed in accordance with EN 13445 parts 1 to 5, one sample shall be subjected to a burst test.

The burst test under hydraulic pressure shall be carried out using an installation which permits a regular increase of pressure at not more than 2 bar/s until the body bursts and also permits the variation of pressure to be recorded as a function of time.

6.3.2.2 Requirements - Bodies

The burst pressure P_r shall not be less than 2,7 times the maximum pressure *PS*.

The burst test shall not cause the body to fragment.

The main break shall show no signs of brittleness, for example the edges of the break shall not be radial, but shall be inclined relative to a diametrical plane and shall have a reduction in area over their entire thickness.

The break shall not show any obvious defects in the material.

The break shall not originate in the body marking or weld.

6.3.2.3 Requirements – Fittings

The bursting test shall be carried out on three samples of all fittings, except for hoses and coupling (see Clause 7).

The bursting pressure P_r shall not be less than 2,7 times the maximum allowable pressure *PS*.

The burst test shall not cause the valve and fitting to fragment.

The break shall not show any obvious defects in the material.

The break shall not originate in the valve or fitting marking area.

6.4 Macroscopic examination

On two bodies each weld subject to pressure shall be examined; the macroscopic examination of a transverse section of the weld, in accordance with EN ISO 9017, shall show complete fusion over the area with preparation acid and any defects shall be revealed.

If there is any doubt, a microscopic examination of the suspect area shall be carried out.

6.5 Attached parts

Attached parts shall be made so not to cause any dangerous stresses or any specific corrosion risks.

6.6 Overfill pressure test

This test is required for water based extinguishing media cartridge operated extinguishers only.

One extinguisher shall be tested in accordance with Annex D. During this test, no components shall be ejected.

6.7 Requirements for components subject to pressure

6.7.1 Test conditions

Two samples of each type of component subject to internal pressure shall be submitted to the pressure test which shall be carried out using apparatus that permits a regular increase of pressure at a maximum of 2 bar/s up to the moment the test pressure *PT* is reached.

6.7.2 Requirements

The test pressure *PT* shall not be less than 1,43 times the maximum allowable pressure *PS,* with a minimum of 20 bar.

The test pressure shall be maintained for a minimum of 30 s and the components shall remain leak-tight and show now defects such as cracks, splits or ejection of parts.

6.8 Hose assembly and attached components

6.8.1 Requirements

The hose assembly and attached components shall function throughout the operating temperature range, and coupling systems shall be designed and fitted in such a way that they cannot damage the hose.

6.8.2 Prototype testing

When tested in accordance with Annex E, the bursting pressure of the hose shall conform to:

— three times the maximum allowable pressure *PS*, the test being carried out at (20 ± 5) °C;

— twice $P(T_{max})$, the test being carried out at (T_{max} ± 2) °C and at (T_{min} ± 2) °C.

6.9 Propellant gas cylinders

Propellant gas cylinders shall fulfil the requirements of Annex F.

7 Manufacturing

7.1 General requirements

The manufacturer of the wheeled extinguisher or his sub-supplier where applicable, shall have manufacturing means and processes suitable for fabricating the extinguisher assembly and its composing parts in accordance with this document.

The manufacturer shall ensure that the materials and components used in the fabrication of the extinguisher are free from any defect likely to impair the safe use of the extinguisher.

7.2 Welded and brazed parts

7.2.1 General

Butt welds in the strength envelope shall be formed using an automatic welding procedure. Welds and brazed joints shall be free from defects which may impair the safe use of the body.

7.2.2 Welding procedures

The weld design and the welding procedures shall be described in a welding procedure specification in accordance with EN ISO 15609-1 and shall be qualified in accordance with EN ISO 15614-1 or EN ISO 15614-2.

7.2.3 Welding personnel

The welders shall be qualified in accordance with EN ISO 9606-1 or EN ISO 9606-2 and the operators in accordance with EN ISO 14732.

7.2.4 Brazing procedures

The braze design and the brazing procedures shall be described in a brazing procedure specification in accordance with EN 13134.

7.2.5 Brazing personel

The brazers shall be qualified in accordance with EN ISO 13585.

7.3 Traceability

7.3.1 Pressure retaining parts

The identification and the control of the materials for all pressure retaining parts shall be such as to ensure that the materials used in manufacture meets the specification of the design.

This is realized by application of adequate procedures, internal to the manufacturer such as batch control.

7.3.2 Operating devices, filling caps and hose assemblies

The operating devices, filling caps and hose assemblies which are or may be subjected to pressure during normal use shall be indelibly marked to permit subsequent identification and traceability.

7.4 Marking

The marking of the extinguisher shall comprise at least:

a) mark of the body manufacturer as registered, for identification;

b) serial or batch number;

c) year (two digits or four digits) and month (two digits) of manufacture separated with a slash, for example: 13/03;

d) test pressure in bar, with the letters *PT* before and followed by Bar;

e) maximum allowable pressure in bar, with the letters *PS* before and followed by Bar;

f) minimum and maximum allowable operating temperatures T_{min} and T_{max};

g) mark of the extinguisher assembly manufacturer as registered, for identification.

Markings a) to e) shall be applied to the metal of the body or on a plate permanently attached to the body by hard stamping or engraving. Marking f) and g) may be incorporated in the extinguisher label.

NOTE Other requirements of the extinguisher label are specified in EN 1866–1.

8 Inspection and testing during manufacturing

8.1 Assemblies

The body and the accessories shall be pressure tested prior to assembly, because a hydrostatic test after assembly may be harmful.

8.2 Extinguisher bodies

8.2.1 Non-destructive examination personnel

The non-destructive testing examination personnel shall be competent to carry out the processes involved.

8.2.2 Non-destructive testing

All extinguisher bodies shall be tested for resistance to test pressure and shall meet the requirements of 8.2.3.

8.2.3 Requirements

The hydrostatic test pressure *PT* shall not be less than 1,43 times the allowable pressure *PS*, with a minimum of 20 bar. The test pressure shall be maintained for a minimum of 30 s and the body shall not leak. After the test the body shall not show any visible sign of permanent deformation.

8.3 Accessories and fittings (excluding pressure relief devices)

Accessories and fittings subject to pressure shall meet the following requirements. Compliance shall be demonstrated by pressure testing components selected from production using an adequate sampling plan.

The test pressure *PT* shall not be less than 1,43 times the maximum allowable pressure *PS*, with a minimum of 20 bar.

The test pressure shall be maintained for a minimum of 30 s and the fittings shall remain tight and show no dangerous defect.

The fittings need not to be tested as part of the complete extinguisher but the test equipment connection and blanking features shall replicate the adjacent components.

8.4 Final inspection

After complete assembly of the mobile extinguisher, a final inspection shall be carried out to ensure that all parts comply with the approved design of the extinguisher and manufacturing records and that the assembly was carried out correctly.

Annex A
(informative)

Classification of the different parts of an extinguisher subject to internal pressure

In the framework of “Pressure Equipment Directive” the different parts under pressure forming the assembly of an extinguisher can be classified as indicated in Table A.1.

Table A.1 — Classification

Part	Type of equipment	Category	Table from Annex II
Body	Vessel	Category III or IV	Table 2
Operating device	Pressure accessory	Art. 3 § 3 or category I in function of DN	Table 7
Hose	Piping	Art. 3 § 3 or category I in function of DN	Table 7
Pressure gauge or indicator	Pressure accessory	Art. 3 § 3 or category I in function of DN	Table 7
Filling cap	Pressure accessory	Art. 3 § 3 or category I in function of DN	Table 7
Hose assembly and attached components	Pressure accessory	Art. 3 § 3 or category I in function of DN	Table 7

Annex B
(normative)

Specifications for plastics components (except hoses, pistols and nozzles)

B.1 General

NOTE See 6.3 and 6.4.

All tests and verifications shall be carried out on components conforming at every point to mass produced components with regard to the material used, the shape and the manufacturing process. The plastic material used shall always be identifiable. Any modification of the material, shape or manufacturing process shall necessitate a new test.

The components shall be verified in the as-delivered condition with regard to their conformity with the manufacturing plan, their appearance, dimensions and weight.

The manufacturer shall prove by means of regular inspection of the manufacturing process that the requirements of this European Standard are met in mass production.

B.2 Requirements for plastics components subject to pressure

B.2.1 General

For plastic components subject to pressure, the specifications of B.2.2, B.2.3, B.2.4, B.2.5 and B.2.6 are applicable. The manufacturer of such components shall make available data sheets relating to the product and to its processing.

B.2.2 Burst under pressure

Three components shall be subjected to the burst pressure by means of suitable liquid at temperatures of (20 ± 3) °C, (T_{max} ± 3) °C and (T_{min} ± 3) °C. The rate of increase of pressure shall not exceed 2 bar/s.

The burst pressure shall be at least equal to 3,4 times the maximum allowable pressure *PS* and shall not be less than 55 bar.

B.2.3 Temperature conditioning 60 °C

Three plastics components normally subject to pressure in operating condition shall be conditioned at a temperature of (60 ± 3) °C for 500 h.

Then they shall be conditioned in an atmosphere of 50 % relative humidity and at a temperature of (20 ± 3) °C until their weight stabilizes.

Then they shall be checked to see that they comply with the manufacturing plans, appearances, dimensions and weight.

The plastics components shall then be subjected to the burst pressure by means of suitable liquid for temperature of (20 ± 3) °C. The rate of increase of pressure shall not exceed 2 bar/s.

The burst pressure shall be at least equal to 3,4 times *PS* but not less than 55 bar for all other components.

B.2.4 Ageing test - Xenon arc

Six components shall be subjected to an artificial ageing test as described in EN ISO 4892-2, Xenon arc source method A for a period of 500 h under the following conditions:

— (65 ± 3) °C black panel temperature;

— (50 ± 5) % relative humidity;

— spray cycle (102 ± 0,5) min dry interval; (18 ± 0,5) min water spraying;

— total dose of exposure 1 GJ/m^2 (500 h at 550 W/m^2).

Then, they shall be conditioned in an atmosphere with a relative humidity of 50 % and at a temperature of (20 ± 3) °C until their weight stabilizes.

Then, they shall be checked to see that they comply with the manufacturing plans, appearances, dimensions and weight. A change in colour is permitted.

Three of these plastics components shall then be subjected to a burst pressure test using a suitable liquid at a temperature of (20 ± 3) °C. The rate of increase of pressure shall not exceed 2 bar/s.

Three components shall be subjected to the burst pressure using a suitable liquid at a temperature of T_{min} ± 3 °C. The rate of increase of pressure shall not exceed 2 bar/s.

The burst pressure shall be at least equal to 3,4 times *PS* but not less than 55 bar for all other components.

B.2.5 Impact test after ageing at 20 °C

Five components shall be subjected to an artificial ageing test as described in EN ISO 4892-2, Xenon arc source method A for a period of 500 h under the following conditions:

— (65 ± 3) °C black panel temperature;

— (50 ± 5) % relative humidity;

— spray cycle (102 ± 0,5) min dry interval; (18 ± 0,5) min water spraying;

— total dose of exposure 1 GJ/m^2 (500 h at 550 W/m^2).

They shall then be stored in an atmosphere with a relative humidity of 50 % and a temperature of (20 ± 3) °C until their weight stabilizes.

Then, the plastics components shall be fitted to the wheeled extinguishers which are 95 % filled with water and pressurized with nitrogen up to the maximum allowable pressure *PS*. The wheeled extinguishers shall then be subjected to the impact test with an impact on the top and the four sides of the components.

In the impact test, the hammer shall be made of steel, be cylindrical with a diameter of 75 mm and have a total mass of 4 kg, its bottom surface flat and it shall be capable of falling free.

The drop height is 500 mm.

One new plastics component may be used for each test.

During the test, no change which is capable of affecting safety shall appear in the component (scaling, fracture, crack). Non dangerous leaks are acceptable.

B.2.6 Plastic/metal thread design (Jet control devices at the end of hoses are excluded)

Plastic/metal threaded connections between the cylinder and the operating device and/or filling cap shall be designed so as to avoid the possibility of the plastic thread becoming damaged when coming into contact with the metal thread.

When the operating device or filling cap is retained by a screw thread or threads produced in a non-metallic material, all threads not having the characteristics defined below shall be prohibited:

— the thread pitch shall be 2,9 mm minimum and the width of the thread crest of both components, when measured normal to the helix angle shall be ≥ 0,6 mm;

— the included angle of the thread form when measured normal to the helix angle shall be ≥ 18° (see Figure B.1);

— the length of incomplete thread at the start of the non-metallic thread shall be no greater than the actual depth of the thread.

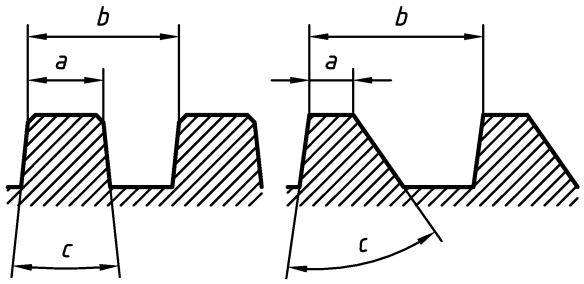
The start of the thread is that part which is first engaged with the mating component as the two are assembled.

Prior to carrying out the tests in accordance with B.2.1, B.2.2 and B.2.3, each sample shall be prepared in the following manner:

— screw and unscrew the closure 100 times with its mating part, tightening each time in accordance with the manufacturer's maintenance instructions;

— test the samples in accordance with the requirements of B.2.1, B.2.2 and B.2.3.

If the closure seals are of the replaceable type, then new seals shall be fitted immediately, prior to carrying out the burst tests and at any time during the screwing/unscrewing cycle when deterioration is evident.



Key

a crest width

b thread pitch

c thread included angle

Figure B.1 — Example of thread profile

Annex C
(normative)

Pressures and temperatures

The scheme given in Table C.1 illustrates the definitions of pressure given in Clause 3.

Table C.1 – Scheme of pressure

Name	Increasing pressure	Symbol	Requirement
Bursting pressure		P_r	$P_r \geq 2{,}7\ PS$
Test pressure		PT	$PT \geq 1{,}43\ PS$
Maximum allowable pressure		PS	$PS \geq P_{tmax}$
Pressure at maximum operating temperature		P_{Tmax}	

The scheme given in Table C.2 illustrate the definitions of temperature given in Clause 3.

Table C.2 – Scheme of temperature

Name	Increasing temperature	Symbol	Requirement
Maximum operating temperature declared by the manufacturer		T_{max}	$T_{max} \geq +60°C$
Minimum operating temperature declared by the manufacturer		T_{min}	

Annex D
(normative)

Overfill Pressure Test

NOTE See 6.6.

A propellant gas operated water based media extinguisher with all its associated fittings and the original filling shall be filled to 95 % of brim-full capacity and fitted with the correct cylinder.

The extinguisher shall be conditioned at T_{max} for 24 h.

The extinguisher shall then be operated in the correct manner and the results recorded; where there is a jet control device fitted at the end of the hose it shall remain closed during the test. If this jet control device is designed to open at in case of overpressure, it shall be blanked off for the purpose of this test.

Annex E
(normative)

Test for burst pressure of hose assembly and attached components

NOTE See 7.2.

Where testing is to be carried out at a temperature other than 20 °C, condition the hose and attached components at the relevant temperature for a period of between 12 h and 24 h.

The hose and attached components shall be fitted to a means of providing the required pressure and the open end blanked off by suitable means.

Increase the pressure in the hose and attached components to the minimum applicable value as specified in 7.2 in a time of not less than 30 s and maintain the pressure for a further 30 s. If the hose and attached components does not burst, increase the pressure until the hose and/or attached components does burst and record the pressure at which it occurs.

Annex F
(normative)

Propellant gas cylinders

F.1 General requirements

The propellant gas cylinder of a wheeled extinguisher consists of a cylinder and a discharge valve. The propellant gas cylinder and the type and quantity of propellant gas shall be part of the wheeled extinguisher design.

For propellant gas cylinders filled with CO_2, the filling ratio shall be chosen in accordance with the test pressure of the cylinder and shall be ≤ 0,750 kg/l.

The filling tolerance shall be +0 −5 %.

F.2 Cylinder

It is important that cylinders fulfil the requirements of:

— Directive 2010/35/EU (TPED) and bear the PI-marking, or

— Directive 1997/23/EU (PED) and bear the CE-marking.

Cylinders shall be suitable for the chosen filling ratio or filling pressure.

The thread of the cylinder shall correspond with the thread of the cylinder valve. This thread shall be marked on the cylinder.

F.3 Cylinder valve

It is important that cylinder valves fulfil the requirements of:

— Directive 2010/35/EU (TPED) and bear the PI-marking, or

— Directive 1997/23/EU (PED) and bear the CE-marking.

Cylinder valves shall be submitted to the impact test in accordance with EN ISO 10297.

The thread of the cylinder valve shall be corresponding with the thread of the cylinder. This thread shall be marked on the valve.

For propellant gas cylinders filled with CO_2, the cylinder valve shall be fitted with an integrated bursting disc device to provide a controlled discharge of the contents of the propellant gas cylinder in case of overfilling and/or excessive ambient temperatures, e.g. in case of a fire. The bursting disc device shall comply with EN ISO 4126-2.

F.4 Marking

In addition to the standard cylinder markings, the propellant gas cylinder shall be marked with the following information:

— the type of propellant gas;

— the quantity of propellant gas (filled mass in kg or filled pressure in bar);

— the identification of the wheeled extinguisher manufacturer.

This information may be placed on a label, permanently attached to the propellant gas cylinder.

Annex G
(normative)

Materials - quality control documents

For materials intended for use as pressure bearing parts of the extinguisher and for attachments welded directly to the pressure bearing part of the extinguisher, the manufacturer shall ensure compliance of these materials with the approved design, by obtaining form the material manufacturer a declaration of compliance, which is traceable to the supplied material batch.

The declaration of compliance consists of a declaration of the material manufacturer that the product supplied is in compliance with the requirements of the specification and the order and an inspection document in accordance with EN 10204, as defined in Table G.1.

Table G.1

Part	**Inspection document** EN 10204:2004
Body	3.1 or 3.2
Operating device / Filling cap body - metallic with safety device - metallic without safety device - plastic with or without safety device	 3.1 or 3.2 2.2 2.2
Hose assembly	2.2
Other components attached to the pressure bearing part of the extinguisher by welding or brazing	2.2
Welding consumables	2.2

NOTE An inspection document of a higher level is acceptable.

Annex ZA
(informative)

Relationship between this European Standard and the essential requirements of EU Directive 97/23/EC

This European Standard has been prepared under a mandate given to CEN by the European Commission to provide a means of conforming to Essential Requirements of the New Approach Directive 97/23/CE.

Once this standard is cited in the Official Journal of the European Union under that Directive and has been implemented as a national standard in at least one Member State, compliance with the clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding Essential Requirements of that Directive and associated EFTA regulations.

Table ZA.1 – Correspondence between this European Standard and Directive 97/23/EC

Clauses in EN 1866–2	**Essential requirements of Directive 97/23/EC**	**Qualifying remarks/Notes**
6.1	2.2.3	Calculation method
6.2, 6.3, 6.4, 6.6, Annex D	2.2.4	Experimental design method
7.2	3.1.2	Permanent joining
7.3	3.1.5	Traceability
8.4	3.2.1	Final inspection
8.1, 8.2, 8.3	3.2.2	Proof test
7.4	3.3a	Marking and labelling
8.2.3, 8.3	7.4	Hydrostatic test pressure
5	4.1b	Materials
5	4.1c	Materials
5	4.1e	Materials

WARNING — Other requirements and other EU Directives may be applicable to the product(s) falling within the scope of this standard.

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