BS EN 15767-3:2010

BSI Standards Publication

Portable equipment for projecting extinguishing agents supplied by fire fighting pumps — Portable monitors

Part 3: Foam devices

National foreword

This British Standard is the UK implementation of EN 15767-3:2010.

The UK participation in its preparation was entrusted to Technical Committee FSH/17/8, Hydrants, hoses and associated water delivery equipment.

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

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Portable equipment for projecting extinguishing agents supplied by fire fighting pumps - Portable monitors - Part 3: Foam devices

Equipement portable de projection d'agents d'extinction alimenté par des pompes à usage incendie - Lances-canon portables - Partie 3: Dispositifs pour la mousse

Tragbare Geräte zum Ausbringen von Löschmitteln, welche mit Feuerlöschpumpen gefördert werden - Tragbare Werfer - Teil 3: Schaumdüsen

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Foreword

This document (EN 15767-3:2010) has been prepared by Technical Committee CEN/TC 192 “Fire service equipment”, the secretariat of which is held by BSI.

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of an identical text or by endorsement, at the latest by March 2011, and conflicting national standards shall be withdrawn at the latest by March 2011.

EN 15767 consists of the following parts, under the general title "*Portable equipment for projecting extinguishing agents supplied by fire fighting pumps — Portable monitors*":

— Part 1: General requirements for portable monitor assemblies;

— Part 2: Water nozzles;

— Part 3: Foam devices.

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1 Scope

1.1 In addition to the requirements given in EN 15767-1, this part of this European standard applies to devices designed for aspirating air and projecting low expansion foam and, in some cases, inducting foam concentrate. It specifies requirements for safety, performance, classification and designation, as well as test methods, instructions for use and maintenance and marking.

1.2 This European Standard is only applicable to foam devices which are manufactured after its date of publication.

2 Normative references

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

EN 15767-1:2009*, Portable equipment for projecting extinguishing agents supplied by fire fighting pumps — Portable monitors — Part 1: General requirements for portable monitor assemblies*

EN 15767-2, *Portable equipment for projecting extinguishing agents supplied by fire fighting pumps — Portable monitors — Part 2: Water nozzles*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15767-1:2009 and the following apply.

3.1
foam concentrate
liquid which is diluted with water to produce foam solution

[EN 1568-1:2008, 3.7]

3.2
foam solution
solution of foam concentrate in water

[EN 1568-1:2008, 3.8]

3.3
foam device
device designed for aspirating air and projecting foam and, in some cases, inducting foam concentrate

NOTE Several types of foam devices are described from 3.3.1 to 3.3.4.

3.3.1
foam cannon
device that transforms the foam solution pressure into velocity and mixes air with the foam solution to produce a coherent stream of firefighting foam in a tube

3.3.2
self-inducting nozzle
nozzle as described in EN 15767-2 equipped with a self-inducting system

3.3.3
pick-up tube
non collapsible tube for transferring the foam concentrate to the inducting system

3.3.4
foam attachment
device fitted to a water nozzle or a self-inducting nozzle that mixes air with the foam solution to produce firefighting foam

3.4
inducting system
device for mixing foam concentrate with water at a set rate

3.5
self-inducting system
inducting system integrated into a foam device

3.6
spreader
device to modify the shape of the foam stream into a flat spray

3.7
induction rate
ratio of foam concentrate to the foam solution

3.8
metering device
device controlling the induction rate

3.9
maximum flow
Q_{max}
maximum combination of flow and pressure under which the foam device can be operated

NOTE The value of the maximum flow is given by the manufacturer.

3.10
expansion
expansion value
expansion ratio
ratio of the volume of foam to the volume of the foam solution from which it was made

[EN 1568-1:2008, 3.2]

3.11
low expansion foam
foam which has an expansion ratio less than 20

[EN 1568-1:2008, 3.3]

4 Requirements

4.1 Mechanical characteristics

4.1.1 Mass

The foam device shall have a maximum mass as specified in Table 1. The maximum mass does not apply to seawater-resistant foam devices.

Table 1 — Maximum mass

Q_{max} l/min	**Maximum mass of the foam device** kg
< 2 000	4
2 000 - 4 000	8
4 000 – 8 000	12
> 8 000	20

4.1.2 Operating and handling elements

The torques necessary to move the operating elements shall not exceed the values given in Table 2 at pressures up to the nominal pressure.

Table 2 — Maximum torques

Type of operating element	**Torque** N·m
Lever	20
Valve handle	15
Rotating operating elements	15

4.1.3 Flow adjustment positions

The flow settings of the foam device equipped with selectable flowrate shall be clearly identifiable by visual means.

4.1.4 Jet adjustment positions

The different jet positions of a foam device equipped with adjustable jet positions shall be clearly marked.

4.2 Materials

When tested in accordance with Clause 5 materials shall conform to Clause 4.

The foam device shall pass the heat and frost tests specified in 5.3.

4.3 Hydraulic characteristics

4.3.1 Pressures

The following pressures, measured at the foam device inlet, shall be used for the determination of the hydraulic characteristics:

— reference pressure: p_R = (6 ± 0,1) bar;

— nominal pressure: p_N = 16 bar.

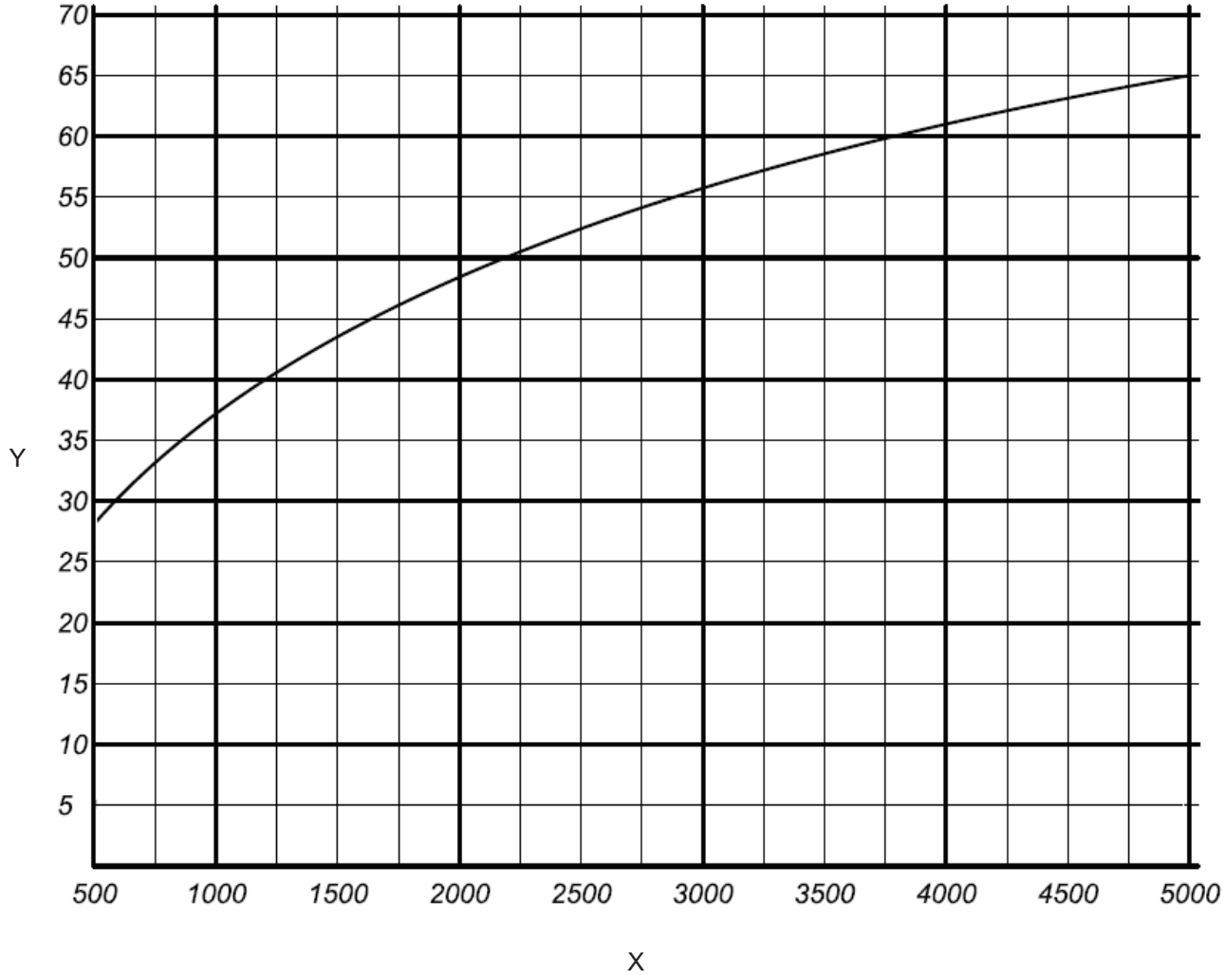
4.3.2 Flowrates

All flowrates indicated on the foam device shall be measured at the reference pressure p_R.

The flowrates measured at the reference pressure p_R shall not deviate by more than - 0/+ 10 % of the flowrate setting of the foam device.

4.3.3 Effective throw

The foam device shall achieve, for each flowrate position above 500 l/min, a minimum effective throw d_{eff} as shown in Figure 1, when set at the reference pressure.



Key

X flowrate Q in litres per minute

Y effective throw d_{eff} in metres

Figure 1 — Effective throw

4.3.4 Spray jet

The spray jet of self-inducting nozzles shall have a spray angle of at least 100°.

5 Testing and verification

5.1 General

All tests shall be with water only (see also information in Annex A).

Unless otherwise specified, tests shall be at the reference pressure p_{R}, in the following order, on foam cannons, self-inducting nozzles and foam attachments.

NOTE Guidance for acceptance tests on delivery is given in Annex B.

5.2 Jet spray angle measurement

Arrange the self-inducting nozzle on a fixed support in a horizontal position 1,5 m above the ground, in a zone where the wind speed is lower than 2 m/s.

Arrange a rule perpendicular to the flow at a distance of 1 m. This rule shall be marked to determine the spray angle.

5.3 Heat and frost test

5.3.1 Sensitivity to heat

The foam device shall function, without restriction, after it has been stored 24 h at (55 ± 2) °C.

NOTE Hand protection should be used for this test.

5.3.2 Sensitivity to frost

The foam device shall be disconnected following operation for 1 min at the reference pressure p_R. It shall then be drained for 1 min and stored at a temperature of (– 15 ± 2) °C for 30 min. Following this, the operating elements shall be movable manually.

NOTE Hand protection should be used for this test.

5.4 Flow and throw test

The effective throw shall be measured under the following conditions, in accordance with Figure 2:

— portable monitor body on the ground in the normal working position;

— inclination: (30 ± 2);

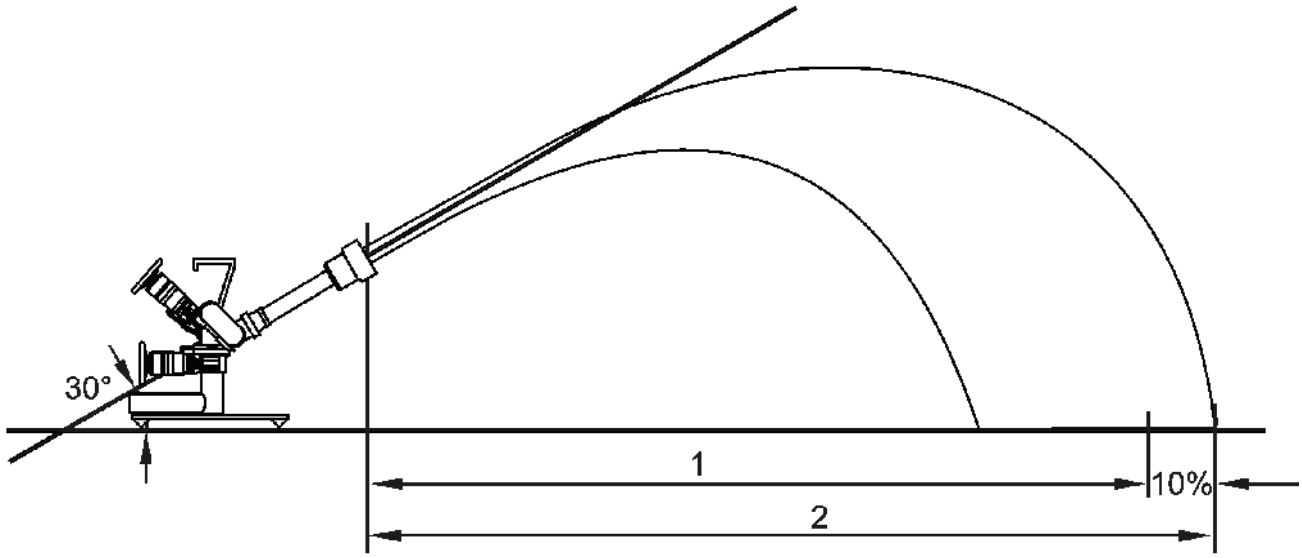
— pressure at the inlet of the foam device: p_R = 6 bar ± 0,1 bar;

— maximum wind speed: 2 m/s (Beaufort scale 3);

— effective throw (in metre): furthest droplets – 10 % = d_{eff} = 0,9 d_{max} .

The measurement shall be carried out when the system is stabilised.

The maximum effective throw shall be given in the instruction handbook.



Key

1 effective thow (d_{eff})
2 maximum throw (d_{max})

Figure 2 — Measurement of the effective throw

6 Information for use

6.1 Instruction and maintenance handbook

6.1.1 General

Each foam device shall be supplied with an instruction and maintenance handbook.

NOTE These instructions may be combined with those for the portable monitor body.

6.1.2 Instruction handbook

The instruction handbook shall contain at least the following information:

— name and/or logo and contact details of manufacturer;

— data sheet according to Annex C (see also an example of a complete data sheet in Annex D);

— product warnings;

— general information for use.

6.1.3 Maintenance handbook

The maintenance handbook shall at least contain:

— maintenance instructions;

— sectional or exploded diagram;

— spare parts list cross-referenced to diagram.

6.2 Marking

Foam devices shall be permanently marked with at least the following information:

— identification of the manufacturer;

— serial or batch number and year of manufacture;

— reference to this European Standard;

— Q_{max};

— p_N;.

— jet adjustment directions or positions, where applicable;

— flush position, where applicable;

— various flow positions, where applicable.

Annex A
(informative)

Effects of the foam concentrate on the performance of the foam devices

To compare the performance of the foam devices, all tests described in Clause 5 are run with water. However, the performance with water is only a guide.

The following characteristics are influenced by the make and condition of the foam concentrate:

— effective throw;

— expansion;

— metering (percentage).

It is recommended that manufacturers provide as much information as possible about the performance of their foam devices with different types of foam concentrates under operational conditions.

Annex B

(informative)

Acceptance test on delivery

Acceptance tests based on the safety and performance requirements of this part of this European Standard may be undertaken on delivery by the customer, by an independent or national testing organisation or by any other third party of the customers' choice and the results of the tests recorded.

The inspection may include:

— examination of all of the test results and the conformity documentation;

— confirmation that the foam device conforms to specification by visual and functional inspection or test;

— confirmation that the required foam device documentation, as specified in the standard, is available;

— confirmation that the performance and specification of the foam device conform to the standard.

Annex C
(normative)

Datasheet for foam devices

C.1 General

NOTE 1 The symbol * means "where applicable" in the whole datasheet.

NOTE 2 The actual test results can be entered in the data sheet, when these exceed the minimum requirements given in this European Standard.

A description of the equipment and the method used should be included in the data sheet.

C.2 General data

Manufacturer	
Type	
Maximum flow (l/min) Q_{max}	
Flowrate(s)	

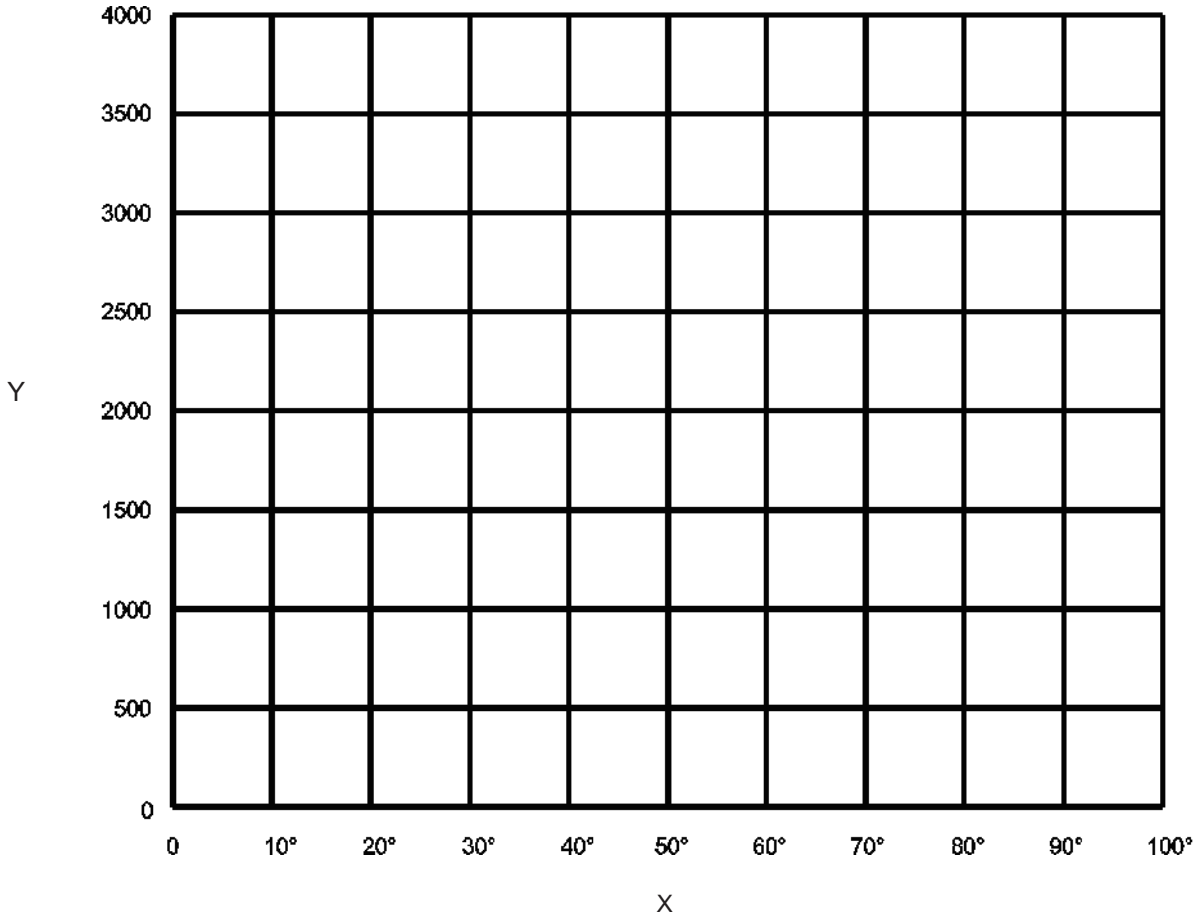
C.3 Flow – pressure chart

In the charts (see Figure C.2), the throw shall be written as shown in Figure C.1.

Key

NN throw (metres)

Figure C.1 — Representation method for throw at spray types



Key

X Angle of rotation [degrees]
Y Flow [l/min]

Figure C.2 — Flow chart template for foam device at p_R, as specified in EN 15767-3

C.4 Operational devices

Fitting system		
Jet / spray system*		
Flow adjustment system*		
Self-inducting device		
Metering device	**Type**	
	Induction rates	
Spreader		
Pick-up tube	**length**	
	Inside diameter	

C.5 Requirements

Number of the relevant subclause of this Part of this Standard	Item		Minimum required	Test result
4.1.1	**Maximum mass** (kg)			
4.1.2	**maximum torques** (N·m)	**Rotating elements**		
		Valve handle		
		Lever		
4.2	**Sensitivity to heat** (° C)			
	Sensitivity to frost (° C)			
4.3.3	**Effective throw** (m)			
4.3.4	**Maximum spray jet* : angle**			

C.6 Optional extra data (no requirements)

Ageing test	**UV test**	
	Ozone test	
	Corrosion test	

C.7 Data certified by*:

Annex D
(informative)

Example of completed datasheet for foam devices

D.1 General

NOTE The symbol * means "where applicable" in the whole datasheet.

D.2 General data

Manufacturer	**XYZ**
Type	**Foam-flow**
Q_{max}	**3 000 l/min at 9 bar**
Flow	**2 400 l/min at 6 bar**

D.3 Flow – pressure chart

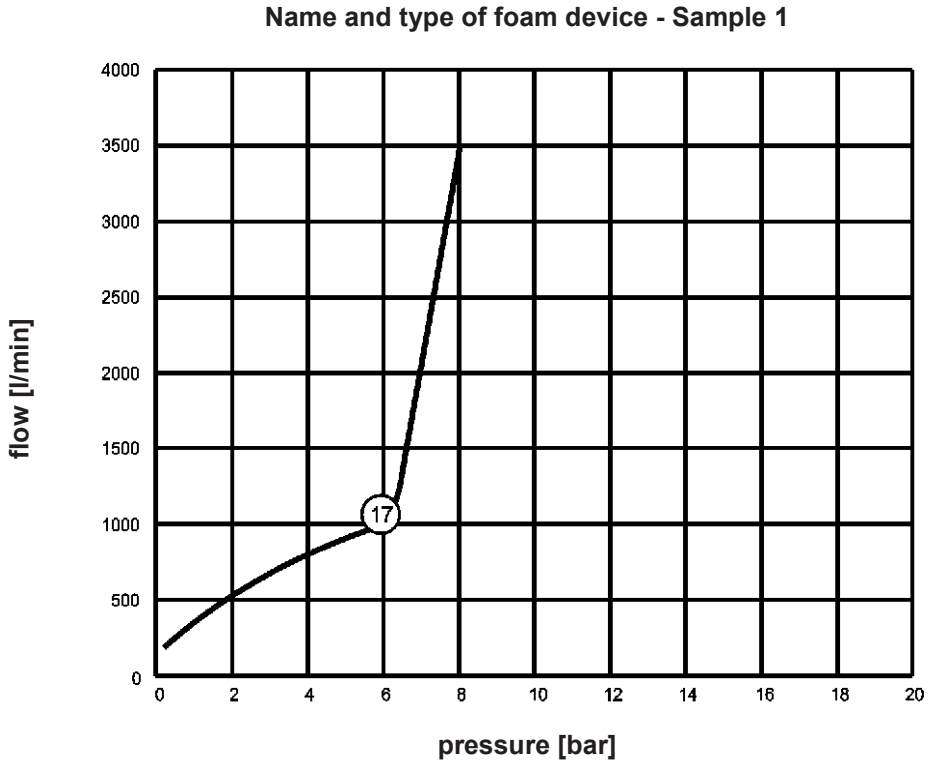


Figure D.1 — Pressure chart template (sample 1) for foam device

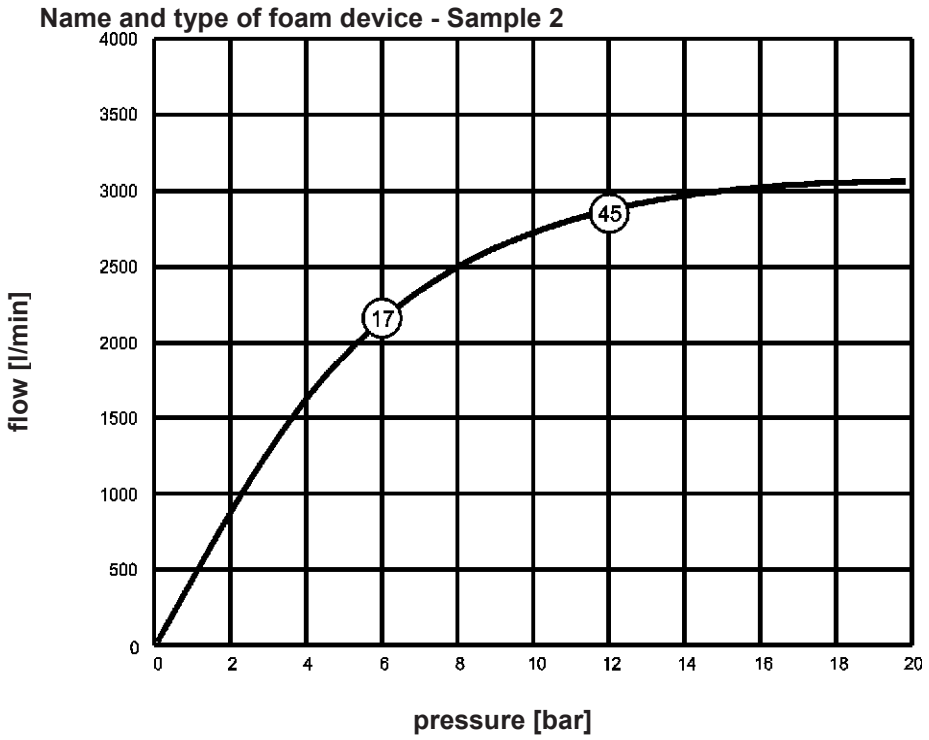


Figure D.2 — Pressure chart template (sample 2) for foam at minimum and maximum flow settings

D.4 Operational devices

Fitting system	Swivelling 2 ½ BSP thread (male, according to ISO 228)
Jet / spray system*	Rotating elements
Flow adjustment system*	No

D.5 Requirements

Number of the relevant subclause of this Part of this Standard	Item		Minimum required	Test result
4.1.1	**Maximum mass** (kg)		< 4,0	3,5
4.1.2	**maximum torques** (N·m)	**Rotating elements**	15	12
		Valve handle	15	10
		Lever	20	16
4.2	**Sensitivity to heat** (° C)		≥ + 55	60
	Sensitivity to frost (° C)		≤ -15	- 15
4.3.3	**Effective throw** (m)		> 58	60
4.3.4	**Maximum spray jet* : angle**		> 100	110

D.6 Optional extra data (no requirements)

Ageing test	**UV test**	
	Ozone test	
	Corrosion test	

D.7 Data certified by*:

Bibliography

[1] EN 1568-1:2008, *Fire extinguishing media — Foam concentrates — Part 1: Specification for medium expansion foam concentrates for surface application to water-immiscible liquids*

[2] ISO 228-1, *Pipe threads where pressure-tight joints are not made on the threads — Part 1: Dimensions, tolerances and designation*

[3] ISO 228-2, *Pipe threads where pressure-tight joints are not made on the threads — Part 2: Verification by means of limit gauges*

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