



BSI Standards Publication

## Fixed firefighting systems – Foam systems

---

Part 2: Requirements and test methods for components

## National foreword

This British Standard is the UK implementation of EN 13565-1:2019. It supersedes BS EN 13565-1:2003+A1:2007, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee FSH/18/7, Foam/Media Systems.

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

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

© The British Standards Institution 2019  
Published by BSI Standards Limited 2019

ISBN 978 0 580 94187 0

ICS 13.220.20

**Compliance with a British Standard cannot confer immunity from legal obligations.**

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2019.

### Amendments/corrigenda issued since publication

Date	Text affected
------	---------------

---

EUROPEAN STANDARD

EN 13565-1

NORME EUROPÉENNE

EUROPÄISCHE NORM

May 2019

ICS 13.220.20

Supersedes EN 13565-1:2003+A1:2007

English Version

## Fixed firefighting systems - Foam systems - Part 1: Requirements and test methods for components

Installations fixes de lutte contre l'incendie -  
Systèmes à émulseurs - Partie 1 : Exigences et  
méthodes d'essais relatives aux composants

Ortsfeste Brandbekämpfungsanlagen -  
Schaumlöschanlagen - Teil 1: Anforderungen  
und Prüfverfahren für Bauteile

This European Standard was approved by CEN on 8 February 2019.

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 CEN-CENELEC Management Centre 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 CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



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

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

# Contents

Page

<b>European foreword</b> .....	<b>4</b>
<b>1 Scope</b> .....	<b>6</b>
<b>2 Normative references</b> .....	<b>6</b>
<b>3 Terms and definitions</b> .....	<b>7</b>
<b>4 General construction requirements</b> .....	<b>9</b>
4.1 Connections .....	9
4.1.1 Permanent connections and joints .....	9
4.1.2 Bolting of pressure retaining parts .....	9
4.2 Parts intended for removal during routine field maintenance .....	10
4.2.1 Removal .....	10
4.2.2 Re-assembly .....	10
4.3 Hydrostatic strength .....	10
4.3.1 Leak test .....	10
4.3.2 Mechanical strength .....	10
4.4 Castings .....	10
4.5 Corrosion resistance of metal parts .....	10
4.5.1 Salt spray corrosion resistance of metal parts .....	10
4.5.2 Copper alloy components stress corrosion test .....	11
4.5.3 Internal corrosion .....	11
4.6 Elastomers .....	11
4.7 Plastics and reinforced resin materials .....	11
4.7.1 General .....	11
4.7.2 Resistance to ageing .....	11
4.7.3 Resistance to exposure to liquids .....	12
4.8 Heat and fire resistance .....	12
4.8.1 Sprayers and nozzles .....	12
4.8.2 Foam generators .....	12
4.9 Components for low expansion foam systems .....	12
4.9.1 Foam branchpipes .....	12
4.9.2 Foam sprayers .....	12
4.9.3 Foam pourers and foam chambers .....	13
4.9.4 Vapour seals .....	13
4.9.5 Low back pressure and high back pressure foam generators .....	13
4.9.6 Semi-subsurface hose units .....	13
4.10 Components for medium and high expansion foam systems .....	13
4.10.1 Nozzles and sprayers .....	13
4.10.2 High expansion foam generators .....	13
4.11 Tanks and pressure vessels for foam concentrates or solutions .....	14
4.11.1 General .....	14
4.11.2 Tanks at atmospheric pressure .....	14
4.11.3 Pressure vessels .....	14
<b>5 Performance Characteristics of Foam Components</b> .....	<b>14</b>
5.1 Discharge coefficients and characteristics of branchpipes, sprayers and low and high back pressure foam generators .....	14
5.1.1 Single orifice components .....	14
5.1.2 Multiple orifice components .....	15
5.2 Quality of foam from aspirating components .....	15
5.2.1 Low and medium expansion components .....	15
5.2.2 High expansion components .....	15
5.3 Accuracy of proportioning components .....	15
<b>6 Documentation</b> .....	<b>15</b>
6.1 Preparation and maintenance .....	15

6.2	Installation and user documentation .....	16
6.3	Design documentation .....	16
<b>7</b>	<b>Marking</b> .....	<b>16</b>
<b>8</b>	<b>Evaluation of conformity — Initial type testing</b> .....	<b>16</b>
8.1	Conformity .....	16
8.2	Modification .....	17
8.3	Prior testing .....	17
8.4	Grouping .....	17
8.5	Related components .....	17
8.6	Normal production .....	17
8.7	Reference samples .....	17
8.8	Test sequence .....	17
	<b>Annex A (normative) Hydrostatic test</b> .....	<b>19</b>
	<b>Annex B (normative) Ageing test for plastics, thermoplastics or thermosets; and reinforced resin materials</b> .....	<b>20</b>
	<b>Annex C (normative) Liquid exposure test</b> .....	<b>21</b>
	<b>Annex D (normative) Heat and fire resistance test for foam generators</b> .....	<b>22</b>
	<b>Annex E (normative) Flow tests</b> .....	<b>23</b>
	<b>Annex F (normative) Quality of foam from aspirating components</b> .....	<b>24</b>
	<b>Annex G (normative) High expansion foam generator test</b> .....	<b>25</b>
	<b>Annex H (normative) Range tests for branchpipes</b> .....	<b>26</b>
	<b>Annex I (normative) Area coverage test for foam sprayers and nozzles</b> .....	<b>27</b>
	<b>Annex J (normative) Maximum flow and back pressure</b> .....	<b>29</b>
	<b>Annex K (normative) Insertion and deployment of semi-subsurface hose</b> .....	<b>31</b>
	<b>Annex L (normative) Salt spray corrosion test</b> .....	<b>32</b>
	<b>Annex M (normative) Stress corrosion test</b> .....	<b>33</b>
	<b>Annex N (normative) Internal corrosion test</b> .....	<b>34</b>

## European foreword

This document (EN 13565-1:2019) has been prepared by Technical Committee CEN/TC 191, “Fixed firefighting systems” 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 November 2019, and conflicting national standards shall be withdrawn at the latest by November 2019.

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

This document will supersede EN 13565-1:2003+A1:2007.

Compared to the previous edition, the following changes have been made:

- 1) the foreword has been updated;
- 2) normative references have been updated;
- 3) [4.1](#) revised;
- 4) [4.4](#) revised;
- 5) [4.5](#) revised;
- 6) [4.6](#) revised;
- 7) [4.9](#) replaces Clause 8;
- 8) [4.10](#) replaces Clause 9;
- 9) [4.11](#) replaces Clause 10;
- 10) [Clause 5](#) changed to ‘performance characteristics of foam components’;
- 11) [Clause 6](#), new clause ‘documentation’;
- 12) [Clause 7](#) replaces Clause 11;
- 13) [Clause 8](#) replaces Clause 12;
- 14) [Annex A](#) revised;
- 15) [Annex E](#) requirements clause reference added;
- 16) [Annex F](#) requirements clause reference added.
- 17) [Annex G](#) revised;
- 18) [Annex H](#) revised;
- 19) [Annex I](#) revised;
- 20) [Annex J](#) revised;
- 21) [Annexes K, L, M, N](#) added.

EN 13565, *Fixed firefighting systems — Foam systems*, is currently composed with the following parts:

- *Part 1: Requirements and test methods for components;*
- *Part 2: Design, construction and maintenance.*

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

## 1 Scope

The requirements of this document set out the materials, construction, and performance of components intended for use in fixed foam fire fighting systems, and using foam concentrates conforming to EN 1568-1 to EN 1568-4. The components covered are: proportioners, sprayers, semi-subsurface hose units, branchpipes, low/medium expansion foam generators, high expansion foam generators, foam chambers, tanks and pressure vessels. Methods of test are given in [Annex A](#) to [Annex K](#).

Requirements are also given for the provision of the characteristic data needed for correct application of components.

NOTE 1 Unless otherwise stated pressures are gauge pressures expressed in bar.

The requirements of this document do not cover, except where stated, the use of combinations of components to form part, or the whole, of a fire fighting system.

NOTE 2 Components conforming to this document are not necessarily compatible one with another.

Requirements for pumps, motors and the functioning of mechanical components (i.e. remote control turrets) are outside the scope of this document.

## 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1568-1:2018, *Fire extinguishing media — Foam concentrates — Part 1: Specification for medium expansion foam concentrates for surface application to water-immiscible liquids*

EN 1568-2:2018, *Fire extinguishing media — Foam concentrates — Part 2: Specification for high expansion foam concentrates for surface application to water-immiscible liquids*

EN 1568-3:2018, *Fire extinguishing media — Foam concentrates — Part 3 Specification for low expansion foam concentrates for surface application to water-immiscible liquids*

EN 1568-4:2018, *Fire extinguishing media — Foam concentrates — Part 4: Specification for low expansion foam concentrates for surface application to water-miscible liquids*

EN 12259-1:1999+A1:2001, *Fixed fire fighting systems — Components for sprinkler and water spray systems — Part 1: Sprinklers*

EN 1092-1, *Flanges and their joints — Circular flanges for pipes, valves, fittings and accessories, PN designated — Part 1: Steel flanges*

EN 12542, *LPG equipment and accessories — Static welded steel cylindrical tanks, serially produced for the storage of Liquefied Petroleum Gas (LPG) having a volume not greater than 13 m<sup>3</sup> — Design and manufacture*

EN ISO 225, *Fasteners — Bolts, screws, studs and nuts — Symbols, designations and dimensions (ISO 225)*

EN ISO 175, *Plastics — Methods of test for the determination of the effects of immersion in liquid chemicals (ISO 175)*

EN ISO 179-1, *Plastics — Determination of Charpy impact properties — Part 1: Non-instrumented impact test (ISO 179-1)*

EN ISO 180, *Plastics — Determination of Izod impact strength (ISO 180)*

EN ISO 527-1, *Plastics — Determination of tensile properties — Part 1: General principles (ISO 527-1)*