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BSI Standards Publication

Fixed firefighting systems — Foam systems

Part 2: Design, construction and maintenance

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National foreword

This British Standard is the UK implementation of EN 13565-2:2018, incorporating corrigenda April 2019 and May 2021. It supersedes BS EN 13565-2:2009, which is withdrawn.

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags. Text altered by corrigenda April 2019 and May 2021 is indicated in the text by AC AC.

The UK participation in its preparation was entrusted to Technical Committee FSH/18, Fixed fire fighting systems.

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

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Schaumlöschanlagen - Teil 2: Planung, Einbau und
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European foreword

This document (EN 13565-2:2018+AC:2019+AC:2021) 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of an identical text or by endorsement, at the latest by October 2019, and conflicting national standards shall be withdrawn at the latest by October 2019.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 includes Corrigendum 1 issued by CEN on 17 April 2019 and Corrigendum 2 issued by CEN on 2021.

This document supersedes AC EN 13565-2:2018 AC.

This document includes the corrigendum 1 which corrects Table 9, lines 1 and 2 and the key table of Figure 2.

This document includes the corrigendum 2 which corrects the bracket expression for the pressure loss of Formula (3).

The start and finish of text introduced or altered by corrigendum is indicated in the text by tags AC AC.

EN 13565, *Fixed firefighting systems — Foam systems* consists of 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.

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Introduction

Foam systems are designed to provide a homogeneous layer of bubbles, of aerated fire fighting foam concentrate and water, over the surface of flammable liquids (Class B) and/or combustible materials (Class A). The layer of bubbles will suppress the release of flammable vapours, exclude air, and cool the fuel and hot surfaces.

Applications for foam systems can be diverse so no one type of foam system can be prescribed. In addition, High Expansion Foam may be used to provide total flooding of enclosures with 3 dimensional hazards of either Class A and/or Class B fuels. Examples of the various types of foam system are set out in Table 1 below:

Table 1 — Typical uses of the various types of foam system

Hazard	Low expansion	Medium expansion	High expansion (indoors)
Flammable liquid storage tanks	Yes	No	No
Tank bunds/collecting areas	Yes	Yes	Yes + LNG/LPG
Process areas	Yes	Yes	Yes
Aircraft hangers	Yes	< 1 400 m ² only	Yes
Fuel transfer areas	Yes	Yes	Yes
Plastic packaging and storage	Yes	No	Yes
Plastic recycling	Yes	No	No
Refuse handling and storage	Yes	No	No
Liquefied Natural Gas	No	No	Yes (and outdoors)
Tyre storage	Yes	No	Yes
Rolled paper	No	No	Yes
Marine jetties	Yes	Yes	No
Oil filled transformers and switchgear	Yes	No	Yes
Cable tunnels	No	No	Yes
LPG (Liquefied Petroleum Gas)	No	Yes	Yes (and outdoors)
Warehouses – Class A and B fuels	Yes	No	Yes

NOTE These examples are not prescriptive and do not preclude other uses, providing there is a fire engineering basis.

Foam systems reduce the environmental impact of fire by reducing fire effluent both into the atmosphere and onto the ground. This is achieved through a more efficient application of fire extinguishing agent onto the seat of fire. Compared to other extinguishing systems, the necessary application rate is significantly reduced by using foam systems. Lower fire water damages and a reduced application of contaminated fire water in the environment are also important advantages. Foam extinguishing systems give increased safety for the fire fighting personnel and neighbouring communities.

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1 Scope

This document specifies the requirements and describes the methods for design, installation, testing and maintenance of low, medium, and high expansion foam fire extinguishing systems.

Foam systems may be used to suppress the release of toxic vapours but this application is outside the scope of this document.

This document provides guidance for the design of various foam systems available to persons with knowledge and experience in determining the selection of foam fire extinguishing systems which will be effective in protecting specific hazard configurations. For the application of this standard, a risk assessment by a qualified and experienced person should be performed for both new and existing systems, however the risk assessment is outside the scope of this document.

This document does not cover a risk analysis carried out by a competent person.

Nothing in this document is intended to restrict new technologies or alternative arrangements, provided that the level of foam system performance prescribed in this standard is not lowered, and supported by documented evidence/test reports.

All foam systems are generally unsuitable for the following:

- chemicals, such as cellulose nitrate, that release sufficient oxygen or other oxidizing agents which can sustain combustion;
- energized unenclosed electrical equipment;
- metals such as sodium, potassium and sodium-potassium alloys which are reactive to water;
- hazardous, water-reactive materials such as triethyl-aluminium and phosphorous pentoxide;
- combustible metals such as aluminium and magnesium.

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 54 (all parts), *Fire detection and fire alarm systems*

EN 1568 (all parts), *Fire extinguishing media — Foam concentrates*

EN 12094-1, *Fixed firefighting systems — Components for gas extinguishing systems — Part 1: Requirements and test methods for electrical automatic control and delay devices*

EN 12259-1, *Fixed firefighting systems — Components for sprinkler and water spray systems — Part 1: Sprinklers*

EN 12845:2015, *Fixed firefighting systems — Automatic sprinkler systems — Design, installation and maintenance*

prEN 13565-1:2016, *Fixed firefighting systems — Foam systems — Part 1: Requirements and test methods for components*