

STN	Stabilné hasiace zariadenia Penové zariadenia Časť 2: Navrhovanie, konštrukcia a údržba	STN EN 13565-2+AC 92 0409
------------	--	---

Fixed firefighting systems - Foam systems - Part 2: Design, construction and maintenance

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 10/19

Obsahuje: EN 13565-2:2018+AC:2019

Oznámením tejto normy sa ruší
STN EN 13565-2 (92 0409) z apríla 2019

129632

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN 13565-2:2018+AC

April 2019

ICS 13.220.20

Supersedes EN 13565-2:2018

English Version

**Fixed firefighting systems - Foam systems - Part 2: Design,
construction and maintenance**

Installations fixes de lutte contre l'incendie - Systèmes
à émulseurs - Partie 2: Calcul, installation et
maintenance

Ortsfeste Brandbekämpfungsanlagen -
Schaumlöschanlagen - Teil 2: Planung, Einbau und
Wartung

This European Standard was approved by CEN on 27 August 2018 and includes the Corrigendum issued by CEN on 24 April 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, 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 United Kingdom.



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

CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

EN 13565-2:2018+AC:2019 (E)

Contents	Page
European foreword.....	5
Introduction	6
1 Scope.....	7
2 Normative references.....	7
3 Terms and definitions	8
3.1 Definitions	8
3.2 Abbreviations	12
4 Foam extinguishing systems	12
4.1 General.....	12
4.1.1 General requirements	12
4.1.2 Application rates	13
4.1.3 Environmental considerations.....	14
4.1.4 Planning.....	14
4.1.5 Documentation.....	15
4.1.6 Supplementary manual foam fire fighting provisions.....	15
4.1.7 Equipment	15
4.2 Water supply.....	16
4.2.1 Water demand.....	16
4.2.2 Operating time	16
4.2.3 Quality of water	16
4.2.4 Power supply for water pumps.....	17
4.3 Foam concentrate	17
4.3.1 General.....	17
4.3.2 Foam concentrate supply – low and medium expansion foams.....	17
4.3.3 Foam concentrate pumps.....	18
4.3.4 Supplementary external connections.....	18
4.4 Foam proportioners.....	18
4.5 Pipework.....	18
4.5.1 Water and foam solution pipework.....	18
4.5.2 Foam concentrate piping.....	19
4.5.3 Non Newtonian foam concentrate.....	19
4.5.4 Piping of aspirated foam (including that for subsurface foam applications)	19
4.5.5 Marking.....	19
4.6 Foam discharge outlets and generators.....	20
4.7 Operation and control systems	20
4.7.1 Detection of fires	20
4.7.2 Release of fixed foam extinguishing systems.....	20
4.7.3 Alarms	21
5 Flammable liquid storage tanks, bunds and process areas.....	21
5.1 General.....	21
5.2 Fixed cone roof tanks.....	23
5.2.1 General.....	23
5.2.2 Sub surface	24
5.2.3 Restrictions for semi-subsurface-mode.....	25
5.2.4 Restrictions for subsurface mode	25
5.3 Floating roof tanks.....	26

5.3.1	General	26
5.3.2	Number of foam discharge outlets for floating roof tanks	26
5.3.3	Rimseal protection.....	26
5.4	Bunded/diked areas and process areas.....	28
6	Foam sprinkler and deluge systems.....	30
6.1	Deluge systems.....	30
6.1.1	Deluge applications	30
6.1.2	Deluge limitations	30
6.1.3	Deluge design.....	30
6.2	Foam enhanced sprinkler systems	30
6.2.1	Foam enhanced sprinkler applications.....	30
6.2.2	Foam enhanced sprinkler limitations.....	30
6.2.3	Foam enhanced sprinkler design	30
6.3	Foam concentrate.....	31
6.3.1	Aspirated foams	31
6.3.2	Non aspirated foams.....	31
6.4	Foam proportioning	31
6.5	Drain and flushing connections.....	31
6.6	Supplementary hose streams.....	33
7	High expansion foam systems.....	33
7.1	General	33
7.2	Foam concentrate.....	34
7.3	Equipment.....	34
7.4	System design	34
7.5	Equipment location considerations.....	34
7.6	Personnel safety.....	34
7.7	Discharge rate.....	35
7.8	Discharge time.....	35
8	Marine loading and unloading docks	35
8.1	Water supplies.....	35
8.2	Foam concentrate.....	36
8.3	Foam water monitors.....	36
8.4	Below dock foam systems.....	36
9	Aircraft hangars	36
9.1	General	36
9.2	Fire detection	36
9.3	System design philosophy	37
9.4	System duration	39
9.5	Foam and water pumps	39
9.6	Acceptable application methods.....	39
9.7	Foam types	39
9.8	Monitors.....	39
9.9	Foam-water deluge systems	39
9.10	Medium expansion systems (Type 3 hangars only).....	40
9.11	High expansion systems.....	40
9.12	Handlines.....	40
9.13	Commissioning tests.....	40
10	Liquefied flammable gases (LNG/LPG).....	41
10.1	General	41
10.1.1	Liquefied Natural Gas (LNG)	41
10.1.2	Liquefied Petroleum Gas (LPG)	41
10.2	Controlled burn-off.....	41

EN 13565-2:2018+AC:2019 (E)

10.3	Un-ignited spills.....	41
10.4	Fire detection.....	42
10.5	Foam properties	42
10.6	Foam proportioning system.....	42
10.7	Application techniques	42
11	Commissioning, testing, and periodic inspections.....	43
11.1	Instruction of operating personnel	43
11.2	Commissioning.....	43
11.2.1	General.....	43
11.2.2	Visual inspection	43
11.2.3	Pressure tests	43
11.2.4	Tests.....	43
11.2.5	Completion certificate	43
11.3	The periodic inspection and testing of foam systems.....	44
11.3.1	General.....	44
11.3.2	Inspections	44
11.4	Shut-down.....	46
11.5	Maintenance.....	46
11.6	Alterations	46
	Bibliography.....	47

European foreword

This document (EN 13565-2:2018+AC: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 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.

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.

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.

EN 13565-2:2018+AC:2019 (E)**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.

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*

koniec náhľadu – text ďalej pokračuje v platenej verzii STN