Draft for Public Comment

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Interested committees:

Title: Draft BS EN 1568-2 BS Fire extinguishing media - Foam concentrates. Part 2: Specification for high expansion foam concentrates for surface application to water-immiscible liquids.

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Introduction

This draft standard is based on national and international discussions. Your comments on this draft are invited and will assist in the preparation of the consequent standard.

For international standards, comments will be reviewed by the relevant UK national committee before sending the consensus UK vote and comments to the international committee, which will then decide appropriate action. If the international standard is approved, it is usual for the text to be published as a British Standard.

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Please indicate whether you consider the UK should submit a negative (with supporting technical reasons) or positive vote on this draft. Please indicate if you are aware of any reason why this draft standard should not be published as a British Standard.

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- All comments should be submitted online at **https://standardsdevelopment.bsigroup.com/**. You will need to register in order to comment.

Template for comments and secretariat observations

Date: xx/xx/20xx	Document: ISO/DIS xxxx

1	2	(3)	4	5	(6)	7
MB	Clause No./ Subclause No./Annex **(e.g. 3.1)**	Paragraph/ Figure/Table/Note	**Type of comment**	**Commend (justification for change) by the MB**	**Proposed change by the MB**	**Secretariat observations on each comment submitted**
	3.1	Definition 1	ed	Definition is ambiguous and needs clarifying.	Amend to read '...so that the mains connector to which no connection...'	
	6.4	Paragraph 2	te	The use of the UV photometer as an alternative cannot be supported as serious problems have been encountered in its use in the UK.	Delete reference to UV photometer.	

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EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

DRAFT
prEN 1568-2

April 2025

ICS 13.220.10

Will supersede EN 1568-2:2018

English Version

Fire extinguishing media - Foam concentrates - Part 2: Specification for high expansion foam concentrates for surface application to water-immiscible liquids

Agents extincteurs - Émulseurs - Partie 2 : Spécifications pour les émulseurs à haut foisonnement destinés à une application à la surface de liquides n'ayant pas d'affinité pour l'eau

Feuerlöschmittel - Schaummittel - Teil 2: Anforderungen an Schaummittel zur Erzeugung von Leichtschaum zum Aufgeben auf mit Wasser nicht mischbaren Flüssigkeiten

This draft European Standard is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 191.

If this draft becomes a European Standard, 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.

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European foreword

This document (prEN 1568-2:2025) has been prepared by Technical Committee CEN/TC 191 “Fixed firefighting systems”, the secretariat of which is held by BSI.

This document is currently submitted to the CEN Enquiry.

This document will supersede EN 1568-2:2018.

This document includes the following significant technical changes with respect to EN 1568-2:2018:

— Determination of solid deposits for synthetic foams and protein foams clarified;

— Optional annual foam quality check introduced;

— Temperature and wind speed measurements for performance fire test clarified;

— Some test procedures clarified.

This document is Part 2 of EN 1568 which has the general title *Fire extinguishing media — Foam concentrates*. The other parts are:

— *Part 1: Specification for medium expansion foam concentrates for surface application to water-immiscible liquids;*

— *Part 3: Specification for low expansion foam concentrates for surface application to water-immiscible liquids;*

— *Part 4: Specification for low expansion foam concentrates for surface application to water-miscible liquids.*

This document is one of a series of standards specifying requirements for fire extinguishing media in common use. This series includes the following standards:

— EN ISO 5923, *Equipment for fire protection and fire fighting — Fire extinguishing media — Carbon dioxide*;

— EN 27201-1, F*ire protection — Fire extinguishing media - Halogenated hydrocarbons — Part 1: Specifications for halon 1211 and halon 1301 (ISO 7201-1)*;

— EN 27201-2, *Fire protection — Fire extinguishing media — Halogenated hydrocarbons — Part 2: Code of practice for safe handling and transfer procedures (ISO 7201-2)*;

— EN 615, *Fire protection — Fire extinguishing media — Specifications for powders (other than class D powders)*.

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Introduction

As fire-fighting foams are chemical agents or chemical preparations, Commission Directive 2000/60/CE and Regulations (EC) No 1272/2008 (CLP) and No 1907/2006 (REACH) apply and should be taken into account.

Classes of fire are defined in EN 2 as follows:

— Class A: fires involving solid materials, usually of an organic nature, in which combustion normally takes place with the formation of glowing embers;

— Class B: fires involving liquids or liquefiable solids;

— Class C: fires involving gases;

— Class D: fires involving metals;

— Class F: fires involving cooking media (vegetable or animal oils and fats) in cooking appliances.

Fire-fighting foams are widely used to control and extinguish Class B fires and to inhibit re-ignition. These foams can also be used for prevention of ignition of flammable liquids and, in certain conditions, to extinguish Class A fires.

Foams can be used in combination with other extinguishing media, particularly gaseous media and powders, which are the subject of other European Standards (see European foreword).

These specifications have been designed to ensure that fire extinguishing media have the minimum useful fire fighting capability. The user should ensure that the foam concentrates are used accurately at the concentration recommended by the manufacturer. Fire performances indicated by this standard cannot replicate practical fire situations.

Foam concentrates of different types and manufacturers should not be mixed.

It should be noted that some combinations of extinguishing powder and foam can lead to unacceptable loss of efficiency, caused by unfavourable interaction of the chosen media when applied simultaneously or successively to the fire.

It is extremely important that the foam concentrate after dilution with water to the recommended concentration should not in normal usage present a significant toxic hazard to life in relation to the environment. The current version of Commission Directive 2000/60/CE, Regulations (EC) No 1272/2008 (CLP) and No 1907/2006 (REACH) apply when considering the testing of ecotoxicological properties and safety in the work environment.

A special quality characteristic is the type test conducted by an independent testing laboratory accredited to EN ISO/IEC 17025.

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1 Scope

This document specifies requirements for chemical and physical properties, and minimum performance requirements of high expansion foams suitable for surface application to water-immiscible liquids. Requirements are also given for marking.

WARNING — Any type approval according to this standard is invalidated by any change in composition of the approved product.

NOTE Some concentrates conforming to this document can also conform to other parts and therefore can also be suitable for application as low and/or medium expansion foams.

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 (all parts), *Fire extinguishing media - Foam concentrates*

prEN 1568-4:—,[1] *Fire extinguishing media - Foam concentrates - Part 4: Specification for low expansion foam concentrates for surface application to water-miscible liquids*

EN ISO 2811-1, *Paints and varnishes - Determination of density - Part 1: Pycnometer method (ISO 2811-1)*

EN ISO 3104, *Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104)*

EN ISO 3219-2:2021, *Rheology - Part 2: General principles of rotational and oscillatory rheometry (ISO 3219-2:2021)*

EN ISO 3675, *Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method (ISO 3675)*

EN ISO 3696, *Water for analytical laboratory use - Specification and test methods (ISO 3696)*

EN ISO 11348-2, *Water quality - Determination of the inhibitory effect of water samples on the light emission of Vibrio fischeri (Luminescent bacteria test) - Part 2: Method using liquid-dried bacteria (ISO 11348-2)*

EN ISO 23753-1, *Soil quality - Determination of dehydrogenases activity in soils - Part 1: Method using triphenyltetrazolium chloride (TTC) (ISO 23753-1)*

ISO 304, *Surface active agents — Determination of surface tension by drawing up liquid films*

ISO 3310-1, *Test sieves — Technical requirements and testing — Part 1: Test sieves of metal wire cloth*

OECD 201, *Test No. 201: Freshwater Alga and Cyanobacteria, Growth Inhibition Test*

OECD 202, *Test No. 202: Daphnia sp. Acute Immobilisation Test*

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[1] Under preparation. Stage at the time of publication: prEN 1568-4:2025.

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OECD 203, *Test No. 203: Fish, Acute Toxicity Test*

OECD 301, *Test No. 301: Ready Biodegradability*

OECD 404, *Test No. 404: Acute Dermal Irritation/Corrosion*

OECD 405, *Test No. 405: Acute Eye Irritation/Corrosion*

OECD 420, *Test No. 420: Acute Oral Toxicity - Fixed Dose Procedure*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— IEC Electropedia: available at http://www.electropedia.org/ ;

— ISO Online browsing platform: available at http://www.iso.org/obp .

3.1
25 %/50 % drainage time
time taken for 25 %/50 % of the volume of the original foam solution to drain out of the generated foam

3.2
expansion (E)
expansion value
expansion ratio
ratio of the volume of foam to the volume of the foam solution from which it was made

3.3
low expansion foam
foam which has an expansion ratio less than 20

3.4
medium expansion foam
foam which has an expansion ratio greater than or equal to 20 but less than 200

3.5
high expansion foam
foam which has an expansion ratio greater than or equal to 200

3.6
fire-fighting foam
aggregate of air filled bubbles formed from a foam solution used for fire-fighting

3.7
foam concentrate
liquid which is diluted with water to produce foam solution

Note 1 to entry: Annex A gives information on grades of foam concentrate.

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3.8
foam solution
homogeneous mixture of foam concentrate and water in the proportions as specified by the foam concentrate manufacturer

3.9
premix
foam solution prepared in a batch process by introducing a measured amount of foam concentrate into a given amount of water in storage

3.10
sediment
insoluble particles in the foam concentrate

3.11
Newtonian foam concentrate
foam concentrate which has a viscosity which is independent of the shear rate

3.12
pseudo-plastic foam concentrate
foam concentrate which has a viscosity which decreases with increasing shear rate

3.13
surface tension
tension within the interface between a liquid and air

3.14
freezing point
temperature at which the first ingredient of a mixture starts to solidify or freeze out

3.15
designation
identifying name
name that corresponds to a chemical formulation and a specific production process

Note 1 to entry: It guarantees consistency of the characteristics, performance and conditions of use of the foam concentrate.

3.16
demineralized water
water conforming to EN ISO 3696 (Grade 3), or having a surface tension greater than 70 $mN \cdot m^{-1}$ and a conductivity of ≤ 5 $\mu S \cdot cm^{-1}$

Note 1 to entry: Surface tension tested in accordance with Clause G.2.

3.17
qualified personnel
designated individual, suitably trained, competent through knowledge and practical experience and with the necessary instruction to enable the tests and examinations to be carried out

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4 Sediment in the foam concentrate

4.1 Sediment before ageing

Any sediment in the foam concentrate sampled in accordance with Annex B, but not aged in accordance with Clause C.1, shall be dispersible through a 180 µm sieve, and the percentage volume of sediment shall be not more than 0,25 % when tested in accordance with Annex C.

4.2 Sediment after ageing

Any sediment in the foam concentrate sampled in accordance with Annex B, and aged in accordance with Clause C.1, shall be dispersible through a 180 µm sieve and the percentage volume of sediment shall be not more than 1,0 % when tested in accordance with Annex C.

5 Freezing point

The freezing point of the foam concentrate sampled in accordance with Annex B shall be determined in accordance with Annex D.

6 Viscosity of the foam concentrate

6.1 Test temperatures

The viscosity of the foam concentrate shall be measured from 20 °C, to and including the lowest temperature for use claimed by the manufacturer in steps of 10 °C. Use a fresh sample for each temperature.

6.2 Newtonian foam concentrates

The viscosity of the foam concentrate at the lowest temperature for use claimed by the manufacturer shall be determined in accordance with EN ISO 3104. If the viscosity is > 200 $mm^2\ s^{-1}$, the container shall be marked in accordance with Clause 15 j).

6.3 Pseudo-plastic foam concentrates

The viscosity of the foam concentrate shall be determined in accordance with Annex E. If the viscosity at the lowest temperature for use is greater than or equal to 120 mPa·s at 375 s^{-1}, the container shall be marked in accordance with Clause 15 k).

7 pH of the foam concentrate

The pH of the foam concentrate sampled in accordance with Annex B shall be not less than 6,0 and not more than 9,5 at (20 ± 1) °C.

8 Surface tension of the foam solution

The surface tension (determined in accordance with Clause G.2) of the foam solutions prepared using top and bottom half-samples (see Clause F.4) of the foam concentrate, sampled in accordance with Annex B and conditioned in accordance with Annex F, shall be not less than 0,95 times and not more than 1,05 times the surface tension of the foam solution prepared using the sampled foam concentrate.

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9 Stability/separation test of foam concentrate

The foam concentrate shall not separate, stratify or precipitate as indicated by two or more distinct layers when tested in accordance with Annex H.

The amount of solid deposits of the aged sample determined according to Annex C at 20 °C in synthetic foams shall not increase from the fresh sample.

The amount of solid deposits of the aged sample determined according to Annex C at 20 °C in protein foams shall not increase by more than 4 times the amount obtained from the fresh sample, and shall not exceed a volume fraction of 1 % in total.

10 Determination of expansion and drainage time

10.1 Before temperature conditioning

The foam produced from the foam solution, prepared from the foam concentrate sampled in accordance with Annex B, at the supplier's recommended concentration with simulated fresh water in accordance with Clause I.4, shall be tested in accordance with Annex I and give an expansion according to 3.5. If appropriate, a further sample of the same concentration made with the simulated sea water in accordance with Clause I.4 shall also be tested.

NOTE Expansion is dependent on the foam concentrate and the equipment used to make the foam.

10.2 After temperature conditioning

The foams produced from the solutions prepared with simulated fresh water by using top and bottom half-samples (see Clause F.4) of foam concentrate, sampled in accordance with Annex B, at the supplier's recommended concentration, when tested in accordance with Annex I, shall have the following:

a) expansions which do not differ from each other or from the value obtained according to 10.1 using simulated fresh water (i.e. before temperature conditioning) by more than 20 % of the value obtained according to 10.1 using simulated fresh water; and

b) 25 % drainage times which do not differ from each other or from the value obtained according to 10.1 using simulated fresh water (i.e. before temperature conditioning) by more than 20 % of the value obtained according to 10.1 using simulated fresh water.

If appropriate, the tests shall be repeated using top and bottom half-samples (see Clause F.4) of foam concentrate, sampled in accordance with Annex B, at the supplier's recommended concentration, using foam solutions prepared with the simulated sea water in accordance with Clause I.4. These foam solutions shall have the following:

c) expansions which do not differ from each other or from the value obtained according to 10.1 using the simulated sea water (i.e. before temperature conditioning) by more than 20 % of the value obtained according to 10.1 using the simulated sea water in accordance with Clause I.4; and,

d) 25 % drainage times which do not differ from each other or from the value obtained according to 10.1 using the simulated sea water (i.e. before temperature conditioning) by more than 20 % of the value obtained according to 10.1 using the simulated sea water in accordance with Clause I.4.

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11 Test fire performance

The foam produced from foam solution, prepared using the foam concentrate, sampled in accordance with Annex B at the supplier's recommended concentration with simulated fresh water in accordance with Clause I.4, and if appropriate at the same concentration with the simulated sea water in accordance with Clause I.4, shall have an extinction time not more than 150 s when tested in accordance with Clause J.2 and Clause J.3.

NOTE 1 The values obtained with simulated sea water can differ from those obtained with simulated fresh water.

NOTE 2 The lack of homogeneity of the premix can influence the firefighting performance of the foam generated from it.

12 Occupational health and ecotoxicological information

The manufacturer shall provide information as specified in Annex K.

If the data for the ecotoxicological report was generated by a third party, this data may be added to the test report or may be added as a reference. If the toxicological/ecotoxicological data were generated by application of mathematical methodologies in accordance with Annex K the corresponding report shall be added to the report confirming conformity with this document.

If the toxicological/ecotoxicological data were generated by an independent third party the data may be added to the report confirming conformity to this document either as a report or as a reference to the report-ID given by the third party.

13 Annual foam quality check

13.1 General

Firefighting foam concentrates are recommended to be checked annually for their quality, indicating their functionality. The test program described in 13.2 is considered to be a collection of analytical methods which in its entirety is suitable to detect degradation or a declining function of a foam concentrate.

The outcome of the annual foam quality check described in 13.2 is intended to be used to qualify or disqualify a foam concentrate for its further usability. Therefore, the quality of testing and evaluation of test data is a special quality characteristic of the body executing the foam quality check.

13.2 Principles

13.2.1 The sample of the foam concentrate(s) shall be collected in such a way, that the sample is representative of the stored volume.

13.2.2 A full declaration of the foam product's identity, hazards associated with it [see section 2 of the most recent material safety data sheet (MSDS)], as well as information on PFAS content, proportioning rate, age, storage condition and possible contaminations shall be given.

13.2.3 For foam concentrates which can be used as low, medium and high expansion foam the desired testing expansion shall be specified as well as the water quality (simulated fresh or sea water) to be used.

13.2.4 Packing and labelling of foam concentrate samples is subject to European regulation on packaging and labelling of chemical mixtures (Regulation (EC) No 1272/2008, CLP, e.g. Article 35).

13.2.5 The equipment for testing shall be calibrated and maintained in full function.

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13.2.6 The foam concentrate sample should be processed as it was received. If stratification, sedimentation or other inhomogeneities are visible, that sample shall not be homogenised prior to testing. Instead, the sample may be considered as a fail.

13.2.7 A comprehensive test report with all tested results should be provided. The report may include evaluation of the obtained results and further recommendations. If this is the case, this shall be indicated as an evaluation of the data based on the experience and knowledge of the body executing the foam quality test.

13.2.8 The test data shall be compared with the technical data of the respective foam concentrate given by the manufacturer.

13.3 Types of analysis

Table 2 indicates the type of analysis that should be run for a given type of foam concentrate. Annex N gives test descriptions and requirements.

Table 2 — Types of analysis

	AR	non-AR	medium expansion application	high expansion application
Visual examination	X	X	X	X
Density at (20 ± 1) °C	X	X	X	X
pH-value at (20 ± 1) °C	X	X	X	X
Sediment at (20 ± 1) °C	X	X	X	X
Viscosity at (20 ± 1) °C	X	X	X	X
Refractive index at (20 ± 1) °C	X	X	X	X
25 %-drainage, low expansion foam	X	X	—	—
25 %-drainage, medium expansion foam	—	—	X	—
25 %-drainage, high expansion foam	—	—	—	X
expansion, low expansion foam	X	X	—	—
expansion, medium expansion foam	—	—	X	—
expansion, high expansion foam	—	—	—	X
Resistance to isopropanol	X	—	—	—

14 Technical information sheet

The manufacturer should provide information for the foam concentrate. An example of the type of information provided in a manufacturers' technical information sheet is given in Annex M.

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15 Container marking

Markings on shipping containers should be permanent and legible. The following information shall be marked on the packaging or transport container:

a) the designation (identifying name) of the concentrate;

b) the words “high expansion fire-fighting foam concentrate” and the number and publication date of this document (i.e. EN 1568-2:2025);

NOTE 1 For high expansion concentrates which also conform to other parts of EN 1568 additional markings can be used as given in those parts.

c) recommended usage concentration (most commonly 1 %, 3 % or 6 %);

d) recommended maximum storage temperature, lowest temperature for use and freezing point;

e) if the manufacturer advises that the foam concentrate is adversely affected by low temperature storage according to Annex F, the words 'Do not freeze';

f) the nominal quantity in the container;

g) the supplier's name and address;

h) the batch number and the date of manufacture;

i) the words “Not suitable for use with sea water” or “Suitable for use with sea water” as appropriate;

j) if the foam concentrate is Newtonian and the viscosity at the lowest temperature for use is more than 200 $mm^2 s^{-1}$ when measured in accordance with EN ISO 3104 the words “This concentrate can require special proportioning equipment”;

k) if the foam concentrate is pseudo-plastic and the viscosity at the lowest temperature for use is greater than or equal to 120 mPa·s at 375 s^{-1} the words “Pseudo-plastic foam concentrate. This concentrate can require special proportioning equipment”;

l) the lowest extinguishing performance class and the lowest burn-back resistance level obtained during testing to each part of EN 1568 (if tested to more than one part) with all fuels in simulated fresh water and sea water.

NOTE 2 The marking of shipping containers shipped to laboratories for testing are exempt from this requirement.

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