SLOVENSKI STANDARD
SIST EN 1568-2:2018

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Nadomešča:
SIST EN 1568-2:2008
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Gasila - Penila - 2. del: Specifikacija za penila za lahko peno za površinsko uporabo pri tekočinah, netopnih v vodi

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

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

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

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EUROPEAN STANDARD

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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 haut foisonnement destinés à une application à la surface des liquides n'ayant pas d'affinité pour l'eau

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This European Standard was approved by CEN on 8 October 2017.

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
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Contents

Page

European foreword

This document (EN 1568-2:2018) 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 July 2018, 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 supersedes EN 1568-2:2008.

In comparison with the previous edition, the following significant changes have been made:

— Interfacial tension and spreading coefficient test removed;

— Freezing point test introduced;

— Stability/Separation test of foam concentrate introduced;

— Occupational health and ecotoxicological testing introduced;

— Example of technical data sheet included.

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 European Standard 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, Fire 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).

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.

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:

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

b) Class B: fires involving liquids or liquefiable solids;

c) Class C: fires involving gases;

d) Class D: fires involving metals;

e) 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.

1 Scope

This European Standard 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.

Some concentrates conforming to this part of EN 1568 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 1568-1, *Fire extinguishing media - Foam concentrates - Part 1: Specification for medium expansion foam concentrates for surface application to water-immiscible liquids*

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

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

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

EN ISO 3219:1994, *Plastics - Polymers/resins in the liquid state or as emulsions or dispersions - Determination of viscosity using a rotational viscometer with defined shear rate (ISO 3219:1993)*

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 dehydrogenase activity in soil - 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*

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.

3.8
foam solution
solution of foam concentrate in water

3.9
sediment
insoluble particles in the foam concentrate

3.10
Newtonian foam concentrate
foam concentrate which has a viscosity which is independent of the shear rate

3.11
pseudo-plastic foam concentrate
foam concentrate which has a viscosity which decreases with increasing shear rate

3.12
surface tension
tension within the interface between a liquid and air

3.13
freezing point
temperature at which the first ingredient of a mixture starts to solidify or freeze out

3.14
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.

3.15
demineralized water
water conforming to EN ISO 3696 (Grade 3), the water having a surface tension greater than 70 mN m^{-1} when tested in accordance with F.2 and a conductivity of < 5 µ S cm^{-1}

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 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 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 I.

6 Viscosity of the foam concentrate

6.1 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 14 j).

6.2 Pseudo-plastic foam concentrates

The viscosity of the foam concentrate shall be determined in accordance with Annex D. 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 14 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 F.2) of the foam solutions prepared using top and bottom half-samples (see E.4) of the foam concentrate, sampled in accordance with Annex B and conditioned in accordance with Annex E, 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.

9 Stability/separation test of foam concentrate

The foam concentrate shall not separate, stratify or precipitate as indicated by two or more distinct layers or the presence of solid deposits when tested in accordance with Annex J.

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 G.4, shall be tested in accordance with Annex G. If appropriate, a further sample of the same concentration made with the simulated sea water in accordance with G.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 E.4) of foam concentrate, sampled in accordance with Annex B, at the supplier's recommended concentration, when tested in accordance with Annex G, shall have the following:

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

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