SLOVENSKI STANDARD
SIST EN 15004-8:2018

01-februar-2018

Nadomešča:
SIST EN 15004-8:2008

Vgrajeni gasilni sistemi - Sistemi za gašenje s plinom - 8. del: Fizikalne lastnosti in načrtovanje sistema za gašenje s plinom za gasilo IG-100 (ISO 14520-13:2015, spremenjen)

Fixed firefighting systems - Gas extinguishing systems - Part 8: Physical properties and system design of gas extinguishing systems for IG-100 extinguishant (ISO 14520-13:2015, modified)

Ortsfeste Brandbekämpfungsanlagen - Löschanlagen mit gasförmigen Löschmitteln - Teil 8: Physikalische Eigenschaften und Anlagenauslegung für Löschmittel IG-100 (ISO 14520-13:2015, modifiziert)

Installations fixes de lutte contre l'incendie - Installations d'extinction à gaz - Partie 8 : Propriétés physiques et conception des systèmes pour agent extincteur IG-100 (ISO 14520-13:2015, modifiée)

Ta slovenski standard je istoveten z: **EN 15004-8:2017**

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This European Standard was approved by CEN on 25 September 2017.

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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.

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COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 15004-8:2017) 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of an identical text or by endorsement, at the latest by June 2018, and conflicting national standards shall be withdrawn at the latest by June 2018.

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 15004-8:2008.

The text of the International Standard ISO 14520-13:2015 from Technical Committee ISO/TC 21 "Equipment for fire protection and firefighting" of the International Organization for Standardization (ISO) has been taken over as a European Standard by Technical Committee CEN/TC 191 "Fixed firefighting systems", the secretariat of which is held by BSI, with common modifications which are indicated by a straight line in the margin of the text.

This European Standard will consist of the following parts, under the general title *Fixed firefighting systems – Gas extinguishing systems:*

— Part 1: Design, installation and maintenance;

— Part 2: Physical properties and system design of gas extinguishing systems for FK-5-1-12 extinguishant;

— Part 3: Physical properties and system design of gas extinguishing systems for HCFC Blend A extinguishant;

— Part 4: Physical properties and system design of gas extinguishing systems for HFC 125 extinguishant;

— Part 5: Physical properties and system design of gas extinguishing systems for HFC 227ea extinguishant;

— Part 6: Physical properties and system design of gas extinguishing systems for HFC 23 extinguishant;

— Part 7: Physical properties and system design of gas extinguishing systems for IG-01 extinguishant;

— Part 8: Physical properties and system design of gas extinguishing systems for IG-100 extinguishant;

— Part 9: Physical properties and system design of gas extinguishing systems for IG-55 extinguishant;

— Part 10: Physical properties and system design of gas extinguishing systems for IG-541 extinguishant.

The International Standards ISO 14520-2 and ISO 14520-11, which dealt with CF_3I and HFC 236fa extinguishants, respectively, have not been implemented by CEN, as CF_3I is only valid for local application and HFC 236fa extinguishant is only applicable for portable fire extinguishers and local application, respectively, which is not covered by the scope.

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

1.1 This document specifies requirements for gaseous fire-extinguishing systems, with respect to the IG-100 extinguishant. It includes details of physical properties, specification, usage and safety aspects.

1.2 This document is applicable for systems operating at nominal pressures of 200 bar at 15 °C and 300 bar at 15 °C. This does not preclude the use of other systems, although design data for other pressures are not available at this time.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 15004-1:2017, *Fixed firefighting systems - Gas extinguishing systems - Part 1: Design, installation and maintenance*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15004-1 apply.

4 Characteristics and uses

4.1 General

Extinguishant IG-100 shall comply with the specification shown in Table 1.

IG-100 is a colourless, odourless, electrically non-conductive gas with a density approximately the same as that of air.

The physical properties are shown in Table 2.

IG-100 extinguishes fires mainly by a reduction of oxygen concentration in the atmosphere of the hazard enclosure.

Table 1 — Specification for IG-100

Property	Requirement
Purity	99,6 % by volume, min.
Moisture	50 parts per million by mass, max.
Oxygen	0,1 % by volume, max.
NOTE Only principal contaminants are shown. Other measurements may include hydrocarbons, CO, NO, NO_2, CO_2, etc. Most are < 20×10^{-6}.	

Table 2 — Physical properties of IG-100

Property	Units	Value
Molecular mass	—	28,02
Boiling point at 1,013 bar (absolute)	°C	–195,8
Freezing point	°C	–210,0
Critical temperature	°C	—
Critical pressure	bar abs	—
Critical volume	cm^3/mol	—
Critical density	kg/m^3	—
Vapour pressure 20 °C	bar abs	—
Liquid density 20 °C	kg/m^3	—
Saturated vapour density 20 °C	kg/m^3	—
Specific volume of superheated vapour at 1,013 bar and 20 °C	m^3/kg	0,858
Chemical formula	N_2	
Chemical name	Nitrogen	

4.2 Use of IG-100 systems

IG-100 total flooding systems may be used for extinguishing fires of all classes within the limits specified in EN 15004-1:2017, Clause 4.

The extinguishant requirements per volume of protected space are shown in Table 3 for various levels of concentration. These are based on methods shown in EN 15004-1:2017, 7.6.

The extinguishing concentrations and design concentrations for heptane and surface class A hazards are shown in Table 4.

Table 3 — IG-100 total flooding quantity

Temperature T °C	Specific vapour volume S	Amount of IG-100 per unit volume of protected space V/V (m^3/m^3)							
		Design concentration (by volume)							
	m^3/kg	34 %	38 %	42 %	46 %	50 %	54 %	58 %	62 %
–40	0,682 5	0,522	0,601	0,685	0,775	0,872	0,976	1,091	1,217
–35	0,697 1	0,511	0,588	0,671	0,758	0,853	0,956	1,068	1,191
–30	0,711 8	0,501	0,576	0,657	0,743	0,836	0,936	1,046	1,167
–25	0,726 4	0,491	0,565	0,644	0,728	0,819	0,917	1,025	1,143
–20	0,741 1	0,481	0,554	0,631	0,714	0,803	0,899	1,005	1,120
–15	0,755 7	0,472	0,543	0,619	0,700	0,787	0,882	0,985	1,099
–10	0,770 4	0,463	0,533	0,607	0,686	0,772	0,865	0,966	1,078
–5	0,785 0	0,454	0,523	0,596	0,674	0,758	0,849	0,948	1,058
0	0,799 7	0,446	0,513	0,585	0,661	0,744	0,833	0,931	1,038
5	0,814 3	0,438	0,504	0,574	0,649	0,731	0,818	0,914	1,020
10	0,829 0	0,430	0,495	0,564	0,638	0,718	0,804	0,898	1,002
15	0,843 6	0,423	0,486	0,554	0,627	0,705	0,790	0,883	0,984
20	0,858 3	0,416	0,478	0,545	0,616	0,693	0,777	0,868	0,968
25	0,872 9	0,409	0,470	0,536	0,606	0,682	0,764	0,853	0,951
30	0,887 6	0,402	0,462	0,527	0,596	0,670	0,751	0,839	0,936
35	0,902 2	0,395	0,455	0,518	0,586	0,659	0,739	0,825	0,920
40	0,916 9	0,389	0,448	0,510	0,577	0,649	0,727	0,812	0,906
45	0,931 5	0,383	0,440	0,502	0,568	0,639	0,716	0,799	0,892
50	0,946 2	0,377	0,434	0,494	0,559	0,629	0,704	0,787	0,878
55	0,960 8	0,371	0,427	0,487	0,550	0,619	0,694	0,775	0,864
60	0,975 5	0,366	0,421	0,479	0,542	0,610	0,683	0,763	0,851
65	0,990 1	0,360	0,414	0,472	0,534	0,601	0,673	0,752	0,839
70	1,004 8	0,355	0,408	0,465	0,526	0,592	0,663	0,741	0,827
75	1,019 4	0,350	0,403	0,459	0,519	0,584	0,654	0,730	0,815
80	1,034 1	0,345	0,397	0,452	0,511	0,575	0,645	0,720	0,803
85	1,048 7	0,340	0,391	0,446	0,504	0,567	0,636	0,710	0,792