

**PAIKSED TULEKUSTUTUSSÜSTEEMID.  
GAASKUSTUTUSSÜSTEEMID. OSA 10: FÜÜSIKALISED  
OMADUSED JA GAASKUSTUTUSSÜSTEEMIDE  
PROJEKTEERIMINE KUSTUTUSGAASILE IG-541**

**Fixed firefighting systems - Gas extinguishing systems -  
Part 10: Physical properties and system design of gas  
extinguishing systems for IG-541 extinguishant (ISO  
14520-15:2005, modified)**

**EESTI STANDARDI EESSÕNA****NATIONAL FOREWORD**

See Eesti standard EVS-EN 15004-10:2008 sisaldab Euroopa standardi EN 15004-10:2008 ingliskeelset teksti.	This Estonian standard EVS-EN 15004-10:2008 consists of the English text of the European standard EN 15004-10:2008.
Standard on jõustunud sellekohase teate avaldamisega EVS Teatajas.	This standard has been endorsed with a notification published in the official bulletin of the Estonian Centre for Standardisation.
Euroopa standardimisorganisatsioonid on teinud Euroopa standardi rahvuslikele liikmetele kättesaadavaks 04.06.2008.	Date of Availability of the European standard is 04.06.2008.
Standard on kättesaadav Eesti Standardikeskusest.	The standard is available from the Estonian Centre for Standardisation.

Tagasisidet standardi sisu kohta on võimalik edastada, kasutades EVS-i veebilehel asuvat tagasiside vormi või saates e-kirja meiliaadressile [standardiosakond@evs.ee](mailto:standardiosakond@evs.ee).

ICS 13.220.20

**Standardite reprodutseerimise ja levitamise õigus kuulub Eesti Standardikeskusele**

Andmete paljundamine, taastekitamine, kopeerimine, salvestamine elektroonsesse süsteemi või edastamine ükskõik millises vormis või millisel teel ilma Eesti Standardikeskuse kirjaliku loata on keelatud.

Kui Teil on küsimusi standardite autorikaitse kohta, võtke palun ühendust Eesti Standardikeskusega:

Aru 10, 10317 Tallinn, Eesti; koduleht [www.evs.ee](http://www.evs.ee); telefon 605 5050; e-post [info@evs.ee](mailto:info@evs.ee)

**The right to reproduce and distribute standards belongs to the Estonian Centre for Standardisation**

No part of this publication may be reproduced or utilized in any form or by any means, electronic or mechanical, including photocopying, without a written permission from the Estonian Centre for Standardisation.

If you have any questions about copyright, please contact Estonian Centre for Standardisation:

Aru 10, 10317 Tallinn, Estonia; homepage [www.evs.ee](http://www.evs.ee); phone +372 605 5050; e-mail [info@evs.ee](mailto:info@evs.ee)

ICS 13.220.20

English Version

**Fixed firefighting systems - Gas extinguishing systems - Part 10:  
Physical properties and system design of gas extinguishing  
systems for IG-541 extinguishant (ISO 14520-15:2005, modified)**

Installations fixes de lutte contre l'incendie - Installations  
d'extinction à gaz - Partie 10 : Propriétés physiques et  
conception des systèmes pour agent extincteur IG-541  
(ISO 14520-15:2005, modifiée)

Ortsfeste Brandbekämpfungsanlagen - Löschanlagen mit  
gasförmigen Löschmitteln - Teil 10: Physikalische  
Eigenschaften und Anlagenauslegung für Feuerlöschmittel  
IG-541 (ISO 14520-15:2005, modifiziert)

This European Standard was approved by CEN on 26 April 2008.

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

**Management Centre: rue de Stassart, 36 B-1050 Brussels**

## Contents

Page

Foreword.....	3
Foreword of ISO 14520-15:2005 .....	5
1 Scope .....	6
2 Normative references .....	6
3 Terms and definitions .....	6
4 Characteristics and uses .....	6
4.1 General.....	6
4.2 Use of IG-541 systems .....	7
5 Safety of personnel.....	9
6 System design.....	10
6.1 Fill pressure.....	10
6.2 Superpressurization .....	14
6.3 Extinguishant quantity .....	14

## Foreword

This document (EN 15004-10:2008) 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 December 2008, and conflicting national standards shall be withdrawn at the latest by December 2008.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

The text of the International Standard ISO 14520-15:2005 from Technical Committee ISO/TC 21 "Equipment for fire protection and fire fighting" 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 (ISO 14520-1, modified)*
- *Part 2: Physical properties and system design of gas extinguishing systems for FK-5-1-12 extinguishant (ISO 14520-5, modified)*
- *Part 3: Physical properties and system design of gas extinguishing systems for HCFC Blend A extinguishant (ISO 14520-6, modified)*
- *Part 4: Physical properties and system design of gas extinguishing systems for HFC 125 extinguishant (ISO 14520-8, modified)*
- *Part 5: Physical properties and system design of gas extinguishing systems for HFC 227ea extinguishant (ISO 14520-9, modified)*
- *Part 6: Physical properties and system design of gas extinguishing systems for HFC 23 extinguishant (ISO 14520-10, modified)*
- *Part 7: Physical properties and system design of gas extinguishing systems for IG-01 extinguishant (ISO 14520-12, modified)*
- *Part 8: Physical properties and system design of gas extinguishing systems for IG-100 extinguishant (ISO 14520-13, modified)*
- *Part 9: Physical properties and system design of gas extinguishing systems for IG-55 extinguishant (ISO 14520-14, modified)*
- *Part 10: Physical properties and system design of gas extinguishing systems for IG-541 extinguishant (ISO 14520-15, modified)*

The International Standards ISO 14520-2 and ISO 14520-11, which dealt with CF<sub>3</sub>I and HFC 236fa extinguishants, respectively, have not been implemented by CEN, as CF<sub>3</sub>I extinguishant 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 organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

This document is a preview generated by EVS

## Foreword of ISO 14520-15:2005

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 14520-15 was prepared by Technical Committee ISO/TC 21, *Equipment for fire protection and fire fighting*, Subcommittee SC 8, *Gaseous media and firefighting systems using gas*.

This second edition cancels and replaces the first edition (ISO 14520-15:2000), which has been technically revised.

ISO 14520 consists of the following parts, under the general title *Gaseous media fire extinguishing systems — Physical properties and system design*:

- *Part 1: General requirements*
- *Part 2: CF<sub>3</sub>I extinguishant*
- *Part 5: FK-5-1-12 extinguishant*
- *Part 6: HCFC Blend A extinguishant*
- *Part 8: HFC 125 extinguishant*
- *Part 9: HFC 227ea extinguishant*
- *Part 10: HFC 23 extinguishant*
- *Part 11: HFC 236fa extinguishant*
- *Part 12: IG-01 extinguishant*
- *Part 13: IG-100 extinguishant*
- *Part 14: IG-55 extinguishant*
- *Part 15: IG-541 extinguishant*

Parts 3, 4 and 7, which dealt with FC-2-1-8, FC-3-1-10 and HCFC 124 extinguishants, respectively, have been withdrawn, as these types are no longer manufactured.

## 1 Scope

This document gives specific requirements for gaseous fire-extinguishing systems, with respect to the IG-541 extinguishant. It includes details of physical properties, specification, usage and safety aspects and is applicable to systems operating at nominal pressure of 150 bar, 200 bar and 300 bar at 15 °C. This does not preclude the use of other systems; however, design data for other pressures were not available at time of publication.

## 2 Normative references

The following referenced documents are indispensable for the application 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 15004-1:2008, *Fixed firefighting systems – Gas extinguishing systems - Design, installation and maintenance (ISO 14520-1, modified)*

## 3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 15004-1:2008 apply.

## 4 Characteristics and uses

### 4.1 General

Extinguishant IG-541 shall comply with the specification according to Table 1.

IG-541 is a colourless, odourless, electrically non-conductive gas with a density approximately the same as that of air. It is an inert gas mixture consisting nominally of 52 % nitrogen, 40 % argon and 8 % carbon dioxide, with the following mixture specification (based on 8 % carbon dioxide with tolerance of 5 %):

- a) Carbon dioxide: range of 7,6 % to 8,4 %;
- b) Argon: range of 37,2 % to 42,8 %;
- c) Nitrogen: range of 48,8 % to 55,2 %.

NOTE Individual container or batch analysis is based on carbon dioxide measurement only.

The physical properties are given in Table 2.

IG-541 extinguishes fires by a reduction of the oxygen concentration in the atmosphere of the hazard enclosure.