# **EESTI STANDARD**

Gas cylinders - Gas properties and associated classification (FTSC) codes (ISO 14456:2015)



### EESTI STANDARDI EESSÕNA

### NATIONAL FOREWORD

5.			
See Eesti standard EVS-EN ISO 14456:2016 sisaldab Euroopa standardi EN ISO 14456:2016 ingliskeelset teksti.	This Estonian standard EVS-EN ISO 14456:2016 consists of the English text of the European standard EN ISO 14456:2016.		
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 21.09.2016.	Date of Availability of the European standard is 21.09.2016.		
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 <u>standardiosakond@evs.ee</u>.

### ICS 23.020.30

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 <u>www.evs.ee</u>; telefon 605 5050; e-post <u>info@evs.ee</u>

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; phone +372 605 5050; e-mail info@evs.ee

# **EUROPEAN STANDARD** NORME EUROPÉENNE **EUROPÄISCHE NORM**

# **EN ISO 14456**

September 2016

ICS 23.020.30

**English Version** 

## Gas cylinders - Gas properties and associated classification (FTSC) codes (ISO 14456:2015)

Bouteilles à gaz - Propriétés des gaz et codes de classification associés (FTSC) (ISO 14456:2015) Gasflaschen - Eigenschaften von Gasen und zugehörige Klassifizierungscodes (FTSC) (ISO 14456:2015)

This European Standard was approved by CEN on 2 September 2016.

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, 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: Avenue Marnix 17, B-1000 Brussels** 

### **European foreword**

The text of ISO 14456:2015 has been prepared by Technical Committee ISO/TC 58 "Gas cylinders" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 14456:2016 by Technical Committee CEN/TC 23 "Transportable gas cylinders" 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 March 2017, and conflicting national standards shall be withdrawn at the latest by March 2017.

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.

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, 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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

### **Endorsement notice**

The text of ISO 14456:2015 has been approved by CEN as EN ISO 14456:2016 without any modification.

Page

## Contents

Fore	eword	iv
Intr	oduction	v
1	Scope	
2	Normative references	
3	Terms and definitions	
4	Gas properties4.1Numerical gas code (FTSC)4.1.1General4.1.2Fire potential, category I4.1.3Acute toxicity, category II4.1.4State of the gas (in the cylinder at 15 °C), category III4.1.5Corrosiveness, category IV	2 2 2 2 2 2 3 3 3 3 3
5	<ul> <li>List of gases and liquids with the corresponding FTSC codes</li> <li>5.1 Basic principles and single gases</li> <li>5.2 Assignment of a gas mixture to a group</li> <li>5.3 Tables of compatible groups of gases and liquids</li> </ul>	
Bibl	liography	
	The service of the se	5

## Foreword

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see <a href="https://www.iso.org/directives">www.iso.org/directives</a>).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see <a href="https://www.iso.org/patents">www.iso.org/patents</a>).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/TC 58, *Gas cylinders*, SC 2, *Cylinder fittings*.

- Support. Gas cylinders, SC 2, Cyun.

### Introduction

This International Standard establishes a method of allocating a four-digit code number (FTSC) to any gas, liquids that are transported under pressure or mixture of gases contained in cylinders. This code number categorizes the gas, liquids that are transported under pressure or gas mixture in terms of its physical-chemical properties and/or flammability, toxicity, state of the gas, and corrosiveness (see <u>4.1</u>). FTSC is the abbreviation of these properties.

The FTSC code enables a gas, liquids that are transported under pressure or gas mixture to be assigned to one of the 15 "compatible" gas groups.

The FTSC codes and the method for their determination are currently given in ISO 5145:2014, Annex A for use in the selection of valve outlets. This annex from ISO 5145 will be removed when the present standard is published.

cr, .abel. The properties and the selection criteria are aligned as appropriate with the Globally Harmonized System for the Classification and Labelling of Chemicals (GHS).

© ISO 2015 – All rights reserved

# Gas cylinders — Gas properties and associated classification (FTSC) codes

### 1 Scope

This International Standard gives a list of FTSC (fire potential, i.e. "oxidizing potential and flammability", toxicity, state of the gas, and corrosiveness) codes determined according to the relevant properties of gases and of some liquids that are transported under pressure.

It does not cover gas material compatibility which is covered by ISO 11114 (all parts).

### 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.

ISO 10156, Gases and gas mixtures — Determination of fire potential and oxidizing ability for the selection of cylinder valve outlets

ISO 10298, Determination of toxicity of a gas or gas mixture

ISO 10286:2015, Gas cylinders — Terminology

### 3 Terms and definitions

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

### 3.1

### gas mixture

combination of different single gases deliberately mixed in specified proportions

[SOURCE: ISO 10286:2015, definition 704]

### 3.2

### liquefied gas

gas, which, when packaged for transport, is partially liquid (or solid) at temperature above -50 °C

[SOURCE: ISO 10286:2015, definition 706]

### 3.3

#### compressed gas

gas, which, when packaged under pressure for transport, is entirely gaseous at -50 °C

Note 1 to entry: This category includes all gases with a critical temperature less than or equal to -50 °C.

[SOURCE: ISO 10286:2015, definition 705]