PLAHVATUSOHTLIKUD KESKKONNAD. OSA 20-1: GAASIDE JA AURUDE LIIGITAMISEKS KASUTATAVAD MATERJALIOMADUSED. KATSEMEETODID JA TUNNUSVÄÄRTUSED

Explosive atmospheres - Part 20-1: Material characteristics for gas and vapour classification - Test methods and data (ISO/IEC 80079-20-1:2017)



EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

	This Estonian standard EVS-EN ISO/IEC 80079-20-1:2019 consists of the English text of the European standard EN ISO/IEC 80079-20-1:2019.
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 23.10.2019.	
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 29.260.20

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: Koduleht www.evs.ee; telefon 605 5050; e-post 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:

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

EUROPEAN STANDARD NORME EUROPÉENNE EUROPÄISCHE NORM

EN ISO/IEC 80079-20-1

October 2019

ICS 29.260.20

Supersedes EN 60079-20-1:2010

English Version

Explosive atmospheres - Part 20-1: Material characteristics for gas and vapour classification - Test methods and data (ISO/IEC 80079-20-1:2017, including Cor 1:2018)

Atmosphères explosives - Partie 20-1 : Caractéristiques des produits pour le classement des gaz et des vapeurs - Méthodes et données d'essai (ISO/CEI 80079-20-1:2017, y compris Cor 1:2018)

Explosionsfähige Atmosphären - Stoffliche Eigenschaften zur Klassifizierung von Gasen und Dämpfen - Teil 20-1: Prüfverfahren und Daten (ISO/IEC 80079-20-1:2017, einschließlich Cor 1:2018)

This European Standard was approved by CEN on 8 January 2018.

This European Standard was corrected and reissued by the CEN-CENELEC Management Centre on 20 November 2019.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, 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: Rue de la Science 23, B-1040 Brussels

European foreword

This document (EN ISO/IEC 80079-20-1:2019) has been prepared by Technical Committee ISO/TMB "Technical Management Board - groups" in collaboration with Technical Committee CEN/TC 305 "Potentially explosive atmospheres - Explosion prevention and protection" the secretariat of which is held by DIN.

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 April 2020, and conflicting national standards shall be withdrawn at the latest by April 2022.

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 60079-20-1:2010.

This document has been prepared under a mandate given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s).

For the relationship with EU Directive(s) see informative Annex ZA, which is an integral part of this document.

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, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO/IEC 80079-20-1:2017, including Cor 1:2018 has been approved by CEN as EN ISO/IEC 80079-20-1:2019 without any modification.

Annex ZA

(informative)

Relationship between this European Standard and the essential requirements of Directive 2014/34/EU aimed to be covered

This European Standard has been prepared under a Commission's standardization request M/BC/CEN/92/46 to provide one voluntary means of conforming to essential requirements of Directive 2014/34/EU "Directive 2014/34/EU Of The European Parliament And Of The Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres (recast)".

Once this standard is cited in the Official Journal of the European Union under that Directive, compliance with the normative clauses of this standard given in Table ZA.1 confers, within the limits of the scope of this standard, a presumption of conformity with the corresponding essential requirements of that Directive, and associated EFTA regulations.

Table ZA.1 — Correspondence between this European Standard and Directive 2014/34/EU

Essential Requirements of Directive 2014/34/EU	Clause(s)/sub-clause(s) of this EN	Remarks/Notes
1.0.1	All clauses	

WARNING 1 — Presumption of conformity stays valid only as long as a reference to this European Standard is maintained in the list published in the Official Journal of the European Union. Users of this standard should consult frequently the latest list published in the Official Journal of the European Union.

WARNING 2 — Other Union legislation may be applicable to the product(s) falling within the scope of this standard.

CONTENTS

Г	JREWORL	J	ວ
1	Scope		7
2	Normat	ive references	7
3		and definitions	
4		cation of gases and vapours	
_		eneral	
		lassification according to the maximum experimental safe gap (MESG) lassification according to the minimum igniting current ratio (MIC ratio)	
		lassification according to the similarity of chemical structure	
		lassification of mixtures of gases	
5		r flammable gases and vapours, relating to the use of equipment	
5			
		etermination of the properties	
	5.1.1	General	
	5.1.2	Equipment group	
	5.1.3	Flammable limits	
	5.1.4	Flash point (FP)	
	5.1.5	Temperature class	
	5.1.6	Minimum igniting current (MIC)	
	5.1.7	Auto-ignition temperature (AIT)	
		roperties of particular gases and vapours	
	5.2.1	Coke oven gas Ethyl nitrite	
	5.2.2		
	5.2.3	MESG of carbon monoxide	
_	5.2.4	Methane, Equipment Group IIA	
6		of test for the maximum experimental safe gap (MESG)	
		utline of method	
		est apparatus	
	6.2.1	General	
	6.2.2	Material and mechanical strength	
	6.2.3	Exterior chamber	
	6.2.4	Interior chamber	
	6.2.5	Gap adjustment	
	6.2.6	Injection of mixture	
	6.2.7	Position of ignition source	
		rocedure	
	6.3.1	Preparation of gas mixtures	
	6.3.2	Temperature and pressure	
	6.3.3	Gap adjustment	
	6.3.4	Ignition	
	6.3.5	Observation of the ignition process	
		etermination of maximum experimental safe gap (MESG)	
	6.4.1	General	
	6.4.2	Preliminary tests	
	6.4.3	Confirmatory tests	
	6.4.4	Reproducibility of maximum experimental safe gaps (MESG)	
	6.4.5	Tabulated values	16

6.5	Verification of the MESG determination method	16
7 Me	thod of test for auto-ignition temperature (AIT)	16
7.1	Outline of method	16
7.2	Apparatus	16
7.2	.1 General	16
7.2	.2 Test vessel and support	17
7.2		17
7.2		
7.2	9	
7.2		
7.2		
7.2		
7.2		
7.3	Sampling, preparation and preservation of test samples	
7.3		
7.3 7.4	Procedure	
7. 4 7.4		
7.4		
7.4		
7.5	Auto-ignition temperature (AIT)	
7.6	Validity of results	
7.6		
7.6		
7.7	Data	
7.8	Verification of the auto-ignition temperature determination method	22
Annex A	A (normative) Ovens of test apparatus for the tests of auto-ignition temperature	23
A.1	General	23
A.2	"IEC oven"	23
A.3	"DIN oven"	23
Annex E	3 (informative) Tabulated values	30
	C (informative) Determination of cool flames	
Annex [O (informative) Volume dependence of auto-ignition temperature	86
Biblioar	aphy	87
Dibliog!		
Eiguro 1	1 - Test apparatus	12
Figure A	A.1 – Test apparatus: assembly	24
	A.2 - Section A-A (flask omitted)	
Figure A	A.3 – Base heater (board made of refractory material)	25
	A.4 – Flask guide ring (board made of refractory material)	
Figure A	A.5 – Neck heater (board made of refractory material)	26
Figure A	4.6 - Oven	27
Figure A	A.7 - Lid of steel cylinder	28
	A.8 – Lid of steel cylinder	
-	A.9 – Injection of gaseous sample	
	C.1 – Additional thermocouple to detect cool flames	

Figure C.2 – 'Negative temperature coefficient' shown for butyl butyrate as an example. Figure D.1 – Volume dependence of auto-ignition temperature	
able 1 – Classification of temperature class and range of auto-ignition temperatures	
able 2 - Values for verification of the apparatus	
able 3 - Values for verification of the apparatus	
able B.1 - Material data	32
9,	
<u>_</u> :	
4	
	.0
	U'

INTERNATIONAL ELECTROTECHNICAL COMMISSION

EXPLOSIVE ATMOSPHERES -

Part 20-1: Material characteristics for gas and vapour classification – Test methods and data

FOREWORD

- 1) The International Electrotechnical Commission (IEC) is a worldwide organization for standardization comprising all national electrotechnical committees (IEC National Committees). The object of IEC is to promote international co-operation on all questions concerning standardization in the electrical and electronic fields. To this end and in addition to other activities, IEC publishes International Standards, Technical Specifications, Technical Reports, Publicly Available Specifications (PAS) and Guides (hereafter referred to as "IEC Publication(s)"). Their preparation is entrusted to technical committees; any IEC National Committee interested in the subject dealt with may participate in this preparatory work. International, governmental and non-governmental organizations liaising with the IEC also participate in this preparation. IEC collaborates closely with the International Organization for Standardization (ISO) in accordance with conditions determined by agreement between the two organizations.
- 2) The formal decisions or agreements of IEC on technical matters express, as nearly as possible, an international consensus of opinion on the relevant subjects since each technical committee has representation from all interested IEC National Committees.
- 3) IEC Publications have the form of recommendations for international use and are accepted by IEC National Committees in that sense. While all reasonable efforts are made to ensure that the technical content of IEC Publications is accurate, IEC cannot be held responsible for the way in which they are used or for any misinterpretation by any end user.
- 4) In order to promote international uniformity, IEC National Committees undertake to apply IEC Publications transparently to the maximum extent possible in their national and regional publications. Any divergence between any IEC Publication and the corresponding national or regional publication shall be clearly indicated in the latter
- 5) IEC itself does not provide any attestation of conformity. Independent certification bodies provide conformity assessment services and, in some areas, access to IEC marks of conformity. IEC is not responsible for any services carried out by independent certification bodies.
- 6) All users should ensure that they have the latest edition of this publication.
- 7) No liability shall attach to IEC or its directors, employees, servants or agents including individual experts and members of its technical committees and IEC National Committees for any personal injury, property damage or other damage of any nature whatsoever, whether direct or indirect, or for costs (including legal fees) and expenses arising out of the publication, use of, or reliance upon, this IEC Publication or any other IEC Publications.
- 8) Attention is drawn to the Normative references cited in this publication. Use of the referenced publications is indispensable for the correct application of this publication.
- 9) Attention is drawn to the possibility that some of the elements of this IEC Publication may be the subject of patent rights. IEC shall not be held responsible for identifying any or all such patent rights.

International Standard ISO/IEC 80079-20-1 has been prepared by subcommittee 31M: Non-electrical equipment and protective systems for explosive atmospheres, of IEC technical committee 31: Equipment for explosive atmospheres.

This first edition of ISO/IEC 80079-20-1 cancels and replaces IEC 60079-20-1:2010. It constitutes a technical revision. No significant changes were made with respect to IEC 60079-20-1:2010.

It is published as a double logo standard.

The text of this standard is based on the following documents:

FDIS	Report on voting
31M/122/FDIS	31M/126/RVD

Full information on the voting for the approval of this standard can be found in the report on voting indicated in the above table.

This publication has been drafted in accordance with the ISO/IEC Directives, Part 2.

A list of all parts in the IEC 60079 series, under the general title: *Explosive atmospheres*, as well as the International Standard 80079 series, can be found on the IEC website.

The committee has decided that the contents of this publication will remain unchanged until the stability date indicated on the IEC website under "http://webstore.iec.ch" in the data related to the specific publication. At this date, the publication will be

- reconfirmed,
- withdrawn.
- · replaced by a revised edition, or
- amended.

IMPORTANT – The 'colour inside' logo on the cover page of this publication indicates that it contains colours which are considered to be useful for the correct understanding of its contents. Users should therefore print this document using a colour printer.