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Standards

Irish Standard Recommendation  
S.R. CLC IEC/TS 60079-43:2021

# Explosive atmospheres - Part 43: Equipment in adverse service conditions

**S.R. CLC IEC/TS 60079-43:2021**

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## National Foreword

S.R. CLC IEC/TS 60079-43:2021 is the adopted Irish version of the European Document CLC IEC/TS 60079-43:2021, Explosive atmospheres - Part 43: Equipment in adverse service conditions

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TECHNICAL SPECIFICATION  
SPÉCIFICATION TECHNIQUE  
TECHNISCHE SPEZIFIKATION

**CLC IEC/TS 60079-43**

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English Version

**Explosive atmospheres - Part 43: Equipment in adverse service  
conditions  
(IEC/TS 60079-43:2017)**

Atmosphères explosives - Partie 43 : Matériel en conditions  
de service défavorables  
(IEC/TS 60079-43:2017)

Explosionsgefährdete Bereiche - Teil 43: Geräte bei  
ungünstigen Betriebsbedingungen  
(IEC/TS 60079-43:2017)

This Technical Specification was approved by CENELEC on 2021-04-19.

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European Committee for Electrotechnical Standardization  
Comité Européen de Normalisation Electrotechnique  
Europäisches Komitee für Elektrotechnische Normung

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**CLC IEC/TS 60079-43:2021 (E)**

## **European foreword**

This document (CLC IEC/TS 60079-43:2021) consists of the text of IEC TS 60079-43:2017 prepared by IEC/TC 31 "Equipment for explosive atmospheres".

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The text of the International Technical Specification IEC/TS 60079-43:2017 was approved by CENELEC as a European Technical Specification without any modification.

## Annex ZA (normative)

### Normative references to international publications with their corresponding European publications

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.

NOTE 1 Where an International Publication has been modified by common modifications, indicated by (mod), the relevant EN/HD applies.

NOTE 2 Up-to-date information on the latest versions of the European Standards listed in this annex is available here: [www.cenelec.eu](http://www.cenelec.eu).

<u>Publication</u>	<u>Year</u>	<u>Title</u>	<u>EN/HD</u>	<u>Year</u>
IEC 60034-5	-	Rotating electrical machines - Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification	EN IEC 60034-5	-
IEC 60068	series	Environmental testing	EN 60068	series
IEC 60079-0	-	Explosive atmospheres - Part 0: Equipment - General requirements	EN IEC 60079-0	-
IEC 60079-11	-	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"	EN 60079-11	-
IEC 60079-14	-	Explosive atmospheres - Part 14: Electrical installations design, selection and erection	EN 60079-14	-
IEC 60079-17	-	Explosive atmospheres - Part 17: Electrical installations inspection and maintenance	EN 60079-17	-
IEC 60529	-	Degrees of protection provided by enclosures (IP Code)	EN 60529	-
IEC 60721-1	-	Classification of environmental conditions - Part 1: Environmental parameters and their severities	EN 60721-1	-
IEC 60721-2-1	-	Classification of environmental conditions - Part 2-1: Environmental conditions appearing in nature - Temperature and humidity	EN 60721-2-1	-
IEC/TR 60721-4	series	Classification of environmental conditions -	-	-

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# **TECHNICAL SPECIFICATION**

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**Explosive atmospheres –  
Part 43: Equipment in adverse service conditions**



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**IEC TS 60079-43**

Edition 1.0 2017-11

# **TECHNICAL SPECIFICATION**

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**Explosive atmospheres –  
Part 43: Equipment in adverse service conditions**

INTERNATIONAL  
ELECTROTECHNICAL  
COMMISSION

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EXPLOSIVE ATMOSPHERES –

## Part 43: Equipment in adverse service conditions

## FOREWORD

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- the subject is still under technical development or where, for any other reason, there is the future but no immediate possibility of an agreement on an International Standard.

Technical specifications are subject to review within three years of publication to decide whether they can be transformed into International Standards.

IEC TS 60079-43, which is a technical specification, has been prepared by IEC Technical committee 31: Equipment for explosive atmospheres.

The text of this technical specification is based on the following documents:

Enquiry draft	Report on voting
31/1311/DTS	31/1328A/RVDTS

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

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

A list of all parts in the IEC 60079 series, published under the general title *Explosive atmospheres*, can be found on the IEC website.

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

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

A bilingual version of this publication may be issued at a later date.

## INTRODUCTION

IEC 60079-0 specifies the requirements for electrical equipment intended for use in explosive atmospheres at standard atmospheric conditions:

- temperature  $-20\text{ }^{\circ}\text{C}$  to  $+60\text{ }^{\circ}\text{C}$ ;
- pressure 80 kPa (0,8 bar) to 110 kPa (1,1 bar); and
- air with normal oxygen content, typically 21 % v/v.

In some cases, other parts of the IEC 60079 series also specify conditions outside the above range, for example in IEC 60079-1.

IEC 60079-0 states the normal ambient temperature range as  $-20\text{ }^{\circ}\text{C}$  to  $+40\text{ }^{\circ}\text{C}$  and states that electrical equipment designed for use in other than this normal ambient temperature range is considered to be special and includes additional marking to communicate this to the user.

IEC 60079-14 includes requirements for users to select and install equipment so that it is suitable for the environmental conditions, but does not provide any specific guidance for installations outside of the standard atmospheric conditions or for other adverse environmental conditions.

Extreme climate conditions in Polar environments are challenging to explosion protection technology and solutions. Conditions such as snow build-up, icing from spray and freezing of precipitation can negatively affect the operation and safety of equipment. Extreme low temperatures and weather conditions make it difficult to process hydrocarbons in open outdoor process areas and it can also be challenging for equipment operation. Measures to deal with these challenges are often called 'winterization'.

This document is a guide for equipment subject to adverse service conditions, for example equipment considered as 'special' in IEC 60079-0. It is applicable to the design, manufacture, installation, inspection and use of such equipment. Annex A gives recommendations on materials and Annex C gives information on electric motors in low temperatures. It is possible that some details in this technical specification will be relocated to relevant parts of the IEC 60079 series at the next edition of each of those relevant parts as guidance material.

This technical specification does not at this time address other environmental conditions such as high temperatures, which will be explored further at a later date.

## EXPLOSIVE ATMOSPHERES –

### Part 43: Equipment in adverse service conditions

#### 1 Scope

This part of IEC 60079, which is a Technical Specification, provides guidance for equipment for use in explosive atmospheres in environments which may include ambient temperatures below –20 °C, and additional adverse conditions, including maritime applications.

The purpose of this document is to provide recommendations to be considered for the design, manufacture and use of equipment. It is intended that this document be used for equipment operating within the environmental range specified on the certificate for the equipment.

NOTE For detailed classification of climate conditions refer to IEC 60721 series and IEC 60068-1.

This document is intended to be used in conjunction with the IEC 60079 series and the ISO/IEC 80079 series.

#### 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.

IEC 60034-5, *Rotating electrical machines - Part 5: Degrees of protection provided by the integral design of rotating electrical machines (IP code) - Classification*

IEC 60068 (all parts), *Environmental testing*

IEC 60079-0, *Explosive atmospheres - Part 0: Equipment - General requirements*

IEC 60079-11, *Explosive atmospheres - Part 11: Equipment protection by intrinsic safety "i"*

IEC 60079-14, *Explosive atmospheres - Part 14: Electrical installations design, selection and erection*

IEC 60079-17, *Explosive atmospheres - Part 17: Electrical installations inspection and maintenance*

IEC 60529, *Degrees of protection provided by enclosures (IP Code)*

IEC 60721-1, *Classification of environmental conditions - Part 1: Environmental parameters and their severities*

IEC 60721-2-1, *Classification of environmental conditions - Part 2-1: Environmental conditions appearing in nature - Temperature and humidity*

IEC TR 60721-4 (all parts), *Classification of environmental conditions*



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