

**PLAHVATUSOHTLIKUD KESKKONNAD. OSA 10-1:  
PIIRKONDADE LIIGITUS. PLAHVATUSOHTLIKUD  
GAASKESKKONNAD**

**Explosive atmospheres - Part 10-1: Classification of  
areas - Explosive gas atmospheres (IEC  
60079-10-1:2020)**

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

|                                                                                                                       |                                                                                                                                                      |
|-----------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|
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English Version

## Explosive atmospheres - Part 10-1: Classification of areas - Explosive gas atmospheres (IEC 60079-10-1:2020)

Atmosphères explosives - Partie 10-1: Classification des  
emplacements - Atmosphères explosives gazeuses  
(IEC 60079-10-1:2020)

Explosionsgefährdete Bereiche - Teil 10-1: Einteilung der  
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## European foreword

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| IEC 60079-13       | NOTE | Harmonized as EN 60079-13                    |
| IEC 60079-10-2     | NOTE | Harmonized as EN 60079-10-2                  |
| IEC 61285          | NOTE | Harmonized as EN 61285                       |
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# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Explosive atmospheres –  
Part 10-1: Classification of areas – Explosive gas atmospheres**

**Atmosphères explosives –  
Partie 10-1: Classification des emplacements – Atmosphères explosives  
gazeuses**



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# INTERNATIONAL STANDARD

## NORME INTERNATIONALE



**Explosive atmospheres –  
Part 10-1: Classification of areas – Explosive gas atmospheres**

**Atmosphères explosives –  
Partie 10-1: Classification des emplacements – Atmosphères explosives  
gazeuses**

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Explosive gas atmospheres**

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This third edition of IEC 60079-10-1 cancels and replaces the second edition, published in 2015, and constitutes a technical revision. The significant technical changes with respect to the previous edition are as follows:

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| Updating editorial details and notes to the definitions                                                                                                                                                   | 3            |                             | X         |                         |
| Deletion of the previous edition clause 3.7.3 definition for catastrophic failure (dealt with in clause 4.5)                                                                                              |              |                             | X         |                         |
| Introduction of new Subclause <b>4.4.2 Zone of negligible extent</b>                                                                                                                                      | 4.4.2        |                             | X         |                         |
| Introduction of new clause <b>5.3.2 Fuel gas installations</b>                                                                                                                                            | 5.3.2        |                             | X         |                         |
| Renumbering of headings                                                                                                                                                                                   | 7            | X                           |           |                         |
| Introduction of <b>Figure 1 – Dilution volume</b>                                                                                                                                                         | 7            |                             | X         |                         |
| Upgrading <b>Table A.1</b> with UFL and its column 15 heading with the 'source of data'                                                                                                                   | A.1          | X                           |           |                         |
| Updating the flow-chart in <b>Figure B.1</b>                                                                                                                                                              | B.6          |                             | X         |                         |
| Updating equations for evaporation rate to align with the recent source modifications                                                                                                                     | B.7.3        |                             | X         |                         |
| Updating the chart in <b>Figure B.2</b> according to the updated equations for evaporation rate and the ventilation velocity of 0,25 m/s                                                                  | B.7.3        |                             | X         |                         |
| Restructuring <b>Table C.1</b>                                                                                                                                                                            | C.3.4        |                             | X         |                         |
| Removal of safety factor <i>k</i> and deleting it from the horizontal axis of the chart in <b>Figure C.1</b>                                                                                              | C.3.5        |                             |           | C2                      |
| Revising equations (C.2) and (C.3)                                                                                                                                                                        | C.5.2        |                             |           | C3                      |
| Revising equations (C.4) and (C.5)                                                                                                                                                                        | C.5.3        |                             |           | C4                      |
| Revising the chart in <b>Figure C.6</b> by changing the label on the horizontal axis                                                                                                                      | C.5.3        |                             |           | C5                      |
| Revising equation (C.6) and deleting equation (C.7)                                                                                                                                                       | C.5.4        |                             |           | C6                      |
| Removal of safety factor <i>k</i> and deleting it from the horizontal axis of the charts in <b>Figure D.1</b>                                                                                             | D.3          |                             |           | C7                      |
| Imposing limitations to the use of the chart in <b>Figure D.1</b>                                                                                                                                         | D.3          |                             | X         |                         |
| Updating and corrections in <b>Annex E</b>                                                                                                                                                                | Annex E      |                             | X         |                         |
| Upgrading <b>Annex G</b> on Flammable mists                                                                                                                                                               | Annex G      |                             | X         |                         |
| Introducing new items in <b>Table K.1</b>                                                                                                                                                                 | Annex K      |                             | X         |                         |
| Introducing new items in the Bibliography                                                                                                                                                                 | Bibliography |                             | X         |                         |
| NOTE The technical changes referred to include the significance of technical changes in the revised IEC Standard, but they do not form an exhaustive list of all modifications from the previous version. |              |                             |           |                         |

## Explanations:

### A) Definitions

#### Minor and editorial changes

clarification  
decrease of technical requirements  
minor technical change  
editorial corrections

These are changes which modify requirements in an editorial or a minor technical way. They include changes of the wording to clarify technical requirements without any technical change.

#### Extension

addition of technical options

These are changes which add new or modify existing technical requirements, in a way that new options are given, but without increasing requirements.

#### Major technical changes

addition of technical requirements  
increase of technical requirements

### B) Information about the background of changes

- C1 The previous edition item e) was: “commercial and industrial applications where only low pressure fuel gas is used for appliances e.g. for cooking, water heating and similar uses, where the installation is compliant with relevant gas codes”. Industrial applications of any kind should not be exempted from the scope of this standard. See also new clause 5.3.2.
- C2 The factor  $k$  was initially intended to provide for additional safety for uncertainties in determining LFL for flammable substances, particularly gas mixtures. However, this was considered as unnecessary and confusing considering the derivation of the chart.
- C3 The equations are updated to align with BS 5925
- C4 The equations are updated to align with BS 5925
- C5 The chart is revised to match the new equation (C.4)
- C6 The equation is updated to align with BS 5925
- C7 See the explanation under C2

These are changes to technical requirements (addition, increase of the level or removal).

NOTE These changes represent current technological knowledge. However, these changes should not normally have an influence on equipment already placed on the market.

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

| FDIS         | Report on voting |
|--------------|------------------|
| 31J/307/FDIS | 31J/310/RVD      |

Full information on the voting for the approval of this International Standard 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 of the IEC 60079 series, 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.

**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.

## INTRODUCTION

In areas where dangerous quantities and concentrations of flammable gas or vapour may arise, measures need to be applied in order to reduce the risk of explosions. This part of IEC 60079 sets out the essential criteria against which the ignition hazards can be assessed and gives guidance on the design and control parameters which can be used in order to reduce such hazards.

## EXPLOSIVE ATMOSPHERES –

### Part 10-1: Classification of areas – Explosive gas atmospheres

#### 1 Scope

This part of IEC 60079 is concerned with the classification of areas where flammable gas or vapour hazards may arise and may then be used as a basis to support the proper design, construction, operation and maintenance of equipment for use in hazardous areas.

It is intended to be applied where there may be an ignition hazard due to the presence of flammable gas or vapour, mixed with air, but it does not apply to:

- a) mines susceptible to firedamp;
- b) the processing and manufacture of explosives;
- c) catastrophic failures or rare malfunctions which are beyond the concept of normality dealt with in this standard (see 3.7.3 and 4.5);
- d) rooms used for medical purposes;
- e) domestic premises;
- f) where a hazard may arise due to the presence of combustible dusts or combustible flyings but the principles may be used in assessment of a hybrid mixture (refer also to IEC 60079-10-2).

NOTE Additional guidance on hybrid mixtures is provided in Annex I.

Flammable mists may form or be present at the same time as flammable vapour. In such case the strict application of the details in this document may not be appropriate. Flammable mists may also form when liquids not considered to be a hazard due to the high flash point are released under pressure. In these cases the classifications and details given in this document do not apply. Information on flammable mists is provided in Annex G.

For the purpose of this document, an area is a three-dimensional region or space.

Atmospheric conditions include variations above and below reference levels of 101,3 kPa (1 013 mbar) and 20 °C (293 K), provided that the variations have a negligible effect on the explosion properties of the flammable substances.

In any site, irrespective of size, there may be numerous sources of ignition apart from those associated with equipment. Appropriate precautions will be necessary to ensure safety in this context. This standard is applicable with judgement for other ignition sources but in some applications other safeguards may also need to be considered. E.g. larger distances may apply for naked flames when considering hot work permits.

This document does not take into account the consequences of ignition of an explosive atmosphere except where a zone is so small that if ignition did occur it would have negligible consequences (see 3.3.8 and 4.4.2).

#### 2 Normative references

This document contains no normative references.