

საქართველოს სტანდარტი

ფეთქებადსაშიში გარემო - ფეთქებადობის პრევენცია და დაცვა - ნაწილი 1:
ძირითადი კონცეფცია და მეთოდოლოგია

საქართველოს სტანდარტებისა და მეტროლოგიის
ეროვნული სააგენტო
თბილისი

სსტ ენ 1127-1:2011/2015

საინფორმაციო მონაცემები

1 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს 2015 წლის 27 მარტის № 21 და 2015 წლის 10 თებერვლის № 9 განკარგულებებით

2 მიღებულია გარეკანის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 1127-1:2011 „ ფეთქებადსაშიში გარემო - ფეთქებადობის პრევენცია და დაცვა - ნაწილი 1: ძირითადი კონცეფცია და მეთოდოლოგია“

3 პირველად

4 რეგისტრირებულია საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2015 წლის 27 მარტი №268-1.3-6966

აკრძალულია ამ სტანდარტის გადაცემა მესამე პირებისათვის ან/და მისი სხვა ფორმით გავრცელება

English Version

Explosive atmospheres - Explosion prevention and protection -
Part 1: Basic concepts and methodology

Atmosphères explosives - Prévention de l'explosion et
protection contre l'explosion - Partie 1: Notions
fondamentales et méthodologie

Explosionsfähige Atmosphären - Explosionsschutz - Teil 1:
Grundlagen und Methodik

This European Standard was approved by CEN on 18 June 2011.

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, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.



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

Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword.....4

Introduction5

1 Scope6

2 Normative references7

3 Terms and definitions8

4 Risk assessment.....8

4.1 General.....8

4.2 Identification of explosion hazards.....9

4.2.1 General.....9

4.2.2 Combustion properties9

4.2.3 Explosion behaviour10

4.2.4 Likelihood of occurrence of a hazardous explosive atmosphere10

4.3 Identification of ignition hazards11

4.3.1 General.....11

4.3.2 Ignition properties11

4.3.3 Likelihood of occurrence of effective ignition sources12

4.4 Estimation of the possible effects of an explosion.....12

5 Possible ignition sources13

5.1 Hot surfaces13

5.2 Flames and hot gases (including hot particles)13

5.3 Mechanically generated sparks.....14

5.4 Electrical apparatus.....14

5.5 Stray electric currents, cathodic corrosion protection.....14

5.6 Static electricity15

5.7 Lightning.....15

5.8 Radio frequency (RF) electromagnetic waves from 10^4 Hz to 3×10^{11} Hz15

5.9 Electromagnetic waves from 3×10^{11} Hz to 3×10^{15} Hz.....16

5.10 Ionizing radiation16

5.11 Ultrasonics16

5.12 Adiabatic compression and shock waves16

5.13 Exothermic reactions, including self-ignition of dusts.....17

6 Risk reduction17

6.1 Fundamental principles17

6.2 Avoidance or reduction of the amount of explosive atmosphere18

6.2.1 Process parameters18

6.2.2 Design and construction of equipment, protective systems and components19

6.3 Hazardous areas21

6.4 Requirements for the design and construction of equipment, protective systems and components by avoidance of effective ignition sources.....21

6.4.1 General.....21

6.4.2 Hot surfaces23

6.4.3 Flames and hot gases24

6.4.4 Mechanically generated sparks.....24

6.4.5 Electrical apparatus.....25

6.4.6 Stray electric currents and cathodic corrosion protection25

6.4.7 Static electricity26

6.4.8 Lightning.....26

6.4.9 Radio frequency (RF) electromagnetic waves from 10^4 Hz to 3×10^{11} Hz27

6.4.10 Electromagnetic waves from 3×10^{11} Hz to 3×10^{15} Hz27

საინფორმაციო ნაწილი. სრული ტექსტის სახსრავად შეიძინეთ სტანდარტი.

6.4.11	Ionizing radiation	28
6.4.12	Ultrasonics	29
6.4.13	Adiabatic compression and shock waves	29
6.4.14	Exothermic reactions, including self-ignition of dusts	30
6.5	Requirements for the design and construction of equipment, protective systems and components to reduce the explosion effects	30
6.6	Provisions for emergency measures	31
6.7	Principles of measuring and control systems for explosion prevention and protection	31
7	Information for use	31
7.1	General	31
7.2	Information for commissioning, maintenance and repair to prevent explosion	32
7.3	Qualifications and training	33
Annex A (informative) Information for the use of tools in potentially explosive atmospheres		34
Annex B (informative) Tightness of equipment		35
B.1	General	35
B.2	Equipment which is durably technically tight	35
B.3	Technically tight equipment	37
Annex C (informative) Significant technical changes between this document and the previous edition of this European Standard		38
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 94/9 EC		40
Annex ZB (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC		41
Bibliography		42

Foreword

This document (EN 1127-1:2011) has been prepared by 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 January 2012, and conflicting national standards shall be withdrawn at the latest by July 2014.

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.

This document supersedes EN 1127-1:2007.

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 Directives.

For relationship with EU Directives, see informative Annex ZA and ZB, which is an integral part of this document.

Annex C provides details of significant technical changes between this European Standard and the previous edition EN 1127-1:2007.

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

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

Introduction

CEN and CENELEC are producing a set of standards to assist designers, manufacturers and other interested bodies to interpret the essential safety requirements in order to achieve conformity with European Legislation. Within this series of standards CEN has undertaken to draw up a standard to give guidance in the field of explosion prevention and protection, as hazards from explosions are to be considered in accordance with EN ISO 12100.

In accordance with EN ISO 12100, it is a type A standard.

This standard describes the basic concepts and methodology of explosion prevention and protection.

CEN/TC 305 has a mandate in this area to produce B-type, and C-type standards, which will allow verification of conformity with the essential safety requirements.

Explosions can occur from:

- a) materials processed or used by the equipment, protective systems and components;
- b) materials released by the equipment, protective systems and components;
- c) materials in the vicinity of the equipment, protective systems and components;
- d) materials of construction of the equipment, protective systems and components.

Since safety depends not only on equipment, protective systems and components but also on the material being handled and its use, this standard includes aspects related to the intended use and foreseeable misuse, i.e. the manufacturer should consider in which way and for which purpose the equipment, protective systems and components will be used and take this into account during its design and construction. This is the only way hazards inherent in equipment, protective systems and components can be reduced.

NOTE This standard may also serve as a guide for users of equipment, protective systems and components when assessing the risk of explosion in the workplace and selecting the appropriate equipment, protective systems and components.