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metoodika**

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

EESTI STANDARDI EESSÕNA**NATIONAL FOREWORD**

<p>Käesolev Eesti standard EVS-EN 1127-1:2008 sisaldab Euroopa standardi EN 1127-1:2007 ingliskeelset teksti.</p> <p>Standard on kinnitatud Eesti Standardikeskuse 27.02.2008 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.</p> <p>Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 28.11.2007.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 1127-1:2008 consists of the English text of the European standard EN 1127-1:2007.</p> <p>This standard is ratified with the order of Estonian Centre for Standardisation dated 27.02.2008 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.</p> <p>Date of Availability of the European standard text 28.11.2007.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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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 21 October 2007.

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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 Management Centre has the same status as the official versions.

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Foreword

This document (EN 1127-1:2007) 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of an identical text or by endorsement, at the latest by May 2008, and conflicting national standards shall be withdrawn at the latest by May 2008.

This document will supersede EN 1127-1:1997.

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, ZB and ZC, which are an integral part of this document.

The main changes with respect to the previous edition are technical changes in the definitions (see Clause 3). Furthermore the document has been editorially revised, references have been updated and a bibliography has been added.

This standard is a general guideline for explosion prevention and protection by design and construction of equipment, protective systems and components.

Detailed information on specific equipment, protective systems and components is comprised in appropriate individual standards. The design and construction of explosion prevention and protection measures need safety relevant data of flammable substances and explosive atmospheres. Detailed information is available from appropriate standards.

EN 1127-1 *Explosive atmospheres — Explosion prevention and protection* consists of the following parts:

- *Part 1: Basic concepts and methodology;*
- *Part 2: Basic concepts and methodology for mining.*

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, 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.

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 12100-1:2003, 4.8.

The present standard was drawn up on request and by mandate of CEC and EFTA to fulfil

- Directive 2006/42/EC of the European Parliament and the Council of May 17, 2006 on machinery which demands in its Annex I, Clause 1.5.7 that machinery must be designed and constructed in such a way as to avoid any risk of explosion as well as
- Directive 94/9/EC of the European Parliament and the Council of March 23, 1994 on the approximation of the laws of the member states concerning equipment and protective systems intended for use in potentially explosive atmospheres.

In accordance with EN ISO 12100-1 it is a type A standard.

This standard has been prepared to be a harmonized standard in the sense of the appropriate Directives of the EU and associated EFTA regulations.

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, i.e. the manufacturer should consider how and for what the equipment, protective systems and components will be used and take this into account during its design and construction. Only in this way can hazards inherent in equipment, protective systems and components 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.

1 Scope

This European Standard specifies methods for the identification and assessment of hazardous situations leading to explosion and the design and construction measures appropriate for the required safety. This is achieved by:

- hazard identification;
- risk assessment;
- reduction of risk;
- information for use.

The safety of equipment, protective systems and components can be achieved by eliminating of hazards and/or limiting the risk, i.e. by:

- a) design without using safeguarding;
- b) safeguarding;
- c) communication links if necessary to convey information to the user;
- d) any other precautions.

Measures in accordance with a) (prevention) and b) (protection) against explosions are dealt with in Clause 6, measures according to c) against explosions are dealt with in Clause 7. Measures in accordance with d) are not specified in this European Standard. They are dealt with in EN ISO 12100-1:2003, Clause 5.

The preventive and protective measures described in this European Standard will not provide the required level of safety unless the equipment, protective systems and components are operated within their intended use and are installed and maintained according to the relevant codes of practice or requirements.

This standard specifies general design and construction methods to help designers and manufacturers in achieving explosion safety in the design of equipment, protective systems and components.

This European Standard is applicable to any equipment, protective systems and components intended to be used in potentially explosive atmospheres, under atmospheric conditions. These atmospheres can arise from flammable materials processed, used or released by the equipment, protective systems and components or from materials in the vicinity of the equipment, protective systems and components and/or from the materials of construction of the equipment, protective systems and components.

This European Standard is applicable to equipment, protective systems and components at all stages of its use.

This European Standard is only applicable to equipment group II which is intended for use in other places than underground parts of mines and those parts of surface installations of such mines endangered by firedamp and/or flammable dust.

This European Standard is not applicable to:

- i) medical devices intended for use in a medical environment;
- ii) equipment, protective systems and components where the explosion hazard results exclusively from the presence of explosive substances or unstable chemical substances;

- iii) equipment, protective systems and components where the explosion can occur by reaction of substances with other oxidizers than atmospheric oxygen or by other hazardous reactions or by other than atmospheric conditions;
- iv) equipment intended for use in domestic and non-commercial environments where potentially explosive atmospheres may only rarely be created, solely as a result of the accidental leakage of fuel gas;
- v) personal protective equipment covered by Directive 89/686/EEC;
- vi) seagoing vessels and mobile offshore units together with equipment on board such vessels or units;
- vii) means of transport, i.e. vehicles and their trailers intended solely for transporting passengers by air or by road, rail or water networks, as well as means of transport insofar as such means are designed for transporting goods by air, by public road or rail networks or by water. Vehicles intended for use in a potentially explosive atmosphere shall not be excluded;
- viii) the design and construction of systems containing desired, controlled combustion processes, unless they can act as ignition sources in potentially explosive atmospheres.

2 Normative references

The following referenced documents are indispensable for the application 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.

EN 13237:2003, *Potentially explosive atmospheres — Terms and definitions for equipment and protective systems intended for use in potentially explosive atmospheres*

EN ISO 12100-1:2003, *Safety of machinery — Basic concepts, general principles for design — Part 1: Basic terminology, methodology (ISO 12100-1:2003)*

EN ISO 12100-2, *Safety of machinery — Basic concepts, general principles for design — Part 2: Technical principles (ISO 12100-2:2003)*

EN ISO 14121-1, *Safety of machinery — Risk assessment Part 1: Principles (ISO 14121-1:2007)*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13237:2003 and the following apply.

3.1

hazardous explosive atmosphere

explosive atmosphere which, if it explodes, causes harm

3.2

malfunction

situation when the equipment, protective systems and components do not perform the intended function

NOTE 1 See also EN ISO 12100-1:2003, 5.3 b).

NOTE 2 For the purposes of this standard this can happen due to a variety of reasons, including

- a) variation of a property or of a dimension of the processed material or of the workpiece,
- b) failure of one (or more) of component parts of the equipment, protective systems and components,