Mitteelektrilised seadmed plahvatusohtlike keskkondade jaoks. Osa 5: Kaitsmine konstruktsiooniohutusklassi "c" abil

Non-electrical equipment intended for use in potentially explosive atmospheres - Part 5: Protection by constructional safety “c”

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13463-5:2011 sisaldab Euroopa standardi EN 13463-5:2011 ingliskeelset teksti.	This Estonian standard EVS-EN 13463-5:2011 consists of the English text of the European standard EN 13463-5:2011.
Standard on kinnitatud Eesti Standardikeskuse 29.07.2011 käskkirjaga ja jõustub sellekohase teate avaldamisel EVS Teatajas.	This standard is ratified with the order of Estonian Centre for Standardisation dated 29.07.2011 and is endorsed with the notification published in the official bulletin of the Estonian national standardisation organisation.
Euroopa standardimisorganisatsioonide poolt rahvuslikele liikmetele Euroopa standardi teksti kättesaadavaks tegemise kuupäev on 20.07.2011.	Date of Availability of the European standard text 20.07.2011.
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EUROPEAN STANDARD

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English Version

Non-electrical equipment intended for use in potentially explosive atmospheres - Part 5: Protection by constructional safety 'c'

Appareils non électriques destinés à être utilisés en atmosphères explosibles - Partie 5: Protection par sécurité de construction 'c'

Nicht-elektrische Geräte für den Einsatz in explosionsgefährdeten Bereichen - Teil 5: Schutz durch konstruktive Sicherheit 'c'

This European Standard was approved by CEN on 11 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.

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Foreword

This document (EN 13463-5:2011) 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 13463-5:2003.

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

The present standard is composed of the following parts:

— EN 13463-1, *Non-electrical equipment for use in potentially explosive atmospheres - Part 1: Basic method and requirements*

— EN 13463-2, *Non-electrical equipment for use in potentially explosive atmospheres - Part 1: Basic method and requirements*

— EN 13463-3, *Non-electrical equipment for use in potentially explosive atmospheres - Part 3: Protection by flameproof enclosure 'd'*

— EN 13463-5, *Non-electrical equipment intended for use in potentially explosive atmospheres - Part 5: Protection by constructional safety 'c'*

— EN 13463-6, *Non-electrical equipment for use in potentially explosive atmospheres - Part 6: Protection by control of ignition source 'b'*

— EN 13463-8, *Non-electrical equipment for potentially explosive atmospheres - Part 8: Protection by liquid immersion 'k'*

Annex C provides details of significant technical changes between this European Standard and the previous edition EN 13463-5:2003.

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.

Introduction

Non-electrical equipment has been used for over 150 years in industries having potentially explosive atmospheres and a great deal of experience has been gained in the application of protective measures to reduce the risk of ignition to an acceptably safe level. With the introduction of the Directive 94/9/EC (ATEX) and the inclusion of non-electrical equipment in its scope, it became necessary to produce ignition protection concept standards which clearly defined these protective measures and incorporated the extensive and diverse experience gained over the years.

One of the methods of applying ignition protection, had been to select types of equipment not containing an ignition source in normal service and then apply good engineering principles, so that risk of mechanical failures likely to create incendive temperatures or sparks, was reduced to a very low level. Such protective measures are referred to in this standard as ignition protection by "Constructional Safety", or "type of protection 'c'".

1 Scope

1.1 This European Standard specifies the requirements for the design and construction of non-electrical equipment, intended for use in potentially explosive atmospheres, protected by the type of protection Constructional Safety 'c'.

1.2 This European Standard supplements the requirements in EN 13463-1, the contents of which also apply in full to equipment constructed in accordance with this European Standard.

1.3 The type of ignition protection described in the standard can be used either on its own or in combination with other types of ignition protection to meet the requirements for equipment of Group I, category M2 or Group II, categories 1 and 2 depending on the ignition hazard assessment in EN 13463-1. Type of ignition protection 'c' is not applicable for Group I for M1. These requirements are specified in EN 50303.

NOTE Most category 3 equipment, only needs to meet the requirements of EN 13463-1, but some category 3 equipment may have to meet the requirements of this European Standard for some of the ignition sources identified in the ignition hazard assessment.

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 1127-1, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

EN 1127-2, *Explosive atmospheres — Explosion prevention and protection — Part 2: Basic concepts and methodology for mining*

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

EN 13463-1:2009, *Non-electrical equipment for use in potentially explosive atmospheres — Part 1: Basic method and requirements*

EN 13463-6:2005, *Non-electrical equipment for use in potentially explosive atmospheres — Part 6: Protection by control of ignition source 'b'*

EN 13463-8, *Non-electrical equipment for potentially explosive atmospheres — Part 8: Protection by liquid immersion 'k'*

EN 13478, *Safety of machinery — Fire prevention and protection*

EN 13501-1:2007+A1:2009, *Fire classification of construction products and building elements — Part 1: Classification using test data from reaction to fire tests*

EN 60529:1991, *Degrees of protection provided by enclosures (IP Code), (IEC 60529:1989)*

EN ISO 284*, Conveyor belts — Electrical conductivity — Specification and test method*

EN ISO 4413, *Hydraulic fluid power - General rules and safety requirements for systems and their components (ISO 4413:2010)*

EN ISO 4414, *Pneumatic fluid power - General rules and safety requirements for systems and their components (ISO 4414:2010)*

IEC 60079-4, *Electrical apparatus for explosive gas atmospheres — Part 4: Method of test for ignition temperature*

ISO 281, *Rolling bearings — Dynamic load ratings and rating life*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13237, EN 13463-1, EN 1127-1 and EN 1127-2 and the following apply.

3.1
type of protection constructional safety 'c'
type of ignition protection in which constructional measures are applied so as to protect against the possibility of ignition from hot surfaces, sparks and adiabatic compression generated by moving parts

3.2
mechanically generated sparks
sparks, as well as showers of sparks, produced by impact or friction between two similar or dissimilar solid materials

4 General

4.1 Determination of suitability

Before a decision is made to protect equipment or pieces of equipment for use as an assembly including interconnecting parts by the measures described in this standard, it shall have been subjected to the ignition hazard assessment in accordance with EN 13463-1.

Furthermore, it shall also have been determined that, by enhancing or increasing the safety of certain vulnerable parts, the required level of protection is ensured against the possibility of ignition sources occurring.

4.2 General requirements for equipment

All parts shall be capable of functioning in conformity with the operational parameters established by the manufacturer throughout their expected lifetime. They shall be sufficiently firm and durable to withstand the mechanical and thermal stresses to which they are intended to be subjected.

This also applies to interconnecting parts of equipment including joints (e.g. cemented, soldered or welded joints).

4.3 Ingress Protection

4.3.1 General

The degree of ingress protection (IP) provided by the outer enclosures of equipment depends upon its intended duty and the type of environment it is designed to be used in. An appropriate rating, according to IP category 1, as specified in 13.4 of EN 60529:1991, shall be determined as part of the ignition hazard assessment (see 4.1) and shall be able to prevent foreign objects and/or water entering the equipment which could:

1) Increase the probability of ignition, by for example, allowing combustible dust, with a lower ignition temperature than the potentially explosive atmosphere, to form a layer on hot internal components or parts of the equipment; and/or

2) make contact with moving parts, resulting in the creation of an effective ignition source.