Mitteelelektrilised seadmed plahvatusohtlike keskkondade jaoks. Osa 8: Vedelikimmersioon "k" poolt tagatav kaitse

Non-electrical equipment for potentially explosive atmospheres - Part 8: Protection by liquid immersion 'k'

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13463-8:2003 sisaldab Euroopa standardi EN 13463-8:2003 ingliskeelset teksti. Käesolev dokument on jõustatud 14.10.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 13463-8:2003 consists of the English text of the European standard EN 13463-8:2003. This document is endorsed on 14.10.2003 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: This European Standard specifies the requirements for the design, construction, testing and marking of ignition protected equipment using liquid immersion k as a means of preventing potential ignition sources from becoming effective according to the category, or categories, of the equipment to which it is constructed	**Scope:** This European Standard specifies the requirements for the design, construction, testing and marking of ignition protected equipment using liquid immersion k as a means of preventing potential ignition sources from becoming effective according to the category, or categories, of the equipment to which it is constructed

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Võtmesõnad: occupational safety, pressure tests, preventive actions, protection, protective measures, risk, risk area, safety, safety engineering, safety requirements, specification (approval), specifications, testing, type k protected electrical equipment, workplace safety

EUROPEAN STANDARD

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English version

Non-electrical equipment for potentially explosive atmospheres - Part 8: Protection by liquid immersion 'k'

Appareils non électriques destinés à être utilisés en atmosphères explosibles - Partie 8: Protection par immersion dans un liquide 'k'

Nicht-elektrische Geräte für den Einsatz in explosionsgefährdeten Bereichen - Teil 8: Schutz durch Flüssigkeitskapselung 'k'

This European Standard was approved by CEN on 1 August 2003.

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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 Management Centre has the same status as the official versions.

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Contents

Foreword

This document (EN 13463-8:2003) 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 March 2004, and conflicting national standards shall be withdrawn at the latest by March 2004.

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.

This standard is to specify the requirements for the type of protection "Liquid immersion" for equipment intended for use in potentially explosive atmospheres and should be used in conjunction with EN 13463-1 " Non-electrical equipment for potentially explosive atmospheres - Part 1: Basic method and requirements”.

The detailed drafting work was entrusted to Working Group 2 "Equipment for use in potentially explosive atmospheres".

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Luxembourg, Malta, Netherlands, Norway, Portugal, Slovakia, Spain, Sweden, Switzerland and the United Kingdom.

Introduction

Certain types of non-electrical equipment, intended for use in potentially explosive atmospheres of gas, vapour and/or dust, have their potential ignition sources rendered ineffective by either submersing them in a protective liquid, or by continuously coating them with a flowing film of protective liquid. In some equipment, the protective liquid is provided solely for the purpose of preventing the potential ignition sources from becoming effective. In other equipment, the protective liquid serves additional purposes, such as lubricating and/or cooling moving parts, or as in the case of hydraulic systems, for transmitting energy. In some equipment, the protective liquid may be the actual process liquid itself.

Examples of the kinds of equipment utilising this type of ignition protection are:

a) oil immersed disc brakes, for example, on the wheels of vehicles used in potentially explosive atmospheres,

b) diaphragm and other submersible pumps used for delivering flammable liquids, having their moving mechanisms immersed below the lowest allowable level of the flammable liquid being processed (e.g. petroleum product dispensers),

c) hydraulic pumps and motors having their internal rotating parts continuously immersed in the flowing hydraulic fluid used to transmit the hydrostatic or hydrokinetic energy,

d) oil filled gearboxes, having their gear wheels partially immersed, but continuously coated by a viscous film of lubricating oil. In this example the protective oil coating may be supplied by natural splashing of the wheels as they rotate in the oil, or by directing a continuously flowing stream of oil directly onto them from an oil pump in the gearbox sump,

e) fluid couplings, torque converters, connected for example, between the output shaft of a driving motor and the input shaft of fully loaded machine, to allow it to be started gradually (‘soft starting’).

In all of the above, ignition protection is achieved by the fact that protective liquid prevents the surrounding explosive atmosphere from coming into contact with the ignition source(s) by continuously coating, and/or lubricating and cooling the moving parts.

A similar type of ignition protection, known as oil immersion ”o”, has been used for many years for electrical equipment, where, in addition to the above, the liquid also acts as an electrical insulating medium. It is for this latter reason that this standard cannot be applied to electrical equipment, because it allows the use of liquids that conduct electricity.

1 Scope

1.1 This European Standard specifies the requirements for the design, construction, testing and marking of ignition protected equipment using liquid immersion ‘k’ as a means of preventing potential ignition sources from becoming effective according to the category, or categories, of the equipment to which it is constructed.

1.2 It may be used to provide ignition protection, either as an independent means, in addition to, or in combination with, other types of ignition protection listed in EN 13463-1 for Group I, categories M1 and M2 and Group II, categories 1G, 1D, 2G, 2D, 3G and 3D equipment, according to the ignition hazard assessment.

1.3 This European Standard supplements the requirements of EN 13463-1 insofar as it applies to the protection of non-electrical equipment by liquid immersion ‘k’.

1.4 This European Standard does not apply to the ignition protection of electrical equipment. For these requirements reference should be made to EN 50014 and EN 50015, which inter-alia, requires electrically non-conducting protective liquids to be used.

2 Normative references

This European Standard incorporates by dated or undated reference, provisions from other publications. These normative references are cited at the appropriate places in the text and the publications are listed hereafter. For dated references, subsequent amendments to or revisions of any of these publications apply to this European Standard only when incorporated in it by amendment or revision. For undated references the latest edition of the publication referred to applies (including amendments).

EN 13463-1:2001, *Non-electrical equipment for potentially explosive atmospheres Part 1: Basic method and requirements.*

EN 60529, *Degree of protection provided by enclosures (IP code) (IEC 60529:1989.)*

3 Terms and definitions

For the purposes of this European Standard, the terms and definitions given in EN 13463-1 and the following apply.

3.1
liquid immersion 'k'
a type of protection in which potential ignition sources are made ineffective or separated from the explosive atmosphere by either totally immersing them in a protective liquid, or by partially immersing and continuously coating their active surfaces with a protective liquid in such a way that an explosive atmosphere which may be above the liquid, or outside the equipment enclosure cannot be ignited.

3.2
protective liquid
a liquid which prevents the explosive atmosphere from making direct contact with potential ignition sources and thereby ensures it cannot be ignited.

3.3
equipment with a sealed enclosure
totally enclosed equipment that prevents the ingress of an external atmosphere during the expansion and contraction of the internally contained protective liquid during use in service. Such equipment includes any pipework associated with it and may contain an over pressure relief device.

3.4
equipment with a vented enclosure
totally enclosed equipment that allows the ingress and egress of an external atmosphere through a breathing device or constricted opening during the expansion and contraction of the internally contained protective fluid during normal operation. Such equipment includes any pipework associated with it.