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NSAI Standards

Irish Standard
I.S. EN 1710:2005+A1:2008

Equipment and components intended for use in potentially explosive atmospheres in underground mines

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I.S. EN 1710:2005+A1:2008

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EN 1710:2005+A1:2008/AC:2010

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S.R. xxx: Standard Recommendation - recommendation based on the consensus of an expert panel and subject to public consultation.

SWiFT xxx: A rapidly developed recommendatory document based on the consensus of the participants of an NSAI workshop.

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NSAI
1 Swift Square,
Northwood, Santry
Dublin 9

T +353 1 807 3800
F +353 1 807 3838
E standards@nsai.ie
W NSAI.ie

Sales:
T +353 1 857 6730
F +353 1 857 6729
W standards.ie

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I.S. EN 1710:2005+A1:2008

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1710:2005+A1:2008/AC

August 2010
Août 2010
August 2010

ICS 73.100.30

English version
Version Française
Deutsche Fassung

Equipment and components intended for use in potentially explosive atmospheres in underground mines

Appareils et composants destinés à être utilisés dans les mines souterraines grisouteuses

Geräte und Komponenten für den Einsatz in schlagwettergefährdeten Bereichen von untertägigen Bergwerken

This corrigendum becomes effective on 18 August 2010 for incorporation in the official English version of the EN.

Ce corrigendum prendra effet le 18 août 2010 pour incorporation dans la version anglaise officielle de la EN.

Die Berichtigung tritt am 18.August 2010 zur Einarbeitung in die offizielle Englische Fassung der EN in Kraft.

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

Management Centre: Avenue Marnix 17, B-1000 Brussels

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Ref. No.:EN 1710:2005+A1:2008/AC:2010 E

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1 Modification to 6.2

4th paragraph, replace "0,5 g" *with* "0,5 kg".

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I.S. EN 1710:2005+A1:2008

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

EN 1710:2005+A1

April 2008

ICS 73.100.30

Supersedes EN 1710:2005

English Version

Equipment and components intended for use in potentially explosive atmospheres in underground mines

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This European Standard was approved by CEN on 26 September 2005 and includes Amendment 1 approved by CEN on 18 March 2008.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
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Management Centre: rue de Stassart, 36 B-1050 Brussels

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Foreword

This European Standard (EN 1710:2005+A1:2008) 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 October 2008, and conflicting national standards shall be withdrawn at the latest by October 2008.

This document includes Amendment 1, approved by CEN on 2008-03-18.

This document supersedes EN 1710:2005.

The start and finish of text introduced or altered by amendment is indicated in the text by tags ▌A1⟩ ⟨A1▌.

This European Standard 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).

▌A1⟩ For relationship with EU Directive(s), see informative Annexes ZA, ZB and ZC which are integral parts of this document. ⟨A1▌

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.

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Introduction

This European Standard specifies requirements for the constructional features of equipment and components that may be an individual item or form an assembly, to enable them to be used in mines, or parts of mines, susceptible to explosive atmospheres of firedamp and/or combustible coal dust.

Most of the electrical equipment used on mining machinery is certified as an individual item of equipment e.g. the motor, switchgear etc., and meets its own marking requirements. This Notified Body Certification, however, does not deal with the interconnection of these items of equipment by cables or the machine electrical power system as an entity. In order to comply with 1.6.4 of the Essential Safety Requirements of the ATEX Directive (94/9/EC), the equipment and components including their interconnections should be assessed, from an ignition point of view, by the manufacturer.

Both non-electrical equipment and the interconnection of electrical/non-electrical equipment require an ignition hazard risk assessment to satisfy the Essential Health and Safety requirements of the ATEX Directive and be put in the appropriate declaration of conformity document.

Therefore, it is necessary that not just the equipment, but all its parts, is examined by the manufacturer according to a formally documented hazard assessment that establishes and lists all the possible ignition sources of the equipment including the cables and electrical supply system. The documentation shall list the measures that shall be introduced to prevent possible ignition sources becoming effective.

The need for this European Standard arises because of major operational differences between underground mining operations and those in other industries working with, or in, potentially explosive atmospheres. Examples of these differences are:

— the product being won from the underground strata may be combustible and continually releases firedamp during the winning process;

— the ignitability of the atmosphere around equipment and components usually depends upon the amount of dilution offered by an active ventilating system;

— the atmosphere in the general body of mine air in which machinery is working may change from one that is potentially explosive to one that is explosive (for example, during an outburst of firedamp);

— persons working in the mine are usually situated within the potentially explosive atmosphere;

— there is a need to monitor constantly the mine atmosphere at strategic places to ensure that power can be disconnected from all equipment except that which is suitable for use in an explosive atmosphere;

— in gassy coal mines, an explosion of firedamp at a machine can raise a combustible dust cloud that exacerbates the explosion;

— some mining machinery, especially that associated with winning the product, contains cutting devices and drilling devices that are intended to cut into the combustible product as part of their normal operation. This introduces an ignition risk from frictional heating or frictional sparking from contact with strata containing high concentrations of quartz or iron pyrites;

— long roadways in coal mines are equipped with mineral conveying systems carrying a product that has a potential for raising an explosive dust cloud.

To decide which equipment or its component parts should merit inclusion in this European Standard, ignition data has been examined based on French, German and UK experience.

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When drafting this European Standard, it has been assumed that equipment and components are:

— designed in accordance with good engineering practice, taking account of expected shocks, vibrations and failure modes;

— of sound mechanical and electrical construction;

— made of materials with adequate strength and of suitable quality;

— free from defects and

— are kept in good repair and working order, e.g. so that the required dimensions remain within permissible tolerance despite wear.

1 Scope

This European Standard specifies the explosion protection requirements for the construction and marking of equipment that may be an individual item or form an assembly. This includes machinery and components placed on the market by a single supplier for use in mines susceptible to explosive atmospheres of firedamp and/or combustible dust (at atmospheric conditions as defined in EN 1127-2).

NOTE 1 This European Standard deals only with the ignition protection of mining machinery and manufacturers will need to take account of all other relevant EU Directives relating to the construction of machines e.g. the consolidated Machinery Directive 98/37/EC ⟨A1⟩ and Directive 2006/42/EC ⟨A1⟩. Additionally, manufacturers will need to take account of any national legislation in the country where they intend to market their equipment.

NOTE 2 Where the flammable gas in the atmosphere is not predominantly methane, reference will need to be made to 4.1 in either EN 60079-0:2004 or EN 13463-1:2001.

NOTE 3 The definition of ‘equipment’ is contained in EN 13463-1. The definition of ‘assembly’ can be found the ATEX guidelines, published by the European Commission.

Equipment complying with the relevant clauses of this European Standard is considered to meet the requirements for equipment of Group I - Category M2.

This European Standard also deals with the prevention of ignitions of explosive atmospheres caused by burning (or smouldering) of combustible material such as fabric fibres, plastic ”O”-rings, rubber seals, lubricating oils or greases used in the construction of the equipment if such items could be an ignition source. For example, the mechanical failure of rotating shaft bearings can result in frictional heating that ignites its plastic cage, plastic seal or lubricating grease. See also 5.2.4 of EN 13463-1:2001.

NOTE 4 The above clause of EN 13463-1 requires the ignition hazard assessment to include those components which, if they failed, could ignite any flammable substance (e.g. lubricating oil) contained within the equipment and which could consequently become, or create, an ignition source. In the case of coal mining equipment and components, the ignition temperature of the mineral oils or greases used is often below that of firedamp, i.e. below 560 °C.

2 Normative references

The following referenced documents are indispensable for the application of this European Standard. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN 982, *Safety of machinery — Safety requirements for fluid power systems and their components — Hydraulics.*

EN 983, *Safety of machinery — Safety requirements for fluid power systems and their components — Pneumatics.*

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