

## საქართველოს სტანდარტი

მიწისქვეშა მალაროებში, პოტენციურად ფეთქებად გარემოში მუშაობისთვის  
განკუთვნილი მოწყობილობები და დეტალები

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

საქართველოს სტანდარტებისა და მეტროლოგიის  
ეროვნული სააგენტო  
თბილისი

სსტ ენ 1710:2005+A1:2008/2019

## საინფორმაციო მონაცემები

1 შემუშავებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს სტანდარტების დეპარტამენტის მიერ

2 დამტკიცებულია და შემოღებულია სამოქმედოდ საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს 2019 წლის 22 აგვისტოს № 46 განკარგულებით

3 მიღებულია გარეკანის თარგმნის მეთოდით სტანდარტიზაციის ევროპული კომიტეტის სტანდარტი ენ 1710:2005+A1:2008 „ მიწისქვეშა მაღაროებში , პოტენციურად ფეთქებად გარომში მუშაობისთვის განკუთვნილი მოწყობილობები და დეტალები“

### 4 პირველად

5 რეგისტრირებულია საქართველოს სტანდარტების და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 2019 წლის 22 აგვისტო №268-1.3-014926

დაუშვებელია წინამდებარე სტანდარტის სრული ან ნაწილობრივი კვლავწარმოება, ტირაჟირება და გავრცელება სსიპ საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს ნებართვის გარეშე

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

English Version

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

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 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 Management Centre has the same status as the official versions.

CEN members are the national standards bodies of 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.



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

Management Centre: rue de Stassart, 36 B-1050 Brussels

**Contents**

Page

Foreword.....4

Introduction .....5

1 Scope .....6

2 Normative references .....6

3 Terms and definitions .....8

4 Requirements for equipment (machines) and components.....8

4.1 General.....8

4.2 Non-electrical equipment and components .....9

4.3 Electrical equipment and components.....9

4.3.1 General.....9

4.3.2 Electrical equipment protection .....10

4.3.3 Overcurrent protection.....10

4.3.4 Earth-fault protection .....11

4.3.5 Mechanical protection of live parts.....11

4.3.6 Electric cables that are part of the equipment.....11

5 Additional requirements for specific equipment and components .....12

5.1 Cutting and stripping equipment .....12

5.1.1 General.....12

5.1.2 Machines with cutting picks .....12

5.1.3 Stripping machines.....13

5.2 Rope haulages for level and inclined transport .....13

5.3 Fans.....13

5.3.1 Ventilating fans for use underground .....13

5.3.2 Other fans .....15

5.4 Diesel engines.....16

5.5 Air compressors .....16

5.6 Drilling equipment and components .....16

5.7 Brakes .....16

5.8 Traction batteries, starter batteries and vehicle lighting batteries .....17

5.9 Optical fibres used on machines and electromagnetic radiation from components on machines .....17

6 Fire protection.....17

6.1 General.....17

6.2 Non-metallic materials .....18

6.3 Internal combustion engines fitted to machines.....18

6.4 Hydraulic and pneumatic equipment.....18

6.5 Additional requirements for cable-reeled machines.....18

6.6 Fire prevention on electric cables that are part of the machine .....19

6.7 Conveyor belting.....19

7 Information for use .....19

7.1 Signals and warning notices .....19

7.2 User instructions .....19

7.2.1 General.....19

7.2.2 Information on use.....20

7.2.3 Information on maintenance and repair .....20

7.3 Marking .....20

საინფორმაციო ნაწილი. სრული ტექსტის სახსრავად შეიძინეთ სტანდარტი.

|   |           |
|---|-----------|
| <b>Annex A</b> (informative) <b>Example of an ignition hazard assessment for a conveyor belt intended for use in a coal mine</b> .....  | <b>21</b> |
| <b>A.1</b> <b>General</b> .....   | <b>21</b> |
| <b>A.2</b> <b>Category and intended use of the equipment</b> .....  | <b>21</b> |
| <b>A.3</b> <b>Construction/description of the equipment</b> .....   | <b>21</b> |
| <b>A.4</b> <b>Assessment</b> .....  | <b>22</b> |
| <b>Annex B</b> (informative) <b>Example of an ignition hazard assessment for a shearer loader intended for use in a potentially explosive atmosphere of a coal mine</b> ..... | <b>26</b> |
| <b>B.1</b> <b>General</b> .....   | <b>26</b> |
| <b>B.2</b> <b>Category and intended use of equipment</b> .....  | <b>26</b> |
| <b>B.3</b> <b>Construction/description of the equipment with regard to ignition protection</b> .....  | <b>27</b> |
| <b>B.4</b> <b>Ignition control and monitoring system</b> .....  | <b>27</b> |
| <b>B.5</b> <b>Compliance with the basic methodology and requirements in EN 13463-1</b> .....  | <b>28</b> |
| <b>B.6</b> <b>Ignition hazard assessment of the electrical parts of the equipment</b> .....   | <b>28</b> |
| <b>B.7</b> <b>Ignition hazard assessment of non-electrical ignition sources</b> .....   | <b>28</b> |
| <b>B.8</b> <b>Equipment marking</b> .....   | <b>28</b> |
| <b>Annex ZA</b> (informative) <b>Relationship between this European Standard and the Essential Requirements of EU Directive 94/9/EC</b> .....                                 | <b>35</b> |
| <b>Annex ZB</b> (informative) <b>Relationship between this European Standard and the Essential Requirements of EU Directive 98/37/EC</b> .....                                | <b>38</b> |
| <b>Annex ZC</b> (informative) <b>Ⓐ Relationship between this European Standard and the Essential Requirements of EU Directive 2006/42/EC</b> .....                            | <b>39</b> |
| <b>Bibliography</b> .....   | <b>40</b> |

## 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.

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

## 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.