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Explosion prevention and protection in underground mines - Equipment and protective systems for firedamp drainage

Protection contre l'explosion dans les mines souterraines -
Appareils et systèmes de protection destinés au captage
du grisou

Explosionsschutz in untertägigen Bergwerken - Geräte und
Schutzsysteme zur Absaugung von Grubengas

This European Standard was approved by CEN on 13 January 2007.

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Foreword

This document (EN 14983:2007) 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 document shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by September 2007, and conflicting national standards shall be withdrawn at the latest by September 2007.

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.

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 the United Kingdom.

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.

Introduction

Firedamp drainage is a technical process for selected gas removal, the purpose of which is to reduce the risks presented by inflammable gas and air mixtures. Firedamp drainage is therefore a measure for preventive explosion protection.

In the mining industry, firedamp is drained from the underground workings of gassy mines, from boreholes and abandoned mine workings to ensure that mine workers are not exposed to the risks associated with the occurrence of an explosive atmosphere at their place of work. In this case, the explosion risk results from unacceptable accumulations of firedamp occurring in the waste areas and cavities left in the rock strata after the coal has been extracted from the coal seam. In such cases, the need to drain these accumulations, and the complexity of the drainage system, depends on the amount of firedamp produced by the coal and the likelihood of it occurring in explosive quantities in the mine roadways and coal face. Examples of situations that might cause firedamp to move in dangerous concentrations from the waste area or cavities into the mine roadways: a breakdown of the mine ventilation system or a sudden reduction in the underground atmospheric pressure. National legislation in EU coal mining member countries requires workers to be withdrawn to a safe place if firedamp levels attain a specific nationally defined value in the general body of mine air. Firedamp drainage is therefore often used in gassy mines in an attempt to ensure that the concentration of firedamp in the general body of mine air is kept well below this critical level, even during abnormal situations such as those described above.

Once the accumulations of firedamp have been drained from the affected areas, it is usually discharged to the mine surface, but in some cases it is discharged into the mine return ventilation system. In systems where the firedamp is brought to the mine surface, it is discharged to the atmosphere through an earthed metallic discharge stack or pressurized and delivered to a utilisation system, such as a gas-fired boiler.

In abandoned mines, firedamp drainage is used

- to prevent gas pressure building up and gas issuing at the surface in an uncontrolled manner, and
- to protect workers at an adjacent nearby mine or
- to allow it to be utilized, for example by burning it in a gas-fired boiler to produce heat or to generate electricity.