EESTI STANDARD EVS-EN 13631-16:2004

Tsiviilkäibes olevad lõhkeained. Brisantlõhkeained. Osa 16: Mürgiste plahvatusgaaside avastamine ja mõõtmine

Explosives for civil uses - High explosives - Part 16: Detection and measurement of toxic gases

EESTI STANDARDIKESKUS

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 13631-16:2004 sisaldab Euroopa standardi EN 13631-16:2004 ingliskeelset teksti. Käesolev dokument on jõustatud 23.11.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN 13631-16:2004 consists of the English text of the European standard EN 13631-16:2004. This document is endorsed on 23.11.2004 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 describes the method for determination of the quantity of nitrogen and carbon oxides produced by the detonation of explosives for use in underground works.	**Scope:** This European Standard describes the method for determination of the quantity of nitrogen and carbon oxides produced by the detonation of explosives for use in underground works.

ICS 71.100.30

Võtmesõnad: examination, igniters, ignition, ignition devices, ignition systems, ignition test, ingredients, materials testing, measuring techniques, mining, pollutant gases, smoke, specimen preparation, specimens, test equipment, testing, toxic, toxic gases

EUROPEAN STANDARD

NORME EUROPÉENNE

EUROPÄISCHE NORM

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English version

Explosives for civil uses - High explosives - Part 16: Detection and measurement of toxic gases

Explosifs à usage civil - Explosifs - Partie 16: Détection et mesure des gaz toxiques az toxiques

Explosivstoffe für zivile Zwecke - Sprengstoffe - Teil 16: Nachweis und Messung von toxischen Schwadenbestandteilen

This European Standard was approved by CEN on 21 June 2004.

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 Central Secretariat 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 Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Slovakia, Slovenia, Spain, Sweden, Switzerland and United Kingdom.

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Contents

Foreword

This document (EN 13631-16:2004) has been prepared by Technical Committee CEN/TC 321 "Explosives for civil uses", the secretariat of which is held by AENOR.

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 February 2005, and conflicting national standards shall be withdrawn at the latest by February 2005.

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 document is one of a series of standards on *Explosives for civil uses – High explosives.* The other parts of this series are:

prEN 13631-1	Part 1:	Requirements
EN 13631-2	Part 2:	Determination of thermal stability of explosives
EN 13631-3	Part 3:	Determination of sensitiveness to friction of explosives
EN 13631-4	Part 4:	Determination of sensitiveness to impact of explosives
EN 13631-5	Part 5:	Determination of resistance to water
EN 13631-6	Part 6:	Determination of resistance to hydrostatic pressure
EN 13631-7	Part 7:	Determination of safety and reliability at extreme temperatures
EN 13631-10	Part 10:	Verification of the means of initiation
EN 13631-11	Part 11:	Determination of transmission of detonation
prEN 13631-12	Part 12:	Specification of boosters with different initiating capability
EN 13631-13	Part 13:	Determination of density
EN 13631-14	Part 14:	Determination of velocity of detonation
prEN 13631-15	Part 15:	Calculation of thermodynamic properties
EN 13631-16	Part 16:	Detection and measurement of toxic gases

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

1 Scope

This document specifies a method for determination of the quantity of nitrogen oxides and carbon oxides produced by the detonation of explosives for use in underground works.

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 13631-10, *Explosives for civil uses — High explosives — Part 10: Verification of the means of initiation*

EN 13857-1:2003, *Explosives for civil uses — Part 1: Terminology*

EN ISO/IEC 17025, General requirements for the competence and testing of calibration laboratories (ISO/IEC 17025:1999).

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13857-1:2003 apply.

4 Apparatus

4.1 Blast chamber

The chamber shall be designed to withstand the forces occurring during detonation of high explosives, with a minimum chamber volume of 15 m^3. The actual size of the chamber shall be known to within an accuracy of ± 2 %. The chamber shall be equipped with an effective mixing system, to ensure a homogeneous atmosphere in the chamber within a few minutes after the blast. The chamber shall be equipped with a means to measure the ambient temperature and pressure inside the chamber, and shall have ports for gas sampling.

When an open flow chamber is used, the volume and flow velocity shall be such as to prevent a significant loss of fumes.

4.2 Analysis apparatus

Suitable analysis equipment shall be used to continuously measure the quantity of CO, CO_2, NO and NO_2 over a period of 20 min. As an example, infrared technique can be used to measure CO and CO_2 and a chemiluminescent analyser for NO and NO_x.

4.3 Gas extraction equipment

An air pump and an air flow measuring device shall be used to extract the gas sample from the blast chamber. Condensation of water vapour in the gas sampling tube and subsequent dissolving of NO_x shall be prevented.

4.4 Tube

A thick walled steel tube (sufficiently strong to withstand a large number of blasts) with an inner diameter of 150 mm and an internal length of 1 400 mm.