

**Tolmupilvede plahvatusomaduste
kindlaksmääramine. Osa 4: Hapniku
piirkontsentratsiooni (LOC)
kindlaksmääramine tolmupilvedes**

Determination of explosion characteristics of dust clouds - Part 4: Determination of the limiting oxygen concentration LOC of dust clouds

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN 14034-4:2004 sisaldab Euroopa standardi EN 14034-4:2004 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 23.11.2004 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN 14034-4:2004 consists of the English text of the European standard EN 14034-4:2004.</p> <p>This document is endorsed on 23.11.2004 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
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<p>Käsitlusala:</p> <p>This standard describes a test method for the determination of the limiting oxygen concentration of dust clouds in a closed vessel under defined initial conditions of pressure and temperature. This method is not suitable for use with recognised explosives, like gunpowder and dynamite, substances which do not require oxygen for combustion, pyrophoric substances, or substances or mixtures of substances which may under some circumstances behave in a similar manner. Where any doubt exists about the existence of hazard due to explosive properties, expert advice should be sought.</p>	<p>Scope:</p> <p>This standard describes a test method for the determination of the limiting oxygen concentration of dust clouds in a closed vessel under defined initial conditions of pressure and temperature. This method is not suitable for use with recognised explosives, like gunpowder and dynamite, substances which do not require oxygen for combustion, pyrophoric substances, or substances or mixtures of substances which may under some circumstances behave in a similar manner. Where any doubt exists about the existence of hazard due to explosive properties, expert advice should be sought.</p>
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ICS 13.230

Võtmesõnad:

ICS 13.230

English version

Determination of explosion characteristics of dust clouds - Part 4: Determination of the limiting oxygen concentration LOC of dust clouds

Détermination des caractéristiques d'explosion des nuages
de poussières - Partie 4 : Détermination de la concentration
limite en oxygène CLO des nuages de poussières

Bestimmung der Explosionskenngößen von Staub/Luft-
Gemischen - Teil 4: Bestimmung der
Sauerstoffgrenzkonzentration SGK von Staub/Luft-
Gemischen

This European Standard was approved by CEN on 9 July 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.



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

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

Contents

page

Foreword.....	3
1 Scope	5
2 Normative references	5
3 Terms and definitions	5
4 Test apparatus	6
4.1 General.....	6
4.2 Explosion vessel.....	8
4.3 Dust dispersion system (dust container, fast acting valve, connecting tube, dust disperser).....	8
4.4 Ignition source	11
4.5 Control unit.....	11
4.6 Pressure measuring system.....	11
4.7 Oxygen measuring system	11
4.8 System to create the inert gas/air-mixture.....	11
5 Dust sample.....	11
6 Test procedure	12
7 Calibration and verification	14
7.1 Calibration	14
7.2 Verification	14
8 Safety precautions / instructions for use.....	14
9 Alternative test equipment / procedures.....	15
10 Test report	15
Annex A (normative) Electro pneumatic valve	16
Annex B (normative) Dust disperser with 5 mm holes	19
Annex C (normative) 20 l sphere.....	22
C.1 General.....	22
C.2 Test apparatus	22
C.3 Test conditions	23
C.4 System to create the inert gas/air-mixture	24
C.5 Test procedure	24
Annex D (informative) Examples of procedures to determine the LOC.....	25
Annex ZA (informative) Relationship between this European Standard and the Essential Requirements of EU Directive 94/9	27
Bibliography	28

Foreword

This document (EN 14034-4:2004) 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 2005, and conflicting national standards shall be withdrawn at the latest by March 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 includes a Bibliography.

This document is one of a series of standards as listed below:

- EN 14034-1, Determination of explosion characteristics of dust clouds - Part 1: Determination of the maximum explosion pressure p_{\max} of dust clouds;
- prEN 14034-2, Determination of explosion characteristics of dust clouds - Part 2: Determination of the maximum rate of explosion pressure rise $(dp/dt)_{\max}$ of dust clouds;
- prEN 14034-3, Determination of explosion characteristics of dust clouds - Part 3: Determination of the lower explosion limit LEL of dust clouds;
- EN 14034-4, Determination of explosion characteristics of dust clouds - Part 4: Determination of the limiting oxygen concentration LOC of dust clouds.

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.

Introduction

This document specifies a method for experimental determination of the limiting oxygen concentration of dust/air/inert gas mixtures. The limiting oxygen concentration is the maximum concentration of oxygen of a dust/air/inert gas mixture at which dust explosions cannot occur. The measurement of the limiting oxygen concentration forms the basis for explosion protection by "Inerting".

This limiting oxygen concentration is a safety characteristic used for hazard identification and designing safety measures. This is done by avoidance or reduction of the amount of explosive atmosphere.

Therefore this document gives added values to the following clauses of the EU directives:

- Council Directive of June 14, 1989 on the approximation of the laws of the member states relating to machinery (89/392/EEC)

Annex I, Clause 1.5.7

- Directive 94/9/EC of the European Parliament and the Council of March 23, 1994 on the approximation of the laws of the member states concerning equipment and protective systems intended for use in potentially explosive atmospheres.

Annex II, Clause 1.0.1

1 Scope

This document describes a test method for the determination of the limiting oxygen concentration of dust clouds in a closed vessel under defined initial conditions of pressure and temperature.

This method is not suitable for use with recognised explosives, like gunpowder and dynamite, substances which do not require oxygen for combustion, pyrophoric substances, or substances or mixtures of substances which may under some circumstances behave in a similar manner. Where any doubt exists about the existence of hazard due to explosive properties, expert advice should be sought.

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 14034-1:2004; *Determination of explosion characteristics of dust clouds - Part 1: Determination of the maximum explosion pressure p_{max} of dust clouds.*

prEN 14034-2:2004; *Determination of explosion characteristics of dust clouds - Part 2: Determination of the minimum rate of explosion pressure rise $(dp/dt)_{max}$ of dust clouds.*

prEN 14460, *Explosion resistant equipment.*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1

dust

small solid particles in the atmosphere which settle out under their own weight, but which may remain suspended in air for some time (includes dust and grit, as defined in ISO 4225).

NOTE Generally maximum particle size will not exceed 500 μm .

3.2

combustible dust

dust able to undergo an exothermic reaction with air when ignited

NOTE The terms "flammable" and "combustible" are used synonymously.

3.3

ignition delay

t_v

time between the initiation of the dust dispersion and the activation of the ignition source

3.4

inert gas

non-flammable gas which will not support combustion and does not react to produce a flammable gas