

TOLMUKIHTIDE PÕLEMISKÄITUMISE MÄÄRAMINE

Determination of burning behaviour of dust layers

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 17077:2018 sisaldab Euroopa standardi EN 17077:2018 ingliskeelset teksti.	This Estonian standard EVS-EN 17077:2018 consists of the English text of the European standard EN 17077:2018.
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English Version

Determination of burning behaviour of dust layers

Détermination du comportement lors de la combustion
des couches de poussières

Bestimmung des Brandverhaltens von Staubschichten

This European Standard was approved by CEN on 9 March 2018.

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Contents

Page

European foreword.....	3
Introduction	4
1 Scope.....	5
2 Normative references.....	5
3 Terms and definitions	5
4 Principle of the test method	6
5 Test equipment.....	6
5.1 General.....	6
5.2 Test apparatus.....	6
5.2.1 Board method.....	6
5.2.2 Lütolf apparatus	7
5.3 Ignition source	8
6 Characterization of dust sample.....	8
7 Test procedure	9
7.1 General.....	9
7.2 Sample preparation.....	9
7.2.1 Board method.....	9
7.2.2 Lütolf apparatus method.....	9
7.3 Ignition procedure.....	9
7.4 Evaluation	9
7.5 Additional tests for melting substances.....	11
8 Safety precautions / instructions	11
9 Test report.....	12
Annex A (informative) Tests at elevated initial temperatures.....	14
A.1 Additional equipment.....	14
A.2 Additional information in the test-report.....	14
Annex B (informative) Alternative test apparatus.....	15
B.1 Principles	15
B.2 Evaluation of results	16
Annex C (informative) Example materials demonstrating behaviour typical of each of the burning classes	17
Annex ZA (informative) Relationship between this European Standard and the essential requirements of Directive 2014/34/EU aimed to be covered.....	18
Bibliography	19

European foreword

This document (EN 17077:2018) 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of an identical text or by endorsement, at the latest by November 2018, and conflicting national standards shall be withdrawn at the latest by November 2018.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN not be held responsible for identifying any or all such patent rights.

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 2014/34/EU.

For relationship with EU Directive, 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, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Introduction

This document specifies a method for experimental determination of the burning behaviour of dust layers.

The determination of burning behaviour of a dust layer is a screening test required to assess the type and magnitude of the fire risk associated with the dust.

The determination of the burning behaviour enables assessment of whether a material layer, when in contact with an external ignition source shows a reaction (e.g. ignition, smouldering). It also measures the ability of the locally induced reaction to propagate through the material in bulk or layer form. The behaviour in the test is characterized as a class number (burning class).

The burning class allows qualitative estimations on the burning behaviour of a dust layer as well as on the probability of transfer of glowing particles and glowing nests from upstream connected parts of a plant. It is therefore in certain cases a basis for explosion prevention and protection measures. In addition to that the burning class is used as basis to decide whether fire prevention and protection measures are necessary.

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

Directive 2014/34/EU of the European Parliament and the Council of 26 February 2014 on the harmonisation of the laws of the Member States relating to equipment and protective systems intended for use in potentially explosive atmospheres.

The burning behaviour can be markedly affected by physical characteristics (e.g. particle size, packing density) and external factors (e.g. temperature, air movement across the surface of the dust). To obtain comparable and reliable results, it is necessary to standardize the conditions under which the burning behaviour is measured. Further testing may be required for those substances which melt or for which rapid propagation of the combustion reaction is observed in the initial test.

If additional information is requested for labelling of the substances according to Regulation (EC) No 1272/2008 (i.e. whether labelling as H228: flammable solid is appropriate) and if testing according to this standard leads to a determination of burning class 4 or 5, then further testing according to the UN (United Nations) Manual of Tests and criteria test N.1 [3] is required.

1 Scope

This European Standard describes a test method for the determination of the burning behaviour of dust layers under defined initial conditions of air flow, temperature and ignition.

A test result of “burning class 1” with the described method does not mean that a dust cannot be ignited when dispersed in a cloud.

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

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 1127-1:2011, *Explosive atmospheres — Explosion prevention and protection — Part 1: Basic concepts and methodology*

EN 13237:2012, *Potentially explosive atmospheres — Terms and definitions for equipment and protective systems intended for use in potentially explosive atmospheres*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in EN 13237, EN 1127-1 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

3.1

air flow velocity

volume of air [m³] which flows through a defined surface [m²] per unit time [s]

3.2

combustion

exothermic reaction with either flames, glowing or smouldering when ignited

Note to entry: For the purpose of this standard “combustion” includes decomposition

3.3

ignition

initiation of combustion

3.4

initial temperature

temperature of the dust train at the moment of ignition