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AURUDE RÕHU SUURENEMISE MAKSIMAALSE KIIRUSE
MÄÄRAMINE

Determination of maximum explosion pressure and the
maximum rate of pressure rise of gases and vapours

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

See Eesti standard EVS-EN 15967:2022 sisaldab Euroopa standardi EN 15967:2022 ingliskeelset teksti.	This Estonian standard EVS-EN 15967:2022 consists of the English text of the European standard EN 15967:2022.
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English Version

Determination of maximum explosion pressure and the
maximum rate of pressure rise of gases and vapours

Détermination de la pression maximale d'explosion et
de la vitesse maximale de montée en pression des gaz
et des vapeurs

Verfahren zur Bestimmung des maximalen
Explosionsdruckes und des maximalen zeitlichen
Druckanstieges für Gase und Dämpfe

This European Standard was approved by CEN on 12 December 2021.

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-CENELEC 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-CENELEC Management Centre has the same status as the official versions.

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European foreword

This document (EN 15967:2022) 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of an identical text or by endorsement, at the latest by July 2022, and conflicting national standards shall be withdrawn at the latest by July 2022.

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

This document supersedes EN 15967:2011.

Significant technical differences between the editions can be found in Annex G.

This document has been prepared under a Standardization Request given to CEN by the European Commission and the European Free Trade Association, and supports essential requirements of EU Directive(s) / Regulation(s).

For relationship with EU Directive(s) / Regulation(s), see informative Annex ZA and ZB, which are integral parts of this document.

Any feedback and questions on this document should be directed to the users' national standards body. A complete listing of these bodies can be found on the CEN website.

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

Introduction

This document describes test methods for the determination of:

- the explosion pressure and the maximum explosion pressure;
- the rate of explosion pressure rise and the maximum rate of explosion pressure rise of a quiescent flammable gas/air/inert mixture at ambient temperature and pressure.

Maximum explosion pressure and maximum rate of explosion pressure rise are used for designing explosion protection measures, such as explosion pressure resistant or explosion pressure shock resistant apparatus, explosion venting and explosion suppression. These characteristics are particularly influenced by:

- the size and shape of the vessel;
- the type and energy of the ignition source;
- the temperature and pressure;
- the level of turbulence.

It is therefore necessary to standardize the conditions at which the maximum explosion pressure and the maximum rate of explosion pressure rise are determined.

1 Scope

This document specifies a test method that is designed to measure the explosion pressure and the maximum explosion pressure, the rate of explosion pressure rise and the maximum rate of explosion pressure rise of a quiescent flammable gas/air/inert mixture in closed volume at ambient temperature and pressure. In this document, the term “gas” includes vapours but not mists. Detonation and decomposition phenomena are not considered in this document.

The pressures and rates of pressure rise measured by the procedures specified in this document are not applicable to flameproof enclosures, i.e. enclosures intended to withstand an internal explosion and not to transmit it to an external explosive atmosphere, or any other closed volume where the internal geometry can result in pressure piling. Even in an enclosure of relatively simple geometry the disposition of the internal components can lead to rates of pressure rise significantly higher than those measured using this document. This document does not apply to the design and testing of flameproof enclosures in conformity with EN ISO 80079-37 (for non-electrical equipment) and EN 60079-1 (for electrical equipment).

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 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 13237:2012 and the following apply.

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

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

3.1 explosion pressure

p_{ex}

highest pressure occurring in a closed vessel during the explosion of a specific mixture of flammable substances with air or air and inert gases determined under specified test conditions

Note 1 to entry: p_{ex} is expressed as absolute pressure with gases and vapours in this standard and as overpressure with dusts in EN 14034.

3.2 maximum explosion pressure

p_{max}

maximum value of explosion pressure measured in the tests for explosion pressure when the content of the flammable substances in the mixture is varied

Note 1 to entry: p_{max} is expressed as absolute pressure with gases and vapours in this standard and as overpressure with dusts in EN 14034.