

Gaaside ja aurude isesüttimistemperatuuri määramine

Determination of the auto ignition temperature of
gases and vapours

EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

Käesolev Eesti standard EVS-EN 14522:2005 sisaldab Euroopa standardi EN 14522:2005 ingliskeelset teksti.	This Estonian standard EVS-EN 14522:2005 consists of the English text of the European standard EN 14522:2005.
Käesolev dokument on jõustatud 25.11.2005 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.	This document is endorsed on 25.11.2005 with the notification being published in the official publication of the Estonian national standardisation organisation.
Standard on kättesaadav Eesti standardiorganisatsioonist.	The standard is available from Estonian standardisation organisation.

Käsitlusala: This European Standard test method is designed to determine the auto ignition temperature of a flammable gas or vapour in mixture with air, or air/inert gas, at ambient pressure up to 650 °C. It is not suitable to describe the interactions of hot surfaces with explosives.	Scope: This European Standard test method is designed to determine the auto ignition temperature of a flammable gas or vapour in mixture with air, or air/inert gas, at ambient pressure up to 650 °C. It is not suitable to describe the interactions of hot surfaces with explosives.
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ICS 13.230

Võtmesõnad: area, burning gases, definition, definitions, explosion protection, flammable materials, ignition, inflammable, inflammable solids, inflammation temperature, sampling, sampling methods, steam, surfaces, testing, testing conditions, vapours

ICS 13.230

English Version

Determination of the auto ignition temperature of gases and vapours

Détermination de la température d'auto-allumage des gaz
et des vapeurs

Bestimmung der Zündtemperatur von Gasen und Dämpfen

This European Standard was approved by CEN on 1 August 2005.

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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Foreword

This European Standard (EN 14522:2005) 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 2006, and conflicting national standards shall be withdrawn at the latest by March 2006.

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.

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, 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

To avoid the hazard of explosion, an appropriate measure is to prevent effective ignition sources. Hot surfaces (heated active or passive) are one of the widespread potential ignition sources. The ignition potential of hot surfaces can be characterized with respect to the flammable substance under use by the auto ignition temperature of the flammable substance.

The auto ignition temperature depends mainly on:

- the properties of the flammable substance;
- oxidiser;
- pressure;
- volume of the test vessel;
- material of the test vessel (hot surface);
- shape of the hot surface (this includes the fact whether the hot surface is surrounded by the cool flammable mixture or the flammable mixture is surrounded by the hot surface);
- flow and turbulence of the mixture;
- inert gas.

Therefore it is necessary to standardize the conditions at which the auto ignition temperature is to be determined.

Auto ignition temperatures as determined according to this European Standard are used first of all for classifying substances and explosion-proof electrical as well as non-electrical equipment into temperature classes. They may be used for designing explosion protection measures when the influence of process conditions is known and taken into account. They may also be element of fire risk assessment.

Because of the influences mentioned above, care shall be taken when applying such results measured under laboratory conditions to industrial applications.

The apparatus and procedure described below is also used for carrying out the 'Surface ignition test' in IEC 60601-2-13 'Medical electrical equipment – Part 2-13: Particular requirements for the safety of anaesthetic systems'.

1 Scope

This European Standard test method is designed to determine the auto ignition temperature of a flammable gas or vapour in mixture with air, or air/inert gas, at ambient pressure up to 650 °C. It is not suitable to describe the interactions of hot surfaces with explosives.

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 amendments) applies.

ISO 1773, *Laboratory glassware — Narrow-necked boiling flasks*

3 Terms and definitions

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

3.1

auto ignition temperature

T_i

lowest temperature (of a hot surface) at which under specified test conditions an ignition of a flammable gas or flammable vapour in mixture with air or air/inert gas occurs

3.2

ignition delay time

time between the completed injection of the flammable substance and the ignition

NOTE 1 The ignition delay time may vary between fractions of a second and some minutes.

NOTE 2 In literature auto ignition temperature is also referred to as self ignition temperature. In the case of dusts the respective safety characteristic is referred to as minimum ignition temperature.

4 Test method

4.1 Principle

The amount of substance and the temperature of the test vessel, which is filled with air or air/inert gas, are varied to find the lowest temperature (of the hot surface) that causes an ignition.

4.2 Apparatus

4.2.1 General

The test apparatus consists of:

- a test vessel;
- support for the test vessel;
- calibrated measuring thermocouple;