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DETERMINATION OF THE AUTO IGNITION TEMPERATURE OF GASES AND VAPOURS

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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.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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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of an identical text or by endorsement, at the latest by March 2006, and conflicting national standards shall be withdrawn at the latest by March 2006.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’.