

Süttivate vedelike plahvatuspunktide määramine

Determination of explosion points of flammable liquids

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EESTI STANDARDI EESSÕNA

NATIONAL FOREWORD

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English Version

Determination of explosion points of flammable liquids

Détermination des points d'explosion des liquides
inflammablesBestimmung von Explosionspunkten brennbarer
Flüssigkeiten

This European Standard was approved by CEN on 22 September 2009.

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Foreword

This document (EN 15794:2009) 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of an identical text or by endorsement, at the latest by April 2010, and conflicting national standards shall be withdrawn at the latest by April 2010.

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For relationship with EU Directive(s), see informative Annex ZA, which is an integral part of this document.

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Introduction

Flammable liquids can give rise to an explosion hazard as a result of evaporation generating an explosive gas and/or vapour mixture with air. One way of eliminating the explosion hazard is to prevent explosive mixtures of gases and/or vapours with air from being formed. In order to assess the likelihood of an explosive mixture being formed the explosion point of the flammable liquid is required. The explosion point depends mainly on:

- the properties (e.g. explosion limits, vapour pressure, chemical composition including impurities of the flammable liquid);
- pressure;
- size, shape, and percentage fill of the test vessel;
- ignition source (type, energy);
- the criterion for self-propagating combustion.

The explosion point of a liquid is normally lower than its flashpoint. For pure substances the difference can be up to 10 K. In the case of mixtures the difference can be up to 25 K. Some liquids which do not exhibit a flash point may have explosion limits and thus have an explosion point.

To obtain reliable and comparable results it is therefore necessary to standardize the conditions (apparatus and procedure) under which the explosion points are to be determined.

1 Scope

This European Standard specifies a test method to determine the explosion points of flammable liquids in air. This European Standard applies to flammable liquids at atmospheric pressure and at temperatures in the range from - 50 °C to 300 °C.

This European standard must not be applied to explosives or materials which, under the test conditions, are thermally unstable liquids (e.g. polymerizing/oxidizing materials).

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 13237:2003, *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 13237:2003 apply.

4 Principle of the test method

The test sample is placed in a cylindrical vessel and heated up to a specified temperature. After having reached equilibrium conditions between the liquid phase and the gas phase at the set temperature ignition is initiated using a series of induction sparks. It is observed whether a flame detachment or a temperature rise occurs. The temperature of the test apparatus is raised or lowered stepwise, until just no ignition is observed.

5 Test equipment

5.1 Reagents and Materials

5.1.1 Flammable liquid:

The flammable liquid may be:

- a single liquid or a defined mixture of liquids;
- a process sample (of known or unknown composition).

When a pure liquid or a mixture of defined composition is used, the purity of each liquid shall be 99,8 % mol. or better. In the case of a mixture or a process sample of undefined composition the sample should be characterised so that the origin as well as the related process conditions can be identified.

5.1.2 Sampling and Storage

Sampling should be carried out if possible according to the procedures given in EN ISO 3170, EN ISO 3171, EN ISO 15528 or an equivalent National Standard.