

**Determination of flash point - Abel closed-cup method  
(ISO 13736:2013)**

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English Version

**Determination of flash point - Abel closed-cup method (ISO 13736:2013)**Détermination du point d'éclair - Méthode Abel en vase clos  
(ISO 13736:2013)Bestimmung des Flammpunktes - Verfahren mit  
geschlossenem Tiegel nach Abel (ISO 13736:2013)

This European Standard was approved by CEN on 9 February 2013.

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## Foreword

This document (EN ISO 13736:2013) has been prepared by Technical Committee ISO/TC 28 "Petroleum products and lubricants" in collaboration Technical Committee CEN/TC 19 "Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin" the secretariat of which is held by NEN.

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of an identical text or by endorsement, at the latest by October 2013, and conflicting national standards shall be withdrawn at the latest by October 2013.

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

This document supersedes EN ISO 13736:2008.

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### Endorsement notice

The text of ISO 13736:2013 has been approved by CEN as EN ISO 13736:2013 without any modification.

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## Introduction

Flash point values can be used in shipping, storage, handling and safety regulations, as a classification property to define “flammable” and “combustible” materials. Precise definition of the classes is given in each particular regulation.

A flash point value can indicate the presence of highly volatile material(s) in a relatively non-volatile or non-flammable material, and flash point testing can be a preliminary step to other investigations into the composition of unknown materials.

Flash point determinations are not appropriate for potentially unstable, decomposable, or explosive materials, unless previously established that heating the specified quantity of such materials in contact with the metallic components of the flash point apparatus, within the temperature range required for the method, does not induce decomposition, explosion or other adverse effects.

Flash point values are not a constant physical-chemical property of materials tested. They are a function of the apparatus design, the condition of the apparatus used, and the operational procedure carried out. Flash point can therefore be defined only in terms of a standard test method, and no general valid correlation can be guaranteed between results obtained by different test methods or with test apparatus different from that specified.

ISO/TR 29662<sup>[1]</sup> (CEN/TR 15138<sup>[2]</sup>) gives useful advice on carrying out flash point tests and interpreting results.

# Determination of flash point — Abel closed-cup method

**CAUTION** — The use of this International Standard can involve hazardous materials and equipment. This International Standard does not purport to address all of the safety problems associated with its use. It is the responsibility of the user of this International Standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

## 1 Scope

This International Standard specifies a method for the determination of the manual and automated closed-cup flash point of combustible liquids having flash points between  $-30,0\text{ }^{\circ}\text{C}$  to  $75,0\text{ }^{\circ}\text{C}$ . However, the precision given for this method is only valid for flash points in the range  $-8,5\text{ }^{\circ}\text{C}$  to  $75,0\text{ }^{\circ}\text{C}$ .

This International Standard is not applicable to water-borne paints.

NOTE 1 Water-borne paints can be tested using ISO 3679.[3]

NOTE 2 See 9.1 for the importance of this test in avoiding loss of volatile materials.

NOTE 3 Liquids containing halogenated compounds can give anomalous results.

NOTE 4 The thermometer specified for the manual apparatus limits the upper test temperature to  $70,0\text{ }^{\circ}\text{C}$ .

## 2 Normative references

The following referenced documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 3170, *Petroleum liquids — Manual sampling*

ISO 3171, *Petroleum liquids — Automatic pipeline sampling*

ISO 15528, *Paints, varnishes and raw materials for paints and varnishes — Sampling*

## 3 Terms and definitions

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

### 3.1

#### **flash point**

lowest temperature of the test portion, corrected to a barometric pressure of  $101,3\text{ kPa}$ , at which application of an ignition source causes the vapour of the test portion to ignite and the flame to propagate across the surface of the liquid under the specified conditions of test

## 4 Principle

The test portion is placed in the test cup of an Abel apparatus and heated to give a constant temperature increase with continuous stirring. An ignition source is directed through an opening in the test cup cover at regular temperature intervals with simultaneous interruption of stirring. The lowest temperature at which application of the ignition source causes the vapours of the test portion to ignite and propagate over the surface of the liquid is recorded as the flash point at the ambient barometric pressure. The temperature is corrected to standard atmospheric pressure using an equation.