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Determination of flash no-flash and flash point - Rapid equilibrium closed cup method (ISO 3679:2015)

Táto norma obsahuje anglickú verziu európskej normy.
This standard includes the English version of the European Standard.

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NORME EUROPÉENNE

EUROPÄISCHE NORM

# EN ISO 3679

March 2015

ICS 75.080; 87.040

Supersedes EN ISO 3679:2004, EN ISO 3680:2004

English Version

# Determination of flash no-flash and flash point - Rapid equilibrium closed cup method (ISO 3679:2015)

Détermination de l'éclair de type passe/ne passe pas et du point d'éclair - Méthode rapide à l'équilibre en vase clos (ISO 3679:2015)

Bestimmung des Flammpunktes mit dem Ja/Nein-Verfahren - Nach dem schnellen Gleichgewichtsverfahren mit geschlossenem Tiegel (ISO 3679:2015)

This European Standard was approved by CEN on 14 January 2015.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

**CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels**

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# Foreword

This document (EN ISO 3679:2015) has been prepared by Technical Committee ISO/TC 28 "Petroleum products and related products of synthetic or biological origin" 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of an identical text or by endorsement, at the latest by September 2015, and conflicting national standards shall be withdrawn at the latest by September 2015.

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 3679:2004, EN ISO 3680:2004.

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

**Endorsement notice**

The text of ISO 3679:2015 has been approved by CEN as EN ISO 3679:2015 without any modification.

INTERNATIONAL STANDARD

**ISO 3679**

Fourth edition
2015-03-01

# Determination of flash no-flash and flash point — Rapid equilibrium closed cup method

*Détermination de l'éclair de type passe/ne passe pas et du point d'éclair — Méthode rapide à l'équilibre en vase clos*

Reference number
ISO 3679:2015(E)

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# Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT) see the following URL: Foreword - Supplementary information

The committee responsible for this document is ISO/TC 28, *Petroleum products and lubricants*, working Group 9, in conjunction with Technical Committee ISO/TC 35, *Paints and varnishes*, Technical Committee CEN/TC 19, *Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin*, and Technical Committee CEN/TC 139, *Paints and varnishes*.

This fourth edition cancels and replaces ISO 3679:2004 and ISO 3680:2004, which have been technically revised. The main technical changes are:

— incorporation of ISO 3680 flash point technique into the flash/no flash technique as a separate procedure due to the fact that many apparatus on the market combine both tests;

— title change;

— revision of temperature measuring device requirements;

— new precision covering both gas and electric ignition.

# Introduction

This International Standard is a closed cup equilibrium test method for the determination of the flash/no-flash and flash point of paints, varnishes, binders for paints and varnishes, solvents, adhesives, petroleum, and related products. ISO 1516[1] and ISO 1523[2] are also closed cup equilibrium test methods that are to be considered when selecting a method.

The apparatus specified in this International Standard enables a similar test result to be determined using a more rapid procedure and a smaller test portion (2 ml or 4 ml) than that required in ISO 1516 and ISO 1523. In addition, the apparatus can be made portable to the extent of being suitable for on-site testing in addition to its more normal use in laboratories.

Collaborative work[3] has shown that results obtained by these methods are comparable. The interpretation of flash point results obtained on solvent mixtures containing halogenated hydrocarbons should be considered with caution, as these mixtures can give anomalous results.[4]

A limited study has indicated that some water borne paints can give an elevated flash point when an electric ignitor is used with ISO 3679.

Flash point 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.

The flash point 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.

It is not appropriate for flash point determinations to be carried out on potentially unstable, decomposable, or explosive materials, unless it has been 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.

The flash point is not a constant physical-chemical property of a material tested. It is a function of the apparatus design, the condition of the apparatus used, and the operational procedure carried out. Flash point can therefore only be defined 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[5] (an adoption of CEN/TR 15138[6]) gives useful advice in carrying out flash point tests and interpreting results.

INTERNATIONAL STANDARD ISO 3679:2015(E)

# Determination of flash no-flash and flash point — Rapid equilibrium closed cup method

**WARNING — The use of this International Standard can involve hazardous materials, operations, 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 procedures for flash point tests, within the temperature range of –30 °C to 300 °C, for paints, including water-borne paints, varnishes, binders for paints and varnishes, adhesives, solvents, petroleum, and related products. The procedures are used to determine whether a product will or will not flash at a specified temperature (flash no-flash Procedure A) or the flash point of a sample (Procedure B). When used in conjunction with the flash detector (A.1.6), this International Standard is also suitable to determine the flash point of fatty acid methyl esters (FAME).

## 2 Normative references

The following 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 1513, *Paints and varnishes — Examination and preparation of test samples*

ISO 3170, *Petroleum liquids — Manual sampling*

ISO 3171, *Petroleum liquids — Automatic pipeline sampling*

ISO 4259, *Petroleum products — Determination and application of precision data in relation to methods of test*

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