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Fifth edition
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Determination of flash point – Method for flash no-flash and flash point by small scale closed cup tester

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



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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).

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT), see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 28, *Petroleum and related products, fuels and lubricants from natural or synthetic sources*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 19, *Gaseous and liquid fuels, lubricants and related products of petroleum, synthetic and biological origin*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This fifth edition cancels and replaces the fourth edition (ISO 3679:2015), which has been technically revised.

The main changes are as follows:

- introduction, title and scope have been revised to present a more generic method description;
- terms and definitions in [Clause 3](#) have been added;
- verification clause has been revised;
- new procedure C has been added;
- [Clause 13](#) wording has been revised and precision for procedure C has been included;
- the apparatus description in [Annex A](#) has been revised;
- [Annex B](#) has been revised and changed to normative;
- the text has been editorially revised in line with the ISO/IEC Directives Part 2, 2021.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

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Introduction

This document includes three procedures (A, B and C) covering determinations of flash no-flash and flash point. Rapid equilibrium procedures A and B enable the determination of the flash no-flash and flash point, respectively. Non-equilibrium procedure C uses automated test cup temperature control for flash point determination.

ISO 1516 and ISO 1523 are also closed cup equilibrium test methods that can be considered when selecting a method.

The apparatus specified in this document enables a similar test result to be determined using more rapid procedures, A or B, and a smaller test portion (2 ml or 4 ml), than those required in ISO 1516 or ISO 1523. In addition, the apparatus in this document can be made portable so that it is suitable for on-site testing, as well as its regular use in laboratories. Collaborative work^[16] has shown that results obtained by these methods are comparable. Procedure C is based on test methods IP 534^[18] and ASTM D7236^[14].

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^[17].

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

Flash point is 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 indicates the presence of highly volatile material(s) in a relatively non-volatile or non-flammable material. Flash point testing is often used as 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. That is, 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 also gives useful advice in carrying out flash point tests and interpreting results.