
**Determination of sustained
combustibility of liquids**

Détermination de la combustion entretenue des liquides



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ISO copyright office
Case postale 56 • CH-1211 Geneva 20
Tel. + 41 22 749 01 11
Fax + 41 22 749 09 47
E-mail copyright@iso.org
Web www.iso.org

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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. 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. www.iso.org/patents

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

The committee responsible for this document is ISO/TC 28, *Petroleum products and lubricants*, (WG 9) in conjunction with Technical Committee ISO/TC 35, *Paints and varnishes*.

This second edition cancels and replaces the first edition (ISO 9038:2002), which has been technically revised.

The main technical changes are the inclusion of 3 reference materials for verification in [Annex B](#).

Introduction

A product with a flash point within a given range can continue to burn after initial ignition, while a similar product, although it has a similar flash point, may not. This International Standard describes a method for discriminating between those products that sustain combustion and those that do not.

The method determines whether a flammable product, when maintained at a selected test temperature, gives off sufficient flammable vapour to cause ignition when an ignition source is applied, and continues to generate sufficient vapour to burn when the ignition source is removed.

This test method does not determine the flash point of the product under test but, by means of a pass/fail procedure, merely determines if it sustains combustion (fail) at a selected test temperature, as can be required to comply with laws or regulations relating to the storage, transport and use of flammable products. Before performing this test, it will normally be necessary to determine either the actual flash point of the material or the temperature range in which the flash point is located.

The apparatus specified in this International Standard enables a result to be determined by a rapid procedure using a small test portion (2 ml).

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WARNING — The use of this International Standard may involve hazardous materials, operations or 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 to determine the applicability of regulatory limitations prior to use.

1 Scope

This International Standard specifies a pass/fail procedure, at temperatures up to 100 °C, to determine whether or not a liquid product, that would be classified as “flammable” by virtue of its flash point, has the ability to sustain combustion at the temperature or temperatures specified in the appropriate regulations.

NOTE 1 Many national and international regulations classify liquids as presenting a flammable hazard on the basis of their flash point, as determined by a recognized method. Some of these regulations allow a derogation if the substance cannot “sustain combustion” at some specified temperature or temperatures.

NOTE 2 In connection with the United Nations recommendations on the Transport of Dangerous Goods as well as with the Globally Harmonized System of Classification and Labelling of Chemicals, and also with derived national/EC regulations, temperatures of 60,5 °C and 75,0 °C are specified for this test.^{[1][2]}

The procedure is applicable to paints (including water-borne paints), varnishes, paint binders, solvents, petroleum or related products and adhesives, which have a flash point. It is not applicable to painted surfaces in respect of assessing their potential fire hazards.

NOTE 3 This test method can be used, in addition to test methods for flash point, in assessing the fire hazard of a product.

NOTE 4 Particular care needs to be taken in translating results from this test method to large scale (real life) situations, as liquids in large quantities may not behave in the same way as small samples.

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 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

sustained combustibility

behaviour of a material, under specified test conditions, whereby its vapour can be ignited by an ignition source and, after ignition, sufficient flammable vapour is produced for burning to continue for at least 15 s after the source of ignition has been removed