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Determination of flash point — Pensky-Martens closed cup method (ISO 2719:2016)

bsi.

National foreword

This British Standard is the UK implementation of EN ISO 2719:2016. It supersedes BS EN ISO 2719:2002 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PTI/13, Petroleum Testing and Terminology.

A list of organizations represented on this committee can be obtained on request to its secretary.

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European foreword

This document (EN ISO 2719:2016) 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.

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Endorsement notice

The text of ISO 2719:2016 has been approved by CEN as EN ISO 2719:2016 without any modification.

Contents

Page

Foreword ... **iv**
Introduction ... **v**
1 Scope ... **1**
2 Normative references ... **1**
3 Terms and definitions ... **2**
4 Principle ... **2**
5 Chemicals and materials ... **2**
6 Apparatus ... **2**
7 Apparatus preparation ... **3**
7.1 General ... 3
7.2 Location of the apparatus ... 3
7.3 Cleaning the test cup ... 3
7.4 Apparatus assembly ... 3
7.5 Apparatus verification ... 3
8 Sampling ... **4**
9 Sample handling ... **4**
9.1 Petroleum products ... 4
9.1.1 Sub-sampling ... 4
9.1.2 Samples containing undissolved water ... 4
9.1.3 Samples that are liquid at ambient temperature ... 4
9.1.4 Samples that are very viscous, semi-solid or solid at ambient temperature ... 4
9.2 Paints and varnishes ... 5
10 Procedure ... **5**
10.1 General ... 5
10.2 Procedure A ... 5
10.3 Procedure B ... 6
10.4 Procedure C ... 7
11 Calculation ... **8**
11.1 Conversion of barometric pressure reading ... 8
11.2 Correction of observed flash point to standard atmospheric pressure ... 8
12 Expression of results ... **8**
13 Precision ... **8**
13.1 General ... 8
13.2 Repeatability, ***r*** ... ***8***
13.3 Reproducibility, ***R*** ... ***9***
14 Test report ... **10**
Annex A (informative) **Apparatus verification** ... **11**
Annex B (normative) **Pensky-Martens closed cup test apparatus** ... **14**
Annex C (normative) **Temperature measuring device specification** ... **20**
Bibliography ... **22**

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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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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 World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: www.iso.org/iso/foreword.html.

The committee responsible for this document is ISO/TC 28, *Petroleum products and related products of synthetic or biological origin*, in conjunction with ISO/TC 35, *Paints and varnishes*.

This fourth edition cancels and replaces the third edition (ISO 2719:2002), which has been technically revised.

The main technical updates include:

a) introduction of procedure C for FAME products;

b) revision of temperature measuring device requirements, allowing alternatives for Hg-containing thermometers;

c) removal of the original Annex D on the adaptor for the low-range thermometer, it being optional when a permanent ferrule is attached to the thermometer;

d) revision of procedures regarding sampling and sample handling;

e) inclusion, for automated apparatus, manufactured after 1 January 2017, of a device to automatically dispense an inert gas or vapour over the test cup in the event of a test cup fire.

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Introduction

Flash point values are 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.

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.

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[6] (CEN/TR 15138[12]) gives useful advice in carrying out flash point tests and interpreting their results.

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Determination of flash point — Pensky-Martens 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 users of this International Standard to take appropriate measures to ensure the safety and health of personnel prior to application of this International Standard, and fulfil statutory and regulatory requirements for this purpose.

1 Scope

This International Standard describes three procedures, A, B and C, using the Pensky-Martens closed cup tester, for determining the flash point of combustible liquids, liquids with suspended solids, liquids that tend to form a surface film under the test conditions, biodiesel and other liquids in the temperature range of 40 °C to 370 °C.

CAUTION — For certain mixtures no flash point, as defined, is observed; instead a significant enlargement of the test flame (not halo effect) and a change in colour of the test flame from blue to yellowish-orange can occur. Continued heating can result in significant burning of vapours outside the test cup, and can be a potential fire hazard.

NOTE 1 Although, technically, kerosene with a flash point above 40 °C can be tested using this International Standard, it is standard practice to test kerosene according to ISO 13736.[5] Similarly, lubricating oils are normally tested according to ISO 2592[2].

Procedure A is applicable to distillate fuels (diesel, biodiesel blends, heating oil and turbine fuels), new and in-use lubricating oils, paints and varnishes, and other homogeneous liquids not included in the scope of Procedures B or C.

Procedure B is applicable to residual fuel oils, cutback residua, used lubricating oils, mixtures of liquids with solids, liquids that tend to form a surface film under test conditions or are of such kinematic viscosity that they are not uniformly heated under the stirring and heating conditions of Procedure A.

Procedure C is applicable to fatty acid methyl esters (FAME) as specified in specifications such as EN 14214[11] or ASTM D6751[13].

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

NOTE 2 Water-borne paints and varnishes can be tested using ISO 3679[3]. Liquids containing traces of highly volatile materials can be tested using ISO 1523[1] or ISO 3679.

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*

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