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STN	**Automobilové palivá Zmesi metylesterov mastných kyselín (FAME) s motorovou naftou Stanovenie oxidačnej stálosti zrýchlenou oxidačnou metódou pri 120 °C**	**STN EN 16568 65 6523**

Automotive fuels - Blends of Fatty acid methyl ester (FAME) with diesel fuel - Determination of oxidation stability by rapidly accelerated oxidation method at 120 C

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

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English Version

Automotive fuels - Blends of Fatty acid methyl ester (FAME) with diesel fuel - Determination of oxidation stability by rapidly accelerated oxidation method at 120 °C

Carburants pour automobiles - Mélanges d'esters méthyliques d'acides gras (EMAG) avec du gazole - Détermination de la stabilité à l'oxydation par méthode d'oxydation plus accélérée à 120 °C

Kraftstoffe - Mischungen von Fettsäure-Methylestern (FAME) mit Dieselkraftstoff - Bestimmung der Oxidationsstabilität mittels stark beschleunigtem Oxidationsverfahren bei 120 °C

This European Standard was approved by CEN on 2 January 2023.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
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EUROPÄISCHES KOMITEE FÜR NORMUNG

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European foreword

This document (EN 16568:2023) has been prepared by 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of an identical text or by endorsement, at the latest by September 2023, and conflicting national standards shall be withdrawn at the latest by September 2023.

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

This document supersedes EN 16568:2014.

In comparison with the previous edition EN 16568:2014, the following technical modifications have been made:

— alignment with the revised EN 14112.

Any feedback and questions on this document should be directed to the users’ national standards body. A complete listing of these bodies can be found on the CEN website.

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

Introduction

This document is based on EN 15751 [1], which was specifically developed for the determination of oxidation stability of fatty acid methyl ester (FAME) and blended petroleum-based diesel fuels. The oxidation stability is assessed by determining the induction period of the fuel. The induction period is a measure for the ageing reserve of the fuel.

The first version of EN 15751 was developed under CEN/TC 19 for a test temperature of 110 °C in order to stay directly comparable to EN 14112 [2] which is used to determine the oxidation stability of pure FAME. The stability of diesel/FAME blends is generally higher compared to pure FAME, thus leading to long measuring times. In order to better accommodate the needs of laboratories, the idea was raised to increase the reaction temperature to 120 °C. Degradation of the ageing reserve of the fuel follows the Arrhenius law. By increasing the temperature by 10 °C, the reaction rate is doubled, cutting in half the induction period.

The modifications to EN 15751, as given in this document, allow the application of this test method for oxidation stability for diesel/FAME blends containing 2 % (*V*/*V*) of FAME at minimum. This test method is not applicable to pure FAME. Pure FAME was not included in the scope because of reduced ability to differentiate between different qualities when the induction period is reduced by 50 %.

The temperature increase required a new validation for diesel/FAME blends. Blends with up to 50 % (*V*/*V*) of FAME were selected for this document in order for this document to also cover high FAME blends, which are currently being discussed for automotive use.

1 Scope

This document specifies a test method for the determination of the oxidation stability at 120 °C of fuels for diesel engines, by means of measuring the induction period of the fuel up to 20 h. The method is applicable to blends of FAME with petroleum-based diesel having a FAME content in the range between 2 % (*V*/*V*) and 50 % (*V*/*V*).

NOTE 1 An almost identical test method for oxidation stability at 110 °C is described in EN 15751 [1], which applies to pure FAME and diesel/FAME blends containing 2 % (*V*/*V*) of FAME at minimum. Other alternative test methods for the determination of the oxidation stability of distillate fuels are described in CEN/TR 17225 [3].

NOTE 2 The precision of this method was determined using samples with a maximum induction period of approximately 20 h. Higher induction periods are not covered by the precision statement; however, experience from EN 15751 indicates sufficient precision up to 48 h.

NOTE 3 The presence of cetane improver can reduce the oxidation stability determined by this test method. Limited studies with 2-ethyl hexyl nitrate (EHN) indicated that the stability is reduced to an extent which is within the reproducibility of the test method.

NOTE 4 For the purposes of this document, the term "% (*V*/*V*)" is used to represent the volume fraction.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

EN ISO 3170, *Petroleum liquids — Manual sampling (ISO 3170)*

EN ISO 3171, *Petroleum liquids — Automatic pipeline sampling (ISO 3171)*

EN ISO 3696, *Water for analytical laboratory use — Specification and test methods (ISO 3696)*