SLOVENSKI STANDARD
SIST EN 16734:2016+A1:2019

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Goriva za motorna vozila - Dizelsko gorivo za motorna vozila B10 - Zahteve in preskusne metode

Automotive fuels - Automotive B10 diesel fuel - Requirements and test methods

Kraftstoffe für Kraftfahrzeuge - B10 Dieselkraftstoff - Anforderungen und Prüfverfahren

Carburants pour automobiles - Carburant B10 pour moteur automobile diesel - Exigences et méthodes d'essai

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Automotive fuels - Automotive B10 diesel fuel - Requirements and test methods

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Kraftstoffe für Kraftfahrzeuge - B10 Dieselkraftstoff - Anforderungen und Prüfverfahren

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

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European foreword

This document (EN 16734:2016+A1:2018) 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of an identical text or by endorsement, at the latest by May 2019, and conflicting national standards shall be withdrawn at the latest by May 2019.

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 includes Amendment 1 approved by CEN on 2018-08-07.

This document supersedes EN 16734:2016.

The start and finish of text introduced or altered by amendment is indicated in the text by tags A1⟩ ⟨A1.

This document has been prepared under a mandate [1] given to CEN by the European Commission and the European Free Trade Association. It has been developed in coordination with representatives of those institutions.

This document describes a new European Standard for diesel fuel containing up to 10,0 % (*V/V*) Fatty Acid Methyl Ester. This fuel is not suitable for all vehicles, so consumers and providers should consult vehicle manufacturers or manuals before use.

The requirements of the European Fuels Directive 98/70/EC [2], including amendments 2003/17/EC [3], 2009/30/EC [4], 2011/63/EU [5] and 2014/77/EU [6], have been included. Dates are included with all normative test method references in order to comply with the requirements of the European Commission; with the accompanying assurance by CEN/TC 19 that any referenced updated versions will always give at least the same accuracy and at least the same level of precision (see [4]).

A1⟩ The marking at the pump of this product is in line with the requirements of the Fuels Quality Directive [2] and the Alternative Fuels Infrastructure Directive [15]. ⟨A1

Annex A is normative and contains the precision data generated on the test methods, which are the result of inter-laboratory testing, carried out by working groups of CEN/TC 19. Many of the test methods included in this standard were the subject of inter-laboratory testing to determine the applicability of the method and its precision in relation to blends of automotive diesel fuel containing 10,0 % (*V/V*) or higher of different sources of fatty acid methyl esters (FAME).

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, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies requirements and test methods for marketed and delivered automotive B10 diesel fuel, i.e. diesel fuel containing up to 10,0 %(*V/V*) Fatty Acid Methyl Ester. It is applicable to fuel for use in diesel engine vehicles compatible with automotive B10 diesel fuel.

NOTE 1 This product is allowed in Europe [4], but national legislation can set additional requirements or rules concerning, or even prohibiting, marketing or delivering of the product.

NOTE 2 In this European Standard, A-deviations apply (see Annex B).

NOTE 3 For the purposes of this European Standard, the terms "% (*m/m*)" and "% (*V/V*)" are used to represent respectively the mass fraction and the volume fraction.

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.

EN 116:2015, *Diesel and domestic heating fuels — Determination of cold filter plugging point — Stepwise cooling bath method*

EN 12662:2014, *Liquid petroleum products — Determination of total contamination in middle distillates, diesel fuels and fatty acid methyl esters*

EN 12916:2016, *Petroleum products — Determination of aromatic hydrocarbon types in middle distillates — High performance liquid chromatography method with refractive index detection*

EN 14078:2014, *Liquid petroleum products — Determination of fatty acid methyl ester (FAME) content in middle distillates — Infrared spectrometry method*

EN 14214:2012+A1:2014, *Liquid petroleum products — Fatty acid methyl esters (FAME) for use in diesel engines and heating applications — Requirements and test methods*

EN 15195:2014, *Liquid petroleum products — Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels by combustion in a constant volume chamber*

EN 15751:2014, *Automotive fuels — Fatty acid methyl ester (FAME) fuel and blends with diesel fuel — Determination of oxidation stability by accelerated oxidation method*

EN 16144:2012, *Liquid petroleum products — Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels — Fixed range injection period, constant volume combustion chamber method*

EN 16329:2013, *Diesel and domestic heating fuels — Determination of cold filter plugging point — Linear cooling bath method*

EN 16576:2014, *Automotive fuels — Determination of manganese and iron content in diesel — Inductively coupled plasma optical emission spectrometry (ICP OES) method*

EN 16715:2015, *Liquid petroleum products — Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels — Ignition delay and combustion delay determination using a constant volume combustion chamber with direct fuel injection*

A1

EN 16906:2017, *Liquid petroleum products — Determination of the ignition quality of diesel fuels — BASF engine method*

EN 16942:2016, *Fuels – Identification of vehicle compatibility – Graphical expression for consumer information* A1

EN 23015:1994,[1]), *Petroleum products — Determination of cloud point (ISO 3015:1992)*

EN ISO 2160:1998, *Petroleum products — Corrosiveness to copper — Copper strip test (ISO 2160:1998)*

A1

EN ISO 2719:2016, *Determination of flash point – Pensky-Martens closed cup method (ISO 2719:2016)* A1

EN ISO 3104:1996[1]), *Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104:1994)*

EN ISO 3170:2004, *Petroleum liquids — Manual sampling (ISO 3170:2004)*

EN ISO 3171:1999, *Petroleum liquids — Automatic pipeline sampling (ISO 3171:1988)*

EN ISO 3405:2011[1]), *Petroleum products — Determination of distillation characteristics at atmospheric pressure (ISO 3405:2011)*

A1

EN ISO 3675:1998[1]) A1, *Crude petroleum and liquid petroleum products — Laboratory determination of density — Hydrometer method (ISO 3675:1998)*

EN ISO 3924:2016, *Petroleum products — Determination of boiling range distribution — Gas chromatography method (ISO 3924:2016)*

EN ISO 4259:2006[1]), *Petroleum products — Determination and application of precision data in relation to methods of test (ISO 4259:2006)*

EN ISO 4264:2007,[2]), *Petroleum products — Calculation of cetane index of middle-distillate fuels by the four-variable equation (ISO 4264:2007)*

EN ISO 5165:1998[1]), *Petroleum products — Determination of the ignition quality of diesel fuels — Cetane engine method (ISO 5165:1998)*

EN ISO 6245:2002, *Petroleum products — Determination of ash (ISO 6245:2001)*

EN ISO 10370:2014, *Petroleum products — Determination of carbon residue — Micro method (ISO 10370)*

A1

EN ISO 12156-1, *Diesel fuel — Assessment of lubricity using the high-frequency reciprocating rig (HFRR) — Part 1: Test method (ISO 12156-1)* A1

1) Under revision.

2) A1 This text is under revision and impacted by the amendment EN ISO 4264:2007/A1:2013. A1

EN ISO 12185:1996[1)], *Crude petroleum and petroleum products — Determination of density — Oscillating U-tube method (ISO 12185:1996)*

EN ISO 12205:1996, *Petroleum products — Determination of the oxidation stability of middle-distillate fuels (ISO 12205:1995)*

EN ISO 12937:2000, *Petroleum products — Determination of water — Coulometric Karl Fischer titration method (ISO 12937:2000)*

EN ISO 13032:2012, *Petroleum products — Determination of low concentration of sulfur in automotive fuels — Energy-dispersive X-ray fluorescence spectrometric method (ISO 13032:2012)*

EN ISO 13759:1996, *Petroleum products — Determination of alkyl nitrate in diesel fuels — Spectrometric method (ISO 13759:1996)*

EN ISO 20846:2011, *Petroleum products — Determination of sulfur content of automotive fuels — Ultraviolet fluorescence method (ISO 20846:2011)*

EN ISO 20884:2011, *Petroleum products — Determination of sulfur content of automotive fuels — Wavelength-dispersive X-ray fluorescence spectrometry (ISO 20884:2011)*

3 Sampling

Samples shall be taken as described in EN ISO 3170 or EN ISO 3171 and/or in accordance with the requirements of national standards or regulations for the sampling of automotive diesel fuel. The national requirements shall be set out in detail or shall be referred to by reference in a National Annex to this European Standard.

In view of the sensitivity of some of the test methods referred to in this European Standard, particular attention shall be paid to compliance with any guidance on sampling containers which is included in the test method standard.

4 Pump marking

〚A1〛 Information to be marked on dispensing pumps and nozzles used for delivering automotive B10 diesel fuel, and the dimensions of the mark shall be in accordance with EN 16942. 〚A1〛

〚A1〛 *Deleted text* 〚A1〛

Where automotive B10 diesel fuel with metallic additives is made available to consumers, the label shall contain: “Contains metallic additives” in the national language(s) and shall be laid down in the National Annex to this document.

Further indication on dispensing pumps in the national language of “Not suitable for all vehicles; consult vehicle manufacturer or manual before use” is also strongly recommended.

5 Requirements and test methods

5.1 Dyes and markers

The use of dyes or markers is allowed.

5.2 Additives

5.2.1 General

In order to improve the quality, the use of additives is allowed. Suitable fuel additives without known harmful side-effects are recommended in the appropriate amount, to help to avoid deterioration of driveability and emissions control durability. Other technical means with equivalent effect may also be used.

NOTE Deposit forming tendency test methods suitable for routine control purposes have not yet been identified and developed.

5.2.2 Methylcyclopentadienyl manganese tricarbonyl (MMT)

〉A1〈 When methylcyclopentadienyl manganese tricarbonyl (MMT) is used, a specific labelling is required (see also Clause 4). The presence of the MMT is limited via a manganese content limit as in Table 1. 〉A1〈

5.3 Fatty acid methyl ester (FAME)

Automotive B10 diesel fuel may contain up to 10,0 % (*V/V*) of FAME complying with EN 14214.

NOTE 1 A suitable method for the separation and identification of FAME is given in EN 14331 〉A1〈 [7] 〉A1〈.

Climate dependent requirements for FAME as a blending component for use in automotive B10 diesel fuel according to this document are set out in EN 14214:2012+A1:2014, 5.4.3. The specific grades shall be specified on a national basis according to local climatic conditions and the FAME volume in the diesel fuel.

NOTE 2 Cold flow requirements for FAME as a blend component in automotive B10 diesel fuel are set out in Tables 3a and 3b and the National Annex of EN 14214:2012+A1:2014, in order to control maximum content of saturated monoglycerides in the final EN 16734 blend to ensure trouble-free operation. Work is on-going to identify a suitable test method for saturated monoglycerides or a performance test to control this aspect of low temperature performance.

The finished blend of automotive B10 diesel fuel shall also comply with the climate dependent requirements set out in 5.6 of this document.

Cold flow additives, when used in FAME, should be specifically matched to the base diesel fuel and FAME quality to ensure correct performance consistent with the requirements set out in this European Standard. The choice could result in incompatibility between the cold flow additives used in the FAME and the diesel fuel. The choice of cold flow additive technology should be a contractual matter between the fuel blender and the FAME supplier taking into account the climatic-dependent requirements of the finished automotive B10 diesel fuel.

In order to improve the oxidation stability of FAME, it is strongly recommended to add oxidation stability enhancing additives to FAME at the production stage and before storage, providing an oxidation stability similar to that obtained with 1 000 mg/kg of 2,6-di-tert-butyl-4-hydroxytoluene (BHT, officially designated by IUPAC as 2,6-bis(1,1-dimethylethyl)-4-methylphenol).

The similar action may be read as providing oxidation stability performance at least equal to that obtained with 1 000 mg/kg of BHT.

CAUTION — There is a potential risk of precipitate formation with oxidation stability enhancing additives at low temperatures in low aromatic arctic fuel. Caution should therefore be taken in the choice of oxidation stability enhancing additives to arctic grade FAME.

5.4 Other (bio-) components

Limits for FAME do not apply to other (non-petroleum derived) hydrocarbons, such as Hydrotreated Vegetable Oil (HVO), Gas To Liquid (GTL) or Biomass To Liquid (BTL) derived hydrocarbons, since