



SLOVENSKI STANDARD
SIST EN 15940:2016/oprA1:2017
01-september-2017

Goriva za motorna vozila - Parafinsko dizelsko gorivo iz sinteze ali postopka s hidrogeniranjem - Zahteve in preskusne metode

Automotive fuels - Paraffinic diesel fuel from synthesis or hydrotreatment - Requirements and test methods

Kraftstoffe für Kraftfahrzeuge - Paraffinischer Dieselkraftstoff aus Synthese oder Hydrierungsverfahren - Anforderungen und Prüfverfahren

Carburants automobiles - Gazoles paraffiniques de synthèses ou obtenus par hydrotraitement - Exigences et méthodes d'essais

Ta slovenski standard je istoveten z: EN 15940:2016/prA1:2017

ICS:

75.160.20 Tekoča goriva Liquid fuels

SIST EN 15940:2016/oprA1:2017 **en,fr,de**

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

DRAFT
EN 15940:2016
prA1

August 2017

ICS 75.160.20

English Version

Automotive fuels - Paraffinic diesel fuel from synthesis or hydrotreatment - Requirements and test methods

Carburants automobiles - Gazoles paraffiniques de synthèses ou obtenus par hydrotraitement - Exigences et méthodes d'essais

Kraftstoffe für Kraftfahrzeuge - Paraffinischer Dieselkraftstoff aus Synthese oder Hydrierungsverfahren - Anforderungen und Prüfverfahren

This draft amendment is submitted to CEN members for enquiry. It has been drawn up by the Technical Committee CEN/TC 19.

This draft amendment A1, if approved, will modify the European Standard EN 15940:2016. If this draft becomes an amendment, CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for inclusion of this amendment into the relevant national standard without any alteration.

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Recipients of this draft are invited to submit, with their comments, notification of any relevant patent rights of which they are aware and to provide supporting documentation.

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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 15490:2016/prA1:2017) 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 document is currently submitted to the CEN Enquiry.

The following is a list of significant technical changes that have been made in this amendment to EN 15940:2016, most of them following technical comments made during the Formal Vote ballot:

- Introduction of an A-deviation as required by NBN, Belgium;
- Rephrasing the Introduction as some of it was superfluous or led to questions in the market;
- Inclusion of reference to the work of CEN/TC 441 regarding pump marking in line with the requirements set by the new Directive 2014/94/EU [24].
- Aligning the wording around MMT and FAME with other diesel fuel specification standards;
- Introduction of the correct manganese determination method;
- Inclusion of a reporting requirement for initial boiling point in Table 1 and of further explanation regarding the test method used for IBP;
- Introduction of the revised determination method for total aromatics which now contains the procedure formerly described in an Annex to this Standard;
- Deletion of the information in the main text on the high aromatics content determination that was not deleted by mistake;
- Updates towards other revised test method standards in general.

EN 15940:2016/prA1:2017 (E)**1 Modifications to the European foreword**

Replace the text in list item c) with the following:

"EN 16906 (equivalent to DIN 51733 [23]) has been studied and allowed as an additional methodology to determine cetane number".

In the first paragraph after the list, in the last sentence, replace "but" with "and".

In the penultimate paragraph, replace the first sentence with the following:

"This document is based on current knowledge at the time of publishing, but will require review based on further experiences with the use of paraffinic diesel fuel or when the specification for either regular automotive diesel fuel, EN 590, or FAME, EN 14214, has been determined (revised) by CEN/TC 19 or based on further experiences with the use of paraffinic diesel fuel according to this document."

2 Modifications to the Introduction

Replace the text in the Introduction with the following:

"This document has been laid down to define a quality specification for diesel fuel on the basis of synthesis gas or of hydrotreated bio-oils or -fats. Its main use is as diesel fuel in dedicated diesel vehicle fleets and engines. Paraffinic diesel fuel does not meet the automotive diesel fuel standard, EN 590 [25]. Its density can be outside the limits for automotive diesel fuel, and the described class A type fuel has a higher cetane number. Paraffinic diesel fuel is not validated for all vehicles, consult vehicle manufacturer before use.

As some production processes result in a fuel containing *cyclo*-paraffins, as well as *n*-paraffins and *iso*-paraffins, they show different cetane number compared to other paraffinic diesel fuels. Hence, in this document, two classes have been defined, one class showing improved ignition quality compared to automotive diesel fuel meeting EN 590.

Blending of paraffinic diesel fuel with fatty acid methyl ester (FAME) is covered in this document. Against the background of the EU Renewable Energy Directive (RED, 2009/28/EC [3]) and also the latest developments regarding the European automotive diesel fuel standard, there is now a pressing requirement to allow for FAME blend variations of those paraffinic fuels, which are not already classified as being from renewable resources.

Paraffinic diesel fuel is also used as a blending component in automotive diesel fuel. In that case it does not have to meet EN 15940 requirements since composition and properties of diesel fuel blends are defined in the respective automotive diesel fuel standards, e.g. EN 590 and EN 16734 (see EN 590:2013+A1:2017, 5.4 and EN 16734:2016, 5.4).

The document will be usable on a voluntary basis for engine clearance, fuel acceptance and fuelling station allowance, supporting both local regulations and international trade".

3 Modifications to the Scope

In the first paragraph, replace the first sentence with the following:

"This European Standard describes requirements and test methods for paraffinic diesel fuel marketed and delivered as such, and containing a level of up to 7,0 % (V/V) fatty acid methyl ester (FAME)."

Replace NOTE 1 with the following:

"NOTE 1 For general diesel engine warranty, paraffinic automotive diesel fuel may need a validation step to confirm the compatibility of the fuel with the vehicle, which for some existing engines may still need to be done (see also the Introduction to this document). The vehicle manufacturer needs to be consulted before use".

Add a new NOTE 3:

"In this European Standard, A-deviations apply (see Annex D)."

4 Modifications to Clause 2, "Normative references"

Add as the third reference:

"prEN 12916:2017, *Petroleum products — Determination of aromatic hydrocarbon types in middle distillates — High performance liquid chromatography method with refractive index detection*".

Delete the actual seventh reference to EN 16136 and add as new eighth reference:

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

Revise the dating of the actual eighth reference into: "EN 16906:2017" and also update the reference in Table 1.

Add after the eighth reference the following new reference:

"EN 16942:2016, *Fuels - Identification of vehicle compatibility - Graphical expression for consumer information*".

Replace the twelfth reference by: "EN ISO 2719:2016, Determination of flash point — Pensky-Martens closed cup method (ISO 2719:2016)" and move the indicator for footnote 1) to the references EN ISO 3405, EN ISO 4259, EN ISO 5165 and EN ISO 12185.

Replace the eighteenth reference by "EN ISO 3924:2016, Petroleum products — Determination of boiling range distribution -- Gas chromatography method (ISO 3924:2016)"

5 Modifications to Clause 4, "Pump marking"

Replace the 1st paragraph with the following:

"Information to be marked on dispensing pumps and nozzles used for delivering paraffinic diesel fuel, and the dimensions of the mark shall be in accordance with EN 16942".

Delete the 2nd paragraph and the footnote 4).

Delete the word "(information)" in the last sentence of this Clause.

EN 15940:2016/prA1:2017 (E)**6 Modification to 5.2.2, "Methylcyclopentadienyl Manganese Tricarbonyl (MMT)"**

Replace the text in the current sub-clause with the following:

"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."

7 Modification to 5.3, "Fatty acid methyl ester (FAME)"

Number the NOTE as "NOTE 1" and add the following paragraphs thereafter:

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

The finished blend of paraffinic diesel fuel shall also comply with the climate-related requirements set out in 5.7 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.

NOTE 2 Cold flow requirements for FAME as a blend component in paraffinic 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 paraffinic diesel fuel 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.

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 paraffinic diesel fuel. Caution should therefore be taken in the choice of oxidation stability enhancing additives to FAME."

8 Modification to 5.4, "Cavitation prevention"

Replace the text in the NOTE with the following:

"The precision for IBP in EN ISO 3405 is better than the precision of IBP in EN ISO 3924. Therefore, only EN ISO 3405 is referred. This issue is being studied further by CEN. For explanation on the risks, see CEN/TR 16389 [2]."

9 Modification to 5.5, "Seizure protection"

In the first sentence, replace: "for well over 12 years" with "since at least the start of the millennium".

Introduce the same change in the first sentence of the third paragraph of Annex A.

10 Modification to 5.6, "Generally applicable requirements and related test methods"

In paragraph 5.6.3, delete the part "EN 16715 [9] and" and the sentence "There is no precision statement available for the alternative correlation equation."

In paragraph 5.6.6, replace the sentence after NOTE 1 with the following:

"Any intentional addition of non-paraffinic material, other than FAME, additives and dyes or markers, is not allowed."

11 Modifications to Table 1, "Generally applicable requirements and test methods" in 5.6.3

In the 6th row on Distillation, introduce a footnote n) in the first column, first row: "The limits for distillation at 250 °C and 350 °C are included for diesel fuel in line with EU Common Customs tariff".

In the 6th row on Distillation, 2nd line, the limits in the 4th and 6th column shall read "65" instead of "< 65".

In the 6th row on Distillation, last line, the limits in the 4th and 6th column shall read "360,0" instead of "360".

After the 6th row on Distillation add the following row:

Initial boiling point ^o	°C	Report		Report		EN ISO 3405
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and add footnote o): "See 5.4. On the basis of collected data the need for this requirement will be assessed in the future".

In the current 7th row on lubricity, capitalize the abbreviation "wsd" into "WSD", and add at the end of the footnote f): " and 5.8.4".

In the current 9th row on Manganese content, last column, replace "EN 16136" by "EN 16576".

In the 10th row on Total aromatics content, last column, replace "Annex C" by "prEN 12916", delete the complete Annex C and renumber Annex D and all references therein.

In the 14th row, the second column shall read "% (m/m)" and fifth column shall read "0,020".

Replace the text in footnote a) with the following: "All test methods are applicable to paraffinic diesel fuels. See 5.8.1."

In footnote l), delete the first sentence (it being a requirement in EN 12662 already) "If the filtration time exceeds 30 min the test should be stopped and the result reported as an incomplete filtration together with the volume filtered".

12 Modifications to Table 3, "Climate-related requirements and test methods - Arctic or severe winter climates" in 5.7.2

In the 6th row on Distillation, introduce a footnote d) in the first column, first row: "EU Common Customs Tariff definition of gas oil may not apply to the grades defined for use in arctic or severe winter climates".

Delete the solid line between the row on recovered at 180 °C and recovered at 340 °C.