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**Goriva za motorna vozila - Parafinsko dizelsko gorivo in mešanice s FAME -
Ozadje zahtevanih parametrov, njihove omejitve ter določanje**

Automotive fuels - Paraffinic diesel fuel and blends with FAME - Background to the parameters required and their respective limits and determination

Kraftstoff für Kraftfahrzeuge - Paraffinischer Dieselkraftstoff und Kraftstoff-Mischungen - Hintergrund zu den erforderlichen Parametern, den entsprechenden Grenzwerten und deren Bestimmung

Carburants pour automobiles - Gazole paraffinique et mélanges d'EMAG - Historique sur la définition des paramètres requis, de leurs limites et de leurs déterminations respectives

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This Technical Report was approved by CEN on 30 June 2025. It has been drawn up by the Technical Committee CEN/TC 19.

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CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels

Contents

Page

European foreword.....	3
1 Scope.....	4
2 Normative references.....	4
3 Terms and definitions	4
4 EN 15940, <i>Automotive fuels - Paraffinic diesel fuel from synthesis or hydrotreatment - Requirements and test methods</i>	4
4.1 Parameters included.....	4
4.2 Considerations on the parameters	9
4.2.1 Cetane number	9
4.2.2 Density	10
4.2.3 Flash point	12
4.2.4 Viscosity.....	12
4.2.5 Distillation characteristics	14
4.2.6 Lubricity	16
4.2.7 Total aromatics content.....	19
4.2.8 Sulfur content.....	21
4.2.9 Residues and contaminants	21
4.2.10 Copper strip corrosion.....	23
4.2.11 Oxidation stability	23
4.2.12 Biodegradability.....	24
4.2.13 FAME.....	24
4.2.14 Addition of non-paraffinic material	25
4.2.15 Climate dependence.....	26
4.2.16 Additives.....	26
4.2.17 Sampling.....	27
4.2.18 Pump marking.....	27
4.2.19 Housekeeping guidance.....	27
4.2.20 Methylcyclopentadienyl manganese tricarbonyl (MMT)	27
4.2.21 Heating applications	27
4.3 Parameters considered and not included in the specification	27
4.3.1 Poly-cyclic aromatic hydrocarbon and olefin content.....	27
4.3.2 Elastomer compatibility	27
5 Acknowledgement	28
Annex A (informative) SL-BOCLE Lubricity of EN 15940 paraffinic fuels: Summary of ILS test results	29
Annex B (informative) A meta-analysis of HFRR precision studies.....	33
Annex C (informative) Paraffinic diesel fuel ILS tests (cetane number)	37
Annex D (informative) Aromatic ILS tests.....	42
Annex E (informative) Oxidation stability ILS tests.....	44
Annex F (informative) Cloud point and CFPP ILS tests.....	45
Bibliography.....	47

European foreword

This document (CEN/TR 16389:2025) 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.

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 CEN/TR 16389:2023.

The fourth version of this document has been updated after the revision of EN 15940:2023. In this update, several editorial and technical improvements have been made.

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.

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1 Scope

This document explains the requirements and test methods for paraffinic diesel fuel from synthesis or hydrotreatment containing up to 7,0 % (V/V) Fatty Acid Methyl Ester (FAME). Synthesis refers to XTL processes where X refers to various feedstocks for example Gas (G), Biomass (B) or Coal (C) and TL stands for To-Liquid. In this document the term hydrotreatment includes all catalytic processes where hydrogen is used. Hydrotreatment of oils and fats from plant, animal or any other biological origin yield paraffinic diesel fuel for example Hydrotreated Vegetable Oil (HVO) or Hydroprocessed Esters and Fatty Acids (HEFA). Paraffinic diesel fuel can be blended with up to 7,0 % (V/V) fatty acid methyl ester (FAME). This document provides background information to the final text of EN 15940:2023 [1] and gives guidance and explanations to the producers, blenders, marketers and users of paraffinic automotive diesel fuel.

Paraffinic diesel fuel is a high quality, clean burning fuel with virtually no sulfur and aromatics. Paraffinic diesel fuel can be used in diesel engines, also to reduce regulated emissions. In order to have the greatest possible emissions reduction, a specific calibration is needed. Some types of paraffinic diesel fuel, at present notably HVO, can also offer a meaningful contribution to the target of increased non-crude derived and/or renewable content in the transportation fuel pool.

For general diesel engine operation, durability and warranty, paraffinic automotive diesel fuel needs a validation step to confirm the compatibility of the fuel with the vehicle, which for some existing engines still needs to be done. The vehicle manufacturer needs to be consulted before use.

NOTE 1 This document is directly related to EN 15940 and will be updated once further publications take place.

NOTE 2 Paraffinic diesel fuel is also used as a blending component in automotive diesel fuel. In that case, composition and properties of the final blends are defined by relevant fuel specification standards.

NOTE 3 For the purposes of this document, the terms “% (m/m)” and “% (V/V)” are used to represent respectively the mass fraction and the volume fraction.

2 Normative references

There are no normative references in this document.

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology databases for use in standardization at the following addresses:

- IEC Electropedia: available at <https://www.electropedia.org/>
- ISO Online browsing platform: available at <https://www.iso.org/obp/>

4 EN 15940, Automotive fuels - Paraffinic diesel fuel from synthesis or hydrotreatment - Requirements and test methods

4.1 Parameters included

This document gives further detailed information about requirements and parameters as defined in EN 15940:2023 [1].

All parameters discussed in this document are based on the paraffinic nature of XTL and HVO and the use of FAME complying with EN 14214:2019 [2] as a blending component. The test methods precisions are presented in Table 1.

Table 1 — Precision of the methods to paraffinic diesel fuel and conventional diesel fuel

Property	Unit	Test method	EN 15940 [1] and EN 590 [3] Precision		
Methods whose precision statement includes paraffinic diesel fuel and conventional diesel fuel					
Cetane number		EN ISO 5165:1998 [4]	Average cetane number level ^a	Repeatability	Reproducibility (R = 0,125× CN - 2,2)
			40	0,8	2,8
			44	0,9	3,3
			48	0,9	3,8
			52	0,9	4,3
			56	1,0	4,8
		EN 15195:2023 [5]	r = 0,013 80 × X R = 0,046 82 × X		
		EN 16906:2017 [6]	r = 1,474 2 + 0,004 3 × X R = -1,054 2+ 0,069 2 × X		
		EN 17155:2018 [7]	r = 0,002 931 × (X) ^{1,47} R = 0,006 407 × (X) ^{1,47}		
		Density at 15 °C	kg/m ³	EN ISO 3675:1998 [8]	r = 0,5 kg/m ³ R = 1,2 kg/m ³
EN ISO 12185:1996 [9]	r = 0,2 kg/m ³ R = 0,5 kg/m ³				
Flash point	°C	EN ISO 2719:2016 [10]	r = 0,029 × X R = 0,071 × X		
Viscosity at 40 °C	mm ² /s	EN ISO 3104:2020 [11]	r = 0,004 3 × (X + 1) R = 0,008 2 × (X + 1)		
		ISO 23581:2020 [12]	r = 0,010 5 – 0,000 3 × X R = 0,034 6 + 0,005 × X		