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

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National foreword

This Published Document is the UK implementation of CEN/TR 16389:2023. It supersedes PD CEN/TR 16389:2017, which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PTI/2, Liquid Fuels.

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

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TECHNISCHER REPORT

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English Version

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

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

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

This Technical Report was approved by CEN on 18 September 2023. 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

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European foreword

This document (CEN/TR 16389:2023) 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.

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 16389:2017.

The third version of this Technical Report has been updated after the revision of EN 15940:2023. In this update, several improvements have been made, historical views of task force meetings have been deleted and the properties of paraffinic diesels are explained in more detail:

- Subclause 4.2.12 on biodegradability was added;
- The requirement in EN 15940 allowing blending of diesel is explained, including subclause 4.2.14 with an additional explanation of the Swedish legislation;
- Subclause 4.2.21 on heating applications was added;
- All available round robin information was included as separate Annexes;
- The information of the latest research was reviewed and updated;
- Summary of the history of XTL-HVO task force was deleted;
- Historical record of the work to date was deleted.

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. 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. Hydrotreatment of vegetable oils and animal fats yield Hydrotreated Vegetable Oil (HVO). 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 [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.

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 [2] as a blending component. The test methods precisions are presented in Table 1.