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Automotive fuels — Unleaded petrol containing more than 3,7 % (m/m) oxygen — Roadmap, test methods, and requirements for E10+ petrol

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Automotive fuels - Unleaded petrol containing more than 3,7 % (m/m) oxygen - Roadmap, test methods, and requirements for E10+ petrol

Carburants pour automobiles - Essence sans plomb contenant plus de 3,7 % (m/m) d'oxygène - Feuille de route, méthodes d'essai et exigences pour les essences E10+

Kraftstoffe für Kraftfahrzeuge - Unverbleiter Ottokraftstoff mit höheren Gehalten an Oxygenaten als 3,7 % (m/m) - Roadmap, Prüfverfahren und Anforderungen für E10+ Ottokraftstoff

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Contents

Page

Foreword

This document (CEN/TR 16514:2013) 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.

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1 Scope

This Technical Report presents an overview and time plan for test methods and requirements that could be expected for future unleaded petrol and petrol blends in Europe. This means unleaded petrol with an ethanol/oxygenates level higher than allowed in the Fuels Quality Directive, Annex I [4], which is petrol containing up to 3,7 % (*m/m*) of oxygen, more familiarly known as E10.

Specific issues that may apply for certain levels or types of oxygenates are highlighted where appropriate in the appropriate sections of this report. This report does not take into account all issues related to vehicles that are specially designed to run on a much wider range of oxygenate contents above E10+, for example up to E85.

The report covers fuels and vehicle concepts for both E10+-capable (without engine efficiency gains) and E10+-optimised (with engine efficiency gains).

NOTE 1 Following the large possible combinations and levels of oxygenates, the work focuses on unleaded petrol with a nominal ethanol content between 10 % (*V/V*) and 25 % (*V/V*). Once the ethanol is higher than approximately 20 % to 25 % (depending on the vehicle) more engine and vehicle measures would likely be needed.

NOTE 2 For the purposes of this document, the terms "% (*m/m*)" and "% (*V/V*)" are used to represent the mass fraction, μ, and the volume fraction, φ, respectively.

NOTE 3 Although EN 228 speaks about and defines "unleaded petrol", the wording "petrol" is used throughout this document for the sake of readability.

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 228, *Automotive fuels — Unleaded petrol — Requirements and test methods*

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

EN 15376, *Automotive fuels — Ethanol as a blending component for petrol — Requirements and test methods*

3 Summary

This report provides an overview and time plan for test methods and requirements to be expected for future unleaded petrol containing oxygenate levels higher than currently allowed in the Fuels Quality Directive (FQD).[2],[3],[4] Before an E10+ petrol specification is developed in response to a legislative initiative, the following factors should be considered:

a) need for more research to define preferred and achievable specifications for an E10+ petrol blend;

b) need for adequate time to implement vehicle and fuel options, after an E10+ standard has been defined;

c) market introduction scenarios of the fuel supply and automotive industry, which general follow the steps:

   1) introduction of capable cars,

   2) build infrastructure for the availability of the fuels, and