MAURITIAN STANDARD

MS EN 15293:2018

First edition
2022-03-19

Automotive fuels — Automotive ethanol (E85) fuel — Requirements and test methods

ICS: 75.160.20

Mauritius Standards Bureau
Moka

This national standard is the identical implementation of EN 15293:2018 and is adopted with the permission of CEN, Avenue Marnix 17, B-1000 Brussels, Belgium.

National foreword

This Draft Mauritian Standard is identical with the European Standard **EN 15293:2018,** *Automotive fuels — Automotive ethanol (E85) fuel — Requirements and test methods.* It was adopted by the Mauritius Standards Bureau on the recommendation of the **Mechanical Engineering Standards Committee** through its subcommittee on Automotive Technology & Engineering. The standard was approved by the **Standards Council** on 24 February 2022 and notified in the Government Gazette on **19 March 2022**. *

For the purposes of this standard the following change should be made:

- the 'decimal comma' should be replaced by the 'decimal point'.

*** General Notice No. 340 of 2022**

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European foreword

This document (EN 15293:2018) 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of an identical text or by endorsement, at the latest by November 2018, and conflicting national standards shall be withdrawn at the latest by November 2018.

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/TS 15293:2011.

Significant technical changes between this European Standard and CEN/TS 15293:2011 are:

— the maximum level of ethers has been excluded as the requirement of using standardized unleaded petrol and ethanol as blending components made this requirement obsolete;

— the requirements towards contaminants originating mainly from ethanol are aligned with the newly revised EN 15376 that has been updated in order to allow blending at all ethanol concentrations up to and including 85 %(*V/V*). An example is the lowering of the limit on sulfate content from 4,0 mg/kg to 2,6 mg/kg. Density minimum has been lowered from 0,760 g/m^3 to 0,755 g/m^3. As alignment of units for elemental contaminants is pursued, a mean density value of 0,780 g/cm^3 has been used;

— in line with recent discussions in CEN/TC 19 on the dating of normative references in European fuel specifications, combined with the fact that the product specified in this document is not linked to EU Directives [1], [2], [3], dates of publication of test method standards have been removed where the CEN rules allow such;

— additional clarification on the impact of additives has been included;

— the determination of higher alcohols is now to be done by the multi-GC technique, because the O-FID technique has not been evaluated with a significant number of laboratories in the Round Robin exercise. EN ISO 22854 has been revised as it needed to include an additional procedure for E85;

— determinations using EN 15837 (ICP) have been deleted as it seemed to have issues with high ethanol blends;

— appearance has been added to the table of requirements;

— the newly developed determination methods for methanol, vapour pressure and sulfur content have been introduced, as well as another sampling method (EN 14725). Where necessary a referee method has been identified;

— the conductivity limit has been aligned in terms of decimal with the reporting requirement of the test method;

— on the basis that petrol blend component in line with EN 228 and ethanol in line with EN 15376 would be used, properties that seem to be covered by other requirements, such as solvent washed existent gum and copper, have been removed from Table 1;

— the development towards a harmonized fuel labelling under CEN/TC 441 has been acknowledged by referencing its European Standard;

— Annex A has been updated following further or pending work by WG 9 and WG 27 under CEN/TC 19;

— following applications by AFNOR, DIN and NBN, A-deviations have been accepted;

— dated references to test methods have been updated.

According to the CEN-CENELEC Internal Regulations, the national standards organisations 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.

Introduction

The quality of the fuel specified in this document is based on the assumption that ethanol and unleaded petrol fulfilling the fuel quality specification standards are used to blend automotive ethanol (E85) fuel. Product delivered to blenders is commonly known as Blending Oxygenate Base-stock (BOB). This is largely the only available petrol for blending, which meets EN 228 after addition of ethanol. Examples of properties of EN 228 that are only fulfilled when BOB is blended with ethanol are octane number and vapour pressure. In this version of document the requirement of EN 228 quality petrol has been clarified in line with the normal blending practice–where the document has been assessed against the EU Directives[1], [2], [3] applicable to the normal fuels.

The specification has been set to allow for the use of denatured and undenatured ethanol as a blending component, depending on national legislation.

All of the determination methods have been assessed (and where necessary revised) on their applicability towards E85. The same work has concluded that the Research Octane Number (RON) of the fuel that is targeted at 104 at minimum, is achieved. A few of the determination methods referenced are still being investigated in terms of correct application and precision.

CEN is revising its Technical Report on the topic [5] to align it with discussions that have led to this revision. One major open issue that is to be explained in that revision – and which generated discussion during the revision of CEN/TS 15293– is the fact that the current sulfate limit is deemed by some to be too high to prevent injector deposit formation and would require vehicles to undergo a variable fuel type utilization program to manage the issue. The fact that the vehicle manufacturers have unanimously underlined that they see no issues in the actual market was one of the re-assuring factors to finalize this document as a European Standard. See for more explanation CEN/TR 15993 [5].

1 Scope

This document specifies requirements and test methods for marketed and delivered automotive ethanol (E85) fuel. It is applicable to automotive ethanol (E85) fuel for use in spark ignition engine vehicles designed to run on automotive ethanol (E85) fuel.

Automotive ethanol (E85) fuel is a mixture of nominally 85 % (*V/V*) ethanol and unleaded petrol, but also including the possibility of having different "seasonal grades" containing more than 50 % (*V/V*) ethanol.

NOTE 1 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.

NOTE 2 For this European Standard, A-deviations apply (see Annex C).

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. 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 13016-1, *Liquid petroleum products - Vapour pressure - Part 1: Determination of air saturated vapour pressure (ASVP) and calculated dry vapour pressure equivalent (DVPE)*

EN 13016-3, *Liquid petroleum products - Vapour pressure - Part 3: Determination of vapour pressure and calculated dry vapour pressure equivalent (DVPE) (Triple Expansion Method)*

EN 14275, *Automotive fuels - Assessment of petrol and diesel fuel quality - Sampling from retail site pumps and commercial site fuel dispensers*

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

EN 15487:2007, *Ethanol as a blending component for petrol - Determination of phosphorus content - Ammonium molybdate spectrometric method*

EN 15489, *Ethanol as a blending component for petrol - Determination of water content - Karl Fischer coulometric titration method*

EN 15491, *Ethanol as a blending component for petrol - Determination of total acidity - Colour indicator titration method*

EN 15492:2012, *Ethanol as a blending component for petrol - Determination of inorganic chloride and sulfate content - Ion chromatographic method*

EN 15692, *Ethanol as a blending component for petrol - Determination of water content - Karl Fischer potentiometric titration method*

EN 15769, *Ethanol as a blending component of petrol - Determination of appearance - Visual method*

EN 15938, *Automotive fuels - Ethanol blending component and ethanol (E85) automotive fuel - Determination of electrical conductivity*

EN 16761-1, *Automotive fuels - Determination of methanol in automotive ethanol (E85) fuel by gas chromatography - Part 1: Method using single column technique*