

English Version

Automotive fuels - Ethanol (E85) automotive fuel - Requirements and test methods

Carburants pour automobiles - Carburant pour automobiles
Ethanol (E85) - Exigences et méthodes d'essai

Kraftstoff für Kraftfahrzeuge - Ethanolkraftstoff (E85) für
Kraftfahrzeuge - Anforderungen und Prüfverfahren

This Technical Specification (CEN/TS) was approved by CEN on 28 September 2010 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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Foreword

This document (CEN/TS 15293:2011) 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 [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

This document supersedes CEN/CWA 15293:2005.

Significant technical changes between this European Standard and the CEN Workshop agreement are:

- the fuel requirements do allow the car manufacturers to optimize the ignition setting over the whole range of 0 % (V/V) to 85 % (V/V) of ethanol, whereas former limits of for instance vapour pressure and MON/RON were calculated on the basis of the percentage. This should give the user the benefit of the improved octane of the alcohol, even though some limits are set as indicative pending further field data;
- the requirements towards contaminants originating mainly from ethanol are aligned with the meanwhile published EN 15376. As alignment of units for elemental contaminants is pursued, a mean density value of 0,78 g/cm³ has been used;
- the specification has been set to allow for the use of denatured and undenatured ethanol as a blending component, depending on national legislation;
- newly developed ethanol test methods are used, which show a better applicability to Ethanol (E85) automotive fuel. Most of the test methods have been assessed for their effective applicability;
- the climate requirements do allow different percentages of ethanol to be blended, based on field experience, of which some limits are still under study.

Furthermore, some of the determination methods referenced are still being investigated in terms of correct application and precision. This, and the fact that production processes need to be assessed on possibility to achieve the required or future limits, underlines the choice for a CEN Technical Specification as an intermediate step.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland and the United Kingdom.

1 Scope

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

Ethanol (E85) automotive fuel is a mixture of nominally 85 % (V/V) ethanol complying to EN 15376 and petrol complying to EN 228, but also including the possibility of having different "seasonal grades" containing more than 50 % (V/V) ethanol.

NOTE 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

The following referenced documents are indispensable for the application 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 1601:1997, *Liquid petroleum products — Unleaded petrol — Determination of organic oxygenate compounds and total organically bound oxygen content by gas chromatography (O-FID)*

EN 13016-1:2007, *Liquid petroleum products — Vapour pressure — Part 1: Determination of air saturated vapour pressure (ASVP) and calculated dry vapour pressure equivalent (DVPE)*

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

EN 15485:2007, *Ethanol as a blending component for petrol — Determination of sulfur content — Wavelength dispersive X-ray fluorescence spectrometric method*

EN 15486:2007, *Ethanol as a blending component for petrol — Determination of sulfur content — Ultraviolet fluorescence method*

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

EN 15488:2007, *Ethanol as a blending component for petrol — Determination of copper content — Graphite furnace atomic absorption spectrometric method*

EN 15489:2007, *Ethanol as a blending component for petrol — Determination of water content — Karl Fischer coulometric titration method*

EN 15491:2007, *Ethanol as a blending component for petrol — Determination of total acidity — Colour indicator titration method*

prEN 15492:2010, *Ethanol as a blending component for petrol — Determination of inorganic chloride and sulfate content — Ion chromatographic method*

EN 15692:2009, *Ethanol as a blending component for petrol — Determination of water content — Karl Fischer potentiometric titration method*

EN 15837:2009, *Ethanol as a blending component for petrol — Determination of phosphorus, copper and sulfur content — Direct method by inductively coupled plasma optical emission spectrometry (ICP OES)*

EN 15938:2010, *Automotive fuels — Ethanol blending component and ethanol (E85) automotive fuel — Determination of electrical conductivity*

EN ISO 2160:1998, *Petroleum products — Corrosiveness to copper — Copper strip test (ISO 2160:1998)*

EN ISO 3170:2004, *Petroleum liquids — Manual sampling (ISO 3170:2004)*

EN ISO 3171:1999, *Petroleum liquids — Automatic pipeline sampling (ISO 3171:1988)*

EN ISO 4259, *Petroleum products — Determination and application of precision data in relation to methods of test (ISO 4259:2006)*

EN ISO 5163:2005, *Petroleum products — Determination of knock characteristics of motor and aviation fuels — Motor method (ISO 5163:2005)*

EN ISO 5164:2005, *Petroleum products — Determination of knock characteristics of motor fuels — Research method (ISO 5164:2005)*

EN ISO 6246:1997, *Petroleum products — Gum content of light and middle distillate fuels — Jet evaporation method (ISO 6246:1995)*

EN ISO 7536:1996, *Petroleum products — Determination of oxidation stability of gasoline — Induction period method (ISO 7536:1994)*

EN ISO 12185:1996, *Crude petroleum and petroleum products — Determination of density — Oscillating U-tube method (ISO 12185:1996)*

3 Sampling

Samples shall be taken as described in EN ISO 3170 or EN ISO 3171 and/or in accordance with the requirements of national standards or regulations for the sampling of Ethanol (E85) automotive fuel. The national requirements shall be set out in detail or shall be referred to by reference in a national annex to this European Standard.

In view of the sensitivity of some of the test methods referred to in this European Standard, particular attention shall be paid to compliance with any guidance on sampling containers, which is sometimes included in the test method standard.

It is essential that for sampling of Ethanol (E85) automotive fuel the containers used to take and store the samples before testing are free from any contamination.

4 Pump marking

Information to be marked on dispensing pumps used for delivering Ethanol (E85) automotive fuel, and the dimensions of the mark shall be in accordance with the requirements of national standards or regulations for the marking of pumps for Ethanol (E85) automotive fuel. Such requirements shall be set out in detail or shall be referred to by reference in a national annex to this European Standard.

NOTE The recommended designation for Ethanol (E85) automotive fuel and its seasonal derivatives is "E85".