

ICS 75.160.20

English Version

**Automotive fuels - High FAME diesel fuel blends (B11 - B30) -  
Background to the parameters required and their respective  
limits and determination**

Carburants pour automobiles - Mélanges de carburants  
diesel ayant une teneur en EMAG élevée (B11 - B30) -  
Contexte de l'élaboration des caractéristiques requises, de  
leurs déterminations et de leurs limites respectives

Kraftstoffe für Kraftfahrzeuge - Dieselmischungen  
mit hohem FAME-Anteil (B10 - B30) - Hintergrund zu den  
geforderten Parametern und deren jeweiligen Grenzwerten  
und Bestimmungen

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## Foreword

This document (CEN/TR 16557:2013) 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.

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.

## 1 Scope

This Technical Report provides background information to the deliberations within CEN that led to establish a specification for blending from more than 10 % (V/V) up to 30 % (V/V) of fatty acid methyl ester (FAME) in diesel fuel to be used in captive fleet application for designated vehicles. It gives guidance and explanations to the producers, blenders, marketers and users of high FAME diesel blends (B11 to B30).

The sole designation “Bxx” refers to a FAME-diesel blend where “xx” is the specific FAME content in volume percentage. The connotation “Byy fuel” is used in this document for a fuel with a defined range of FAME allowed and having “yy” volume percentage of FAME content as the maximum of that range.

NOTE For the purposes of this document, the term “% (m/m)” and “% (V/V)” are used to represent the mass fraction,  $\mu$ , and the volume fraction,  $\phi$ , respectively.

## 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 116:1997, *Diesel and domestic heating fuels - Determination of cold filter plugging point*

EN 590, *Automotive fuels — Diesel — Requirements and test methods*

EN 12662:2008, *Liquid petroleum products - Determination of contamination in middle distillates*

EN 14078:2009, *Liquid petroleum products - Determination of fatty acid methyl ester (FAME) content in middle distillates - Infrared spectrometry method*

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

EN 15195:2007, *Liquid petroleum products - Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels by combustion in a constant volume chamber*

EN 15751:2009, *Automotive fuels - Fatty acid methyl ester (FAME) fuel and blends with diesel fuel - Determination of oxidation stability by accelerated oxidation method*

EN 16091:2011, *Liquid petroleum products - Middle distillates and fatty acid methyl ester (FAME) fuels and blends - Determination of oxidation stability by rapid small scale oxidation method*

EN 16329:2013, *Diesel and domestic heating fuels - Determination of cold filter plugging point - Linear cooling bath method*

EN ISO 2719:2002, *Determination of flash point - Pensky-Martens closed cup method (ISO 2719:2002)*

EN ISO 3104:1996, *Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104:1994)*

EN ISO 3170, *Petroleum liquids - Manual sampling (ISO 3170)*

EN ISO 3171, *Petroleum liquids - Automatic pipeline sampling (ISO 3171)*

EN ISO 3405:2011, *Petroleum products - Determination of distillation characteristics at atmospheric pressure (ISO 3405:2011)*

EN ISO 3675:1998, *Crude petroleum and liquid petroleum products - Laboratory determination of density - Hydrometer method (ISO 3675:1998)*

EN ISO 5165:1998, *Petroleum products - Determination of the ignition quality of diesel fuels - Cetane engine method (ISO 5165:1998)*

EN ISO 6245:2002, *Petroleum products - Determination of ash (ISO 6245:2001)*

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

EN ISO 12937:2000, *Petroleum products - Determination of water - Coulometric Karl Fischer titration method (ISO 12937:2000)*

EN ISO 20846:2011, *Petroleum products - Determination of sulfur content of automotive fuels - Ultraviolet fluorescence method (ISO 20846:2011)*

EN ISO 20884:2011, *Petroleum products - Determination of sulfur content of automotive fuels - Wavelength-dispersive X-ray fluorescence spectrometry (ISO 20884:2011)*

### 3 Background of the High FAME diesel blends (B11 - B30) taskforce work

At the 2009 plenary meeting, CEN/TC 19 decided to register the following preliminary work item as described in its active programme of work: *Automotive fuels — High FAME diesel blends (B10 - B30) — Requirements and test methods*, under responsibility of WG 24, with the scope to finalise its feasibility study in time to allow WG 24 to report to TC19 in order to make a final decision on activation at 2011 plenary meeting at the latest on the basis of existing related national standards and to consider and solve the comments as presented by SUTN during the PWI ballot.

An automatic link has been established between the diesel fuel and FAME standards (EN 590 and EN 14214 respectively) and the High FAME diesel blends standard so that modifications to one will be coherent with the other.

Captive fleets are in general considered as a group of vehicles that possess specific supply logistics, their own dedicated facilities for storage and distribution and adequate maintenance of the vehicles. As the definitions are widespread around Europe and the group does not wish to contradict specific legal situations in some countries, the technical definition of captive fleets is left to the national standardization bodies and will be required.

The provisional scope would thus read: "This European Standard specifies requirements and test methods for marketed and delivered high FAME (B30) fuel for use in diesel engine vehicles designed or subsequently adapted to run on high FAME (B30) fuel. High FAME (B30) fuel is a mixture of more than 10 % (V/V) up to 30 % (V/V) fatty acid methyl esters (commonly known as FAME) complying to EN 14214 and automotive diesel fuel complying to EN 590. For maintenance and control reasons it is to be used in captive fleets that are intended to have an appropriate fuel management."

The group agreed that the national captive fleet description requirement needed to be required in a point in the text.