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Automotive fuels — Automotive B10 diesel fuel — Requirements and test methods

bsi.

National foreword

This British Standard is the UK implementation of EN 16734:2016.

National Annexes NA, NB and NC (appended) give requirements for complying with this standard in the UK.

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

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European foreword

This document (EN 16734:2016) 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of an identical text or by endorsement, at the latest by February 2017, and conflicting national standards shall be withdrawn at the latest by February 2017.

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 has been prepared under a mandate [1] given to CEN by the European Commission and the European Free Trade Association. It has been developed in coordination with representatives of those institutions.

This document describes a new European Standard for diesel fuel containing up to 10,0 % (*V/V*) Fatty Acid Methyl Ester. This fuel is not suitable for all vehicles, so consumers and providers should consult vehicle manufacturers or manuals before use.

The requirements of the European Fuels Directive 98/70/EC [2], including amendments 2003/17/EC [3], 2009/30/EC [4], 2011/63/EU [5] and 2014/77/EU [6], have been included. Dates are included with all normative test method references in order to comply with the requirements of the European Commission; with the accompanying assurance by CEN/TC 19 that any referenced updated versions will always give at least the same accuracy and at least the same level of precision (see [4]).

Annex A is normative and contains the precision data generated on the test methods, which are the result of inter-laboratory testing, carried out by working groups of CEN/TC 19. Many of the test methods included in this standard were the subject of inter-laboratory testing to determine the applicability of the method and its precision in relation to blends of automotive diesel fuel containing 10,0 % (*V/V*) or higher of different sources of fatty acid methyl esters (FAME).

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, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This European Standard specifies requirements and test methods for marketed and delivered automotive B10 diesel fuel, i.e. diesel fuel containing up to 10,0 %(*V/V*) Fatty Acid Methyl Ester. It is applicable to fuel for use in diesel engine vehicles compatible with automotive B10 diesel fuel.

NOTE 1 This product is allowed in Europe [4], but national legislation can set additional requirements or rules concerning, or even prohibiting, marketing or delivering of the product.

NOTE 2 In this European Standard, A-deviations apply (see Annex B).

NOTE 3 For the purposes of this European Standard, the terms "% (*m/m*)" and "% (*V/V*)" are used to represent respectively the mass fraction and the volume fraction.

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 116:2015, *Diesel and domestic heating fuels - Determination of cold filter plugging point - Stepwise cooling bath method*

EN 12662:2014, *Liquid petroleum products - Determination of total contamination in middle distillates, diesel fuels and fatty acid methyl esters*

EN 12916:2016, *Petroleum products - Determination of aromatic hydrocarbon types in middle distillates - High performance liquid chromatography method with refractive index detection*

EN 14078:2014, *Liquid petroleum products - Determination of fatty acid methyl ester (FAME) content in middle distillates - Infrared spectrometry method*

EN 14214:2012+A1:2014, *Liquid petroleum products - Fatty acid methyl esters (FAME) for use in diesel engines and heating applications - Requirements and test methods*

EN 15195:2014, *Liquid petroleum products - Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels by combustion in a constant volume chamber*

EN 15751:2014, *Automotive fuels - Fatty acid methyl ester (FAME) fuel and blends with diesel fuel - Determination of oxidation stability by accelerated oxidation method*

EN 16144:2012, *Liquid petroleum products - Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels - Fixed range injection period, constant volume combustion chamber method*

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

EN 16576:2014, *Automotive fuels - Determination of manganese and iron content in diesel - Inductively coupled plasma optical emission spectrometry (ICP OES) method*

EN 16715:2015, *Liquid petroleum products - Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels - Ignition delay and combustion delay determination using a constant volume combustion chamber with direct fuel injection*

EN 23015:1994[1)], *Petroleum products - Determination of cloud point (ISO 3015:1992)*

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

EN ISO 2719:2002[1)], *Determination of flash point - Pensky-Martens closed cup method (ISO 2719:2002)*

EN ISO 3104:1996[1)], *Petroleum products - Transparent and opaque liquids - Determination of kinematic viscosity and calculation of dynamic viscosity (ISO 3104:1994)*

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 3405:2011[1)], *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 3924:2016, *Petroleum products - Determination of boiling range distribution - Gas chromatography method (ISO 3924:2016)*

EN ISO 4259:2006[1)], *Petroleum products - Determination and application of precision data in relation to methods of test (ISO 4259:2006)*

EN ISO 4264:2007[2)], *Petroleum products - Calculation of cetane index of middle-distillate fuels by the four-variable equation (ISO 4264:2007)*

EN ISO 5165:1998[1)], *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 10370:2014, *Petroleum products - Determination of carbon residue - Micro method (ISO 10370)*

EN ISO 12156-1:2016, *Diesel fuel - Assessment of lubricity using the high-frequency reciprocating rig (HFRR) - Part 1: Test method (ISO 12156-1:2016)*

EN ISO 12185:1996[1)], *Crude petroleum and petroleum products - Determination of density - Oscillating U-tube method (ISO 12185:1996)*

EN ISO 12205:1996, *Petroleum products - Determination of the oxidation stability of middle-distillate fuels (ISO 12205:1995)*

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

EN ISO 13032:2012, *Petroleum products - Determination of low concentration of sulfur in automotive fuels - Energy-dispersive X-ray fluorescence spectrometric method (ISO 13032:2012)*

EN ISO 13759:1996, *Petroleum products - Determination of alkyl nitrate in diesel fuels - Spectrometric method (ISO 13759:1996)*

1) Under revision.

2) This text is impacted by the amendment EN ISO 4264:2007/A1:2013.

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 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 automotive diesel 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 included in the test method standard.

4 Pump marking

For automotive B10 diesel fuel, pump marking that identifies the product as distinct from automotive diesel fuel complying with EN 590 is required. It is recommended to use easily recognized visual symbols, the recommended symbol being “B10”.

Information to be marked on dispensing pumps used for delivering automotive B10 diesel fuel, and the location and dimensions of the mark shall be in accordance with national regulations or national standards for the marking of pumps for automotive B10 diesel 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 CEN is developing a harmonized approach for indicating fuel-vehicle compatibility [7].

Where automotive B10 diesel fuel with metallic additives is made available to consumers, the label shall contain: “Contains metallic additives” in the national language(s) and shall be laid down in the National Annex to this document.

Further indication on dispensing pumps in the national language of “Not suitable for all vehicles; consult vehicle manufacturer or manual before use” is also strongly recommended.

5 Requirements and test methods

5.1 Dyes and markers

The use of dyes or markers is allowed.

5.2 Additives

5.2.1 General

In order to improve the quality, the use of additives is allowed. Suitable fuel additives without known harmful side-effects are recommended in the appropriate amount, to help to avoid deterioration of driveability and emissions control durability. Other technical means with equivalent effect may also be used.

NOTE Deposit forming tendency test methods suitable for routine control purposes have not yet been identified and developed.

5.2.2 Methylcyclopentadienyl manganese tricarbonyl (MMT)

When methylcyclopentadienyl manganese tricarbonyl (MMT) is used, a specific labelling is required (see also Clause 4).

MMT is a metallic additive that can be used in automotive fuels, but whose presence is limited since 1 January 2011 (see [5]).

5.3 Fatty acid methyl ester (FAME)

Automotive B10 diesel fuel may contain up to 10,0 % (*V/V*) of FAME complying with EN 14214.

NOTE 1 A suitable method for the separation and identification of FAME is given in EN 14331 [8].

Climate dependent requirements for FAME as a blending component for use in automotive B10 diesel fuel according to this document are set out in EN 14214:2012+A1:2014, 5.4.3. The specific grades shall be specified on a national basis according to local climatic conditions and the FAME volume in the diesel fuel.

NOTE 2 Cold flow requirements for FAME as a blend component in automotive B10 diesel fuel are set out in Tables 3a and 3b and the National Annex of EN 14214:2012+A1:2014, in order to control maximum content of saturated monoglycerides in the final EN 16734 blend to ensure trouble-free operation. Work is on-going to identify a suitable test method for saturated monoglycerides or a performance test to control this aspect of low temperature performance.

The finished blend of automotive B10 diesel fuel shall also comply with the climate dependent requirements set out in 5.6 of this document.

Cold flow additives, when used in FAME, should be specifically matched to the base diesel fuel and FAME quality to ensure correct performance consistent with the requirements set out in this European Standard. The choice could result in incompatibility between the cold flow additives used in the FAME and the diesel fuel. The choice of cold flow additive technology should be a contractual matter between the fuel blender and the FAME supplier taking into account the climatic-dependent requirements of the finished automotive B10 diesel fuel.

In order to improve the oxidation stability of FAME, it is strongly recommended to add oxidation stability enhancing additives to FAME at the production stage and before storage, providing an oxidation stability similar to that obtained with 1 000 mg/kg of 2,6-di-tert-butyl-4-hydroxytoluene (BHT, officially designated by IUPAC as 2,6-bis(1,1-dimethylethyl)-4-methylphenol).

The similar action may be read as providing oxidation stability performance at least equal to that obtained with 1 000 mg/kg of BHT.

CAUTION — There is a potential risk of precipitate formation with oxidation stability enhancing additives at low temperatures in low aromatic arctic fuel. Caution should therefore be taken in the choice of oxidation stability enhancing additives to arctic grade FAME.

5.4 Other (bio-) components

Limits for FAME do not apply to other (non-petroleum derived) hydrocarbons, such as Hydrotreated Vegetable Oil (HVO), Gas To Liquid (GTL) or Biomass To Liquid (BTL) derived hydrocarbons, since these paraffinic diesel components are allowed in any proportions provided that the final blend complies with the requirements of this European Standard.

The co-processing of renewable feedstock at refineries is also allowed provided that the final automotive B10 diesel fuel meets the requirements of this European Standard.

5.5 Generally applicable requirements and related test methods

5.5.1 When tested by the methods indicated in Table 1, automotive B10 diesel fuel shall be in accordance with the limits specified in Table 1. The test methods listed in Table 1 have been assessed

for application to automotive diesel containing FAME. Precision data from inter-laboratory test programmes are given in normative Annex A, where these were found to be different from the precision data given in the test methods for neat petroleum products.

5.5.2 The limiting value for the carbon residue given in Table 1 is based on product prior to addition of ignition improver, if used. If a value exceeding the limit is obtained on finished fuel in the market, EN ISO 13759 shall be used as an indicator of the presence of a nitrate-containing compound. If an ignition improver is thus proved present, the limit value for the carbon residue of the product under test cannot be applied. The use of additives does not exempt the manufacturer from meeting the requirement of maximum 0,30 % (*m/m*) of carbon residue prior to addition of additives.

5.5.3 Automotive B10 diesel fuel shall be free from any adulterant or contaminant that may render the fuel unacceptable for use in diesel engine vehicles.

NOTE For further information on preventing contamination by water or sediment that may occur in the supply chain, or for cross-contamination, it is advisable to check CEN/TR 15367–1 [9] or CEN/TR 15367–3 [10] respectively.

Table 1 — Generally applicable requirements and test methods for automotive B10 diesel fuel

Property	**Unit**	**Limits**		**Test method** [a]
		minimum	**maximum**	(See Clause 2)
Cetane number		**51,0**	–	EN ISO 5165 [b] EN 15195 EN 16144 EN 16715
Cetane index		46,0	–	EN ISO 4264[c]
Density at 15 °C	**kg/m³**	820,0	**845,0**	EN ISO 3675 [d] EN ISO 12185
Polycyclic aromatic hydrocarbons [e]	**% (*m/m*)**	–	**8,0**	EN 12916
Sulfur content	**mg/kg**	–	**10,0**	EN ISO 20846 [f] EN ISO 20884 [f] EN ISO 13032
Manganese content [g]	**mg/l**	-	**2,0**	EN 16576
Flash point	°C	≥ 55,0	–	EN ISO 2719
Carbon residue [h] (on 10 % distillation residue)	% (*m/m*)	–	0,30	EN ISO 10370
Ash content	% (*m/m*)	–	0,010	EN ISO 6245
Water content	mg/kg	–	200	EN ISO 12937
Total contamination	mg/kg	–	24	EN 12662
Copper strip corrosion (3 h at 50 °C)	rating	class 1		EN ISO 2160
Fatty acid methyl ester (FAME) content [i]	**% (*V/V*)**	**-**	**10,0**	EN 14078
Oxidation stability	g/m³ h	– 20,0 [j]	25 -	EN ISO 12205 EN 15751
Lubricity, wear scar diameter at 60 °C	µm	–	460	EN ISO 12156-1
Viscosity at 40 °C	mm²/s	2,000	4,500	EN ISO 3104
Distillation [k, l] % (*V/V*) recovered at 250 °C % (*V/V*) recovered at 350 °C **95 % (*V/V*) recovered at**	 % (*V/V*) % (*V/V*) **°C**	 85 	 < 65 **360,0**	EN ISO 3405 [m] EN ISO 3924

NOTE Requirements in bold refer to the European Fuels Directive 98/70/EC [2], including amendments 2003/17/EC [3], 2009/30/EC [4], 2011/63/EU [5] and 2014/77/EU [6].

[a] See also 5.7.1.
[b] See also 5.7.4.
[c] See also 5.7.5
[d] See also 5.7.2.
[e] For the purposes of this European Standard, polycyclic aromatic hydrocarbons are defined as the total aromatic hydrocarbon content less the mono-aromatic hydrocarbon content, both as determined by EN 12916.
[f] See also 5.7.3.
[g] See also 5.2.2.
[h] See also 5.5.2 and Annex A.
[i] **FAME shall meet the requirements of** EN 14214, **see** [4].
[j] For diesel fuel containing FAME above 2 % (*V/V*) this is an additional requirement.
[k] For the calculation of the cetane index the 10 % (*V/V*), 50 % (*V/V*) and 90 % (*V/V*) recovery points are also needed.
[l] The limits for distillation at 250 °C and 350 °C are included for diesel fuel in line with EU Common Customs tariff.
[m] EN ISO 3924 gives instructions to convert to EN ISO 3405-equivalent data. See also 5.7.6.

5.6 Climate dependent requirements and related test methods

5.6.1 For climate-dependent requirements, options are given to allow for seasonal grades to be set nationally. The options are for temperate climates six CFPP (cold filter plugging point) grades and for arctic or severe winter climates five different classes. Climate-dependent requirements are given in Table 2 (temperate climates) and Table 3 (arctic or severe winter climates). When tested by the methods given in Table 2 and Table 3, automotive B10 diesel fuel shall be in accordance with the limits specified in these tables.

NOTE Attention is drawn to CEN/TR 16884 [11] on cold operability testing and fuel performance correlation. In addition, CEN has developed a technical report , CEN/TR 16982 [15] on cold filterability issues that have been reported in some geographical areas at low temperatures above the cloud point of the fuel. Work to improve understanding of these issues and develop technical solutions is ongoing within CEN and some national standardization bodies.

5.6.2 In a National Annex to this European Standard, each country shall detail requirements for a summer and a winter grade and may include (an) intermediate and/or regional grade(s) which shall be justified by national meteorological data.

Table 2 — Climate-related requirements and test methods — Temperate climates

Property	**Unit**	**Limits**						**Test method** [a]
		Grade A	**Grade B**	**Grade C**	**Grade D**	**Grade E**	**Grade F**	(See Clause 2)
CFPP	°C, max.	+5	0	−5	−10	−15	−20	EN 116 [b] EN 16329

[a] See also 5.7.1.
[b] See 5.7.7.

Table 3 — Climate-related requirements and test methods — Arctic or severe winter climates

Property	Units	Limits					Test method [a]
		class 0	**class 1**	**class 2**	**class 3**	**class 4**	(See Clause 2)
CFPP	°C, max.	−20	−26	−32	−38	−44	EN 116 [b] EN 16329
Cloud point	°C, max.	−10	−16	−22	−28	−34	EN 23015
Density at 15 °C	kg/m³,min. kg/m³, max.	800,0 845,0	800,0 845,0	800,0 840,0	800,0 840,0	800,0 840,0	EN ISO 3675 [c] EN ISO 12185
Viscosity at 40 °C	mm²/s, min. mm²/s, max.	1,500 4,000	1,500 4,000	1,500 4,000	1,400 4,000	1,200 4,000	EN ISO 3104
Cetane number EU [e]	minimum	51,0	51,0	51,0	51,0	51,0	EN ISO 5165 [d] EN 15195 EN 16144 EN 16715
Cetane number [f]	minimum	49,0	49,0	48,0	47,0	47,0	EN ISO 5165 [d] EN 15195 EN 16144 EN 16715
Cetane index[g]	minimum	46,0	46,0	46,0	43,0	43,0	EN ISO 4264
Distillation [h], [i]							EN ISO 3405 [j]
recovered at 180 °C	% (*V*/*V*), max.	10,0	10,0	10,0	10,0	10,0	EN ISO 3924
recovered at 340 °C	% (*V*/*V*), min.	95,0	95,0	95,0	95,0	95,0	

[a] See also 5.7.1.

[b] See also 5.7.7.

[c] See also 5.7.2.

[d] See also 5.7.4.

[e] In countries where the European Fuels Directive 98/70 EC [2] including amendments 2003/17/EC [3], 2009/30/EC [4], 2011/63/EU [5] and 2014/77/EU [6]applies.

[f] In countries where the European Fuels Directive 98/70 EC [2] including amendments 2003/17/EC [3], 2009/30/EC [4], 2011/63/EU [5] and 2014/77/EU [6] does not apply.

[g] See also 5.7.5

[h] EU Common Customs Tariff definition of gas oil may not apply to the grades defined for use in arctic or severe winter climates.

[i] For the calculation of the cetane index, the 10 % (*V*/*V*), 50 % (*V*/*V*) and 90 % (*V*/*V*) recovery points are also needed.

[j] EN ISO 3924 gives instructions to convert to EN ISO 3405-equivalent data. See also 5.7.6.

5.7 Precision and dispute

5.7.1 All test methods referred to in this European Standard include a precision statement. In cases of dispute, the procedures for resolving the dispute and interpretation of the results based on test method precision, described in EN ISO 4259, shall be used.

5.7.2 In cases of dispute concerning density, EN ISO 3675 shall be used.

5.7.3 In cases of dispute concerning sulfur content, either EN ISO 20846 or EN ISO 20884 shall be used.

5.7.4 In cases of dispute concerning cetane number, EN ISO 5165 shall be used. For the determination of cetane number alternative methods to those indicated in Table 1 and Table 3 may also be used, provided that these methods originate from a recognized method series, and have a valid precision statement, derived in accordance with EN ISO 4259, which demonstrates precision at least equal to that of the referenced method. The test result, when using an alternative method, shall also have a demonstrable relationship to the result obtained when using the referenced method.

5.7.5 FAME blends are outside the scope of EN ISO 4264 as they were not included in the original data set used to establish the cetane index correlation with cetane number. However, evaluation of the effect of FAME characteristics on the cetane index calculation indicates that at levels up to 10 % V/V FAME the effects are relatively small in comparison to the precision of the cetane number test EN ISO 5165. Therefore, for the purposes of this standard, in cases of dispute EN ISO 4264 shall be used.

5.7.6 In cases of dispute concerning distillation, EN ISO 3405 shall be used.

5.7.7 In cases of dispute concerning CFPP, EN 116 shall be used.

Annex A
(normative)

Details of inter-laboratory test programme

Table A.1 presents the precision data obtained for diesel fuel containing 5 % (*V/V*) of FAME in inter-laboratory testing programmes by CEN/TC 19 [12] and the EI [13], that differ from those of test methods listed in Table 1 and that at the time of publication of this European Standard were not yet revised. There are no indications that these data would differ for automotive B10 diesel fuel.

NOTE The following methods were found to have precision data for 5 % (*V/V*) FAME blends similar to the published values:

— Ash content: EN ISO 6245,

— Oxidation stability: EN ISO 12205.

Table A.1 — Precision data updates

Property	**Test method**	**Unit**	**CEN/TC 19 data for 5 % (*V/V*) FAME blend**
Viscosity at 40 °C	EN ISO 3104	mm^2/s	r = 0,001 1 *X* R = 0, 018 *X*
Flash point	EN ISO 2719	°C	r = 2,0 R = 3,5
Carbon residue	EN ISO 10370	% (*m/m*)	r = 0,143 0 $X^{0,5}$ R = 0,212 5 $X^{0,5}$
where r is repeatability (EN ISO 4259) R is reproducibility (EN ISO 4259) *X* is the mean of two results being compared			

Annex B
(informative)

A-deviations

A-deviation: National deviation due to regulations, the alteration of which is for the time being outside the competence of the CEN/CENELEC national member.

Notwithstanding that under Directive 2009/30/EC [4], EU Member States may permit the placing on the market of diesel with a fatty acid methyl ester (FAME) content greater than 7 %, national legislation may prohibit bringing on the market of diesel fuel other than specified in EN 590 [14] or diesel with a FAME percentage above 7 %.

This European Standard describes a diesel fuel containing up to 10,0 % (*V/V*) FAME.

This European Standard does not fall under any Directive of the EU.

ln the relevant CEN-CENELEC countries these A-deviations are valid instead of this European Standard until they have been removed:

Country	**Deviation**
Belgium	Royal Decree of September 2013 (SERVICE PUBLIC FEDERAL ECONOMIE, P.M.E., CLASSES MOYENNES ET ENERGIE [C − 2013/11492], 19 SEPTEMBRE 2013. — Arrêté royal relatif à la dénomination et aux caractéristiques du gasoil diesel pour les véhicules routiers); Diesel fuel marketed and delivered in Belgium shall fulfil EN 590.
Germany	BImSchV 10 of 2010–12–08; Diesel fuel marketed and delivered in Germany shall fulfil DIN EN 590:2010-05
Sweden	Drivmedelslag (SFS 2011:319); FAME blending in diesel fuel marketed and delivered in Sweden is limited to 7 % (*V/V*).

Bibliography

[1] Mandate M/394 - *Mandate to CEN on the revision of EN 590 to increase the concentration of FAME and FAEE to 10% v/v*, 13 November 2006

[2] *Directive 98/70/EC of the European Parliament and of the Council of 13 October 1998 relating to the quality of petrol and diesel fuels and amending Council Directive 93/12/EEC*

[3] *Directive 2003/17/EC of the European Parliament and of the Council of 3 March 2003 amending Directive 98/70/EC relating to the quality of petrol and diesel fuels*

[4] *Directive 2009/30/EC of the European Parliament and of the Council of 23 April 2009 amending Directive 98/70/EC as regards the specification of petrol, diesel and gas-oil and introducing a mechanism to monitor and reduce greenhouse gas emissions and amending Council Directive 1999/32/EC as regards the specification of fuel used by inland waterway vessels and repealing Directive 93/12/EEC*

[5] *Commission Directive 2011/63/EU of 1 June 2011 amending, for the purpose of its adaptation to technical progress, Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels*

[6] *Commission Directive 2014/77/EU of 10 June 2014 amending Annexes I and II of Directive 98/70/EC of the European Parliament and of the Council relating to the quality of petrol and diesel fuels*

[7] prEN 16942:2016, *Fuels - Identification of vehicle compatibility - Graphical expression for consumer information, under publication*

[8] EN 14331, *Liquid petroleum products - Separation and characterisation of fatty acid methyl esters (FAME) from middle distillates - Liquid chromatography (LC)/gas chromatography (GC) method*

[9] CEN/TR 15367-1, *Petroleum products - Guidelines for good housekeeping - Part 1: Automotive diesel fuels*

[10] CEN/TR 15367-3, *Petroleum products - Guide for good housekeeping - Part 3: Prevention of cross contamination*

[11] CEN/TR 16884, *Automotive fuels - Diesel fuel - Cold operability testing and fuel performance correlation*

[12] CEN/TR 15160, *Petroleum and related products - Applicability of diesel fuel test methods for Fatty Acid Methyl Esters (FAME) - Information and results on round robin tests*

[13] EI Research Report on IP 398 and EN ISO 10370, under publication, available from the Energy Institute, 61 New Cavendish Street, London W1G 7AR, England

[14] EN 590, *Automotive fuels - Diesel - Requirements and test methods*

[15] CEN/TR 16982, *Diesel blends and fuels - Cold filterability issues*

National Annex NA
(normative)

Sampling requirements

NA.1 General

This National Annex gives the sampling requirements to comply with Clause 3 of this standard.

NA.2 Normative references

The following referenced documents are indispensable for the application of this National Annex. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN ISO 3170, *Petroleum liquids — Manual sampling* (dual numbered as *BS 2000-475*).

BS EN ISO 3171, *Petroleum liquids — Automatic pipeline sampling* (dual numbered as *BS 2000-476*).

BS EN 14275, *Automotive fuels — Assessment of petrol and diesel fuel quality — Sampling from retail site pumps and commercial site fuel dispensers* (dual numbered as *BS 2000-509*).

NA.3 Sampling

NA.3.1 Sampling from storage tanks

All sampling from storage tanks shall be carried out in accordance with the relevant procedures given in BS EN ISO 3170/BS 2000-475.

NA.3.2 Sampling from pipelines

All sampling from pipelines shall be carried out in accordance with the relevant procedures given in either BS EN ISO 3170/BS 2000-475 or BS EN ISO 3171/BS 2000-476.

NA.3.3 Sampling from commercial site fuel dispensers

All sampling from commercial site fuel dispensers shall be carried out in accordance with the relevant procedures given in BS EN 14275/BS 2000-509.

NA.3.4 Labelling and transport

Full and legible information relating to the source of the sample shall be attached to the can in such a manner that it shall not easily become detached.

NOTE 1 If required, the sample may be sealed and labelled to maintain its legal integrity.

NOTE 2 Attention is drawn to:

— the European Agreement Concerning the International Carriage of Dangerous Goods by Road (ADR) as amended, particularly with regard to the provisions for 'Limited Quantities';

— the Carriage of Dangerous Goods (Classification, Packaging and Use of Transportable Pressure Receptacles) Regulations 2004 (as amended);

— the Carriage of Dangerous Goods by Road Regulations 1996 (as amended), with reference to the labelling and transport of samples.

National Annex NB
(normative)

Pump marking requirements

NB.1 General

This National Annex gives the pump marking requirements to comply with Clause 4 and Subclause 5.2.2 of this standard.

NB.2 Requirements

The following information shall be marked on each dispensing pump or container used for delivering diesel with Biodiesel B10 (conforming to the requirements of BS EN 16734:2016) into the consuming vehicle.

a) The name or mark of the supplier or vendor of the diesel fuel.

b) The designations 'Diesel with Biodiesel (B10) BS EN 16734' displayed as shown in Figure NB.1. The minimum dimensions of this mark shall be as shown in Figure NB.1 and the colour used for the design and lettering shall be in clear contrast to the background (see Notes 2 and 3).

Dimensions are in millimetres

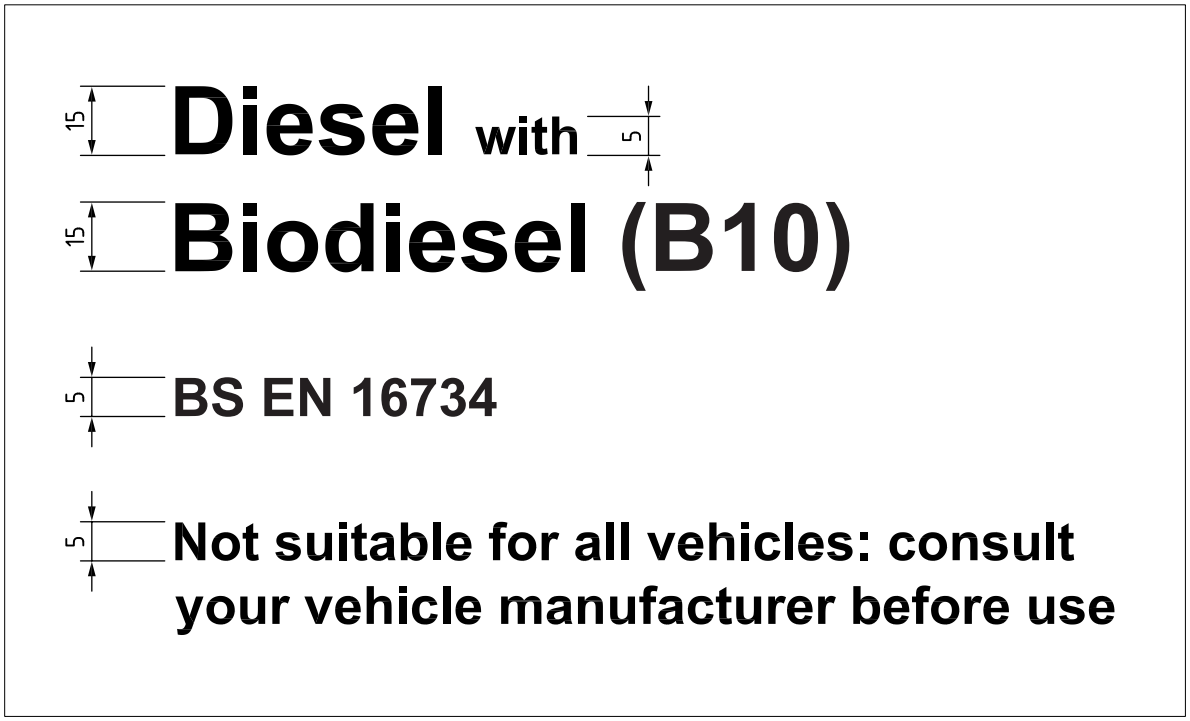

Figure NB.1 — Form of marking for automotive Diesel with Biodiesel (B10)

The mark shall be in a position where it can be seen by the person dispensing fuel.

In accordance with Clause 4 and Subclause 5.2.2 the words 'CONTAINS METALLIC ADDITIVES' shall be displayed at any point where diesel with Biodiesel B10 containing metallic additives is made available

to consumers. The form and minimum dimensions are shown in Figure NB.2. Where this label is necessary it is not necessary for this mark to form an integral part of the label shown in Figure NB.1, although it shall also be in a position where it can be seen by the person dispensing fuel.

Dimensions in millimetres

Figure NB.2 — Form of marking for automotive diesel with Biodiesel (B10) containing metallic additives

NOTE 1 Marking BS EN 16734 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third-party certification of conformity, which may also be desirable.

NOTE 2 The minimum dimensions of the mark given in Figure NB.1 have been selected to enable its application to pumps of the smallest anticipated dimensions. It is strongly recommended that, in the interests of visibility to the motorist, larger dimensions be used wherever possible.

NOTE 3 It is recommended that the prominent colour of the lettering should be black. The preferred colour is colour number 642, 'Night', of BS 381C:1996.

NOTE 4 Attention is drawn to the relevant marking provisions of the Measuring Instruments legislation: SI 2006 No. 1266 and SI 2006 No. 2234.

National Annex NC
(normative)

Climate-dependent requirements

NC.1 Introduction

This National Annex gives the climate-dependent requirements to comply with Subclause 5.6 of this standard.

NC.2 Requirements

For the purposes of this British Standard, the following grades shall apply:

	Summer	Winter
For delivery from refineries and imports into the United Kingdom	16 March to 15 October inclusive CFPP Grade C	16 October to 15 March inclusive CFPP Grade E
For delivery from terminals (including refinery-based terminals)	16 March to 31 October inclusive CFPP Grade C	01 November to 15 March inclusive CFPP Grade E
For sales from the dispenser	16 March to 15 November inclusive CFPP Grade C	16 November to 15 March inclusive CFPP Grade E

NOTE 1 The date for the change from summer grade to winter grade will be reviewed in the light of experience.

NOTE 2 At the seasonal change-over points, product may be deemed to conform to BS EN 16709:2015, providing it

i) conforms to the previous season's quality, and

ii) is stored in a tank to which fewer than three deliveries have been made in the four weeks prior to the relevant sales date in BS EN 16709:2015.

NOTE 3 A 'refinery-based terminal' is a facility located within a refinery boundary which is used to load fuel onto road tanker vehicles for delivery to retail service stations and other end-consumers.

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