

BS 2869:2010+A1:2011



BSI Standards Publication

Fuel oils for agricultural, domestic and industrial engines and boilers – Specification

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This document comprises a front cover, an inside front cover, pages i to iv, pages 1 to 18, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI and came into effect on 15 November 2010. It was prepared by Technical Committee PTI/2, *Liquid fuels*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

The Technical Committee recognizes that suppliers of products and services within the scope of BS 2869 might require time to comply with the provisions of BS 2869:2010. For this reason, the provisions of BS 2869:2006 will remain effective for 2 months after the publication date of this British Standard.

BS 2869:2010+A1:2011 supersedes BS 2869:2010, which is withdrawn.

Information about this document

The start and finish of text introduced or altered by Amendment No. 1 is indicated in the text by tags $\boxed{A1}$ and $\boxed{A1}$. Minor editorial changes are not tagged.

BS 2869 was first published as a combination of earlier standards in 1957, and subsequent revisions took place in 1967, 1970 and 1983. In 1988, in expectation of a European Standard for automotive diesel fuel, prepared by the European Committee for Standardization (CEN), BS 2869 was split into the following parts:

- Part 1: Specification for automotive diesel fuel (class A1);
- Part 2: Specification for fuel oil for agricultural and industrial engines and burners (classes A2, C1, C2, D, E, F, G and H).

BS 2869-1:1988 was withdrawn and superseded by BS EN 590 in 1993. There are some applications for which, for technical or other reasons, limits different to those in this standard or additional requirements might be necessary. This standard does not cover special applications, which should be the subject of agreements between the supplier and purchaser of fuel oils.

Council Directive 1999/32/EC [1], and subsequent amendments, limit the sulfur content of gas oil (other than some gas oil marketed as diesel fuel). The Fuels Quality Directive 2009/30/EC [2] further reduces the sulfur content of the Class A2 middle distillate fuel to conform to a sulfur-free description.

This is a full revision of the standard, and introduces the following principal changes:

- a) the sulfur content of class C2 kerosine is reduced from 0.2% max to 0.1% max;
- b) the sulfur content of Class A2 fuel is reduced to conform to a sulfur-free description;
- c) the introduction of a density requirement for Class C2 kerosine;
- d) the introduction of a minimum specific energy requirement for Class C2 kerosine;
- e) the introduction of an oxidation stability value for the middle distillate fuels, with associated test methods for high and low biofuel (FAME) blends;

- f) the introduction of a lubricity requirement for A2 middle distillate fuel;
- g) the inclusion of up to 7.0% (fraction by volume [V/V]) of Fatty Acid Methyl Ester (FAME) to the appropriate British Standard is permitted in both grades of middle distillate fuel;
- h) maximum viscosity values have been set for the middle distillate grades;
- i) guidance is given to address material compatibility and operability issues associated with the use of FAME to the maximum concentrations specified;
- j) the addition of cetane number or derived cetane number in Table 1.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This British Standard specifies requirements for eight classes of petroleum fuels for engines and boilers used in agricultural, domestic and industrial applications.

This British Standard does not preclude lawful use of one class of fuel in an application designed for use with a fuel of another class. However, it is strongly recommended that only class C1 burner fuel is used in flueless domestic appliances, and it is advisable that tests or consultation with the equipment manufacturer are carried out if fuel is to be used for a purpose other than that for which it is classified in this British Standard.

NOTE Annex A, Annex B and Annex C provide information on fuel types and applications, storage and handling, and properties of fuels respectively. Additional information on storage and handling is given in BS 6380.

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.

BS 2000-10, *Methods of test for petroleum and its products – Part 10: Determination of kerosine burning characteristics – 24 hour method*

BS 2000-12, *Methods of test for petroleum and its products – Part 12: Determination of specific energy*

BS 2000-57, *Methods of test for petroleum and its products – Part 57: Petroleum products – Determination of the smoke point of kerosine*

BS 2000-388, *Methods of test for petroleum and its products – Part 388: Petroleum Products – Determination of the oxidation stability of middle-distillate fuels (BS EN ISO 12205:1996)*

BS 2000-450, *Methods of test for petroleum and its products – BS 2000-450: Diesel fuel – Assessment of lubricity using the high-frequency reciprocating rig (HFRR)*

BS 2000-498, *Liquid petroleum products – Determination of ignition delay and derived cetane number (DCN) of middle distillate fuels by combustion in a constant volume chamber*

BS EN 116 (BS 2000-309), *Methods of test for petroleum and its products – Part 309: Diesel and domestic heating fuels – Determination of cold filter plugging point*

BS EN 14078, *Liquid petroleum products – Determination of fatty methyl esters (FAME) content in middle distillates – Infrared spectrometry method*

BS EN 14214, *Automotive fuels – Fatty acid methyl esters (FAME) for diesel engines – Requirements and test methods*

BS EN 14275 (BS 2000-509), *Methods of test for petroleum and its products – BS 2000-509: Automotive fuels – Assessment of petrol and diesel fuel quality – Sampling from retail site pumps and commercial site fuel dispensers*

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

BS EN ISO 2160 (BS 2000-154), *Petroleum products – Corrosiveness to copper – Copper strip test*

BS EN ISO 2719 (BS 2000-34), *Determination of flash point – Pensky-Martens closed cup method*

BS EN ISO 3104 (BS 2000-71.1), *Methods of test for petroleum and its products – Section 1: Petroleum products – Transparent and opaque liquids – Determination of kinematic viscosity and calculation of dynamic viscosity*

BS EN ISO 3170 (BS 2000-475), *Methods of test for petroleum and its products – Part 475: Petroleum liquids – Manual sampling*

BS EN ISO 3171 (BS 2000-476), *Methods of test for petroleum and its products – BS 2000-476: Petroleum liquids – Automatic pipeline sampling*

BS EN ISO 3405 (BS 2000-123), *Methods of test for petroleum and its products – BS 2000-123: Petroleum products – Determination of distillation characteristics at atmospheric pressure*

BS EN ISO 3675 (BS 2000-160), *Methods of test for petroleum and its products – BS 2000-160: Crude petroleum and liquid, petroleum products – Laboratory determination of density – Hydrometer method*

BS EN ISO 4259 (BS 2000-367), *Petroleum products – Determination and application of precision data in relation to methods of test*

BS EN ISO 4264 (BS 2000-380), *Petroleum products – Calculation of cetane index of middle-distillate fuels by the four-variable equation*

BS EN ISO 5165 (BS 2000-41), *Methods of test for petroleum and its products – Part 41: Petroleum products – Determination of the ignition quality of diesel fuels – Cetane engine method*

BS EN ISO 6245 (BS 2000-4), *Methods of test for petroleum and its products – Part 4: Petroleum products – Determination of ash*

BS EN ISO 8754 (BS 2000-336), *Methods of test for petroleum and its products – BS 2000-336: Petroleum products – Determination of sulfur content – Energy-dispersive X-ray fluorescence spectrometry*

BS EN ISO 10370 (BS 2000-398), *Methods of test for petroleum and its products – Part 398: Petroleum products – Determination of carbon residue – Micro method*

BS EN ISO 12185 (BS 2000-365), *Methods of test for petroleum and its products – Part 365: Crude petroleum and petroleum products – Determination of density – Oscillating U-tube method*

BS EN ISO 12937 (BS 2000-438), *Methods of test for petroleum and its products – BS 2000-438: Petroleum products – Determination of water – Coulometric Karl Fischer titration method*

BS EN ISO 13736 (BS 2000-170), *Methods of test for petroleum and its products – Part 170: Petroleum products and other liquids – Determination of flash point – Abel closed cup method*

BS EN ISO 20846 (BS 2000-490), *Methods of test for petroleum and its products – BS 2000-490: Petroleum products – Determination of sulfur content of automotive fuels – Ultraviolet fluorescence method*

BS EN ISO 20884 (BS 2000-497), *Methods of test for petroleum and its products – Part 497: Petroleum products – Determination of sulfur content of automotive fuels – Wavelength dispersive X-ray fluorescence spectrometry method*