

Specification for fuel oils for agricultural, domestic and industrial engines and boilers

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by Technical Committee PTI/2, Liquid fuels, to Subcommittee PTI/2/4, Off road fuels, upon which the following bodies were represented:

- Association of United Kingdom Oil Independents
- Automobile Association
- Chemical Industries Association
- Confederation of Passenger Transport
- Consumer Policy Committee of BSI
- Department of the Environment, Transport and the Regions — Central Transport Group
- Department of Trade and Industry — Oil and Gas Division
- Federation of British Historic Vehicle Clubs
- Federation of Petroleum Suppliers
- Freight Transport Association
- Institute of Petroleum
- Institute of Road Transport Engineers
- Institute of Trading Standards Administration
- Ministry of Defence
- Motor Cycle Industry Association Ltd.
- National Farmers' Union
- Petrol Pump Manufacturers Association
- Petrol Retailers Association
- Road Haulage Association Ltd.
- Royal Automobile Club
- Society of Motor Manufacturers and Traders Limited
- United Kingdom Petroleum Industry Association Ltd.
- World Wide Fund for Nature

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- British Association for Bio Fuels and Oils
- Combustion Engineering Association
- Oil Firing Technical Association for the Petroleum Industry (Oftec)

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Foreword

This British Standard has been prepared by Technical Committee PTI/2. It supersedes BS 2869-2:1988 which is withdrawn.

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BS 2869-1:1988 was withdrawn and superseded by BS EN 590 in 1993.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 may be necessary. This standard does not cover special applications, which should be the subject of agreements between the supplier and purchaser of fuel oils.

Following inclusion of a recommendation in BS EN 590:1997, consideration has been given to lubricity of engine fuels (class A2). Many off-highway and agricultural applications use the same engines and fuel injection equipment as automotive applications. Technical Committee PTI/2 agrees that while the stipulated maximum sulfur level for class A2 fuel remains at 0.2 % (*m/m*), there is no reason to include a lubricity requirement, as there is no risk, on economic grounds, of inferior lubricity, heavily hydrotreated, desulfurized fuel being included in this category. However, if future European Council Directives require lower sulfur levels in class A2 fuel, the issue of lubricity will be reviewed.

Council Directive 93/12/EEC limits the sulfur content for gas oil (other than gas oil marketed as diesel fuel) to 0.2 % (*m/m*) determined in accordance with ISO 8754 (BS EN ISO 8754:1995).

The principal differences between BS 2869-2:1988 and this edition are:

- a) a rearrangement of Tables 1 and 2 into three new tables;
- b) the minimum viscosity of the summer grade of class A2 fuel is increased to 2 mm²/s;
- c) a minimum density for class A2 fuel is introduced;
- d) the limit value and method for determination of carbon residue classes A2 and D is changed and limit values are introduced for classes E, F, G and H;
- e) a maximum distillation recovery at 250 °C is introduced for classes A2 and D;
- f) the sulfur content of classes A2 and D is reduced;
- g) the limit value and method for determination of the water content of classes A2 and D is changed;
- h) the limit value for smoke point for classes C1 and C2 is reduced;
- i) the limit value for the ash content of classes E, F, G and H is reduced;
- j) changes are introduced to the method for determination of sediment and sediment limits for classes E, F, G and H.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 10, an inside back cover and a back cover.

1 Scope

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

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

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 advised that tests or consultation with the equipment manufacturer is carried out if fuel is to be used for other than the purpose for which it is classified in this British Standard.

2 Normative references

The following normative documents contain provisions that, through reference in this text, constitute provisions of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 799-4:1991, *Oil burning equipment — Specification for atomizing burners (other than monobloc type) together with associated equipment for single burner and multi burner installations.*

BS 799-5:1987, *Oil burning equipment — Specification for oil storage tanks.*

BS 2000-10:1995, *Methods of test for petroleum and its products — Determination of kerosine burning characteristics — 24 h method.*

BS 2000-12:1993, *Methods of test for petroleum and its products — Determination of specific energy.*

BS 2000-57:1995, *Methods of test for petroleum and its products — Petroleum products — Determination of the smoke point of kerosine.*

BS 2000-107:1993, *Methods of test for petroleum and its products — Determination of sulfur — Lamp combustion method.*

BS 2000-139:1993, *Methods of test for petroleum and its products — Petroleum products and lubricants — Neutralization number — Colour-indicator titration method.*

BS 2000-375:1994, *Methods of test for petroleum and its products — Petroleum products — Total sediment in residual fuel oils — Determination by hot filtration.*

BS 3195-1:1989, *Methods for sampling petroleum products — Manual sampling of liquid hydrocarbons.*

BS 3195-2:1989, *Methods for sampling petroleum products — Automatic pipeline sampling of liquid hydrocarbons.*

BS 5410-1:1977, *Code of practice for oil firing — Installations up to 44 kW output capacity for space heating and hot water supply purposes.*

BS 5410-2:1978, *Code of practice for oil firing — Installations of 44 kW and above output capacity for space heating, hot water and steam supply purposes.*

BS 5410-3:1976, *Code of practice for oil firing — Installations for furnaces, kilns, ovens and other industrial purposes.*

BS 7392:1990, *Method for determination of distillation characteristics of petroleum products.*

BS EN 116:1998, *Diesel and domestic heating fuels — Determination of cold filter plugging point.*

BS EN 590:1997, *Specification for automotive diesel fuel.*

BS EN 22719:1994, *Methods of test for petroleum and its products — Petroleum products and lubricants — Determination of flash point — Pensky-Martens closed cup method.*

BS EN ISO 2160:1995, *Petroleum products — Corrosiveness to copper — Copper strip test.*

BS EN ISO 3104:1994, *Methods of test for petroleum and its products — Petroleum products — Transparent and opaque liquids — Determination of kinematic viscosity and calculation of dynamic viscosity.*

BS EN ISO 3675:1996, *Crude petroleum and liquid petroleum products — Laboratory determination of density or relative density — Hydrometer method.*

BS EN ISO 3733:1996, *Petroleum products including bitumen — Determination of water — Distillation method.*

BS EN ISO 3735:1996, *Crude petroleum and fuel oils — Determination of sediment — Extraction method.*

BS EN ISO 3838:1996, *Methods for determination of density or relative density of petroleum and petroleum products (pycnometer methods).*

BS EN ISO 4259:1996, *Petroleum products — Determination and application of precision data in relation to methods of test.*

BS EN ISO 5165:1998, *Petroleum products — Determination of the ignition quality of diesel fuels — Cetane engine method.*

BS EN ISO 6245:1996, *Petroleum products — Determination of ash.*

BS EN ISO 8754:1995, *Methods of test for petroleum and its products — Petroleum products — Determination of sulfur content — Energy-dispersive X-ray fluorescence method.*