

Specification for

Kerosine (paraffin) lighting appliances for domestic use

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- British Mechanical Engineering Confederation
- British Rubber Manufacturers' Association Limited
- British Steel Industry*
- CBMPE*
- Department of Energy
- Oil Companies Materials Association*
- Process Plant Association

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Committee entrusted with the preparation of this British Standard:

- British Hardware Federation
- British Steel Corporation
- Chief and Assistant Chief Fire Officers' Association
- Consumer Standards Advisory Committee of BSI
- Department of Education and Science
- Department of Prices and Consumer Protection
- Department of the Environment, Joint Fire Research Organization
- Fire Protection Association
- Home Office
- Institution of Fire Engineers
- Oil Appliance Manufacturers' Association
- Royal Society for the Prevention of Accidents

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Foreword

This revised British Standard has been prepared under the authority of the Petroleum Equipment Industry Standards Committee, and supersedes BS 2049-2:1955.

BS 2049-1:1953 was superseded in 1963 by BS 3300 “*Kerosine (paraffin) influed space heaters, cooking and boiling appliances for domestic use*”.

This revision takes into account the experience gained in making appliances conforming to BS 3300, and, where appropriate, the tests and requirements of this standard are in line with those of BS 3300.

Certification. It is strongly recommended that in view of the nature of this specification, manufacturers and purchasers should make use of the certification facilities described on the inside back cover of this standard.

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.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

1 Scope

This British Standard specifies requirements and, where appropriate, associated methods of test for the design, construction, performance and safety of lighting appliances, intended by the manufacturer for domestic use and designed to be used with kerosine (paraffin) of type C1 described in BS 2869.

The following types of lighting appliance are covered:

- a) non-pressure appliances for indoor and/or outdoor use;
- b) pressure appliances for indoor and/or outdoor use.

2 References

The titles of the publications referred to in this standard are listed on page 12.

3 Non-pressure lighting appliances

3.1 Design and construction

3.1.1 General. The construction and the strength of materials shall be such that harmful distortion, breakage or discharge of kerosine or vapour does not take place under normal conditions of use.

3.1.2 Fuel container. Materials used in the structure of the container or present in its internal coating after manufacture shall have the following characteristics.

- a) They shall be insoluble in test kerosine as specified in Appendix A and shall not soften or otherwise deteriorate through prolonged exposure to test kerosine.

NOTE 1 The object of this requirement is to ensure that containers or coating composed wholly or partly of organic materials are durable, and incidentally to prevent interference with normal burning of the fuel.

- b) They shall be resistant to corrosion. When ferrous sheet metal other than stainless steel is used for the bottom of the container it shall be coated internally to render it resistant to corrosion where water droplets could accumulate or be trapped.

NOTE 2 As evidence of the performance of protective coatings in containers is accumulated, a list of approved protective methods may be drawn up. In the meantime, the following remarks are intended for the guidance of manufacturers.

The following coating materials, quoted as examples, appear capable of giving beneficial results.

- a) Electrodeposited zinc, 0.003 mm thick, but preferably 0.008 mm.
- b) Tin or terne alloy, with 7 % or 20 % tin, at a coating mass of not less than 250 g/m² of sheet preferably covered with a kerosine-resistant lacquer, provided that its adhesion is good and that fabrication processes and handling do not adversely affect the coating.
- c) Stoved epoxy resin, provided that its application and stoving are correctly carried out.
- d) Kerosine resistant paint or lacquer, used in some instances in conjunction with non-ferrous or phosphate coatings, provided that adhesion is good.

NOTE 3 Kerosine as such is non-corrosive. Corrosion can occur, however, through the presence of water which may be introduced accidentally or may be condensed from the atmosphere. In such circumstances, the water may be expected to contain the ionizable corrosion-promoting compounds that occur normally in natural waters, or as atmospheric pollution.

All joints below the full fuel level of the container shall be thoroughly sweated with solder or welded or otherwise jointed so that the joint is airtight to a pressure of 0.2 bar¹⁾. The container and any internal coating materials shall not be susceptible to thermal or mechanical damage arising from normal use and operation of the appliance.

The maximum capacity of fuel containers shall be 2 litres except that:

- in the case of appliances for use outdoors only, the maximum capacity shall be 5 litres, and
- in the case of glass containers, the maximum capacity shall be 1 litre.

3.1.3 Wick carrier and winder. The wick carrier and winder mechanism shall give an even adjustment of the wick and shall be so mounted as to prevent fuel leakage in service.

3.1.4 Winder knob or other regulating device. This shall be readily accessible and easily adjustable when the appliance is alight.

3.1.5 Inner and outer wick tubes. Inner or outer wick tubes shall be sufficiently strong to avoid harmful distortion under normal use and shall be so mounted as to prevent fuel leakage in service.

3.1.6 Assembly of removable components.

Removable components shall be so constructed that they cannot be assembled incorrectly or, where this is not possible, they shall be marked to show clearly their correct position for normal operation.

¹⁾ 1 bar = 10⁵ N/m² = 100 kPa.

3.1.7 Lighting. Lighting shall be possible with a match without undue inconvenience or difficulty.

3.1.8 Burner. The burner and any part of the burner that is detachable for servicing shall be so constructed that they cannot be reassembled incorrectly. They shall be so constructed that there is no risk of a flame flashing back into the fuel container and so arranged that the fuel cannot splash on to the flame in normal use.

3.1.9 Robustness. Appliances for use outdoors shall be so constructed as to give adequate protection to the globe and shall be so designed and constructed as to withstand rough usage.

3.1.10 Interchangeability. All catalogued parts of the same model and capacity shall be interchangeable without adverse effect upon performance.

3.2 Performance and testing requirements

3.2.1 Test kerosine. The test kerosine shall be as specified in Appendix A, except where otherwise stated.

3.2.2 Test conditions. The test conditions shall be as specified in Appendix B.

3.2.3 General. When the appliance is burned continuously for a period of 8 h (or until the fuel is consumed, whichever is the shorter period) at any setting between the manufacturer's maximum and minimum recommended flame setting, the appliance shall not catch fire. The method of determining the maximum flame setting of mantle lamps is specified in Appendix C. The test shall be repeated, after which the appliance shall be subjected to a visual examination to check that there has been no distortion, fracture or breakage of any part that would cause the appliance to become unsafe.

Deep drawn brass parts shall show no evidence of cracking when tested in accordance with the mercurous nitrate test specified in BS 2871-2.

3.2.4 Strength of joints. Any joint which, if it became loose or broke, might cause the appliance to become unstable or cause kerosine to leak from the appliance shall withstand a pull of 100 N. In addition, the filler cap shall also withstand a pull of 100 N.

3.2.5 Combustion. When tested by the method specified in Appendix C, the CO/CO₂ ratio of the product of combustion shall not exceed 0.02.

3.2.6 Stability. The following conditions shall be met.

a) *Appliances for indoor use only.* The appliance, both when full and empty, shall be capable of being tipped to an angle of 20° from the vertical in any direction and shall not overturn when released.

b) *Other appliances.* The appliance, both when full and empty, shall be capable of being tipped to an angle of 25° from the vertical in any direction and shall not overturn when released.

3.2.7 Safety on overturning. When appliances designed for use on horizontal surfaces are tested in accordance with Appendix D, the fuel spillage during the first 15 s on overturning shall not exceed 55 ml per burner or, where a burner has more than one wick, 55 ml for each wick having its own winder.

NOTE This requirement is intended to ensure that provided the appliance is righted without delay following accidental overturning, the fuel spilled will be unlikely to prove a serious hazard even if it becomes ignited.

3.2.8 Fuel creep. At no time, when operated under normal conditions, shall there be spreading of fuel over any part of the appliance (including the burner) so as to cause undesirable odour or an increase in flame size.

3.2.9 Flame creep. After the final adjustment of the flame to the manufacturer's recommended maximum setting as specified in Appendix C, the flame shall not increase in size during a period of 4 h.

3.2.10 Smoke test. At no time after a final adjustment of the flame to the manufacturer's recommended maximum size as specified in Appendix C shall the flame of the burner emit visible smoke during the period required to burn 90 % of the fuel in the fuel container.

3.2.11 Surface temperature. When tested in accordance with E.1 the surface temperature of any part it may be necessary to touch during the operation on the appliance shall not exceed 60 °C in the case of good thermal conductors or 85 °C in the case of poor thermal conductors. No portion of the surface of an appliance likely to be accidentally touched (other than a working surface), shall exceed 120 °C. In addition, appliances with carrying handles shall be tested in accordance with E.2 and the temperature of the black card shall not exceed 65 °C (based on a room temperature of 16 °C).