

Code of practice for domestic butane and propane gas-burning installations —

Part 3: Installations in boats, yachts and other vessels

ICS 47.080

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The preparation of this British Standard was entrusted to Technical Committees GME/33, Small craft and GSE/31, Installations using neat LPG, upon which the following bodies were represented:

- GME/33:
- Association of Canoe Trades
 - British Marine Industries Federation
 - British Nautical Instrument Trade Association
 - British Waterways Board
 - Consumer Policy Committee of BSI
 - Department of Trade and Industry
 - Environment Agency
 - Fire Extinguishing Trades Association
 - Lloyds Register of Shipping
 - Maritime and Coastguard Agency
 - Royal Society for the Prevention of Accidents
 - Royal Yachting Association
 - Wooden Boatbuilders Trade Association
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- GSE/31: (where not already listed under GME/33)
- British Fire Services' Association
 - Caravan Club
 - Council for Registered Gas Installers
 - Health and Safety Executive
 - Institution of Fire Engineers
 - Institution of Gas Engineers
 - LP Gas Association
 - Loss Prevention Council
 - National Caravan Council Limited
 - Society of British Gas Industries

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- Berkshire College of Agriculture
- Construction Industry Training Board

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Foreword

This British Standard has been prepared jointly by Technical Committees GME/33, Small craft, and GSE/31, Installations using neat LPG. It recommends good practice for installation of liquified petroleum gas (LPG) appliances in boats, yachts and other vessels.

This British Standard supersedes BS 5482-3:1979 which is withdrawn.

As a code of practice this British Standard takes the form of guidance and recommendations. It should not be quoted as if it were a specification and particular care should be taken to ensure that claims of compliance are not misleading.

WARNING Work in gas installations should only be carried out by suitably qualified and competent persons. Attention is drawn to the Gas Safety (Installation and Use) Regulations 1998 (SI 1998 no. 2451), which deal with safe installation, maintenance and use of gas systems mainly in domestic and commercial premises.

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 14, an inside back cover and a back cover.

1 Scope

This part of this British Standard covers gas burning installations in boats, yachts and other vessels¹⁾ of up to 24 m in length, using liquefied petroleum gas (LPG) from cylinders stowed on board, operating at 28 mbar²⁾ for commercial butane and 37 mbar for commercial propane. It does not cover use of LPG for propulsion of vessels. It gives guidance on selection of materials, appliances and components, design considerations, installation requirements, inspection, and testing, and preparing instructions for the user.

This part of this British Standard gives recommendations for selection and maintenance of room sealed appliances and non-room sealed cooking appliances. It is intended for new installations, but recommendations for existing installations are given in annex A.

This part of this British Standard does not cover installation of bulk supplies of LPG, or installations that are supplied from the shore, or portable LPG-burning appliances.

2 Normative references

The following normative documents contain provisions that, through reference in this text, constitute provisions of this part 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 476-7:1997, *Fire tests on building materials and structures — Part 7: Method of test to determine the classification of the surface spread of flame of products*.

BS 476-20:1987, *Fire tests on building materials and structures — Part 20: Method for determination of the fire resistance of elements of construction (general principles)*.

BS 1179:1967, *Glossary of terms used in the gas industry*.

BS 2779:1986, *Specification for pipe threads for tubes and fittings where pressure-tight joints are not made on the threads (metric dimensions)*.

BS 3212:1991, *Specification for flexible rubber tubing, rubber hose and rubber hose assemblies for use in LPG vapour phase and LPG/air installations*.

BS 5258-11:1980, *Safety of domestic gas appliances — Part 11: Flueless catalytic combustion heaters (3rd family gases)*.

BS 6956 (all parts), *Jointing materials and compounds*.

BS EN 437:1994, *Specification for test gases, test pressures and categories of appliance, for gas appliances*.

BS EN 449:1997, *Specification for dedicated liquid petroleum gas appliances — Domestic flueless space heaters (including diffusive catalytic combustion heaters)*.

BS EN 751-3:1997, *Sealing materials for metallic threaded joints in contact with 1st, 2nd and 3rd family gases and hot water — Unsintered PTFE tapes*.

BS EN 1057:1996, *Copper and copper alloys — Seamless, round copper tubes for water and gas in sanitary and heating applications*.

BS EN 27418:1994, *Leisure accommodation vehicles — Vocabulary*.

prEN 12864, *Low pressure non-adjustable regulators having a maximum outlet pressure of less than or equal to 200 mbar with a capacity of less than or equal to 4 kg/h, and their associated safety devices for butane, propane or their mixtures*.

3 Definitions

For the purposes of this part of this British Standard, the definitions in BS 1179 and BS EN 27418 apply, together with the following.

3.1

liquefied petroleum gas (LPG)

mixture of light hydrocarbons, gaseous at normal temperature and pressure, maintained in the liquid state by increased pressure or lowered temperature

3.2

high pressure stage

part of an installation between the valve of the cylinder and the inlet of the pressure regulator

3.3

low pressure stage

part of an installation between the outlet of the single stage pressure regulator and the inlet of the appliance

3.4

cylinder

portable and refillable vessel of approved design, used to contain LPG under pressure

3.5

low pressure regulator

apparatus for automatically maintaining a constant gas outlet pressure at the level recommended for an appliance

¹⁾ In British registered ships the provisions of the various Merchant Shipping Acts also apply.

²⁾ 1 mbar = 10² N/m² = 100 Pa.

3.6**cylinder locker**

storage space for LPG cylinders, low pressure regulators and associated equipment, only openable from the top

3.7**cylinder housing**

storage space for LPG cylinders, low pressure regulators and associated equipment, openable from the side or top and side

3.8**flame supervision device**

device that prevents gas flowing to the burner, ignition burner, or pilot light if there is no flame at the burner or pilot light

3.9**room sealed appliance**

appliance with a system in which incoming combustion air and outgoing combustion products pass through sealed ductwork connected to an enclosed combustion chamber and terminating outside the vessel

3.10**accessible**

capable of being reached for inspection, removal or maintenance, without removal of a permanent vessel structure

NOTE Hatches are not included as permanent vessel structures, even if tools are required to open them.

3.11**readily accessible**

capable of being reached for operation, inspection or maintenance, without removal of a vessel structure, or use of tools or keys, or removal of any item of portable equipment stowed in a place intended for storage of portable equipment (e.g. lockers, drawers or shelves)

3.12**main shut-off valve**

valve for isolating an LPG system from a high pressure stage supply

3.13**ventilator**

device that allows air to pass into and out of an accommodation space

3.14**appliance connector**

pipe or hose connecting an appliance isolation valve and the appliance inlet connection

4 Materials**4.1 Pipework materials**

The following materials should be used for installation pipework:

- a) seamless copper tube conforming to BS EN 1057 with copper or copper alloy compression fittings;
- b) stainless steel tube, of a grade suitable for use with LPG and a marine environment, and appropriate compression or screwed fittings;
- c) copper nickel alloy, of a grade suitable for use with LPG and a marine environment, and appropriate compression or screwed fittings.

The following materials should not be used for installation pipework, for the reasons given:

- a) aluminium (corrosion, low melting point, vibration);
- b) lead (creep);
- c) brass tubing (season cracking);
- d) steel tubing (corrosion);
- e) plastics (low melting point, low-temperature embrittlement).

NOTE Tubing of the type fabricated from sheet steel, coated internally and externally and wrapped, is subject to atmospheric corrosion and should not be used externally.

4.2 High and low pressure stage hoses

High and low pressure stage hoses should conform to type 2 of BS 3212.

5 Selection of components

Components should be suitable for use with LPG and a marine environment.

6 Selection of appliances**6.1 General**

Appliances should be recommended by the manufacturers as suitable for use in a marine environment. Appliances should include a test fitting. Appliances should be room sealed (with the exception of cooking appliances).

6.2 Flame supervision devices

Appliance burners, ignition burners and pilot lights should be fitted with flame supervision devices that completely close the LPG supply.