

Specification for

Welded steel tanks for the road transport of liquefiable gases

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Pressure Vessel Standards Policy Committee (PVE/-) to Technical Committee PVE/3, upon which the following bodies were represented:

- Aluminium Federation
- Associated Offices Technical Committee
- Association of Manufacturers of Domestic Electrical Appliances
- British Compressed Gases Association
- British Fire Consortium
- British Fire Protection Systems Association Ltd
- British Railways Board
- British Soft Drinks Association Ltd
- Chief and Assistant Chief Fire Officers' Association
- Department of Trade and Industry (National Engineering Laboratory)
- Department of Trade and Industry (National Physical Laboratory)
- Department of Trade and Industry [Mechanical Engineering and Manufacturing Technology Division (Mmt)]
- Department of Transport (Marine Directorate)
- Engineering Equipment and Materials Users' Association
- Fire Extinguishing Trades Association
- Health and Safety Executive
- Home Office
- Industrial Safety (Protective Equipment) Manufacturers' Association
- Institute of Refrigeration
- Institution of Chemical Engineers
- Liquefied Petroleum Gas Industry Technical Association (UK)
- Metal Packaging Manufacturers' Association
- Ministry of Defence
- Society of Motor Manufacturers and Traders Limited
- Coopted members

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

- Chemical Industries Association
- CEI/CSTI Joint Technical Committee

This British Standard, having been prepared under the direction of the Pressure Vessel Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 31 August 1989

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The following BSI references relate to the work on this standard:
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Contents

	Page
Committees responsible	Inside front cover
Foreword	ii
Section 1. General	
1 Scope	1
2 Definitions	1
3 Design, manufacture and testing of tanks	1
4 Information to be supplied by the purchaser and the manufacturer	1
5 Certificate of acceptance	2
Section 2. Materials	
6 General	3
7 Identification	3
8 Condition	3
9 Analysis	3
10 Permissible materials	3
11 Impact and intercrystalline corrosion tests	4
Section 3. Design	
12 General	5
13 Welds	8
14 Valves and fittings	8
15 Pressure relief devices	9
Section 4. Manufacture and workmanship	
16 General	11
17 Tolerances	11
18 Post weld heat treatment	11
Section 5. Inspection and tests	
19 General	12
20 Production control test plates	12
21 Pressure tests	12
22 Water capacity	12
23 Marking	12
Appendix A Typical acceptance certificate	13
Appendix B Side protection	14
Figure 1 — Location of side protection relative to the horizontal centreline of the tank	14
Figure 2 — Section of guard rail	14
Table 1 — Impact values	4
Table 2 — Intercrystalline corrosion test	4
Table 3 — Design stress values for austenitic steel bars	5
Table 4 — Design pressure for toxic gases in uninsulated tanks	6
Table 5 — Design pressure for non-toxic gases in uninsulated tanks	6
Table 6 — Constant C for gas or vapour related to the ratio of specific heat capacities ($K = C_p/C_v$) at standard conditions	10
Publications referred to	Inside back cover

Foreword

This British Standard has been prepared under the direction of the Pressure Vessel Standards Policy Committee at the request of the Health and Safety Executive in order to satisfy the technical requirements of legislation.

The committee responsible for the drafting of this standard had intended its publication to be part of the current British Standard series of BS 5045 (Transportable gas containers) but existing ADR, RID and/or IMG Codes already covered the use of gas containers' transportation by road, rail or air and agreement was reached that a separate standard should be produced to meet industries needs for road transportation of welded steel tanks.

This British Standard, therefore, deals with welded steel tanks for road transportation of liquefiable gases and is not applicable to tanks which are transportable by air or sea. Also, in dealing with this type of tank, it excludes vacuum insulated tanks and drums from its scope, as well as limiting the portable tank capacity to 1 000 L and over.

This particular standard deals with the materials, design, construction and testing of new tanks for road tankers and tank containers used to transport liquefiable gases.

This standard is to be used only in reference to transportable tanks used within the UK.

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.

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.

Section 1. General

1 Scope

This British Standard specifies requirements for the material, design, construction and testing of the tanks of road tankers used for the conveyance by road of liquefiable gases under pressure. It applies to steel tanks having manually and/or automatically welded circumferential and longitudinal seams.

It does not cover vacuum insulated tanks and drums.

This standard may also be used as a specification for the materials, design, construction and testing of portable tanks (e.g. the tanks of tank containers) with a capacity greater than 1 000 L, in which case **12.6** and **12.7** do not apply.

In addition to the definitive requirements, this British Standard also requires the items detailed in clause **4** to be documented. For compliance with this British Standard, both the definitive requirements and the documented items have to be satisfied. A model form of acceptance certificate is given in Appendix A.

The requirements for design, manufacture and testing of tanks are based on those specified for construction category 1 components of BS 5500 and as far as possible are covered by direct cross-references to the relevant requirements in sections 2, 3, 4 and 5 of BS 5500, and to the requirements of other relevant British Standards.

NOTE The titles of the publications referred to in this standard are listed on the inside back cover.

2 Definitions

For the purposes of this British Standard, the definitions given in BS 5355 and BS 5500 apply.

3 Design, manufacture and testing of tanks

The design, manufacture and testing of tanks shall be carried out to the satisfaction of the purchaser and the nominated inspecting authority which shall be independent of the manufacturer.

4 Information to be supplied by the purchaser and the manufacturer

4.1 General

The following information to be supplied as appropriate by the purchaser or manufacturer shall be fully documented and, together with the definitive requirements specified throughout the standard, shall be satisfied before a claim of compliance with this standard can be made and verified.

4.2 Information to be supplied by the purchaser

The following information is to be supplied:

- a) name or classification of gas(es) (see BS 5355);
- b) minimum service temperature and filling ratio at the prescribed reference temperature (see BS 5355);
- c) preferred dimensions and nominal (or minimum) volumetric capacity required;
- d) positions of branches and other openings;
- e) material specification(s) and details of heat treatment condition(s) in which the material(s) is to be supplied (see clauses **6** and **8**);
- f) amount of corrosion allowance (if any) (see **12.4**);
- g) if additional material tests, e.g. ultrasonic examination and/or additional certification of materials is required, the purchaser shall advise the manufacturer if the tests are to be witnessed by the purchaser's representative or the inspecting authority;
- h) the type of examination to be carried out on welds to nozzles, branches and other attachments to the tanks (see clause **19**);
- i) any special or adverse conditions under which the tank will be required to operate;
- j) external/internal finish required;
- k) for tanks which are to be an integral part of a road vehicle, such information as necessary to suit the type of vehicle selected;
- l) the name of the inspecting authority.

4.3 Information to be supplied by the manufacturer

Before commencing manufacture, the manufacturer shall submit for approval by the purchaser and the inspecting authority a fully dimensioned sectional drawing(s) showing in full detail the construction of the tank together with the following documented information.

- a) A statement that the tank shall be constructed in accordance with this standard and identifying the particular issue and update of BS 5500 which will be used by the manufacturer where BS 5500 is referred to in this standard and is not specifically dated.
- b) Specification(s) to which materials for each part shall conform, (see clause **6**).
- c) Welding processes and procedures to be adopted for all parts of the tank.

- d) Large scale dimensional details of the weld preparations for the longitudinal and circumferential seams and details of the joints for branch pipes, seating, etc., and the position of these joints relative to longitudinal and circumferential seams and other openings.
- e) Design pressure calculations.
- f) Test pressure calculations.

No modification shall be made to the design, or any of the details provided as above, after approval by the purchaser and inspecting authority, except with the prior agreement between the purchaser, manufacturer and inspecting authority.

The manufacturer shall supply to the purchaser for record purposes a copy of all the above information as finally approved. These records shall be retained by the purchaser for the life of the tank.

5 Certificate of acceptance

The manufacturer shall certify that the design, manufacture, inspection and testing of the tank were carried out in accordance with this standard.

Where the design has been carried out by a separate organization from that which manufactured and tested the tank, each organization shall certify that the work it has performed is in accordance with this standard.

The inspecting authority shall certify acceptance of the above certification.

NOTE A suitable form of acceptance certificate is shown in Appendix A.