

CONFIRMED
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Specification for

Floats for ballvalves (copper)

Co-operating organizations

The Sanitary Appliances Industry Standards Committee, under whose supervision this British Standard was prepared, consists of representatives from the following Government departments and scientific and industrial organizations:

Admiralty	Metal Sink Manufacturers' Association
British Bath Manufacturers' Association	Ministry of Housing and Local Government*
British Ironfounders' Association*	Ministry of Works*
British Plastics Federation	National Brassfoundry Association*
British Sanitary Earthenware Manufacturers' Association	National Federation of Building Trades Employers
British Sanitary Fireclay Association	National General Export Merchants Group
British Waterworks Association*	Royal Institute of British Architects*
D.S.I.R. — Building Research Station*	Royal Institute of Chartered Surveyors
Flushing Cistern Makers' Association*	Royal Sanitary Institute*
Institute of Plumbers*	Sanitary Inspectors' Association
Institution of Municipal Engineers*	Scottish Federation of Plumbers and Domestic Engineers (Employers) Associations
Institution of Sanitary Engineers	Water Companies Association*
London County Council	

The Government departments and scientific and industrial 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:—

Associated Master Plumbers and Domestic Engineers	Crown Agents for the Colonies
Association of Heating, Ventilating and Domestic Engineering Employers	Distributors of Builders' Supplies Joint Council
British Electrical Development Association	Electric Water Heater Manufacturers' Association
British Electrical and Allied Manufacturers' Association	Institute of British Foundrymen
British Non-Ferrous Metals Research Association	Institution of Gas Engineers
Building Industries National Council	Institution of Heating and Ventilating Engineers
B.W.A. Licensees Association	Institution of Water Engineers
Copper Ball Manufacturers' Association	London Chamber of Commerce
Copper Tube Fittings Manufacturers' Association	Metropolitan Water Board
	Society of British Gas Industries
	Urban District Council's Association

Amendments issued since publication

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Foreword

This standard makes reference to the following British Standards:—

BS 84, *Screw threads of Whitworth form.*

BS 218, *Brass bars and sections (suitable for forging) and drop forgings.*

BS 219, *Soft solders.*

BS 427, *Tables of diamond pyramid hardness numbers.*

BS 899, *Cold rolled copper sheets and strip (half-hard and annealed) for general purposes.*

BS 1212, *Ballvalves ("Portsmouth" type) excluding floats.*

BS 1400, *Copper alloy ingots and castings.*

BS 1845, *Filler alloys for brazing (silver solders and brazing solders).*

This British Standard specifies requirements for copper floats for use with ballvalves and has been issued to facilitate the manufacture — as separate items, to be purchasable as such — of floats suitable for ballvalves complying with the requirements of BS 1212, "*Ballvalves ("Portsmouth" type)*" and other types of ballvalve requiring floats of this description. Reference should be made to BS 1212 for permissible alternative types of float for use with ballvalves complying with that specification.

For information regarding the correct size of float to use for a particular size of ballvalve, or range of pressure, where the leverage exerted is not less than that specified in BS 1212, reference should be made to Table 2 of this standard and also to BS 1212.

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 8, 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 for a range of spherical copper floats of 4½, 5, 6, 7, 8, 9, 10, 11 and 12 inches nominal diameter suitable for attachment to the ballvalves specified in BS 1212 and to ballvalves the leverage of which for the same bore of seat is not less than that specified in BS 1212, in the following classes:—

Class A. Floats of all sizes with soldered joints.

Class B. Floats of all sizes with solderless joints.

Class C. Floats of all sizes with brazed, welded or silver-soldered joints.

Performance requirements relating to floats of a shape other than spherical are also included.

2 Definitions

For the purposes of this British Standard the following definitions shall apply:—

2.1

volume

the volume of water in cubic inches, taken to the nearest cubic inch, displaced when the shell (float with no boss) is completely immersed

2.2

free-floating, volume

the volume of water in cubic inches, taken to the nearest cubic inch, displaced when the shell (float with no boss) is resting on water

2.3

useful volume

half the volume (see definition 2.1 above) less the free-floating volume (see definition 2.2 above) taken to the nearest cubic inch

2.4

lifting effort

the useful volume (see definition 2.3 above) converted into weight in pounds at the rate of 0.036 lb. per cubic inch (Shown calculated in Table 1 for the minimum weight of shell.)

2.5

maximum immersed operating depth

the point at which the volume (see definition 2.1 above) is equally above and below the surface of the water

2.6

diameter of spherical floats

the average outside diameter of the shell measured at two axes at right angles to each other and clear of the jointing seam

3 General

The shells of copper floats shall comply with the requirements of Clauses 4, 5, 6, 8, 9 and 10, and shall be of the dimensions and weights given in Table 1. They shall be fitted with bosses complying with the requirements of Clause 7 and Table 2, Table 3a, Table 3b and Table 4. The complete float shall comply with the weight requirements of Table 5 and shall not be artificially loaded for this purpose.

After manufacture, the copper used for floats shall be left in a planished, condition and shall have a minimum Vickers hardness (HV) of 70 at any one point when tested with a 5 kgf load applied in accordance with the requirements of BS 427-1¹⁾ Table 3.

4 Materials

The chemical, composition of the materials of which the float is made shall be not less suitable than that laid down in the following British Standards:—

- a) *Copper for the shell*: BS 899, “Cold rolled copper sheets and strip for general purposes”.
- b) *Alloy for cast bosses*: BS 1400, “Copper alloy ingots and castings”. Complying with either Specification BS 1400-B1-C for brass castings or for Specification BS 1400-LG2-C for leaded gunmetal castings.
- c) *Alloy for hot pressed bosses*: BS 218, “Brass bars and sections (suitable for forging) and drop forgings”.
- d) *Solder*: BS 219, “Soft solders”, complying with Type F, Table 2, “Non-antimonial solders” or BS 1845, “Filler alloys for brazing”, complying with the requirements for silver bearing brazing alloy, Types 4 or 5 or with the requirements for brazing brasses, Grades 8, 9 or 10.

5 Jointing of copper floats

The jointing of the shells shall be in accordance with one of the methods given below, provided that when floats are required for use in water at a temperature exceeding 37.8 °C. (100 °F.) they shall be jointed as specified for Class C. The purchaser shall specify the method of jointing required. The methods of jointing are as follows:—

Class A floats. An efficient, burnished, lapped and soldered seam.

¹⁾ BS 427, “Method for Vickers hardness test”, Part 1, “Testing of metals”.