

Specification for

7.5 L WC flushing cisterns

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Building Services Standards Policy Committee (SEB/-) to Technical Committee SEB/1, upon which the following bodies were represented:

- British Bathroom Council
- British Plastics Federation
- Clay Pipe Development Association Limited
- Consumer Policy Committee of BSI
- Department of Health
- Department of the Environment (Building Research Establishment)
- Department of the Environment for Northern Ireland
- Department of the Environment (Property Services Agency)
- Institute of Clerks of Works of Great Britain Inc.
- Institute of Plumbing
- Institute of Vitreous Enamellers
- Institution of Environmental Health Officers
- Institution of Water and Environmental Management
- Metal Sink Manufacturers' Association
- Royal Institute of British Architects
- Vitreous Enamel Development Council
- Water Services Association of England and Wales

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Foreword

This British Standard has been prepared under the direction of the Building Services Standards Policy Committee and is complementary to BS 1125, which specifies requirements for flushing cisterns designed to have a 9 L flushing capacity.

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 16, 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 7.5 L maximum single flush, exposed and concealed WC flushing cisterns with a side inlet or bottom inlet supplied with a float operated valve, a valveless siphon for high level, low level, and close coupled applications together with the necessary flush pipes.

Information to be supplied by the purchaser at the time of enquiry and/or order is listed in Appendix A.

Requirements for float operated valve assemblies and methods of fixing cisterns are not specified in this standard.

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 following definitions apply.

2.1

spill-over level

the level at which water in the flushing cisterns will first spill over if the rate of inflow exceeds the rate of outflow through the warning pipe

2.2

warning pipe

an overflow pipe with its outlet, whether inside or outside a building, in a conspicuous position where the discharge of water can be readily seen

2.3

water line

a level marked inside the cistern to indicate the highest water level at which the float operated valve is adjusted to shut off

2.4

effective warning water level

the level when water reaches 10 mm above the invert of a side entry connection warning pipe or 10 mm above the overflow level of a bottom connecting warning pipe (see Figure 1)

2.5

concealed cistern

a cistern that is not normally visible after installation

3 Marking

3.1 Cisterns shall be permanently marked with the following:

- a) the manufacturer's name or identification mark;
- b) the number of this British Standard, i.e. BS 7357¹⁾.

NOTE For the purposes of this standard, marking by means of a label complying with BS 4781 is considered to be permanent.

3.2 Cisterns intended only for concealed use shall be marked:

“For concealed use only”.

NOTE The purchaser should state at the time of enquiry and/or order the type of cistern required (see Appendix A).

Marking shall be capable of being seen after the installation of the cistern and before any cover is fitted.

¹⁾ Marking BS 7357 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is therefore solely the responsibility of the person making the claim. Such a declaration is not to be confused with third party certification of conformity, which may also be desirable.

Section 2. Materials and design

4 General corrosion resistance for components

Cistern shells, siphons and associated components shall be manufactured from materials which under the conditions of use are either:

- a) non-corroding, e.g. plastics;
- b) protected against the types of corrosion caused by the action on them of the water with which the cistern is to be used;
- c) highly resistant to corrosion by the action of the water with which the cistern is to be used, i.e. they corrode only at a rate which is insufficient to affect adversely the durability or efficiency of the cistern.

NOTE The purchaser should state at the time of enquiry and/or order the materials of manufacture (see Appendix A).

Before dissimilar metals are used in the construction of a cistern, the manufacturer shall ensure the avoidance of possible electrolytic action.

5 Cistern shells

5.1 Ceramic ware cisterns

NOTE See also clauses 14, 15 and 16.

5.1.1 The shell thickness of ceramic ware cisterns shall comply with either **5.1.2**, **5.1.3** or **5.1.4** as appropriate; in addition vitreous china cisterns shall comply with BS 3402.

5.1.2 All ceramic ware cisterns, except vitreous china, shall have a minimum thickness of 12 mm.

5.1.3 Vitreous china cisterns shall have a minimum thickness of 10 mm, except as described in **5.1.4**.

5.1.4 Vitreous china cisterns with an internal width of less than 365 mm, measured at the effective warning water level, shall have a minimum thickness of 6 mm.

5.2 Stainless steel cisterns

NOTE See also clauses 14, 15 and 16.

5.2.1 Stainless steel cisterns shall be manufactured from one of the following grades of austenitic steel: 304S11, 304S15, 304S16 or 304S31, selected from BS 1449-2, having a minimum thickness of 1.2 mm before forming.

5.2.2 Steel cisterns shall have no sharp edges.

5.2.3 Steel cisterns shall have all joints continuously welded.

5.3 Rubber compound and plastics cisterns

NOTE See also clauses 14, 15 and 16

5.3.1 General

Plastics materials and rubber compounds shall be such that, when assembled, the cistern shall comply with **5.3.2** to **5.3.4**.

5.3.2 Appearance

5.3.2.1 Cisterns shall be free from blisters and delaminations.

5.3.2.2 Exposed cisterns shall be reasonably free from flow lines, streaking or unintended colour variations on surfaces visible after installation.

5.3.3 Distortion resistance

When tested in accordance with Appendix B, cisterns shall not distort outwards by more than 6 mm and the cover shall not be dislodged.

5.3.4 Exposed cisterns only

5.3.4.1 Colour fastness to light

When tested in accordance with BS 2782:Method 540B the colour fastness to light of the cistern and cover shall be not less than No. 5.

5.3.4.2 Opacity

When tested in accordance with BS 2782:Method 1104A, the cistern and cover shall not transmit more than 10 % of the visible light falling on them.

5.3.4.3 Front thrust test for low level and close coupled suite cisterns

When tested as described in Appendix C, the complete cistern shall not distort to such an extent that any part becomes detached or inoperative.

6 Soft solder

Any soft solder used in the construction of siphons or associated components shall be of grade F or J as given in Table 1 of BS 219:1977.

7 Hard solder

Any hard solder or filler alloy used in the construction of siphons or associated components shall be of copper-silver-phosphorus or other corrosion resistant alloy, in accordance with type CP2 or CP3 of BS 1845.

8 Flushing apparatus

Cisterns shall be supplied with an efficient flushing apparatus of valveless siphonic type which prevents the waste of water. The apparatus shall be capable of flushing directly the mechanism is operated, when the water is at the water line, and shall be so constructed that water cannot flow down the flush pipe other than while a flush is being properly delivered.

Flushing apparatus shall be detachable from the shell and suitable means shall be provided for ensuring and maintaining a watertight joint.

When tested as described in Appendix D the assembly shall be capable of being dismantled and reassembled.

The underside of the bend in the siphon pipe (the siphon invert) or, in the case of the dome pattern, the top of the straight discharge pipe, shall be at such a height that no water runs down the flush pipe when the water level is raised to the spill-over level after temporarily closing the warning pipe connection.

Any servicing joint in the down leg of a siphon shall be above the effective warning water level.

9 Volume of discharge per flush

When tested as described in Appendix E, cisterns shall discharge $7.5 \pm 0.0, - 1.0$ L.

10 Rate of flush discharge

When tested as described in Appendix F cisterns shall discharge the flush at the following rate:

- a) low level or close coupled : 1.6 L/s minimum;
- b) high level : 2.0 L/s minimum.

NOTE Cisterns intended for close coupled use will be tested as for low level.

11 Water line

The water level shall be marked permanently inside the cistern in such a position that it is easily visible to a person adjusting the water level.

12 Spill-over level

The spill-over level of the cistern shall be not less than 60 mm above the water line (see Figure 1).

13 Warning pipe connections

13.1 General

Each cistern shall be provided with a warning pipe connection so arranged that the invert of a side connection type or the overflowing level of a bottom connection type is not less than 25 mm or not more than 32 mm above the water line.

NOTE The purchaser should state at the time of enquiry and/or order whether the warning pipe and the inlet are to have a side or bottom connection (see Appendix A).

Each cistern shall be supplied with a warning pipe connection or a warning stand pipe of not less than 19 mm internal diameter throughout.

13.2 Bottom warning pipe connection

13.2.1 Metal warning stand pipes

Warning stand pipes of metal shall be of either copper, copper alloy or stainless steel. If made of copper, they shall comply with Tables X or Z of BS 2871-1:1971. If made of copper alloy, they shall have a minimum thickness of 1 mm, if made of stainless steel they shall have a minimum thickness of 0.5 mm. They shall be brazed, hard soldered or welded at the lower end to a flanged nipple of not less than 35 mm diameter, and shall be provided with a backnut and washer.

13.2.2 Plastics warning stand pipes

Warning stand pipes of plastics material shall be either integral with, or welded to, a flanged nipple at the lower end and shall be provided with a backnut and washer. They shall have a minimum thickness of 1.2 mm except at the counterbore at the threaded outlet end of the pipe where the thickness under the root of the thread shall be not less than 0.9 mm.

NOTE The minimum thickness of 0.9 mm is necessary because of the small difference between the outside diameter of 22 mm pipe and the root diameter of the G $\frac{3}{4}$ thread as specified in BS 2779.

13.3 Side warning pipe connection

Side connection cisterns shall be supplied with a union, for the connection of a warning pipe complete with a backnut. The union shall be manufactured from copper, copper alloy, stainless steel or plastics materials.

NOTE For frost precaution recommendations see the commentary and recommendations of 10.3.4 of BS 6700:1987.

13.4 Torque testing

When tested in accordance with Appendix G, the assembly shall be capable of being dismantled and reassembled.

14 Float operated valves

14.1 Every cistern shall be supplied with a nominal size $\frac{1}{2}$ float operated valve complying with BS 1212-2 or BS 1212-3²⁾ fitted with a type 114S or 114NS float complying with either BS 2456 or a valve listed under the UK Water Fittings Byelaws Scheme.

14.2 The float operated valve assembly supplied shall be such that the function of any part is not impaired by the cistern shell or any internal components.

²⁾ BS 1212-4 specifying compact type float operated valves is in preparation.