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Workmanship on building sites —

Part 15: Code of practice for hot and cold water services (domestic scale)

CAWS S12

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- Chartered Institute of Building
- Consumer Policy Committee of BSI
- Department of the Environment (Building Research Establishment)
- Department of the Environment (Property Services Agency)
- Federation of Associations of Specialists and Sub-Contractors
- Institute of Clerks of Works of Great Britain Inc
- Institution of Civil Engineers
- Institution of Structural Engineers
- National Building Specification Ltd.
- National Council of Building Materials Producers
- National House Building Council
- Royal Institute of British Architects
- Royal Institution of Chartered Surveyors
- Society of Chief Architects of Local Authorities

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Foreword

This Part of BS 8000 has been prepared under the direction of the Council for Building and Civil Engineering. It makes recommendations and gives guidance on basic workmanship for conventional types of building work.

The recommendations given are not necessarily comprehensive; particular project documents, e.g. project specifications, may need to cover particular recommendations not dealt with by this code of practice.

This code of practice is unique in that unlike other British Standards, it draws together recommendations given in other codes of practice.

The purpose of this code of practice is to encourage good workmanship by providing the following:

- a) the most frequently required recommendations on workmanship for building work in a readily available and convenient form to those working on site;
- b) assistance in the efficient preparation and administration of contracts;
- c) recommendations on how designers' requirements for workmanship may be satisfactorily realized;
- d) definitions of good practice on building sites for supervision and for training purposes; this guidance is not intended to supplant the normal training in craft skills;
- e) a reference for quality of workmanship on building sites.

It is recognized that design, procurement and project information should be conducive to good workmanship on site.

During the preparation of this code of practice the Building Industry's Co-ordinating Committee for Project Information (CCPI), produced a Common Arrangement of Work Sections (CAWS) for building work. This code of practice has generally been arranged in accordance with the Common Arrangement so that it can be used easily with project specifications and bills of quantities using this arrangement. Other major documents are being restructured in accordance with the Common Arrangement.

NOTE The CCPI was sponsored by the Association of Consulting Engineers, the Building Employers' Confederation, the Royal Institution of Chartered Surveyors and the Royal Institute of British Architects.

When complete BS 8000 will comprise the following Parts.

- *Part 1: Code of practice for excavation and filling;*
- *Part 2: Code of practice for concrete work;*
- *Part 3: Code of practice for masonry;*
- *Part 4: Code of practice for waterproofing;*
- *Part 5: Code of practice for carpentry, joinery and general fixings;*
- *Part 6: Code of practice for roof, slate, tile covering and cladding;*
- *Part 7: Code of practice for glazing;*
- *Part 8: Code of practice for plasterboard partitions and dry linings;*
- *Part 9: Code of practice for cement/sand floor screeds and concrete floor toppings;*
- *Part 10: Code of practice for plastering and rendering;*
- *Part 11: Code of practice for wall and floor tiling;*
- *Part 12: Code of practice for decorative wallcoverings and painting;*
- *Part 13: Code of practice for above ground drainage and sanitary appliances;*
- *Part 14: Code of practice for below ground drainage;*
- *Part 15: Code of practice for hot and cold water services (domestic scale).*

Technical Committee SEB/17, Water supply, has also participated in the preparation of this Part of BS 8000 and the content is based on and consistent with that of BS 6700. However, BS 6700 covers the subject matter more comprehensively and includes design, materials and other related aspects in addition to workmanship on site.

The text of this Part of BS 8000 includes commentaries and figures. These commentaries are separately identified and are intended to be for guidance only and do not form part of the recommendations. They refer, unless otherwise stated, to the clause which immediately precedes each commentary.

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 to iv, pages 1 to 20, 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

1.1 Scope

This Part of BS 8000 gives recommendations on basic workmanship and covers those tasks which are frequently carried out in relation to hot and cold water services (domestic scale).

For design aspects of hot and cold water services, reference should be made to BS 6700.

NOTE This code of practice includes supplementary elements in the form of commentaries to assist in its use and understanding. Compliance with the commentaries is not necessary in order to be able to claim conformity with the standard.

1.2 References

1.2.1 Normative references

This Part of BS 8000 incorporates, by reference, provisions from specific editions of other publications.

These normative references are cited at the appropriate points in the text and the publications are listed on the inside back cover. Subsequent amendments to, or revisions of, any of these publications apply to this Part of BS 8000 only when incorporated in it by amendment or revision.

1.2.2 Informative references

This Part of BS 8000 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

1.3 Definitions

For the purposes of this Part of BS 8000, the definitions given in BS 6700:1987 apply.

Section 2. Materials handling and preparation

2.1 Checking, handling and site storage of materials and components

2.1.1 Checking

Check delivery tickets and certificates against specification; examine marks and labels and condition of materials and components. If necessary refer to supplier immediately.

In particular check that materials and components are clean, undamaged and dry as appropriate.

If there is doubt regarding acceptability by the water supplier, seek and obtain instructions.

COMMENTARY. *To satisfy the requirements of the Water Byelaws [1], all materials and components have to:*

- a) comply with the relevant British Standard where applicable; or*
- b) be deemed by the Water Research Centre to be not less suitable than a) and accepted for listing in their UK Water Fittings Byelaws Scheme (UKWFBS) [2]; or*
- c) where any fittings materials or components do not comply with the relevant British Standard and are not listed in UKWFBS, an approval should be sought from the water undertaker before they are connected to the supply.*

2.1.2 Handling and site storage

2.1.2.1 Handling. Handle all materials and components with appropriate care to prevent damage, soiling or contamination.

2.1.2.2 Storage. Store materials and components:

- a) in a secure hut or compound under cover and on bases or racking prepared in advance of deliveries;
- b) in accordance with manufacturer's sitework instructions; in particular protect blue medium density polyethylene (MDPE) tube and pipe from direct sunlight;
- c) in the protective wrappings or cartons in which they are delivered.

2.2 Preparation of work, materials and components

2.2.1 Liaison

Liaise to establish and agree the positions of pipework and fittings in relation to other services, building fabric and appliances, and any requirements for first and subsequent fixing stages.

Ensure that any necessary builder's work is or will be sufficiently complete and not delay continuity.

2.2.2 Inspection

Inspect all components immediately before assembly. Discard and clearly label any components that are damaged, and any that will have parts in contact with water and which have been contaminated by site debris.

COMMENTARY. *Discarded items should be removed and kept quite separate from sound goods to prevent the possibility of their being used.*

Section 3. Installation

3.1 General safety

3.1.1 Earthing and bonding

Ensure that all metal water pipes are bonded to the electrical installation main earth terminal as near as possible to their point of entry into the building. Do not use any water pipe as a sole protective earth electrode for any electrical installation. Extend the bonding arrangements where water systems are modified or replaced.

3.1.2 Preservation of water quality

Ensure that every aspect of workmanship in the installation of any part of the hot and cold water supply services preserves the quality of the water, and that any temporary connections or design modifications made on site comply with the Water Byelaws [1] and BS 6700:1987.

3.1.3 Hot water systems

Ensure that all appliances and their associated pipework and fittings, assembled as an installation for the distribution and supply of hot water, operate and/or fail safely in the event of an operating failure. If there is doubt about the installation requirements or instructions seek instructions, as appropriate, before proceeding.

3.1.4 Unvented systems

Attention is drawn to the need to install unvented systems in accordance with Document G3 of the Building Regulations in England and Wales [3], and with the manufacturer's installation instructions.

COMMENTARY. Open vented systems provide a high degree of safety in the event of a failure; they are nevertheless not wholly without risk and it is important to ensure that systems are properly constructed so that vent and feed pipes cannot inadvertently be blocked, particularly through freezing.

3.1.5 Insulation

Ensure that insulation is provided in accordance with BS 6700:1987. Install insulation in accordance with the manufacturer's sitework instructions.

3.2 Jointing, cutting and bending pipes

3.2.1 Metal and fibre reinforced pipes

3.2.1.1 General. Make all proprietary joints in accordance with the manufacturer's sitework instructions. Take care to establish satisfactory jointing techniques for all water service pipework. When making joints by welding, brazing or soldering, take precautions to avoid the risk of fire. Remove all burrs from the ends of pipes and prevent any jointing materials used from entering the waterways. Clean all piping and fittings internally and ensure that they are free from particles of sand, soil, metal filings and chips, etc.

COMMENTARY. Jointing of potable water pipework should comply with appendix F of BS 6700:1987.

3.2.1.2 Iron pipes

- a) Make flexible mechanical joints in accordance with the manufacturer's sitework instructions.
- b) Make flanged joints with screwed or cast on flanges using jointing rings and, if necessary, a suitable jointing paste. Tighten the nuts carefully, in opposite pairs, until the jointing ring is sufficiently compressed between the flanges to form a watertight joint.

3.2.1.3 Steel pipes

- a) Do not use welded joints where a protective lining would be damaged by heat, or where the pipework is employed as a primary circulation to an indirect hot water heating system.
- b) Make screwed joints in steel piping with screwed socket joints using wrought-iron, steel or malleable cast-iron fittings. Use a thread filler. Paint exposed threads left after jointing or, where installed underground, coat thickly with bituminous or other suitable corrosion preventative (see BS 5493).
- c) Make flanged joints with screwed or welded flanges of steel or cast-iron as described in 3.2.1.2 b).

3.2.1.4 Fibre reinforced cement pipes. Use proprietary flexible joints in accordance with the manufacturer's sitework instructions.

3.2.1.5 Cutting. Cut the tube to reach completely into the socket of the fitting. Use cutting tools that are in good condition to limit tube distortion and cut the tube square with the axis. Re-round any tube ends that are distorted using a suitable tool prior to the joint assembly. Always re-round the ends of annealed tubes.