

BS 5834-1:2009



BSI Standards Publication

Surface boxes, guards and underground chambers for the purposes of utilities

Part 1: Specification for guards and plinths

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 18, an inside back cover and a back cover.

Foreword

Publishing information

This part of BS 5834 is published by BSI and came into effect on 31 July 2009. It was prepared by Technical Committee B/504, *Water supply*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This part of BS 5834 supersedes BS 5834-1:1985, which is withdrawn.

Relationship with other publications

BS 5834, *Surface boxes, guards and underground chambers for the purposes of utilities*, is published in three parts:

- *Part 1: Specification for guards and plinths;*
- *Part 2: Specification for surface boxes;*
- *Part 4: Specification for utility chambers.*

Information about this document

This is a full revision of the standard.

The scope of BS 5834-1:1985 included cast iron guards; however such units are no longer manufactured in the United Kingdom and so have been excluded from this revision.

The requirements for cementitious content and concrete mix have been updated and the requirements for product evaluation extended.

NOTE In BS 5834-1:1985 "plinths" were termed "foundation units".

For an enquiry or order to be fully understood it is essential that the manufacturer be given the information set out in Annex A.

Product certification

Users of this part of BS 5834 are advised to consider the desirability of third party certification of product conformity with this British Standard, based on the conformity attestation arrangements described herein. Users seeking assistance in identifying appropriate conformity assessment bodies or schemes may ask BSI to forward their enquiries to the relevant association.

Presentational conventions

The provisions of this standard are presented in roman (i.e. upright) type. Its requirements are expressed in sentences in which the principal auxiliary verb is "shall".

Commentary, explanation and general informative material is presented in smaller italic type, and does not constitute a normative element.

Contractual and legal considerations

This publication does not purport to include all the necessary provisions of a contract. Users are responsible for its correct application.

Compliance with a British Standard cannot confer immunity from legal obligations.

1 Scope

This part of BS 5834 specifies requirements and test methods for vitrified clay and unreinforced concrete guards and plinths for use with utility apparatus and surface boxes conforming to BS 5834-2.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS 65:1991, *Specification for vitrified clay pipes, fittings and ducts, also flexible mechanical joints for use solely with surface water pipes and fittings*

BS 4027, *Specification for sulfate-resisting Portland cement*

BS 4035, *Specification for linear measuring instruments for use on building and civil engineering constructional works – Steel measuring tapes, steel bands and retractable steel pocket rules*

BS 4484-1, *Specification for measuring instruments for constructional works – Part 1: Metric graduation and figuring of instruments for linear measurement*

BS 5834-2, *Surface boxes, guards and underground chambers for gas and the purposes of utilities – Part 2: Specification for surface boxes*

BS EN 197-1, *Cement – Part 1: Composition, specifications and conformity criteria for common cements*

BS EN 197-4, *Cement – Part 4: Composition, specifications and conformity criteria for low early strength blastfurnace cements*

BS EN 450-1:2005+A1:2007, *Fly ash for concrete – Part 1: Definition, specifications and conformity criteria*

BS EN 934-2, *Admixtures for concrete, mortar and grout – Part 2: Concrete admixtures. Definitions, requirements, conformity, marking and labelling*

BS EN 1008, *Mixing water for concrete – Specification for sampling, testing and assessing the suitability of water, including water recovered from processes in the concrete industry, as mixing water for concrete*

BS EN 12390-2, *Testing hardened concrete – Part 2: Making and curing specimens for strength tests*

BS EN 12390-3, *Testing hardened concrete – Part 3: Compressive strength of test specimens*

BS EN 12620, *Aggregates for concrete*

BS EN 15167-1, *Ground granulated blastfurnace slag for use in concrete, mortar and grout – Part 1: Definitions, specifications and conformity criteria*

BS EN 15167-2, *Ground granulated blastfurnace slag for use in concrete, mortar and grout – Part 2: Conformity evaluation*

3 Terms and definitions

For the purposes of this part of BS 5834, the following terms and definitions apply.

- 3.1 cementitious content**
quantity of cement plus any pozzolanic or latent hydraulic addition in the concrete mix measured in kg/m³
- 3.2 guard**
circular pipe, or square sectional structure with a square or circular bore, used vertically to house utility apparatus and to permit access for inspection, operation and maintenance
- 3.3 plinth**
component that provides additional support to a guard
- 3.4 section**
make up or base component of a sectional guard
- 3.5 type**
units of the same manufacturing process and design
- 3.6 unit**
pipe guard, section or plinth

4 Symbols

The meanings of symbols used in this part of BS 5834 shall be as specified in Table 1.

Table 1 Symbols

Symbol	Meaning	Unit	Reference
<i>B</i>	depth of seating in concrete plinth	mm	5.2.2, B.4.1
<i>C</i>	minimum thickness of concrete plinth	mm	5.2.2, B.4.2
<i>D</i>	internal seating width of concrete plinth	mm	5.2.2, B.4.1
<i>E</i>	width of gap in seatings of concrete plinth	mm	5.2.2, B.4.1
<i>F</i>	diameter of recessed seating in concrete plinth	mm	5.2.2, B.4.1
<i>L</i>	overall length of pipe guard	mm	7.2, B.2.4
<i>N</i>	test per nominal size	—	Annex C
<i>R</i>	routine inspection test	—	Clause 8
<i>T</i>	initial type test	—	Clause 8
<i>Y</i>	test per type produced per 1 000, with a minimum of one per type and year	—	Annex C

5 Units

5.1 Guards

COMMENTARY ON 5.1

In cases where ground conditions are doubtful, guards should be provided with an appropriate plinth, particularly in connection with plastics pipes. However, the range of apparatus in service is such that a standardized range of matching channels is considered impractical. Therefore purchasers wishing to use channelled plinths should discuss their specific requirements with potential suppliers.

5.1.1 Vitrified clay

Vitrified clay guards shall be of the pipe type and be provided with a flange at the top, with a width of face of not less than 23 mm [see Figure 1.a)]. The thickness of the flange shall be not less than 12.5 mm or the thickness of the wall of the guard, whichever is the greater.

5.1.2 Concrete

Concrete guards shall be of the pipe type [see Figure 1.b)] or sectional type [see Figure 2].

5.2 Plinths

5.2.1 Vitrified clay

Vitrified clay plinths shall be of the circular plate type [see Figure 1.c)].

NOTE Vitrified clay plinths are suitable for use with guards made only from the same material.

5.2.2 Concrete

Concrete plinths shall be of the slab type, for use in conjunction with slotted guards and rigid utility apparatus, or of the channel type for use with slotted or unslotted guards and non-rigid apparatus. Plinths shall be square or circular in plan and incorporate seatings to form an interlock with the guard to prevent horizontal displacement. In slab type plinths the seatings shall be so designed as not to reduce the clearance provided by the slot in the guard.

NOTE 1 Typical patterns of concrete plinths are shown in Figure 3.

NOTE 2 In channel type plinths the channels should be so constructed as to prevent harmful stresses occurring in the utility apparatus during operation. Channel plinths may be provided with a local recess to accommodate a plug cock.

NOTE 3 Plinths may be either single or double channel types.

NOTE 4 Concrete plinths are suitable for use with guards made from either of the specified materials.

Figure 1 Pipe guards and vitrified clay plinths

