

BS 951:2009



BSI Standards Publication

Electrical earthing – Clamps for earthing and bonding – Specification

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Summary of pages

This document comprises a front cover, an inside front cover, pages i to ii, pages 1 to 12, an inside back cover and a back cover.

Foreword

Publishing information

This British Standard is published by BSI and came into effect on 31 August 2009. It was prepared by Technical Committee GEL/600, *Earthing*. A list of organizations represented on this committee can be obtained on request to its secretary.

Information about this document

BS 951:2009 supersedes BS 951:1999, which is withdrawn.

This revision incorporates more performance-based requirements and new tests for temperature rise and short-circuit.

Annex A, Annex B and Annex C are normative.

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 notes 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 British Standard specifies performance and mechanical requirements for clamps used to provide mechanically and electrically sound means of earthing and/or bonding, which are primarily intended for use in electrical installations for the connection of:

- a) earthing conductors, having a cross-sectional area in the range 2.5 mm^2 to 70 mm^2 , to earth electrode rods or other means of earthing;
- b) bonding conductors to metal tubes of circular cross-section that have circumferences of not less than 18.8 mm (i.e. diameters of not less than 6 mm).

NOTE 1 These clamps are also suitable for electrically bonding other conductive parts, where at least one is a tube of circular cross-section. Such clamps are not intended for connection to the armour or sheath of a cable.

NOTE 2 Clamps specified in this standard are intended to be used singly.

NOTE 3 There is no correlation between the size of the conductor which the clamp conductor can accommodate and the size of tube to which it is intended to be fitted.

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 EN 1057, *Copper and copper alloys – Seamless, round copper tubes for water and gas in sanitary and heating applications*

BS EN 13601, *Copper and copper alloys – Copper rod, bar and wire for general electrical purposes*

3 Terms and definitions

For the purposes of this British Standard, the following terms and definitions apply.

3.1 tube

metal conduit, pipe or rod

3.2 terminal

conductive part of the conductor clamping unit required for the mechanical clamping and the electrical connection of the conductor(s), including the parts which are necessary to ensure the correct contact pressure

[BS EN 60999-1:2000, modified]

4 General

The clamp shall comprise:

- a) a device for making electrical contact with the tube;
- b) a means of tightening the device on to the tube and maintaining tightness;
- c) a means of termination separate from the arrangement given in item b) for attaching the protective conductor to the device in item a).

The clamp shall be provided with a label or other permanent marking warning against the removal of the clamp, which shall have a means of being securely fixed either to the clamp or the protective conductor (see 5.5).

5 Construction

5.1 General

The clamp shall be such that effective electrical and mechanical contact can be made and maintained between the clamp and tubes with diameters within the range for which the clamp is intended.

The clamp shall make mechanical contact as specified in Clause 8.

The design of the clamp shall be such that its attachment to the tube is not likely to result in the deformation of the latter.

5.2 Electrical connections

Electrical connections, including the connection to the tube, shall be designed in such a way that contact pressure is not transmitted through insulating material, other than ceramic, pure mica or other material with relevant characteristics, unless there is sufficient resiliency in the conductive parts to compensate for any possible shrinkage or creep of the insulating material.

5.3 Terminals

Terminals shall be such that effective electrical contact can be made and maintained between the clamp and an attached protective conductor. The clamp, when installed with the terminal(s) in place, shall be such that it can make electrical contact as specified in Clause 7.

The form of construction of the terminal shall ensure that the conductor, solid or stranded, can be held captive in the clamping unit without deformation of the conductor to an extent which is likely to be detrimental to its strength and energy handling capability.

NOTE The terminal may be of a screwed or screwless construction.

When a conductor is clamped by the end of a screw bearing directly upon it, the screw end shall be profiled so as not to damage the conductor. Conformity shall be checked by inspection.

A screw terminal shall be capable of accepting one of the following:

- a) a conductor clamped under a screw head provided with a captive washer so that the screw head does not act directly on the conductor; or