

Joist hangers —

Part 1: Specification for joist hangers for building into masonry walls of domestic dwellings

Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Civil Engineering and Building Structures Standards Policy Committee (CSB/-) to Technical Committee CSB/52, upon which the following bodies were represented:

- Brick Development Association
- British Board of Agrément
- British Ceramic Research Ltd.
- British Non-ferrous Metals Federation
- British Plastics Federation
- British Steel Industry
- British Woodworking Federation
- Building Employers' Confederation
- Department of the Environment (Building Research Establishment)
- Galvanizers Association
- Great Central Merchants Ltd.
- Institute of Building Control
- Institution of Mechanical Engineers
- Institution of Structural Engineers
- Royal Institute of British Architects
- Stainless Steel Fabricators' Association of Great Britain
- Steel Construction Institute
- Timber Research and Development Association
- Zinc Development Association

The following bodies were also represented in the drafting of the standard, through subcommittees and panels:

- Autoclaved Aerated Concrete Products Association
- House Builders' Federation

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Foreword

This Part of BS 6178 deals with joist hangers associated with masonry and has been prepared under the direction of the Civil Engineering and Building Structures Standards Policy Committee. It supersedes BS 6178-1:1982, which is withdrawn.

The practice of supporting joists on steel supports which in turn are built into masonry walls is now accepted as normal within the building industry, and joist hangers complying with this Part of BS 6178 may be expected to have a life comparable with that of the building in which they are used, subject to the following conditions of use.

- a) Joist hangers are used in domestic dwellings in which the moisture content of the timber joists does not exceed 18 % except for a short period at and after installation which can be considered insignificant.
- b) Timber in contact with the joist hanger is treated with copper/chrome/arsenic, boron compounds or organic solvent type preservatives, and the composition and application of the treatment is in accordance with BS 5268-5. In addition, in the case of copper/chrome/arsenic treatment, the treatment is allowed to cure completely before contact with the joist hangers. An allowance of seven days is normally sufficient, but additional time may be required, for example in winter when drying conditions are unfavourable.
- c) Those parts of the joist hanger in contact with the masonry are above the damp proof course, unless special protection is provided.

This revision incorporates previous amendment No. 1 to BS 6178-1:1982 dated 31 March 1983 (AMD 4222) together with the following main revisions:

- 1) changes to protective coatings;
- 2) changes to test requirements (see 8.1);
- 3) changes to working loads (see Table 1);
- 4) changes to the type tests (see Appendix A) and to the statistical constant K (see Table 2);
- 5) changes to the guidance given on the loads the joists hangers will be required to sustain, and the information to be supplied by the purchaser (see Appendix C and Appendix D).

It is intended to cover timber to timber connections of like character and other types of joist hangers which are not covered by this standard (see clause 1) in subsequent Parts.

Recommendations regarding the fire resistance of joist hangers are given in BS 5268-4.1.

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 10, 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 Part of BS 6178 specifies requirements for joist hangers which are supported by or built into internal masonry walls, or the inner skin of cavity walls, of domestic dwellings in order to provide vertical support to timber floor joists.

The standard does not cover joist hangers designed to transmit horizontal as well as vertical forces, where joists are required to provide lateral restraint to the walls, nor does it cover face fixing joist hangers. It also neglects torsional forces within the floor structure, such as those arising around stair wells.

Appendix C gives information regarding the loads which these joist hangers can be required to sustain when supporting joists.

Recommendations for the information to be supplied by the purchaser in the enquiry and order are listed in Appendix D, and Appendix E gives recommendations for fixing joist hangers.

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 Part of BS 6178, the definitions illustrated in Figure 1 apply together with the following.

2.1

joist hanger

a steel support between timber joist and a wall

2.2

depth of hanger

the vertical distance, in millimetres, between the top of the masonry flange and the top of the joist flange

2.3

width of hanger

the width of the joist, in millimetres, for which the joist hanger is suitable

2.4

characteristic strength

ideally, the value of the failure load below which the probability of test results falling is not more than 5 %. In the context of this document, the value estimated from tests on a limited sample of joist hangers and masonry units is under the assumption that the failure load data is normally distributed

3 Materials

3.1 The joist hangers shall be manufactured from one of the following materials:

a) low carbon steel, in accordance with grade HR15 of BS 1449-1, or in accordance with grade 43A of BS 4360, and protected in accordance with **5.1** or **5.2** (see note);

b) low carbon steel, in accordance with grade Z1 or Z2 of BS 2989, protected in accordance with **5.3** (see note);

NOTE Steel that is susceptible to strainage embrittlement should not be used unless it is stress relieved after fabrication.

c) austenitic stainless steel in accordance with BS 1449-2 or BS 970-1 and excluding free machining specifications.

3.2 The minimum thickness of the low carbon steel plus zinc coating shall be 2.5 mm.

4 Construction

4.1 The joist hangers shall be fabricated either without jointing or with mechanical jointing or welding. If welded the welding shall be in accordance with BS 1140 or BS 5135. If welded in accordance with BS 5135 the joist hangers shall be subsequently protected in accordance with **5.1** or **5.2**. If welded in accordance with BS 1140 the joist hangers shall either be subsequently protected in accordance with **5.1** or **5.2**, or shall be welded after galvanizing in accordance with **5.3** b) but before the additional protection specified in that subclause.

4.2 The joist flange shall have a minimum length of 75 mm and the masonry flange shall have a minimum length of 75 mm.

4.3 The joist hanger shall have at least one vertical side web or gusset, which shall enable the hanger and joist to be retained in the correct position using screws or nails.

4.4 The nominal thickness of the material of the joist hanger shall be the same as that stated in the manufacturer's test report for that type of hanger and all other dimensions shall be within ± 2.5 % of the dimensions stated in that report.

5 Protective coatings

5.1 Where joist hangers are galvanized after fabrication a spelter hole shall be formed at the junction of the back plate, side web and joist flange before galvanizing and the zinc coating shall comply with BS 729.