

Fences —

Part 10: Specification for anti-intruder fences in chain link and welded mesh

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- British Cement Association
- British Independent Steel Producers' Association
- British Precast Concrete Federation Ltd.
- British Steel Industry
- British Timber Merchants' Association
- British Wood Preserving Association
- Concrete Society
- Country Landowners' Association
- County Surveyors' Society
- Department of Agriculture and Fisheries for Scotland
- Department of the Environment (Property Services Agency)
- Department of the Environment (Building Research Establishment)
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- National Farmers' Union
- Royal Institution of Chartered Surveyors
- Society of Chain Link Fencing Manufacturers
- Timber Growers United Kingdom
- Timber Research and Development Association
- Wire Products Association

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

- British Gas plc
- British Wire Netting Association
- Cold Rolled Sections Association
- Consumer Policy Committee of BSI
- Fencing Industry Association
- Timber Trade Federation

This British Standard, having been prepared under the direction of the Road Engineering Standards Policy Committee, was published under the authority of the Board of BSI and comes into effect on 31 July 1990

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Foreword

This British Standard has been prepared under the direction of the Road Engineering Standards Policy Committee. It is a revision of BS 1722-10:1972, taking into account current practice and including welded mesh infill. BS 1722-10:1972 is now withdrawn.

BS 1722 is published in separate Parts as follows:

- *Part 1: Specification for chain link fences;*
- *Part 2: Specification for rectangular wire mesh and hexagonal wire netting fences;*
- *Part 3: Specification for strained wire fences;*
- *Part 4: Specification for cleft chestnut pale fences;*
- *Part 5: Specification for close boarded fences;*
- *Part 6: Specification for wooden palisade fences;*
- *Part 7: Specification for wooden post and rail fences;*
- *Part 8: Specification for mild steel (low carbon steel) continuous bar fences;*
- *Part 9: Specification for mild steel (low carbon steel) fences with round or square verticals and fiat posts and horizontals;*
- *Part 10: Specification for anti-intruder fences in chain link and welded mesh;*
- *Part 11: Specification for woven wood and lap boarded panel fences;*
- *Part 12: Specification for steel palisade fences;*
- *Part 13: Specification for chain link fences for tennis court surrounds;*
- *Part 14¹⁾: Specification for open mesh steel panel fences;*
- *Part 16¹⁾: Specification for organic powder coatings as a plastics finish.*

The various Parts specify requirements for the types of fences that are considered suitable for standardization. It should be noted that no attempt has been made to standardize fences or gates of a purely decorative nature, or to suit special requirements, or to specify requirements for “patent” proprietary fencing systems. It is recommended that the structure of such fences or gates should comply with those sections of this Part of BS 1722 that are applicable.

It has been assumed in the drafting of this British Standard that the execution of its provisions is entrusted to appropriately qualified and experienced people.

The purpose of this standard is to establish minimum requirements for materials and workmanship in order to ensure satisfactory service for the purchaser, and to assist manufacturers and erecting contractors by eliminating unnecessary minor variations in the demands of purchasers. It specifies requirements for the components that make up a fence and the way in which the fence needs to be constructed. Throughout this standard there are requirements for sizes of components, together with the permissible tolerances on size. These are minimum requirements and it will normally be acceptable to use larger sizes, except where it would otherwise adversely affect the fit of components or where replacement parts need to match up with those already present.

The choice of a fence is affected by factors such as the intended purpose of the fence, the desired service life, aesthetic considerations, and the availability of components. This standard includes requirements for protective treatments. However, an important aspect of providing an extended service life is the maintenance of the fence after its erection; this is outside the scope of this standard. Premature failure can be avoided by taking care not to overstrain coated wire or damage protective treatments during installation.

¹⁾ In preparation

This standard specifies the requirements for anti-intruder wire mesh fences. It may be used as a specification for work to be carried out by a specialist fencing contractor or, if such a contractor is not available, by local labour under strict supervision, with component parts supplied by firms approved by the purchaser. It specifies concrete and steel posts and struts, steel gates and gate posts and both zinc coated and plastics coated zinc coated mesh infill.

The specification given in this standard is suitable for use for general industrial security such as for industrial estates, airfields, oilfields etc.

It will be appreciated that it is not possible economically to erect a fence that cannot be negotiated by an intruder given time and opportunity free from observation. It can also be accepted that an intruder will not wish to advertise his presence to a patrolling guard and that he will, therefore, endeavour to negotiate a fence without leaving obvious traces. In order to make the task of the intruder more difficult and at the same time to assist patrols, this Part of the standard incorporates a number of features derived from experience of intruders' techniques. In this connection attention is drawn to the following requirements.

- a) The nominal length of the side of the mesh is limited so as to make footholds difficult.
- b) The bottom of the wire mesh fencing is buried or fastened to the ground to prevent burrowing.
- c) The top edge, and, if exposed, the bottom edge, of the wire mesh fencing is barbed.
- d) The top lines of barbed wire are fitted with droppers so that they cannot be bunched together.
- e) The bolts are burred over to guard against dismantling.
- f) The angle at any change of direction in the fence is (where possible) not less than 130° to avoid providing facilities for climbing.
- g) The gates are designed to eliminate as far as possible any increased facilities for unauthorized entry.

It should be noted that throughout this Part of this standard the spacing of posts is given in terms of centre-to-centre distances.

Ground conditions may indicate that a variation in the length of a post or strut, or of the depth to which it should be set, is desirable. The posts and struts and setting depths specified in this standard are intended for use in normal ground but, if special conditions exist that warrant a change in the specification, such a change needs to be agreed with the specifier, as for other variations.

To assist those specifying and/or providing a fence, appendix C provides guidance on the more important details, which often take the form of selected options, that need to be specified at the time of ordering a fence. This is a new feature of the standard.

Designations of bolt size are in accordance with BS 4190.

This revision of the standard permits the use of welded mesh infill and introduces new requirements for the use of droppers with barbed wire.

The proof test of concrete strength has been deleted as experience had shown that there were technical problems associated with the application and interpretation of the test. Cube tests of concrete strength are now required and the frequency of testing is specified to ensure that regular quality checks are made.

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 vi, pages 1 to 22, 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 1722 specifies requirements for chain link or welded mesh fences and gates for anti-intruder purposes, approximately 2.4 m to the top of the mesh above the ground at the posts and approximately 2.8 m in vertical height to the top line of barbed wire attached to the tops of the posts or to extension arms. It also includes requirements for the erection of the fencing at the specified location.

NOTE 1 For a typical arrangement, see Figure 1.

Provision is made for either single or double protective tops.

Requirements for the manufacture of concrete posts and struts are given in appendix A.

The gates described are fabricated from steel and have a welded mesh infill or an infill corresponding to that of the fence.

NOTE 2 The titles of the publications referred to in this standard are listed on the inside back cover.

Section 2. Materials for chain link fences

2.1 Wire

2.1.1 General

All wire shall comply with BS 4102. Mild steel wire diameters shall be in accordance with Table 1.

2.1.2 Chain link mesh

Chain link mesh shall be manufactured from zinc coated wire, or plastics coated zinc coated wire complying with grade A of BS 4102. The size of mesh shall be 40 mm or 50 mm as defined in BS 4102. The width of the mesh shall be 2.4 m if it is not to be buried, or 2.7 m if it is to be buried. The top edge, and if exposed the bottom edge, shall be barbed. Chain link mesh shall be joined by interweaving a spiral and restoring the knuckle or barb.

2.1.3 Line wire

The diameter of mild steel line wires shall be in accordance with Table 1 and BS 4102.

High tensile line wires shall be zinc coated, or grade A plastics coated zinc coated, with 3.15 mm nominal core diameter and a 4 mm overall diameter, having a tensile strength of 1050 N/mm², all as defined in BS 4102.

2.1.4 Stirrup wire

The wire for securing line wires to intermediate posts shall be mild steel, in accordance with Table 1.

2.1.5 Tying wire

The wire for securing mesh to the line wires shall be mild steel, in accordance with Table 1.

2.1.6 Barbed wire

Barbed wire shall be zinc coated wire, in accordance with BS 4102.

2.2 Concrete components

2.2.1 General

Concrete posts and struts shall be of steel reinforced concrete complying with appendix A.

2.2.2 Tolerances on size

The following permissible deviations shall apply to the specified size of concrete components when determining the actual sizes:

- a) a demoulding draw allowance of up to 4 mm on each of two opposing sides;
- b) additional deviations on size of:

length	+ 50 mm
	– 25 mm
cross section	+ 6 mm
	– 4 mm

NOTE The cross section is measured about the centrelines.

2.2.3 General constructional details

The long arrises formed in the mould shall either be rounded or have all sharp edges removed. The heads of posts shall be weathered or half rounded to prevent the lodgement of water. Holes for bolts shall allow the bolt to be freely inserted. Holes for wire shall allow an M6 bolt to be freely inserted. All holes shall be free from obstructions and shall be accurately positioned.

2.2.4 Intermediate posts

The cross section of intermediate posts shall be 125 mm × 100 mm. The 100 mm dimensions shall be constant and parallel to the fence line. The vertical portion of intermediate posts shall not be tapered, and shall be holed for the attachment of line wires. The heads of intermediate posts with an integral cranked extension arm shall be tapered to 85 mm × 100 mm at the top, and shall be holed for the attachment of barbed wires. The length of intermediate posts shall be 3.15 m measured from the top line wire position to the base of the post. The top line wire position shall be 75 mm below the top of posts without an integral extension, bringing the overall length of the post to 3.22 m. Where separate extension arms are to be fitted, intermediate posts shall be holed for the attachment of the arms.

2.2.5 Straining posts

The cross section of straining posts shall be 150 mm × 150 mm. The 150 mm dimensions parallel to the fence line shall be constant. The vertical portion of straining posts shall not be tapered, and shall be holed for the attachment straining fittings for line wires. The heads of straining posts with an integral cranked extension arm shall be tapered to 85 mm × 150 mm at the top, and shall be holed for the attachment of straining fittings for barbed wires. The length of straining posts shall be 3.15 m measured from the top line wire position to the base of the post. The top line wire position shall be 75 mm below the top of posts without an integral extension, bringing the overall length of the post to 3.22 mm. Where separate extension arms are to be fitted, straining posts shall be holed for the attachment of the arms. Straining posts shall provide a firm bearing for the struts, which shall meet the straining posts at a point within the top one-third of the length of the vertical portion of the straining post which is above the ground.

2.2.6 Gate posts

Gate posts for gates up to 1.2 m wide shall comply with 2.2.5. Gate posts shall, in addition, be holed for the attachment of gate fittings. Integral extension arms on gate posts shall be vertical.

NOTE See 2.3.5 for freestanding steel gate posts for use with gates over 1.2 m wide.