

# Fences —

## Part 12: Specification for steel palisade fences

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# Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Road Engineering Standards Policy Committee (RDB/-) to Technical Committee RDB/34, upon which the following bodies were represented:

- Aluminium Federation
- British Independent Steel Producers' Association
- British Precast Concrete Federation Ltd.
- British Steel Industry
- British Timber Merchants' Association
- Country Landowners' Association
- County Surveyors' Society
- Department of Agriculture and Fisheries for Scotland
- Department of the Environment (Building Research Establishment)
- Department of the Environment (Property Services Agency)
- Department of Transport
- Electricity Supply Industry in England and Wales
- Fencing Contractors' Association
- Forestry Commission
- Institute of Clerks of Works of Great Britain Inc.
- Landscape Institute
- Ministry of Agriculture, Fisheries and Food
- National Council of Building Material Producers
- 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
- Cold Rolled Sections Association
- Fencing Industry Association
- Institute of Leisure and Amenity Management

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## Foreword

This Part of BS 1722 has been prepared under the direction of the Road Engineering Standards Policy Committee. It is a revision of BS 1722-12:1979, which is withdrawn.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 flat 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 14<sup>1)</sup>: Specification for open mesh steel panel fences;*
- *Part 15<sup>1)</sup>: Specification for barriers for the attenuation of noise.*

The various Parts specify requirements for the types of fence 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 clauses 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 for the more common types of fence 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.

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<sup>1)</sup> In preparation.

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. The specifier of the fence will know its intended purpose and by reference to Table 2 and Table 3 a suitable choice can be made. This then gives those erecting the fence the basic characteristics that need to be provided. 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 damage protective treatments during installation.

Ground conditions may indicate that a variation in the length of a post, or of the depth to which it should be set, is desirable. The post 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, e.g. ground that is softer or firmer than usual, such a change needs to be agreed with the specifier, as for other variations.

It is generally assumed in this standard that the fence is erected on horizontal ground. Where erected on a gradient special measures may be required.

This revision of this Part specifies steel palisade fences of two types:

- a) a fence up to 2.4 m in height for general purposes;
- b) a fence of 2.4 m, 3.0 m or 3.6 m in height where there is a need for greater security or where there is a statutory or moral duty to make access difficult.

The general purpose palisade fence (GP) (see Table 2) is intended for use in those locations where it is deemed necessary to deter the casual intruder or trespasser from gaining access to areas within the fence where property or goods that are vulnerable to vandalism or interference from the unauthorized are located. It is not considered that this fence in itself would normally prevent unauthorized access.

On those locations where greater protection from trespass and vandalism is required, especially where there is vulnerable equipment or a dangerous situation could exist for the intruder, the security palisade (SP) (see Table 3) should be employed. It should be appreciated that it is not possible to erect a fence that cannot be negotiated by a determined intruder given adequate time, freedom from observation and suitable climbing aids or tools for forcing an entry.

The specification for security palisade has been prepared on the basis that it may be necessary for the occupier of vulnerable or potentially dangerous installations to demonstrate that all reasonably practicable precautions have been taken to keep out casual intruders.

A number of different profiles have been developed for corrugated pales for use in security palisade fencing and it would be impractical to attempt to describe all such profiles in this standard. Such an approach would also present a risk of stifling further development. To avoid this, requirements are now included to ensure an adequate profile by specifying minimum performance requirements for a pale in terms of bending (flexural) strengths. Verification is by means of a test procedure described in appendix A. These requirements have been based upon the results of an extensive series of tests carried out on a range of different profiles.

Minimum thicknesses have been specified because experience indicates that thinner sections are prone to failures when subject to forms of attack for which it has not been found practical to devise tests.

In developing the design and installation of palisade fences the supplier and the purchaser should exercise care to avoid providing projections or footholes on the face of the fence and gates that could aid climbing. Junctions of the palisade with existing buildings or other types of fencing should also receive special attention to ensure that corners, angle returns in the palisade, rain-water pipes, lighting standards, signboards, etc. do not negate the security being provided by the palisade.

Each type of fence has been subdivided according to its height and, for the sake of uniformity, this is considered to be the height of the top of the pale above the general ground level as measured at the posts.

It should be noted throughout this Part of BS 1722 that the fence post spacings are given in terms of centre to centre distances. All references to rails mean horizontal rails and all references to pales mean vertical pales.

Designations of bolt sizes are in accordance with BS 4190.

To assist those specifying and/or providing a fence, appendix B 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.

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 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 1722 specifies requirements for steel palisade fences and gates for general purposes in corrugated and angle pales for heights up to 2.4 m and for security in corrugated pales for heights of 2.4 m, 3.0 m and 3.6 m, all with posts at 2.75 m centres. Requirements in this standard for the minimum sizes of fence components are based on a design wind loading,  $q$ , (see CP 3: Chapter V-2) at right angles to the plane of the fence of  $900 \text{ N/m}^2$  employing a shape factor of 1.9 on the net area presented to the wind.

NOTE 1 In situations of extreme exposure or abnormal loading it will be necessary to carry out a special appraisal and for the design criteria to be specified.

For the purpose of an order or enquiry the type reference given in Table 2 and Table 3 should be used.

Maintenance of the fence after erection is outside the scope of this standard.

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

## 1.2 Dimensions and general characteristics

### 1.2.1 Dimensions

The minimum dimensions of components shall be as given in Table 1, Table 2, Table 3, Table 5, Table 6 and Table 7.

### 1.2.2 Characteristics of pales

#### 1.2.2.1 General

Pales shall be hot or cold formed. For general purpose fences (see Table 1 and Table 2) they shall be either corrugated or angle section; for security fences (see Table 1 and Table 3) they shall be corrugated.

#### 1.2.2.2 Spacing and face to view

The maximum spacing of pales centre to centre shall be:

- a) for corrugated pales: 155 mm;
- b) for angle pales: 135 mm.

The minimum face to view (width) shall be:

- 1) for corrugated pales for security fences: 70 mm;
- 2) for corrugated pales for general purpose (GP) fences: 65 mm;
- 3) for angle pales:  $\sqrt{2} \times \text{leg length}$ .

### 1.2.2.3 Thickness

Pale thickness is dependent on the profile selected and the fabrication methods employed. Security pales shall be not less than 3.0 mm nominal thickness and general purpose pales shall be not less than 2.5 mm nominal thickness. Pale nominal thickness shall be exclusive of finish and shall be subject to rolling tolerances in accordance with BS 1449-1. Table 1 gives nominal thicknesses which have been found satisfactory for typical pale sections.

Table 1 — Typical pale thickness

| Typical profile                                                                     | General purpose | Security |
|-------------------------------------------------------------------------------------|-----------------|----------|
|  | 5 mm            | — mm     |
|   | 2.5             | 3.0      |
|  | 3.0             | 3.5      |

### 1.2.2.4 Strength

When tested in accordance with appendix A corrugated pales for use in steel palisade fences shall comply with the following requirements.

- a) For security palisade fencing the maximum deflection at the middle of the span under a test load of 3.5 kN shall not exceed 10 mm.
- b) For general purpose palisade fencing the maximum deflection at the middle of the span under a test load of 2.5 kN shall not exceed 8 mm.

NOTE These requirements apply whether or not the pale has become permanently deformed due to buckling or plastic deformations.