BRITISH STANDARD

Fences –

Part 11: Specification for prefabricated wood panel fences

ICS 91.090

Confirmed
December 2011

BSI
British Standards

Publishing and copyright information

ISBN 0 580 49508 6

The following BSI references relate to the work on this standard:
Committee reference B/201
Draft for comment 06/30139511 DC

Publication history

First published November 1965
Second edition October 1972
Third edition October 1986
Fourth edition July 2000
Fifith (present) edition November 2006

Amendments issued since publication

Amd. no.	Date	Text affected

Contents

Summary of pages

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

Foreword

Publishing information

This part of BS 1722 was published by BSI and came into effect on 30 November 2006. It was prepared by Technical Committee B/201, *Fences and gates*. A list of organizations represented on this committee can be obtained on request to its secretary.

Supersession

This part of BS 1722 supersedes BS 1722-11:2000, which is withdrawn.

Relationship with other publications

BS 1722 is published in parts as follows:

- *Part 1: Specification for chain link fences;*
- *Part 2: Specification for strained wire and wire mesh netting fences;*
- *Part 4: Specification for cleft chestnut pale fences;*
- *Part 5: Specification for close boarded and wooden palisade fences;*
- *Part 7: Specification for wooden post and rail fences;*
- *Part 8: Specification for mild steel (low carbon steel) continuous bar fences and hurdles;*
- *Part 9: Specification for mild steel (low carbon steel) fences with round or square verticals and flat horizontals;*
- *Part 10: Specification for anti-intruder fences in chain link and welded mesh;*
- *Part 11: Specification for prefabricated wood panel fences;*
- *Part 12: Specification for steel palisade fences;*
- *Part 13: Specification for chain link fences for tennis court surrounds*[1)]*;*
- *Part 14: Specification for open mesh steel panel fences;*
- *Part 16: Specification for organic powder coatings for use as a plastics finish to components and mesh;*
- *Part 17: Specification for electric security fences – Design, installation and maintenance;*
- *Part 18: Specification for steel mesh site perimeter temporary fencing systems*[2)].

Information about this document

It should be noted that no attempt has been made to standardize fences or gates of a purely decorative nature, or those to suit special requirements; nor to specify requirements for "patent" proprietary fencing systems. However, the structure of such fences or gates should be in accordance with the applicable clauses of this part of BS 1722.

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1) Obsolescent.
2) Part 18 is in development and will be published as a Draft for Development (DD).

This standard aims to establish minimum requirements for materials and workmanship of the more common types of fence in order to ensure satisfactory service for the purchaser, and to assist manufacturers and installing contractors by eliminating unnecessary minor variations.

Choosing a suitable fence is affected by factors such as the intended purpose, desired service life, aesthetic considerations and availability of components. The specifier can match a suitable choice of fence to its intended purpose and also inform those installing the fence of the basic characteristics required.

Premature failure of the fence can be avoided by taking care not to damage protective treatments during installation.

Ground conditions might indicate that a variation in the length of a post, or 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 conditions, but if special conditions exist that warrant a change in the specification, e.g. the ground is softer or firmer than usual, such a change should be agreed with the specifier.

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

Annex A provides details of the fence requirements and installation site that should be agreed between the fence supplier and purchaser. However, as conditions vary from site to site, Annex A should not be assumed to be exhaustive.

Use of this document

It has been assumed in the drafting of this part of BS 1722 that the execution of its provision is entrusted to appropriately qualified and experienced people. Before installation commences the Lead Installer should hold a current FISS/CSCS registration card skilled level (blue card) or equivalent and all other operatives should hold the basic fence operative card (green card) or equivalent.

At the time of publication of this British Standard the registration cards are validated by the Joint Fencing Industry Skills Scheme (FISS) and Construction Scheme Skills Certification Scheme (CSCS). FISS/CSCS maintains a national register of fence installers and operatives. There might be other schemes available.

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.

Requirements in this standard are drafted in accordance with *The BSI guide to standardization – Section 2: Rules for the structure, drafting and presentation of British Standards*, subclause **11.3.1**, which states, “Requirements should be expressed using wording such as: ‘When tested as described in Annex A, the product shall ...’”. This means that only those products that are capable of passing the specified test will be deemed to conform to this standard.

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 1722 specifies requirements for the materials, design, construction and installation of prefabricated wood panel fences constructed from softwood panels fixed between timber or concrete posts. This standard does not cover fences of a height greater than 2 m above ground level.

This standard includes requirements for protective treatments. However, maintenance requirements of the fence after installation are outside the scope of this standard.

It specifies requirements for the components that make up a fence and the way in which the fence should be constructed. The standard includes requirements for component dimensions, together with the permissible tolerances on size. These are minimum requirements and it will normally be acceptable to use larger sizes, except if this could adversely affect the fitting of components or if replacement parts are required to match with those already present.

NOTE 1 Prefabricated wood panel fences are suitable for housing, for dividing boundaries and for visual screens. They are not suitable for fencing which is exposed to animal or personnel loading. They are also not suitable for some very exposed areas such as headlands and high hills liable to abnormally high winds.

NOTE 2 Annex A lists items that should be agreed between the fence supplier and the purchaser.

2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of this British Standard. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. For undated references, the latest edition of the publication referred to applies.

BS 1202-1, *Specification for nails – Part 1: Steel nails*

BS 1722-5:2006, *Fences – Part 5: Specification for close boarded fences and wooded palisade fences*

BS 3892 (all parts), *Pulverized-fuel ash*

BS 4027, *Specification for sulfate resisting Portland cement*

BS 4449, *Specification for carbon steel bars for the reinforcement of concrete*

BS 4482, *Steel wire for the reinforcement of concrete products – Specification*

BS 4483, *Steel fabric for the reinforcement of concrete – Specification*

BS 8417:2003, *Preservation of timber – Recommendations*

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 206-1:2000, *Concrete – Part 1: Specification, performance, production and conformity*

BS EN 480 (all parts), *Admixtures for concrete, mortar and grout – Test methods*

BS EN 844-9, *Round and sawn timber – Terminology – Part 9: Terms relating to features of sawn timber*

BS EN 934 (all parts), *Admixtures for concrete, mortar and grout*

BS EN 12620, *Aggregates for concrete*

BS EN 12839:2001, *Precast concrete products – Elements for fences*

BS EN 12878, *Pigments for the colouring of building materials based on cement and/or lime – Specifications and methods of test*

BS EN ISO 1461, *Hot dip galvanized coatings on fabricated iron and steel articles – Specifications and test methods*

3 Terms and definitions

For the purposes of this part of BS 1722, the terms and definitions given in BS EN 844-9 apply.

4 Dimensions and general characteristics

The height of panels shall be as specified by the manufacturer up to a maximum of (1 830 ± 5) mm at any point.

The width of panels shall not exceed 1 830 mm.

At the point of manufacture the widths and heights of panels shall not deviate by more than $1\,830^{+5}_{-3}$ mm.

The profile of a panel shall be a rectangle, the corners of which shall be 90° ± 2.5° (approximately 12.5 mm in 1 830 mm). The sides of a panel shall be straight ±4 mm. No horizontal member shall protrude beyond the end of the external framing.

5 Concrete components

5.1 General

Concrete posts and gravel boards shall be of steel reinforced concrete conforming to BS EN 12839 and Annex B.

5.2 Tolerances on size

Concrete components shall conform to their specified sizes within the following tolerances:

a) a demoulding draw allowance of up to 4 mm on each of two opposing sides;

b) length of posts: ±1%;

c) cross-section: ±3 mm;

d) length of gravel boards: ±5 mm.

NOTE The cross-section is measured about the centre lines.

5.3 General construction

The long arrises formed in the base of the mould shall either be rounded or all their sharp edges shall be removed. The arrises formed at the top of the mould shall be free from overfill.

The heads of posts shall be either weathered or half rounded in order to prevent lodgement of water.

Holes for bolts shall allow the bolt to be freely inserted. All holes shall be free from obstructions and accurately positioned within ±5 mm.

5.4 Fence posts

Concrete posts shall extend to the top of the panel and far enough into the ground to satisfy the requirements of **8.2**.

Concrete posts shall have a rectangular cross-section of at least 100 mm × 85 mm and conform to the specified wind class (see BS EN 12839:2001, **4.3.3**). They shall not be tapered.

Rectangular posts shall have a minimum of three holes for the attachment of fillets, positioned at centres of not greater than 900 mm.

Slotted posts shall be provided with slots at least 50 mm wide and approximately 25 mm deep.

5.5 Gravel boards

Concrete gravel boards shall have a cross-section of at least 150 mm × 50 mm and shall have a maximum length of 1 830 mm.

They shall be reinforced as necessary to give strength in handling.

6 Timber components

6.1 General

6.1.1 Material

Timber posts shall be of square sawn timber (either hardwood or softwood) conforming to Annex C. Timber used for panels shall be sawn softwood conforming to Annex C.

6.1.2 Tolerance of size for posts and gravel boards

Timber components shall conform to their specified sizes within the following tolerances.

a) An allowance (reduction) on size of 1% for every 5% of moisture content below 28%.

NOTE The sizes specified in this standard are for timber with a moisture content of 28% determined in accordance with Annex D.

b) Additional deviations on size of other components.

- Under 75 mm: ±3 mm.
- 75 mm and over: ±6 mm.

NOTE Dimensions of timber components in panels are exclusive of wane; any wane included for decorative purposes is additional to the specified dimensions.

6.2 Posts

The length of timber posts shall be such as to extend to the top of the panel and far enough into the ground to satisfy the requirements of **8.2**. Fence posts shall be at least 75 mm × 75 mm in cross-section, have the same cross-section throughout their length and be of one continuous piece.

6.3 Post caps

Caps for posts shall be weathered and cut from timber at least 25 mm^2 greater in cross-sectional area than the post.

6.4 Gravel boards

Gravel boards shall be at least 22 mm × 150 mm in cross-section.

6.5 Panels

Panels shall have the dimensions given in Clause **4**.

NOTE Panels may be cut to provide closing panels.

6.6 Slats

Slats shall be at least 5 mm thick.

7 Performance and construction

7.1 Loading

When tested according to Annex E panels shall withstand the full test load for a period of at least 3 min without any splitting or fracturing of the timber components and without any visible parting of any of the joints or intersections of the framing.

NOTE This test simulates a wind load of 0.65 kN/m at 90° to the line of the fence. No consideration has been given to personnel loading as this type of fencing is not considered suitable for use in conditions where such loading occurs.

7.2 Life expectancy – Treatment for timber posts

Timber posts shall be preserved in accordance with the appropriate recommendations for fencing timber given in BS 8417.

NOTE 1 Under normal conditions the life expectancy of the panel should be 15 years subject to maintenance recommended by the manufacturer, where prescribed. All necessary considerations should be given to the construction of the panel and the plating and gauge of the nails and fixings to achieve this life expectancy.

*NOTE 2 See notes to **C.3**.*

7.3 Type

7.3.1 Where panels are lapped they shall be constructed so that 20% of the width of each slat overlaps the preceding slat, the width and the overlap being measured at the same point. No lap shall be less than 22 mm.

7.3.2 Panels shall be classified and labelled as suitable or non-suitable for nail fixing to posts. In panels classified as suitable for nail fixing to posts, the external battens shall be at least 18 mm thick.

7.4 Straightness of panel components

7.4.1 Slats

Bow, spring and cup shall not be limited, but in lapped panels the requirements of **7.3.2** shall be met. In unlapped panels, any gaps between slats shall be within the manufacturer's specification. No slat shall cup or twist or spring away from a straight line by more than 22 mm.

7.4.2 Framing

Internal framing shall sit straight (±8 mm) on the completed panel, and the panel shall not deviate by more than 20 mm from a vertical plane at each end.

8 Installation

8.1 Line and level

On level ground the top of the fence shall follow approximately the level of the ground along the line of the fence. On sloping ground the panels shall be stepped.

The presence of any electricity, gas, water or other underground services shall be established prior to commencement of excavation, drilling or erection in the working area.

NOTE Unless specified (see Annex A), the installation of the fence does not include cutting or filling the ground to vary the levels.

8.2 Posts

Holes for posts shall have vertical sides.

NOTE 1 It is realized that the ground at the top of the hole is damaged during digging. This is acceptable provided that the damage is limited to the top of the hole and does not extend downwards so that the hole itself is tapered out towards the top.

Posts shall be set in the ground to a minimum depth of 500 mm for fences where the tops of the panels are less than 1 400 mm above ground level and 600 mm for heights between 1 400 mm and 2 000 mm high. The panel height shall be measured at its highest distance above ground level.

Holes for posts shall be at least 300 mm square in plan or at least 300 mm in diameter if round, as produced by an auger.

NOTE 2 The spacing between posts is dependent upon the length of panels to be used, and should take into account that the panels should be fitted between posts and not to the face of them.

*NOTE 3 The first post should be fixed, and the panel fixed to it as specified in **8.3** before the next post is fixed; the progress should be post-panel-post throughout the installation of the fence.*

Holes for posts shall, after insertion, be filled to at least half with concrete, which shall be well rammed as the filling proceeds. The remainder of the hole shall be filled with backfill which shall be well rammed.

8.3 Infill

Where slotted concrete posts are used, the panels and any gravel boards shall be fitted within the slots in the posts.

Panels shall be secured to timber posts with nails through each vertical batten within 200 mm of the top and bottom of the panel, and at intermediate points as required, so that the maximum distance between fixings is not greater than 0.8 m.

The nails shall be round, plain headed nails conforming to BS 1202-1 and hot dip galvanized in accordance with BS EN ISO 1461. They shall be at least 3 mm in diameter and of sufficient length to penetrate the posts by at least 37 mm.

NOTE Alternative forms of fixings may be used provided it can be shown that these offer strength equivalent to or greater than the above.

The bottom of panels shall be kept free of ground contact by the use of:

a) reinforced concrete gravel boards;

b) timber gravel boards of sufficient quality and durability (see Annex C).

9 Statement of conformity

9.1 Fence manufacturer

On delivery, the manufacturer/supplier of the fence shall provide the installer with a certificate, conforming to **9.3**, confirming that the fence and/or gates are manufactured in accordance with the client's instructions.

*NOTE This certificate can be in the form of an invoice provided this conforms to **9.3**.*

9.2 Fence installer

On completion, the fence installer shall provide the end user with a certificate, conforming to **9.3**, confirming that the installation, and materials used, are in accordance with the client's instructions.

*NOTE This certificate can be in the form of an invoice provided this conforms to **9.3**.*

9.3 Certificate

In addition to the requirements of **9.1** and **9.2**, the certificate shall also include the following information:

a) the supplier's name and address;

b) the contract or order number;

c) the date of delivery or installation, as appropriate;

d) the purchaser's name and address.

9.4 Statement

The manufacturer and/or installer shall make a statement to the effect that it is their policy to conform to a previously client agreed and documented specification and to offer goods and/or services accordingly.

NOTE This could be done by inclusion in trade advertising and "terms of trading" statements supplied with quotations.

Annex A (informative) Specifying a prefabricated wood panel fence

A.1 General

When preparing a specification for a fence it is important that precise details of the requirements of the fence and the installation site are provided. This annex lists items that should be specified at the time of ordering the fence. As conditions vary from site to site this annex should not be assumed to be exhaustive.

A.2 Site conditions

The following items should at least be agreed between the supplier and purchaser at the time of enquiry and/or order:

a) the line and length of fence;

b) the profile of the fence and ground clearance (if any);

c) the site preparation:

   1) clearance;

   2) cutting or filling of ground level;

   3) any specific requirements for non-standard post lengths due to ground conditions (see Foreword).

NOTE The requirements for post lengths in this standard are for "normal" ground conditions. This standard does not cover conditions of particularly soft or firm ground, where other lengths or foundation sizes may be required. The method of setting timber posts in the ground is also affected by the local ground conditions.

A.3 Construction of fence

The following items should at least be agreed between the supplier and purchaser at the time of enquiry and/or order.

a) Panel height (related to proposed use of fence).

b) Type of panel infill.

   1) Waney edged horizontal.

   2) Square edged horizontal.

   3) Vertical boarding.

   4) Lapped or unlapped.

   5) Other infill agreed between supplier and customer.

c) Posts.

   1) Concrete, and Annex B details.

   2) Wood, and Annex C details.

d) Gravel boards.

   1) Concrete.

   2) Wood (hardwood or softwood).

Annex B (normative) Concrete components

B.1 Materials

B.1.1 Cement

Cement for concrete shall be:

a) Portland cement (ordinary or rapid hardening) conforming to BS EN 197-1;

b) Portland-blast furnace cement conforming to BS EN 197-4; or

c) sulfate-resisting Portland cement conforming to BS 4027.

B.1.2 Aggregate

Aggregate for concrete shall conform to BS EN 12620.

Aggregate shall not exceed 10 mm nominal size.

B.1.3 Admixtures

Admixtures for concrete shall conform as follows:

a) Pigments: BS EN 12878;

b) Pulverized-fuel ash: BS 3892;

c) Concrete admixtures: BS EN 480 or BS EN 934 and used in accordance with BS EN 12839.

B.1.4 Chloride content

For chloride content BS EN 206-1:2000, **5.2.7** applies.

Calcium chloride and chloride based admixtures shall not be added to concrete containing steel reinforcement.

B.1.5 Reinforcement

Reinforcement for concrete shall conform to BS 4449, BS 4482 or BS 4483.

B.2 Moulds

Moulds shall remain rigid during placing and compaction of the concrete and shall prevent loss of water, grout or mortar. Moulds shall produce finished components accurately within the specified size limits.

NOTE Timber moulds shall be of closely jointed planed timber.

B.3 Manufacture

B.3.1 Mixing

Concrete shall be mixed in a mechanical mixer until uniform in colour and consistency.

B.3.2 Placing and compaction

Concrete shall be placed as soon as practicable after mixing, and shall be thoroughly compacted by vibration, tamping or other method so that on demoulding the surface is free from honeycombing and other large blemishes (see **B.4**).

NOTE Blemishes do not include small surface voids caused by entrapped air or water.

B.3.3 Location of reinforcement

Reinforcement shall be prefabricated and located during placing and compacting of the concrete so that the cover of concrete measured from main external faces and from the top of a post or strut is at least 15 mm, or 10 mm if the section is 100 mm × 100 mm or less.

The length of the assembled reinforcement shall be at least equal to the minimum length of the component, minus up to 100 mm to allow for the minimum cover and up to 75 mm to allow for cutting, prefabrication and location.

Reinforcement shall extend beyond the centre line of the uppermost line wire hole or beyond the top edge of the uppermost rail fixing point, as appropriate.

NOTE If the ends of components are splayed, each bar can be of equal length.

B.3.4 Protection from freezing

Materials that have been exposed to below freezing point shall not be used unless completely thawed.

Components shall not be moulded if the mould is below freezing point. The temperature of fresh concrete shall be not less than 5 °C at the time of placing.

B.3.5 Maturing

Components shall not be used unless:

a) the concrete has a strength of 45 N/mm^2, as tested in accordance with **B.5**; or

b) they have been allowed to mature under suitable conditions for at least 28 days at normal ambient temperatures.

B.4 Surface characteristics

B.4.1 Surface finish as cast

The surface finish shall be assessed against the reference photographs in BS EN 12839:2001, Annex B. Furthermore, the total area of blowholes shall not exceed 3% of the concrete surface and no blowhole shall exceed 150 mm^2.

NOTE It is acknowledged that semi-dry cast posts may have a more visually open surface texture than shown in these photographs.

B.4.2 Surface finish as treated

The requirements of BS EN 12839:2001, **5.3.2** shall apply.

B.5 Tests

To demonstrate compliance, testing shall comprise of initial type testing and factory production control in accordance with BS EN 12839:2001, Clause **6**.

B.6 Product information

The manufacturer shall give the following information on at least one product by unit of packaging, delivery notes, certificate or any documentation supplied with components in accordance with BS EN 12839:2001, **ZA.3**.

a) Name (or identifying mark) and address of the manufacturer.

b) Last 2 digits of the year in which the marking was affixed.

c) BS 1722 and BS EN 12839: Elements for Fences.

d) Loadbearing capacity, expressed in newtons according to the result of initial type testing, rounded down to the nearest ten.

Annex C (normative) Timber components

C.1 General

The quality of fencing timber and the preservative treatment shall be as specified in **C.2** and **C.3**.

*NOTE 1 Provided a timber fencing component is suitably designed, for instance to avoid the collection of water at joints, and suitably protected against premature failure due to natural decay by the use of suitable preservative treatment (see **C.3**), a large choice of species of timber is available. This annex is largely concerned with ensuring durability of timber components, but in some cases economic or aesthetic factors will influence the choice of species. The specifier should make known any additional limits on the type of timber to be used.*

NOTE 2 Guidance on durability classes for timber in and out of ground contact is given in BS EN 335-2. Guidance on timbers that can be used with and without preservation in different durability classes, based on their natural durability is given in BS 8417:2003, Table 2. Guidance on the natural durability of different timbers is given in BS EN 350-2.

C.2 Timber quality

C.2.1 Limiting characteristics

When measured in accordance with BS 1722-5:2006, **B.2.2** either at any time within 14 days of delivery to the preservation treatment works or at any time within 14 days of delivery to the site, the timber shall conform to Table C.1.

NOTE The method of sampling the timber should be agreed between the supplier and the specifier. A suggested sampling procedure is given in Annex F.

Defects caused by changing climatic conditions shall not be considered a valid reason for subsequent rejection of the timber after the initial inspection within 14 days of delivery either to the preservation treatment works or to the site.

Table C.1 **Characteristics and defects of softwoods and hardwoods**

Characteristics		**Posts**	**Framing**	**Slats**
Knots – intergrown		Total KAR (knot area ratio) not greater than ½	Total KAR not greater than ½	Not more than ⅓ width of piece
Knots – dead		Total KAR not greater than ½	Total KAR not greater than ½	Not more than 2 per square metre of panel but excluding those covered by laps
Knots – holes		Total KAR not greater than ½	Total KAR not greater than ½	
Slope of grain		Not more than 1 in 6 to the longitudinal axis of the piece		Unlimited
Rate of growth		Unlimited		
Checks		The depth of each check shall not exceed one half of the thickness of the piece		
End splits		Not more than 150 mm	Not more than 25 mm	Not more than 150 mm of visible slat
Resin pockets		Unlimited	Not more than the width of the piece	
Bark pockets		Unlimited	Not more than the width of the piece and not wider than 5 mm	
Rot		Not permitted		
Active insect attack		Not permitted		
Lyctus damage		Not permitted		
Pin holes		Not more than 20 in any 0.3 m length	Not more than 10 in any 0.6 m length	
Blackheart		Unlimited	Not permitted when it impairs the decorative finish of the panel	
Blue stain		Unlimited	Not permitted when it impairs the decorative finish of the panel	
Straightness	Bow	Not more than 10 mm per 1 m length	Unlimited within the constraints of **7.4**	
	Spring	Not more than 10 mm per 1 m length	Unlimited within the constraints of **7.4**	
	Twist	Not more than 2 mm per 25 mm width	Unlimited within the constraints of **7.4**	
	Cup	Not more than 1 mm per 25 mm width	Unlimited within the constraints of **7.4**	

C.3 Preservative treatment

Timber posts and gravel boards shall be preserved in accordance with the appropriate recommendations for fencing timber in BS 8417. Under BS EN 335-2, gravel boards are durability class 4 timbers and have the same treatment requirements as fence posts.

Under normal conditions the life expectancy of the panel shall be 15 years, subject to the maintenance recommended by the manufacturer where prescribed; if a longer service life is required 30 years shall be specified. Where preservation is required to achieve this service life, Tables 4, 5, 6 and 9 of BS 8417:2003 shall apply.

NOTE Certain species of timber do not require treatment, depending upon the intended use and provided there is not excessive sapwood. Durability classes for common species are given in BS EN 350-2 and guidance on which of these can be used without preservation is given in BS 8417. Whenever an amount of sapwood is present, the loss of which would render the fencing component unfit for its intended use, the fencing component should be treated with preservative.

C.4 Regulations regarding wood preservatives

Users are reminded of two regulations regarding the wood preservatives chromated copper arsenate (CCA) and creosote.

NOTE 1 ***Marketing and use of chromated copper arsenate (CCA):*** The Environmental Protection (Controls on Dangerous Substances) Regulations 2003, SI 2003/3274 [1] *and* The Marketing and Use of Dangerous Substances (No. 4) Regulations (Northern Ireland) 2003, SR 2003/548 [2] *restrict the marketing and use of chromated copper arsenate (CCA) treated timber. Examples of uses for which treated timber is not permitted include residential or domestic structures (whatever the purpose) and in any application where there is a risk of repeated skin contact. Guidance on the restrictions is available from the Wood Protection Association* [3].

NOTE 2 ***Marketing and use of creosote:*** The Creosote (Prohibition on Use and Marketing) (No. 2) Regulations 2003 [4] *restrict the marketing and use of creosote treated timber. Examples of uses for which treated timber is not permitted include uses in parks, gardens or outdoor leisure facilities where there is a risk of frequent skin contact. Guidance on the restrictions is available from the Wood Protection Association* [5].

Annex D (informative) Determination of moisture content

Moisture content should not exceed 28% when measured with a calibrated moisture meter of the electrical resistance type, fitted with insulated probes that can be hammered into wood to the depth specified in Table D.1.

When determining the suitability of a charge of timber for preservation, moisture readings should be made on no fewer than $\sqrt{(n/2)}$ separate components, where n is the total number of components in the charge. The components to be measured should be taken from random positions in the charge. The number of heartwood and sapwood faces sampled should reflect the relative proportions of these types of wood in the charge as a whole.

If preferred, the oven-dry method of determining moisture content as described in BS EN 212 may be used in place of a moisture meter.

To achieve the recommended moisture content of 28% (m/m) timber can be either air dried or kiln dried. For either process it is essential that fencing timber is debarked and stacked so that air can circulate freely. In winter little natural drying is likely, therefore kiln drying may be the only effective solution.

Table D.1 **Determination of moisture content of timber to be treated for use in fencing**

Type of timber		Length of electrodes within the timber	Maximum indicated moisture content in a sample %
a)	All sapwood	25 mm, or sapwood thickness if less	
b)	Heartwood of wood species other than those listed in c):		
	posts	25 mm	28
	other components	12 mm	
c)	Heartwood of sweet chestnut, dahoma, danta, guarea, kapur, kempas, oak	5 mm	

Annex E (normative) Static load test

E.1 Principle

The panel design and method of production are assessed. The test applies to the panel only and not to the post or fixings. The test is performed initially and when any change is made in the design, production method or material composition of the panels.

NOTE The test assesses the suitability of panels made to a range of heights, providing that all the panels tested are of the greatest height made, that all the panels through the range are manufactured using the same method of construction and that all members are of similar quality with similar cross-sectional dimensions.

E.2 Sampling

The number of panels to be tested shall be in accordance with Table E.1. The panels shall be selected at random.

Table E.1 **Sampling**

Average monthly output of panels	Number of panels per sampling
Less than 1 000	2
More than 1 000 and less than 5 000	4
More than 5 000 and less than 15 000	7
More than 15 000	10

E.3 Procedure

Prior to the test ensure that the panel is touch dry.

NOTE 1 Tests have shown that use of panels that are touch dry is sufficient to assess satisfactory performance. Under real life conditions the most likely time of high winds is during wet conditions. However, there is a possible loss of strength if the wood in the panel is very dry.

Load the panel in a horizontal position with sand or similar loose granular material at 52 kg/m^2 (see Figure E.1). Apply the load gradually, without shock. Fix the panel at each end to a rigid frame with nails as described in **8.3**, but with not more than the minimum number allowed in **8.3**.

NOTE 2 Alternatively the panel may be supported on blocks measuring not more than 38 mm, measured at right angles to the edge, and not more than 6 mm, measured along the edge. There should be not more than two supports for panels up to and including 1.2 m high and three supports for taller panels.

Position the blocks along the edge of the panel in a similar position to those taken by the nails in **8.3**.

Prior to loading, cover the panel with 500 gauge polyethylene or similar film.

The sand or loose granular load material shall be retained within a frame. The design of the frame and supports shall be such that the whole weight of the load material is supported by the panel only and that the panel is supported only by the nails or blocks described above.

NOTE 3 The panel may be temporarily supported until the full load has been applied.

The test period shall start when all temporary supports have been removed.

Repeat the procedure with the other side of the panel. Repeat for the remaining panels.

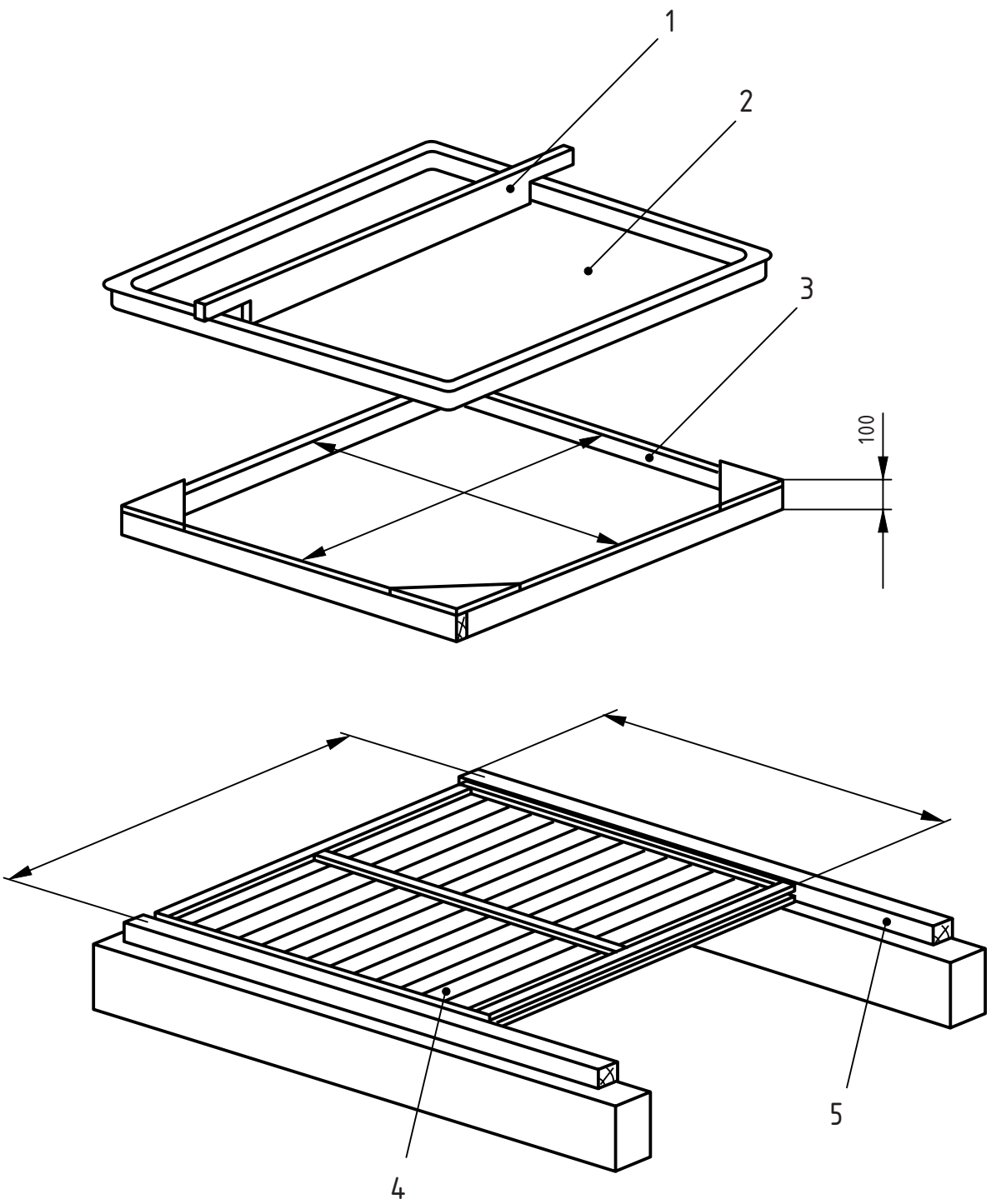
E.4 Assessment of results

Observe whether the panel withstands the full test load for a period of at least 3 min without any splitting or fracturing of the timber components and without any visible parting of any joint or intersection of the frame.

If any of the selected panels fails the test, repeat with a further two panels selected at random. If any of the retested panels fail, the whole sample shall be deemed to have failed.

Figure E.1 **General layout for static load test**

Dimensions in millimetres



Key

1 Screed
2 Tray
3 Loading box
4 Fence panel
5 Post

Annex F (informative) Suggested sampling method for measuring the limiting characteristics of timber

F.1 Purpose

This sampling plan is for use in determining initially if a parcel of timber conforms to Table F.1. It does not preclude the subsequent rejection of individual pieces for non-conformity with Table F.1, except for defects due to changing climatic conditions.

F.2 Procedure

Sample in accordance with Table F.1. Take the pieces comprising the sample at random. Inspect by defective pieces, not by defects (i.e. a piece containing one or more defects is to be counted as a defective piece). Reject a parcel if the number of defectives is equal to, or exceeds, the rejection number.

Table F.1 **Single sampling plans**

Number of pieces in parcel [A)]	Number of pieces in sample	Rejection number
91 to 150	20	4
151 to 280	32	6
281 to 500	50	8
501 to 1 200	80	11
1 201 to 3 200	125	15
3 201 to 10 000	200	22

[A)] For parcels comprising 90 pieces or less, 100% inspection is recommended.

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Standards publications

For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

BS EN 212, *Wood preservatives – General guidance on sampling and preparation for analysis of wood preservatives and treated timber*

BS EN 335-2, *Durability of wood and wood-based products – Definition of use classes – Part 2: Application to solid wood*

BS EN 350-2, *Durability of wood and wood-based products – Natural durability of solid wood – Part 2: Guide to the natural durability and treatability of selected wood species of importance in Europe*

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[1] GREAT BRITAIN. Statutory Instrument 2003 No. 3274: The Environmental Protection (Controls on Dangerous Substances) Regulations 2003. London: The Stationery Office.

[2] GREAT BRITAIN. Statutory Rules 2003 No. 548: The Marketing and Use of Dangerous Substances (No. 4) Regulations (Northern Ireland) 2003. London: The Stationery Office.

[3] Wood Protection Association. *Use of CCA wood preservatives and CCA-treated timber.*[3)]

[4] GREAT BRITAIN. Statutory Instrument 2003 No. 1511: The Creosote (Prohibition on Use and Marketing) (No. 2) Regulations 2003. London: The Stationery Office.

[5] Wood Protection Association. *Use of creosote and creosote-treated timber.*[3)]

[3)] Wood Protection Association, WPA, 1 Gleneagles House, Vernongate, Derby, UK, DE1 1UP, www.wood-protection.org

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