

# Domestic bedding

## Part 10. Specification for mattresses and bumpers for children's cots, perambulators and similar domestic articles

ORIGINAL

CONTROLLED

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**BSi**

## Committees responsible for this British Standard

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Association of Consulting Scientists  
 Baby Equipment Hirers Association  
 Baby Products Association  
 British Association of Nursery and Pram Retailers  
 British Furniture Manufacturers' Federation  
 British Retail Consortium  
 British Toy and Hobby Association  
 BSI Testing Services  
 Chemical Industries' Association  
 Child Accident Prevention Trust  
 Consumer Policy Committee of BSI  
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 National Bed Federation Limited  
 Royal Society for the Prevention of Accidents  
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## Foreword

This Part of BS 1877 has been prepared by Technical Committee CW/52. It supersedes BS 1877 : Part 10 : 1982, which is withdrawn.

As cot mattresses are available in a number of sizes to fit a variety of sizes of cot, it has been decided that reference to preferred sizes should be deleted from this edition.

In its report of Sudden Infant Death Syndrome (SIDS), the Department of Health recommended that only grades of antimony trioxide containing the lowest possible levels of arsenic should be used in any treatment of cot furnishings. Research work is in hand to determine a suitable test method and to set an appropriate level for arsenic content.

A separate Part of this standard will eventually be produced to cover types of mattress other than those covered by Part 10. These mattresses are of a type which have soft fillings and could be prone to indentation problems and would require special tests to cover this problem. The object of the test or tests will be to detect any possibility of the formation of excessive indentations that might present a hazard if the child should vomit.

In particular, attention is drawn to the Furniture and Furnishings (Fire) (Safety) Regulations 1988 (SI No. 1324) [1], the Furniture and Furnishings (Fire) (Safety) (Amendment) Regulations 1989 (SI No. 2358) [2] and the Furniture and Furnishings (Fire) (Safety) (Amendment) Regulations 1993 (SI No. 207) [3].

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### Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 5 and a back cover.

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# Specification

## Introduction

As mattresses with loose fillings (i.e. bean bag type) or mattresses with covers which are not level and can form pockets (i.e. button down type) are not covered by this standard, it is intended that a further Part of BS 1877 will be published to cover types of mattress other than those covered by Part 10. These mattresses are of a type which have soft fillings and could be prone to indentation problems and would require special tests to cover this problem. The object of the test or tests will be to detect any possibility of excessive indentations forming that might present a hazard if the child should vomit.

## 1 Scope

This Part of BS 1877 specifies requirements for materials, construction, dimensions, performance, marking and packaging of mattresses and bumpers for children's cots, cot beds, perambulators, carry cots, cribs, moses baskets and similar domestic articles.

This British Standard is not applicable to mattresses with loose fillings (i.e. bean bag type) or mattresses with covers which are not level and can form pockets (i.e. button down type).

## 2 References

### 2.1 Normative references

This Part of BS 1877 incorporates, by dated or undated reference, provisions from other publications. These normative references are made at the appropriate places in the text and the cited publications are listed on the inside back cover. For dated references, only the edition cited applies; any subsequent amendments to or revisions of the cited publication apply to this Part of BS 1877 only when incorporated in the reference by amendment or revision. For undated references, the latest edition of the cited publication applies, together with any amendments.

### 2.2 Informative references

This Part of BS 1877 refers to other publications that provide information or guidance. Editions of these publications current at the time of issue of this standard are listed on the inside back cover, but reference should be made to the latest editions.

## 3 Definitions

For the purposes of this Part of BS 1877, the following definitions apply.

### 3.1 bumper

Product intended for attachment to the inner surface of the sides and/or ends of a structure to provide cushioning.

### 3.2 ventilator

Device fitted to achieve ventilation.

## 4 Materials and components

### 4.1 General

Monofilament sewing thread shall not be used.

### 4.2 Fillings

Any fillings shall conform to the relevant requirements of BS 1425 : Part 1 or BS 1425 : Part 2. If polyurethane foam is used as a separate insulator, the foam shall comply with Class L of BS 3379 : 1991.

### 4.3 Mattress construction

#### 4.3.1 Polyurethane foam cores

Polyurethane foam cores shall conform to BS 1425 : Part 1, and the hardness grade of the foam shall be at least 100. They shall also conform to at least class A of BS 3379 : 1991.

#### 4.3.2 Spring units

Spring units shall conform to the requirements of BS 3173 applicable to mattresses for children's use.

#### 4.3.3 Types of construction other than spring units and polyurethane foam cores

Types of mattress construction other than spring units and polyurethane foam cores shall meet the A classification or above for indentation hardness loss as specified in BS 3379 when tested in accordance with BS EN ISO 3385.

NOTE. Although BS 3379 and BS EN ISO 3385 apply specifically to polyurethane foam materials, they are considered to provide the best available requirements and test method for the other types of mattress that fall within the scope of this standard.

### 4.4 Covering materials

Covering fabrics shall conform to the requirements of BS 7337. PVC sheeting shall conform to the requirements of BS 1763 or BS 2739 and shall be at least 200  $\mu\text{m}$  thick. Polyurethane coated fabrics shall conform to the requirements of BS 5455.

Dyed covering fabrics, when tested in accordance with BS EN ISO 105-E04 : 1996, shall give a numerical rating for change in colour of not less than 4 and a fastness grade for staining of not less than 3.

PVC sheeting and polyurethane coated fabrics shall not contain any soluble antimony, arsenic, barium, cadmium, chromium, lead, selenium or mercury, or any soluble compound of any of those elements, which exceed the following amounts when determined in accordance with 8.2 of BS EN 71-3 : 1995:

Antimony	60 mg/kg;
Arsenic	25 mg/kg;
Barium	1000 mg/kg;
Cadmium	75 mg/kg;
Chromium	60 mg/kg;
Lead	90 mg/kg;
Mercury	60 mg/kg;
Selenium	500 mg/kg.

**4.5 Ventilators**

If fitted, ventilators shall be made of plastics material and shall not contain any soluble antimony, arsenic, barium, cadmium, chromium, lead, selenium, mercury or any soluble compound of any of those elements, which exceed the amounts given in 4.5 when determined in accordance with 8.2 of BS EN 71-3 : 1995. Ventilators shall not be positioned on the sleeping surface of a mattress.

**5 Construction**

**5.1 Mattresses**

**5.1.1 Cover and filling**

**5.1.1.1** Every mattress shall be supplied with a casing made from one or more covering materials conforming to the requirements of 4.5.

**5.1.1.2** If the cover, or part of the cover, is removable for cleaning purposes, at least 50% of the non-sleeping surface of the mattress shall be covered by the cover. Any hole in the cover shall be positioned on the underside and in the centre of the mattress and shall be under sufficient tension when in position on the mattress, so as to prevent it being removed or dislodged unintentionally.

**5.1.1.3** If the cover consists of two parts, there shall be a means of fastening the two parts together. When they are in place on the mattress it shall not be possible for the cone measuring device, shown in figure 1, to pass through any gap when a force of 15 N or less is applied, nor shall any of the fastenings come apart.

NOTE. The force is measured by means of a force gauge attached to the cone, as shown in figure 1.

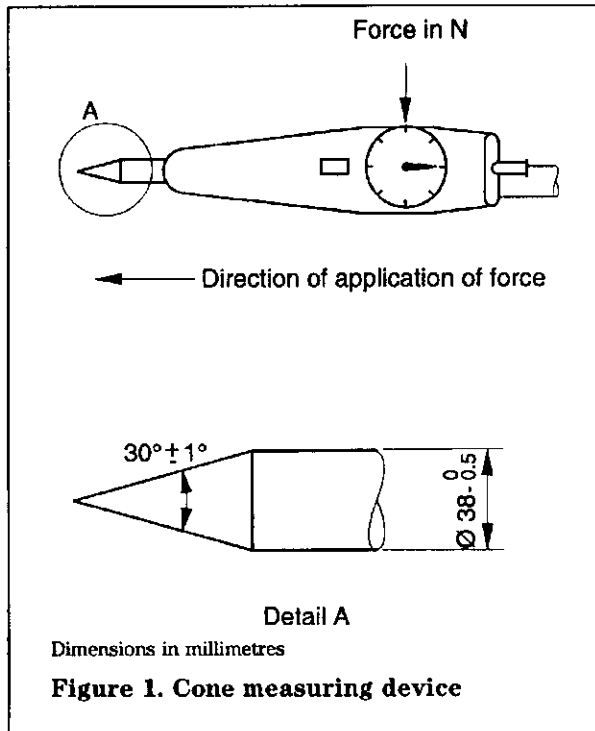


Figure 1. Cone measuring device

**5.1.1.4** Provision shall be made for ventilation if impermeable covers are used. If separate ventilators are fitted, they shall be so fixed that they cannot become detached or loosened when a pulling force of 90 N is applied.

NOTE. Ventilation may be achieved by any appropriate means, e.g. design construction, holes or ventilators.

**5.1.1.5** When tested in accordance with the procedure specified in clause 7 of BS 3320 : 1988, using a force of 30 N, there shall be no opening of the seams.

**5.1.1.6** Mattress handles shall not be provided.

**5.1.1.7** A protective membrane shall be provided between spring centre units and the filling.

NOTE. The protection may be, for example, in the form of a separate fabric or a skin of polyurethane foam.

**5.1.1.8** When measured in accordance with the method specified in BS EN ISO 5084 : 1997, the thickness of the filling and insulator shall be at least 15 mm.

**5.1.2 Cover fit**

The fit of the cover shall be such that there is no rucking of the covering materials nor any deformation of the shape of the upper and lower surfaces of the core.

**5.1.3 Mesh strength (applicable when mesh is used as all or part of the cover)**

When tested in accordance with annex A, the probe shall not pass through the mesh and the threads of the mesh shall not break.

## 5.2 Bumpers

5.2.1 A means of attaching the bumper to the structure shall be provided.

5.2.2 Any means of attachment shall either:

- a) have a free length of not more than 250 mm; or
- b) have a width that is at least half of its length.

If attachments are in sets, each set shall comprise two separate lengths of material.

NOTE. A single length of material of greater than 250 mm in length, joined to the bumper at its mid-point so as to provide two attachments, could present a hazard in the event of it becoming detached from the bumper.

5.2.3 The ends of any means of attachment shall be turned in or sealed to prevent unravelling.

5.2.4 The means of attaching the bumper to the structure shall show no sign of damage and there shall be no tearing of the fabric of the bumper when a force of 70 N is applied over  $(5 \pm 1)$  s and maintained for 10 s to each element of the attachment when not fastened to the cot.

5.2.5 Any frills, bindings, appliqué, trimmings or other decorative features with free edges shall have a maximum depth of 70 mm. Any such features shall show no sign of damage and there shall be no tearing of the fabric of the bumper when a force of 70 N is applied perpendicular to a seam/stitching. The force shall be applied over  $(5 \pm 1)$  s and maintained for 10 s using a 12 mm wide clamp.

5.2.6 Any toys attached to the bumper shall conform to the applicable requirements in the appropriate Parts of BS EN 71.

## 6 Dimensions of mattresses

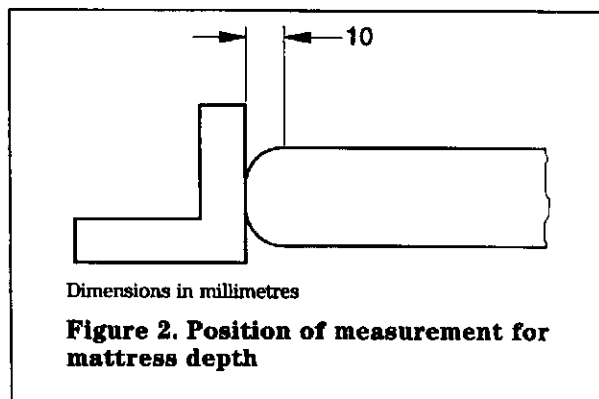
### 6.1 Length and width

The maximum length and width of mattresses shall be measured with the mattress placed on a flat surface and shall be clearly stated in millimetres, subject to a tolerance of  $0$ / $25$  mm. Spring interior mattresses shall be measured tape edge to tape edge.

### 6.2 Depth

#### 6.2.1 Cot mattresses

The mattress shall have a maximum depth of 100 mm at the edge and a maximum depth of 150 mm at the centre. The edge measurement shall be taken 10 mm in from the outermost point (see figure 2).



#### 6.2.2 Travel cot mattresses

The depth of travel cot mattresses shall not be more than 100 mm.

#### 6.2.3 Other mattresses

The depth of mattresses for uses other than in cots and travel cots shall not be more than 50 mm.

## 7 Marking

7.1 Mattresses and bumpers shall be permanently and legibly marked with the following:

- a) the name, trade mark or other means of identification of either the UK manufacturer, UK distributor or UK retailer and the postcode of the first supplier or retailer into the UK;
- b) the number and date of this British Standard, i.e. BS 1877 : Part 10 : 1997<sup>1)</sup>;
- c) for all mattresses, the nominal width and length;
- d) for cot mattresses, a boxed warning to indicate the type and internal dimensions of the product with which the mattress is designed to be used. The internal width limits shall be the nominal width of the mattress and the nominal width plus 40 mm. The internal length limits shall be the nominal length and the nominal length plus 40 mm.
- e) for all mattresses, the following wording: 'WARNING. This mattress may not soak up vomit.'  
NOTE. This information may be included in the same box as the information required in (d) above.
- f) for bumpers, the following warning: 'WARNING. Check bumpers regularly to make sure they are secure. Remove bumpers when child can sit unaided.'
- g) care instructions.

<sup>1)</sup> Marking BS 1877 : Part 10 : 1997 on or in relation to a product represents a manufacturer's declaration of conformity, i.e. a claim by or on behalf of the manufacturer that the product meets the requirements of the standard. The accuracy of the claim is solely the claimant's responsibility. Such a declaration is not to be confused with third-party certification of conformity, which may also be desirable.

- 7.2 Looped labels shall not be attached to bumpers.
- 7.3 Markings shall be in the English language, but this shall not preclude the additional use of other languages.
- 7.4 Markings shall be in letters at least 2.5 mm high.
- 7.5 Hand-written labels shall be written in marking inks which conform to BS 3484 : Part 2 : 1994.

## 8 Packaging

8.1 Any plastics covering used as packaging for a mattress or bumper shall be conspicuously marked with a warning to the effect that the covering should be kept away from babies and children.

NOTE. An example of suitable wording is as follows: 'To avoid danger of suffocation, remove this plastics cover before using this article. The cover should then be destroyed or kept away from babies and children'.

8.2 Plastics used as packaging shall be not less than 38  $\mu\text{m}$  thick unless the packaging comes into one or more of the following categories:

- bags with an opening perimeter of less than 380 mm;
- shrunk-on film packaging that is normally destroyed when the packaging is opened by the user;
- bags made of perforated film, that make it possible for the child to breath through the film, and that are unable to form a vacuum and stick to the face of the child.

A minimum 1 % of any area of maximum dimensions 30 mm  $\times$  30 mm shall be perforated in order to conform to item c) above.

## Annex A (normative)

### Measurement of mesh strength

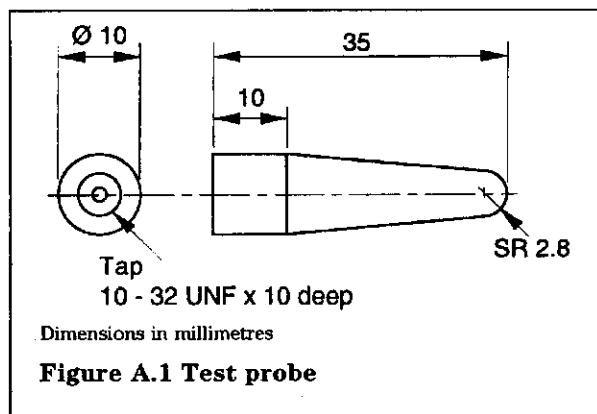
#### A.1 Apparatus

*Test probe*, with high polished chrome plate finish and as shown in figure A.1.

#### A.2 Procedure

Insert the test probe into an opening in the mesh using a force of 12 N at the following positions:

- in the middle;
- at any other position that is considered to be the most onerous.





## List of references (see clause 2)

### Normative references

#### BSI publications

BRITISH STANDARDS INSTITUTION, London

BS 1425 :	<i>Cleanliness of fillings and stuffings for bedding, upholstery and other domestic articles</i>
BS 1425 : Part 1 : 1991	<i>Specification for fillings and stuffings other than feather and/or down</i>
BS 1425 : Part 2 : 1991	<i>Specification for feather and/or down fillings and stuffings</i>
BS 1763 : 1975	<i>Specification for thin PVC sheeting (calendered, flexible, unsupported)</i>
BS 2739 : 1975	<i>Specification for thick PVC sheeting (calendered, flexible, unsupported)</i>
BS 3173 : 1996	<i>Specification for spring units for mattresses</i>
BS 3320 : 1988	<i>Method for determination of slippage resistance of yarns in woven fabrics: seam method</i>
BS 3379 : 1991	<i>Specification for flexible polyurethane cellular materials for loadbearing applications</i>
BS 3484 :	<i>Record inks</i>
BS 3484 : Part 2 : 1994	<i>Specification for permanent inks</i>
BS 5455 : 1977	<i>Specification for polyurethane coated nylon fabric for mattress covers</i>
BS 5665 :	<i>Safety of toys</i>
BS 5665 : Part 1 : 1989	<i>Specification for mechanical and physical properties</i>
BS 7337 : 1990	<i>Specification for tickings</i>
BS EN 71 (all parts)	<i>Safety of toys</i>
BS EN ISO 105-E04 : 1996	<i>Textiles. Tests for colour fastness. Colour fastness to perspiration</i>
BS EN ISO 3385 : 1995	<i>Flexible cellular polymeric materials. Determination of fatigue by constant-load pounding</i>
BS EN ISO 5084 : 1997	<i>Textiles. Determination of thickness of textiles and textile products</i>

### Informative references

- [1] GREAT BRITAIN. Furniture and Furnishings (Fire) (Safety) Regulations 1988 (SI No. 1324).<sup>2)</sup> London: HMSO
- [2] GREAT BRITAIN. Furniture and Furnishings (Fire) (Safety) (Amendment) Regulations 1989 (SI No. 2358).<sup>2)</sup> London: HMSO
- [3] GREAT BRITAIN. Furniture and Furnishings (Fire) (Safety) (Amendment) Regulations 1993 (SI No. 207).<sup>2)</sup> London: HMSO

<sup>2)</sup> Referred to in the foreword only.