

SPECIFICATION FOR DOMESTIC BEDDING

Part 1. Spring interior mattresses for adult use (PERFORMANCE AND CONSTRUCTION)

BS 1877 : Part 1 : 1971



BRITISH STANDARDS INSTITUTION

Incorporated by Royal Charter

2 PARK STREET, LONDON W1A 2BS

Telex: 266933

Telephone: 01-629 9000

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The Institution desires to call attention to the fact that this British Standard does not purport to include all the necessary provisions of a contract.

This standard makes reference to the following British Standards:

- BS 1425. Cleanliness of fillings and stuffings for bedding, upholstery, toys and other domestic articles.
- BS 2005. Glossary of terms for fillings for bedding, upholstery, and other domestic articles.
- BS 2036. Tickings for domestic bedding (including border fabrics).
- BS 3173. Non-pocketed or open type spring centre units for domestic mattresses.
- BS 3474. Quality of fillings for bedding, upholstery and domestic articles.
 Part 1. Layered washed fillings containing wool.
 Part 2. Washed flock (loose) for use in bedding.
 Part 3. Curled hair.
 Part 4. Recleansed hair.
- BS 4637. Carbon steel wire for coiled springs (bedding and seating).
- BS 4820* Performance requirements covering materials for domestic mattresses.



British Standards are revised, when necessary, by the issue either of amendment slips or of revised editions. It is important that users of British Standards should ascertain that they are in possession of the latest amendments or editions.

* In course of preparation

The following BSI references relate to the work on this standard:
 Committee reference BDM/9 Draft for comment 70/15565

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CO-OPERATING ORGANIZATIONS

The Bedding Industry Standards Committee under whose supervision this British Standard was prepared consists of representatives of the following Government departments and industrial and other organizations:

- *British Rubber Manufacturers' Association
- *Department of the Environment
Consumers' Association
- *Furnishing Spring Makers' Federation
- *Institute of Iron and Steel Wire Manufacturers
- *Ministry of Defence
Department of the Environment
National Association of Retail Furnishers
- *National Bedding Federation Limited
- *National Union of Furniture Trade Operatives
- *Ticking Group
- *Women's Advisory Committee of BSI

The Government departments and industrial and other organizations marked with an asterisk in the above list, together with the following, were directly represented on the committees entrusted with the preparation of this British Standard.

Association of Hospital Management Committees
 Association of Hospital Matrons
 British Fire Services' Association
 British Man-made Fibres Federation
 British Nursery Goods Association
 Department of Health and Social Security
 Institute of Hospital Administrators
 Medical Superintendents' Society
 National Fillings Trades Association
 Royal College of Nursing

BRITISH STANDARD SPECIFICATION FOR

DOMESTIC BEDDING

Part 1. Spring interior mattresses for adult use

(PERFORMANCE AND CONSTRUCTION)

FOREWORD

This Part 1 of BS 1877 is the third revision of the British Standard for spring interior mattresses for domestic use, which was first published in 1952; it supersedes Part 1 of BS 1877 : 1963, and introduces new metric sizes of mattresses which it is the hope of the National Bedding Federation will be ready for the domestic market early in 1971. There are to be four basic sizes, a standard and a small double bed mattress, and a standard and a small single bed mattress, and the new sizes take account of the fact, well established by anthropometric evidence, that the average stature of the adult population has considerably increased during the last 15 to 20 years.

Preparation of a revised (metric) edition of the related standard for open type spring units (BS 3173 : 1959) is in hand. It is also intended that a revision of the specification for divans and bases (BS 1877 : Part 9 : 1954) shall follow shortly.

The other chief feature of this revised standard is that it now specifies the requirements for domestic spring interior mattresses in terms of a performance and constructional specification. The introduction of assessment tests to verify adequate performance by mattresses complying with this revised standard has made it possible to omit some of the specific constructional requirements that were a feature of earlier editions of this standard, which may be considered restrictive of design and new materials and which the test can satisfactorily replace.

Performance requirements. The assessment test, and procedures for examination of a mattress before and after testing, are specified in Clause 3, in the related Appendices A and B and in Figs. 1 to 3. These requirements have been evolved after considerable investigations into test methods, and a development programme on a range of spring-interior mattresses, largely financed by the National Bedding Federation Limited. The investigation and the development work have been carried out at the BSI Hemel Hempstead Centre. This is one example of the way in which the Hemel Hempstead Centre of the British Standards Institution can actively collaborate with industry in conducting research and development work.

The tests were first announced, with the approval of the Bedding Industry Committee and the full support of the National Bedding Federation, by the issue

in October 1968 of Supplement No. 1 to BS 1877, Part 1 which gave provisional information about the intention to introduce assessment tests for spring interior mattresses. The content of that supplement has been somewhat modified since the first edition was published as a result of further testing work done during the period from October 1968 to November 1969.

A new edition of the supplement was issued in July 1970 to provide up-to-date information about the performance tests applicable to spring interior mattresses purporting to comply with BS 1877, Part 1. Detailed information thus remained available in provisional form for a transitional period, pending the issue of this revised standard in which the tests become an integral part of the requirements of the standard.

The tests are essentially based on a durability or fatigue treatment which is applied to mattresses by means of a weighted roller mechanically moved across a portion of the mattress width. There is also a handle strength test in which the mattress is repeatedly raised by the handles on to each side in turn and dropped. No test can reproduce completely the effects of normal usage of a mattress, but the tests which have been adopted were developed to achieve the following:

- (1) A definite basis for evaluation, i.e. measurable and visual evidence of distortion or damage, after a reasonable period of treatment.
- (2) Repeatable results, within acceptable limits, on similar mattresses.
- (3) The subjection to load conditions of a considerable area of the mattress, rather than of isolated positions.
- (4) The treatment of mattresses of various widths.

Constructional requirements. 4.1 to 4.7 replace the whole of Clauses 3 to 11 inclusive of Part 1 of BS 1877 : 1963 and the introduction of the performance test in Clause 3 has also made it possible to delete Clause 12 of that standard. Readers comparing the older with this new specification will note that in particular there have been changes in the clauses dealing with covering materials, method of manufacture (which has been very much shortened), spring centre units, and making up (with which the former clauses about tufting and about borders have been combined). There is now no specific mention of the depth of a mattress border in relation to the height of the spring unit.

If it is found that some features of a product call for variations from the constructional requirements laid down in this British Standard, such variations may be approved in accordance with the footnote to Clause 4.

Very little change has been introduced at present in connection with 4.3, 'Filling materials', which is substantially the same as Clause 4 of Part 1 of BS 1877 : 1963. It is however, considered that newer types of filling materials should be acceptable where possible, provided that they enable a mattress in

which they are used to comply with the performance test requirements and the relevant requirements for cleanliness of fillings. It is recognized that new standards for various types of filling materials recently introduced are likely to be issued in the near future. In the meantime, it is intended that any materials for which a separate cleanliness standard has not yet been issued shall be required to comply with Part 100 of BS 1425*.

Attention is drawn to the fact that the use of the BSI Certification Trade Mark (the Kitemark) is mandatory for compliance with this British Standard (see Clause 5). The Kitemark may only be used under licence granted to the manufacturer by the Institution. For further information see the back cover of this standard.

SPECIFICATION

1. SCOPE

This Part of this British Standard specifies performance requirements and constructional requirements for spring interior mattresses for domestic use by adults.

NOTE. Requirements for domestic mattresses for children's cots, perambulators etc. are specified in BS 1877: Part 10.

2. DEFINITIONS

For the purposes of this Part of this British Standard the definitions given in BS 2005†, BS 1425* and BS 3474‡ apply.

3. PERFORMANCE REQUIREMENTS

3.1 General. Each mattress shall be so constructed that when it is subjected to the tests described in 3.2 and 3.3, it meets the requirements of 3.1.1 to 3.1.7 inclusive.

NOTE. The test will normally first be performed on a mattress of one of the widths specified in 4.1, and if the test is successful compliance may then be claimed for mattresses of the same construction, of widths equal to or less than the sample tested.

3.1.1 There shall be no breakage or distortion of springs, cross attachments, insulators, edge supports of spring centre units, and no breakage of tufts, tufting twine or tufting tape, or significant breakages of stitching.

3.1.2 There shall be no excessive surface irregularities, no significant movement or displacement of filling materials and no significant escape of fillings into the spring centre unit.

†BS 2005, 'Glossary of terms for fillings for bedding, upholstery and other domestic articles'.

*BS 1425, 'Cleanliness of fillings and stuffings for bedding, upholstery, toys and other domestic articles'.

‡BS 3474, 'Quality of fillings for bedding, upholstery and domestic articles'.

3.1.3 There shall be no excessive slip of yarn, and no significant seam slippage or stretch of covering materials. There shall be no emission of filling materials. All other fabric material used, including pocketing cloth, shall have no defects which could significantly affect the fitness for purpose of the mattress.

3.1.4 The average amount of permanent set over the grid pattern shown in Fig. 1 shall not exceed 10 % of average initial deflection reading, and no individual amount of permanent set shall exceed 13 % of the average initial deflection reading.

3.1.5 There shall be no change in hardness (as measured by indentation thickness readings) at the points of the grid pattern shown in Fig. 2 greater than 15 mm from the initial readings.

3.1.6 There shall be no failure of handles, handle fixings or border attachments and no significant movement of handles, handle fixings, or borders relative to the mattress.

3.1.7 There shall be no evidence of any other defects arising from the tests or treatments which could significantly affect fitness for purpose of the mattress.

3.2 Roller durability test. The mattress, after preparation and conditioning in accordance with 3.2.1 and 3.2.2, and initial examination in accordance with 3.2.3 shall be subjected to 60 000 passes (including the preliminary treatment referred to in 3.2.3.2) of the roller in accordance with 3.2.4. It shall then be carefully examined for any defects caused by the roller treatment, in accordance with 3.2.5.

3.2.1 Test conditions. Tests shall be carried out with the temperature controlled within the range 15°C to 25°C and with the relative humidity within the range 40 % to 70 %. Test samples shall also be maintained in these conditions for a period of 24 hours prior to the commencement of any tests or examinations, after removal of any wrapping material, e.g. paper or polythene.

NOTE. Standard conditions of temperature and relative humidity ($20^{\circ} \pm 2^{\circ}\text{C}$ and $65 \pm 2\%$ r.h.) are desirable. At the present time it is not considered practicable to make such conditions mandatory.

3.2.2 Preparation of mattress for testing. All examinations and treatments shall be carried out on new mattresses. No preliminary conditioning, other than that required in 3.2.1, shall be carried out apart from the cutting of certain openings in the ends of the mattress to facilitate internal examinations. Such openings are to be bound together during the taking of all measurements and during durability treatments.

NOTE. Handle strength testing takes place on the same mattress, after the roller durability treatment.