

Specification for

Webbing load restraint assemblies for use in surface transport

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Committees responsible for this British Standard

The preparation of this British Standard was entrusted by the Textiles and Clothing Standards Committee (TCM/-) to Technical Committee TCM/7 upon which the following bodies were represented:

- Association of Solid Woven Belting Manufacturers
- British Narrow Fabrics Association
- Consumer Standards Advisory Committee of BSI
- Home Laundering Consultative Council
- Man-made Fibres Producers Committee
- Ministry of Defence
- Society of Dyers and Colourists
- Textile Institute

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

- Association of Webbing Load Restraint Equipment Manufacturers
- British Railways Board
- Made-up Textiles Association
- Road Haulage Association Ltd
- Textile Research Council
- Vehicle Builders and Repairers Association

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Foreword

This British Standard has been prepared under the direction of the Textiles and Clothing Standards Committee and forms a revision of the 1979 edition. It supersedes BS 5759:1979 which is withdrawn.

Textile load restraint systems may be used to secure cargo for road, rail and sea transport taking into consideration the different forces experienced during normal transportation of goods.

Changes from the previous edition clarify the standard in terms of the relationship between the rated assembly strength, and the load to be restrained. Particular requirements for rail transport have also been included.

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Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 12, 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.

1 Scope

This British Standard specifies requirements for webbing load restraint assemblies for use in road, rail and sea transport. It also includes particular requirements for rail transport. It is not intended to apply to webbing assemblies such as load restraint nets, which are specified in BS 6451, nor does it include anchorage points.

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

2 Definitions

For the purposes of this British Standard, the following definitions apply.

NOTE Additional definitions relating to webbing load restraint equipment are given in Appendix A.

2.1

breaking force

the maximum tensile force observed during a test in which the assembly is stretched until it breaks

2.2

load restraint assembly (lashing)

an assembly comprising webbing, one or more suitable tensioning devices or buckles, and any other fittings incorporated in the assembly but excluding anchorage points

2.3

load restraint system

a collection of load restraint assemblies

2.4

rated assembly strength (RAS)

one half of the mass, in tonnes, that the assembly will sustain in straight line pull

NOTE 1 The rated assembly strength for webbing load restraint assemblies is referred to in the Code of practice "Safety of loads on vehicles" published by HMSO under the authority of the Department of Transport, 1984.

NOTE 2 Figure 1 indicates the forces and accelerations that may be encountered in surface transport.

2.5

representative assembly

an assembly representative of a production run or batch of assemblies. It is not necessarily of the same length but is of the same type (i.e. has webbing of the same type of weave, the same width and the same material and, if applicable, has the same type of end fitting and tensioning device)

2.6

webbing

a woven narrow fabric, the prime function of which is load bearing. It is generally of a coarse weave and multiple plies

3 Design and construction

The load restraint assembly shall be composed of the following:

- a) webbing;
- b) suitable tensioning device(s);
- c) any fittings appropriate to the particular design or assembly.

NOTE. The design and construction of the assembly should be suitable for its intended use. For guidance in this respect, refer to the Code of practice "Safety of loads on vehicles" published by HMSO, 1984.

4 Webbing

The webbing shall be woven from continuous filament, high tenacity polyester, polyamide or polypropylene yarns.

NOTE 1 Polyester loses little strength when wet, it is resistant to moderate strength acid but can be damaged by alkali.

Polyamide may lose up to 15 % in strength whilst wet, it is highly resistant to alkalies but can be damaged by moderate strength acids.

Polypropylene is particularly useful where chemical inertness is an important requirement in use. Attention is drawn to the fact that some polypropylene products are likely to be susceptible to actinic degradation, and it is essential that an ultraviolet stabilizer be incorporated in the polymer. Attention is also drawn to the fact that certain types of polypropylene may be susceptible to stress relaxation which, particularly in certain climatic conditions, can reduce the tension in the assembly.

The webbing shall be supplied loomstate, coloured, or treated to improve resistance to abrasion or light degradation. The edges shall have non-fray characteristics.

NOTE 2 The webbing should be uniformly woven, free from any defect liable to affect its performance.

NOTE 3 No absolute strength value is specified for the webbing, since the webbing strength required to obtain a specified assembly strength will vary according to the particular design or assembly.

5 Hardware

5.1 All hardware shall be free from burrs and sharp edges. The edges of hardware which are in contact with the webbing shall have a minimum radius of 1.5 mm. If requested by the purchaser, metal parts, when subjected to the corrosion test specified in BS 5466-1, shall be free from ferrous corrosion.

5.2 The buckle or tensioning device shall be of such a design as to require a positive action to release it.

5.3 The buckle, tensioning device or end fitting shall show no signs of damage that will affect the function of the mechanism when tested by the method given in Appendix B and, when made up into an assembly or representative assembly and tested in accordance with Appendix C, it shall comply with the assembly breaking force appropriate to the rated assembly strength calculated as in clause 7.

6 Making-up

6.1 Sewing threads shall be of the same material as the webbing.

6.2 The seams shall be made on a machine with lock stitch. Any damage caused by the stitches to the yarn in the webbing shall not affect the performance of the assembly.

6.3 The stitches shall not touch or affect the edge of the webbing, and shall not be closer to the edge than 3 mm. The locking of the stitches shall not be visible on either side of the webbing.

6.4 The stitches shall be locked or backstitched so that they do not unravel in use. There shall be no more than one fault (e.g. a missed stitch, broken thread, etc.) in a seam length of 100 mm. Each fault shall be compensated for by back- or over stitching for a distance of at least 25 mm.

6.5 The ends of cut webbing shall be finished in such a way as to avoid unravelling.

7 Rated assembly strength

The breaking force of the assembly or representative assembly shall be determined in accordance with Appendix C. From the breaking force figures obtained, in kilonewtons, the rated assembly strength, in tonnes, shall be calculated by means of the equation:

$$\text{Rated assembly strength} = \frac{\text{Assembly breaking force}}{2 \times 9.81}$$

NOTE The calculated rated assembly strength may be rounded down, in accordance with BS 1957 to the nearest two significant figures but may not be rounded up.

8 Particular requirements for rail transport

8.1 In addition to the other requirements of this British Standard, webbing load restraint assemblies for use in rail transport shall comply with the requirements specified in 8.2 to 8.5.

8.2 The webbing shall be 50 ± 2 mm wide when tested in accordance with BS 1930 and not greater than 3.5 mm thick when tested in accordance with BS 2544.

8.3 No modifications or repairs shall be undertaken on webbing.

8.4 The assembly shall withstand a tensile force of 45 kN, when tested in accordance with Appendix C.

8.5 The webbing shall be protected by the use of sleeves manufactured from the same material as the webbing, and woven in a tubular form. The ends of the sleeves shall be heat sealed.

NOTE Fixed winches on rail wagons should be at least equal in strength to the specified webbing and should be used in preference to loose equipment. If the load, because of its shape and general size, precludes the use of fixed winches, only tensioning devices which have been approved by the relevant transport authority should be used.