



Guidance on the Thorough Examination of Textile Slings

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1. INTRODUCTION

Textile slings are widely used in many industrial sectors including construction, marine, aviation, manufacturing and general engineering. They can be used for a variety of purposes including lifting and handling. There is a wide range of possible causes of degradation and damage of all types of textile slings which should be considered and assessed at each Thorough Examination.

2. LEGAL REQUIREMENTS

Under the Lifting Operations and Lifting Equipment Regulations 1998 (LOLER), textile slings are termed 'accessories for lifting'. They are also 'work equipment' within the meaning of the Provision and Use of Work Equipment Regulations 1998 (PUWER).

The key requirements for textile slings under the provisions of LOLER and PUWER are:

- **Suitability** — must be suitable for the intended use.
- **Mode Factor** — must be clearly marked with its Working Load Limit (WLL) and must not be used above the WLL.
- **Information and training** — employers are required to ensure that employees are adequately informed, instructed trained and competent in the safe use of equipment.
- **Maintenance** — must be kept, used and stored in a designated area. The condition should be suitable for continued safe use.
- **Thorough Examination** — must be thoroughly examined by a competent person at least every 6 months, or in accordance with a scheme of examination. Records of thorough examination must be as per LOLER 1998, Schedule 1.
- **Inspection** — must be visually inspected prior to use. If any defects are found, the sling should be withdrawn from service.

3. STANDARDS

Further information regarding European Harmonised Standards detailing design and construction of textile slings can be reviewed within:

BS EN 1492-1:2000+A1:2008 — Textile Slings — Safety — Flat woven webbing slings made of man-made fibres for general purpose use.

BS EN 1492-2:2000+A1:2008 — Textile Slings — Safety — Round slings made of man-made fibre ropes for general purpose use.

BS EN 1492-4:2004+A1:2008 — Textile Slings — Safety — Lifting slings for general purpose made from natural and man-made fibre ropes.

Textile slings which conform to BS EN 1492 will have a Factor of Safety ratio 7:1. This is as per The Machinery Directive part 4.1.2.5 c) which states;

The working coefficient for textile ropes or slings is dependent on the material, method of manufacture, dimensions and use. This coefficient must be chosen in such a way as to guarantee an adequate level of safety; it is, as a general rule, equal to 7, provided the materials used are shown to be of very good quality and the method of manufacture is appropriate to the intended use. Should this not be the case, the coefficient is, as a general rule, set at a higher level in order to secure an equivalent level of safety. Textile ropes and slings must not include any knots, connections or splicing other than at the ends of the sling, except in the case of an endless sling.

4. OTHER CONSIDERATIONS

As slings are used throughout engineering industry, variants are common to encounter on a daily basis.

The below should be considered.

Single Trip Slings

Single trip slings tend to be thinner and narrower than the general-purpose textile sling as they are not intended for repeated use but will have the same WLL as general purpose slings.

The intended purpose of a single trip sling is to accompany the load from the initial site to load destination. After the trip the **sling must be destroyed or returned to owner**. The label should indicate the intended use and the sling may have the intended use printed along the working length. This may be present in different languages including: - ('One trip sling', 'einweg hebeband', 'ne pas reutilizer', 'non riutilizzare', 'eslinga un solo uso' or similar translation for the country of origin.)



Fig 1. Example of single use sling label
Note: Monouso translated 'single use'.

Sling Colours

General use textile slings are present in various colours stated within the 'WLL and colour codes table' in BS EN 1492, however colours not indicated within this standard are common to encounter. For instance - a common textile sling colour within theatre work is black - to obscure the sling from view.

Textile slings of other nominal WLL's not indicated within BS 1492, shall not be denoted with the colours indicated. BS EN 1492 does not exclude use of other WLL and colours.

5. EQUIPMENT CHARACTERISTICS

Accessories for lifting should be carefully selected after a suitable and sufficient risk assessment has been completed and documented for the particular work activity.

Textile slings can be made from natural fibres such as sisal, manila and hemp or man-made materials such as polyester, polyamide and polypropylene.

Certification in the form of a declaration of conformity and the visible marking of safe working loads are statutory requirements and should be made available for scrutiny as deemed necessary at the time of the thorough examination.

Other information which should be included on the item label will include the following;

- Working Load Limit
- Material of sling
- Grade of fitting
- Nominal length in m
- Manufacturers name, symbol, trade mark
- Traceability code
- Number and relevant part of European Standard (BS EN 1492)

Depending on the material the colour of the label will be as follows;

- Polyamide – Green
- Polyester – Blue
- Polypropylene – Brown
- Manila / Sisal / Hemp – White

6. EXAMINATION CONSIDERATIONS

Some of the more important points which need to be considered when carrying out a thorough examination are as follows:

- Assess the suitability of the marking of the Working Load Limit (WLL) on the textile sling
- Assess the suitability and legibility of the unique identification number
- Assess any heat and friction damage. The surface fibres take on a glazed appearance especially where the fibres have melted and fused.
- Assess any abrasion. If the webbing shows signs of local abrasion, as opposed to general wear, serious loss of strength may occur. Check the webbing is free from grit or sharp particles.

- Assess any damaged stitching. Damage to the stitching or looseness of the threads is cause for concern.
- Assess the webbing as often the yarn becomes loose so the weft can be moved or split.
- Assess any cuts. Both longitudinal and cross cuts into the surface of the webbing result in loss of strength. Cross cuts on the edges of flat textile slings are particularly detrimental to the strength of the sling.
- Assess any areas affected by ultraviolet light, biological or chemical attack. Local weakening and softening of the material may result which is often indicated by flaking of the surface fibres.
- Assess the surfaces for chafing. Some chafing is acceptable if this is confined to the surface fibres. Any substantial chafe must be viewed critically.
- Assess the extent and severity of soiling. Heavy soiling can obscure damage, making detection difficult. It can also make identification difficult by obscuring any marking or colour coding. Grit and dirt will pick up on the face of soiled webbing and can cause rapid wear and abrasion. Where necessary they should be washed in clean water or in accordance with the manufacturer's instructions.
- Assess any damaged or deformed fittings. Cuts, abrasion and damage to the stitching around folded eyes and local protection should be carefully assessed. Terminal fittings should be checked for any damage. Particular attention should be made to the webbing where it passes around terminal fittings as this is a point of high wear and cutting can occur from misuse.
- Assess any weld spatter burns. Textile slings are often used in welding processes as they insulate the work piece from the lifting appliance. Weld spatter will cause localised burning and will embed in the webbing causing internal abrasion.

7. REJECTION

The textile sling should be removed from service where:

- The weave of the fibres has been disturbed and / or discontinued.
- The outer sacrificial sheath has either a single severe transverse cut or multiple cuts in a concentrated area of the sling, and where there is evidence of fibre withdrawal or abrasion.
- There is evidence of fibre extrusion from slings with outer sacrificial sheathes.
- Cuts are located which will affect the continued safe use – this may be localised to one area.
- If any load bearing stitches have been damaged.
- Slings should never be knotted or twisted.

