
International Standard



4878

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

Flat woven webbing slings made of man-made fibre

Élingues plates en sangles tissées en textiles chimiques

First edition — 1981-07-01

UDC 677.755/.756 : 677.4

Ref. No. ISO 4878-1981 (E)

Descriptors : webbing, hoisting slings, manmade fibres, equipment specifications, capacity of load, tension tests, designation, marking.



Documents

Document Sharing Hub

Price based on 13 pages

Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 4878 was developed by Technical Committee ISO/TC 38, *Textiles*, and was circulated to the member bodies in September 1979.

It has been approved by the member bodies of the following countries:

Australia	Israel	South Africa, Rep. of
Belgium	Italy	Spain
Bulgaria	Japan	Sweden
Canada	Korea, Rep. of	Switzerland
Cyprus	Netherlands	Turkey
Czechoslovakia	New Zealand	United Kingdom
Egypt, Arab Rep. of	Norway	USA
Finland	Poland	USSR
Ghana	Portugal	Yugoslavia
Indonesia	Romania	

The member bodies of the following countries expressed disapproval of the document on technical grounds:

France
Germany, F.R.

Flat woven webbing slings made of man-made fibre

1 Scope and field of application

1.1 This International Standard specifies the basic characteristics of flat woven webbing slings made of certain man-made fibres (polyamide, polyester and polypropylene) used for lifting purposes or handling loads, and defines the tests and procedures needed to verify them.

In addition it stipulates the method of manufacture, identification and marking of these slings as well as the means of recording their characteristics.

This International Standard also gives important practical advice on the use, maintenance and inspection of slings (see annexes B and C).

1.2 This International Standard does not apply to special slings or to the types of applications indicated below :

- webbings used for the securing or lashing of cargoes to each other on pallets and platforms or in vehicles;
- slings consisting of webbing with a nominal width below 25 mm¹⁾ or above 320 mm, as well as special slings : bag slings, nets (consisting of several crossed webbings stitched together) "adjustable" slings (containing, for example, intermediate buckles stitched along the webbing), etc.;
- flat slings made from non-woven webbing, such as extruded profile webbing (with or without inclusion of continuous thread cores), monofilament webbing, webbing plaited from cable or rope²⁾;
- slings used for pre-slinging and not re-used;
- slings of tubular webbing without filling;
- slings formed from strips of cut fabric.

2 References

ISO 3, *Preferred numbers — Series of preferred numbers*.

ISO 17, *Guide to the use of preferred numbers and series of preferred numbers*.

ISO 139, *Textiles — Standard atmospheres for conditioning and testing*.

ISO 1833, *Textiles — Binary fibre mixtures — Quantitative chemical analysis*.

ISO 1968, *Ropes and cordage — Vocabulary*.

ISO 2076, *Man-made fibres — Generic names*.

ISO 2307, *Ropes — Determination of certain physical and mechanical properties*.

3 Definitions

3.1 sling : A flexible component for connecting the lifting appliance and the load during handling and lifting.

NOTE — A distinction is made between :

sling in basic configuration, i.e. a single or endless sling as used for determination of working load limit (see figure 9), and

finished sling or sling assembly, i.e. a sling in the form in which it is actually used (in some cases this will be the same as the sling in basic configuration, in others it will be a form thereof, as in choke hitch, or a derivation or multiple thereof).

3.2 flat woven webbing sling : A sling consisting of webbing with woven edges, sometimes terminating in end fittings to allow fastening.

3.3 woven webbing : A part of the sling comprising a woven area containing one or several woven warps intended to withstand the force exerted by the load.

1) The greatest care should be taken when using narrow or thin slings, because of their greater vulnerability to abrasion, cutting or twisting during use.

2) "rope" : A textile product not less than 4 mm diameter, generally consisting of three or four strands cabled or plaited together, with or without a core." (Definition from ISO 1968.)

3.4 seams : A method of securing the webbing to itself, or of securing several webbings to each other, by means of a number of stitches produced by thread traversing the layers.

Distinctions are made between two types of seam :

3.4.1 non-load-bearing seam : A seam which joins several webbings in layers without affecting the breaking force of the sling.

3.4.2 load-bearing seam : A seam by means of which one end of the webbing is joined either to the body of the webbing, to form a soft eye or to carry a metal attachment, or to itself to form an endless sling. The load-bearing seam withstands a considerable part of the force imposed upon the sling.

3.5 Types of slings

NOTE — The drawings are given as examples only.

The following are defined :

3.5.1 single sling with soft eyes (see figure 1) : A sling consisting of webbing of which each end is sewn to form an eye (see 3.9).

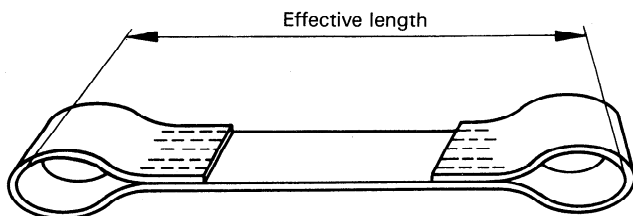


Figure 1 — Single sling with soft flat eyes

3.5.2 single sling with metal end fittings [see figure 2 a) and 2 b)] : A sling consisting of webbing each end of which is terminated with a metal fitting attached by sewing.

The two end fittings may be identical or different; if the sling is to be used in choked lift, one fitting should be able to pass through the other fitting.

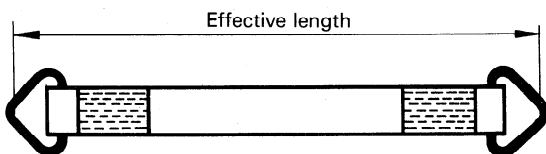


Figure 2 a) — Single sling with metallic end fittings

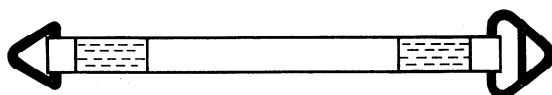


Figure 2 b) — Single sling with metallic end fitting to allow for choked lift

3.5.3 multiple sling (see figure 3) : A sling formed by two or more identical widths of webbing placed side by side widthwise and terminated at each end by a fitting common to all the widths : the different widths can be joined to each other in various places by flexible stitching, for example.

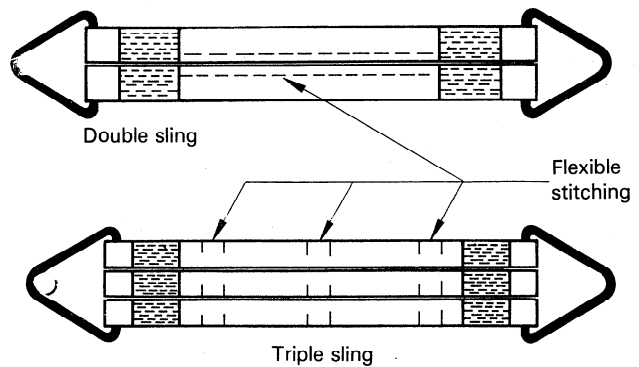


Figure 3 — Multiple slings

3.5.4 multi-layer sling (see figure 4) : A sling consisting of two or more layers of identical webbings superimposed in the lengthwise direction. When such slings comprise several widths of webbing, they are known simultaneously as multiple and multi-layer slings.

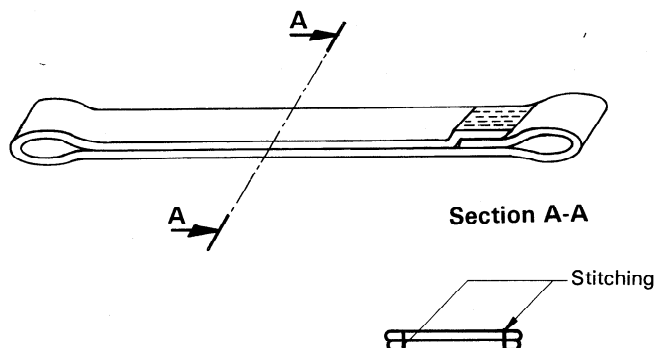


Figure 4 — Multi-layer sling

3.5.5 endless sling (see figure 5) : A sling consisting of a webbing with its ends sewn to each other. (Such a sling can also be woven endless without a seam.)

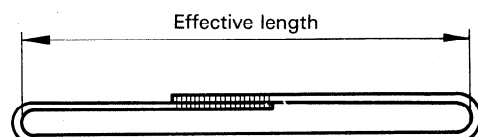


Figure 5 — Endless sling (single layer)

3.6 end fittings : Fittings attached to the end of the sling by stitching of the webbing (see 4.4).

3.7 eye reinforcement : A piece of reinforcing material put between the webbing and its end fitting. The reinforcement may be sewn to the webbing by a seam.

3.8 protective sleeve : A component of leather, woven fabric or other material, to provide extra protection to the webbing, but having no effect on the breaking force of the sling.

3.9 soft eye : An end of the sling webbing in the form of an eye, sewn so as to allow attachment or reeving. The inside of this eye can be reinforced in the same way as in 3.7.

Distinctions are made between three types of eye :

3.9.1 flat eye : An eye produced by sewing the webbing back on to itself without twisting (see figure 6).

3.9.2 reversed eye : An eye produced by sewing the webbing to itself after turning it through 180° so that the top of the webbing is placed on the back of the same webbing (see figure 7).¹⁾

3.9.3 folded eye : An eye produced by folding the parts of the webbing which form the eye (reversed eye) on to each other, the two edges being sewn either together or to the webbing itself (see figure 8). The folded eye can be provided with a "sleeve" (of leather or fabric, for example) for further protection.

3.10 effective length : The distance between the bearing points of the sling stretched out by hand (without noticeable tension) on a flat surface.

This length is measured either between the inner sides of the eyes formed by the webbing (single sling with soft eyes) (see figure 1) or between the inner sides of the bearing points of the end fittings (single slings with end fittings) [see figure 2 a)]. Endless slings are measured between the inner side of the ends of the laid-out fully extended sling (see figure 5).

3.11 breaking force of the webbing component : The maximum force, in decanewtons²⁾ which the sewn webbing component can withstand when tested to break in the form of a representative sling, i.e. complete with end fittings (if any), as described in 5.1.



Figure 6 — Flat eye

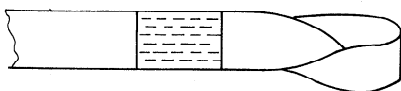
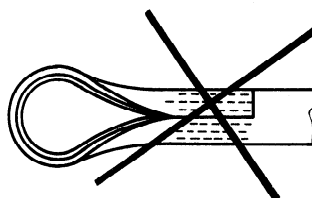


Figure 7 — Reversed eye



Figure 8 — Folded eye

1) The term "reversed eye" can also be used when the ends of the webbing are divided into two equal parts in a longitudinal sense, as shown in the figure below. This type of eye is strongly deprecated.



2) 1 daN is equivalent to 1,02 kgf.