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Conveyor belts — Guidelines for storage and handling

*Courroies transporteuses — Lignes directrices pour le stockage et la
manutention*

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Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 5285 was prepared by Technical Committee ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 3, *Conveyor belts*.

This second edition cancels and replaces the first edition (ISO 5285:1978), which has been technically revised.

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Conveyor belts — Guidelines for storage and handling

1 Scope

This International Standard gives guidelines for creating the most suitable conditions for the storage and handling of conveyor belts. It is not applicable to light conveyor belts as described in EN 873.

2 Normative references

The following referenced document is indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 2230, *Rubber products — Guidelines for storage*

3 Packing

3.1 Coiling

Belting is generally packed in a coiled form. Core inserts are not always necessary but for large, heavy belts or where stacking or excessive handling is anticipated (e.g. for overseas delivery), the cores used should be capable of withstanding the loads without damage or collapse. Cores made of wood or steel are recommended, having a square hole in the centre to accept a mounting bar. The diameter of the centre core, and the hole for the bar, depends on the mass, width and physical characteristics of the belting in the roll. Preferred hole sizes accommodate bars 50, 100, 150 and 200 mm square. It is important that the coil be wound

- a) tightly enough to prevent telescoping of the layers in subsequent handling and storage, and
- b) “square and true”, i.e. the top and bottom of the roll have a flat profile across the width of the belt — the edges of the belt in each layer of the coil should all be in line and at 90° to the outer surface.

3.2 Strapping

3.2.1 Coiled belting should be bound circumferentially by textile, plastic or steel strapping. For double coiled belts the configuration should be as shown in Figure 1.

3.2.2 Textile/plastic strapping should not be used for underground belting unless the material is acceptable to the purchaser after suitable risk assessment.

3.2.3 It should be noted that textile or fabric strapping may be subject to stretch or “creep” causing gradual instability of the coil, or a tendency to burst open if the coil is dropped. The possibility and consequence of these occurrences should be assessed before selection of the strapping type.

3.2.4 Strapping should have a suitable guaranteed minimum breaking load, be resistant to degradation for the storage life/conditions envisaged and be of sufficient width to prevent damage of the belt surface due to cutting.

3.3 Protection

3.3.1 The belting may be protected by paper, hessian, plastic sheeting, rubberized fabric or any other suitable covering material. All combustible protective packaging should be removed from any belt intended for underground use before the belt is taken underground.

3.3.2 Heavy rolls, and rolls which have to travel large distances, may be contained in timber-sided drums or crates. This is particularly relevant to steel cord belting.

3.3.3 If the packaging completely covers the belt, all relevant details of the belt should be written clearly on the outer wrapping.

3.3.4 Special packing and protection requirements may apply for certain belts and locations. These should be agreed between the manufacturer and the purchaser at the time of ordering.

3.4 Endless belts

Endless belts may be despatched in roll form or in crates, depending on size, but it is essential that the loop ends be protected from crushing by the insertion of suitable sized cores.

4 Storage

4.1 Environmental conditions

4.1.1 General

Storage indoors is usually preferable but if storage outdoors is unavoidable, the belting should be protected by covering with tarpaulin or other suitable material.

However, it may be permissible to store outdoors, without covering, belts which contain 100 % synthetic carcasses and which are protected by ozone- and weather-resistant compounds, unless storage time is measured in years or the ambient conditions are extreme.

Preferred rubber storage conditions are specified in ISO 2230.

4.1.2 Temperature

Extremes of temperature should be avoided.

Belting should be stored away from direct sources of heat such as boilers, radiators or direct sunlight.

If stored at temperatures below 0 °C, it may be necessary, before handling or unrolling, for the belting to be conditioned for at least 24 h at a temperature of not less than 10 °C in order to improve flexibility and reduce the risk of belt damage.

4.1.3 Humidity

Belting should be kept dry and any packaging used should not cause internal condensation. This is particularly important for belting containing fabric made from natural fibres.

4.1.4 Light

Belts, particularly those containing rubber, should be protected from light, especially direct sunlight and strong artificial light with a high ultra-violet content.

4.1.5 Ozone

Ozone is particularly deleterious to some types of rubber. Belts should not be stored in any room containing equipment which is capable of generating ozone, such as fluorescent or mercury vapour lamps, high-voltage electrical equipment or other items which may give rise to electric sparks or discharges.

Combustion gases and organic vapours should also be excluded as they could produce ozone via photochemical processes.

4.1.6 Other potentially harmful materials

Belting should be protected from contact with other potentially harmful materials such as acids, oils, caustic solutions or solvents.

4.2 Form of storage

4.2.1 Coils of belting should be stored with the central axis horizontal.

4.2.2 Belting stored outdoors should be raised off the ground for protection from damage by water, mud, grit etc. Pallets are preferable to wooden battens, which may cut into the surface of the belts if the area of battens in contact with the belt is insufficient. The ground surface should be hard and level.

4.2.3 Belts stored indoors may be placed directly onto hardstanding. They should be securely wedged to prevent rolling.

4.2.4 Belt rolls of up to 1 m diameter may be stacked several rolls high in nesting tiers, provided that the resultant pressure does not cause the centres to collapse or distort. The largest diameter rolls should be placed in the first tier and an adequate proportion of them should be securely wedged.

Stacks should be only one belt deep and there should be no contact between the stacks.

For a roll diameter, D , the maximum height of a stack should not exceed $3,5 \times D$ for storage, and $2,5 \times D$ for transportation.

Belting not coiled on centre cores that is to be stored for a significant length of time in stacks should have suitable lengths of steel tubing (or similar) inserted into the centres to prevent coil centre collapse and subsequently difficulty in handling.

4.2.5 Gangways should be adequately protected both in warehouses and in the open by the use, for example, of steel posts set firmly into the floor.

4.2.6 Rolls weighing over 10 Mg (10 000 kg), and having thick rubber covers should preferably be stored supported on a bar passed through the core.

5 Lifting

To lift a roll of belting, the preferred method is to insert a steel bar of suitable size through the centre hole and attach rope or chain slings hanging down from the spreader bar of a lifting apparatus to the protruding ends of the bar (see Figure 2). The spreader bar attachments should be wider apart than the belt width to avoid damage to the edges of the belt edges by the ropes or chains.

If a textile or plastic sling of sufficient strength and length is available as a lifting means, this may be fed through the core hole and used without a spread bar (see Figure 3).

For double coiled belts, as shown in Figure 1, it is necessary to insert two steel bars through the central cores and for the slings to be of sufficient length to pass around both bars.

No attempt should be made to hook into the outer lap of the coil or the binding material (strapping). Steel ropes or chains should not be used for lifting unless a spreader bar or suitable beam is available to prevent contact between the ropes or chains and the belt edges. On no account should a sling be tied around the circumference of a roll of belting for lifting purposes. Unequal load distribution, and/or telescoping of the coils, might cause the roll to fall out sideways (see Figure 4) risking serious injury to personnel.

6 Transport over short distance

6.1 Fork-lift trucks

6.1.1 A conventional truck of adequate load capacity may be used, provided that care is taken not to damage the outer laps of belting with the forks. Such damage may be prevented by placing cushioning material on the forks before lifting the roll (see Figure 5).

Alternatively, a boom nose truck attachment of suitable diameter may be used (in place of the forks) to fit into the centre holes of the belting (see Figure 6).

The length of the boom should be at least two-thirds of the reel width.

6.1.2 The use of fork-lift trucks is often regulated through national legislation or health and safety requirements. Regard should be paid to any such documents before operating fork lift trucks.

6.2 Without mechanical handling facilities

If no mechanical handling facilities are available, belting may be rolled along the floor, provided that the floor surface is not likely to damage the belting. Unstrapped rolls can only be rolled one way without uncoiling, but strapped rolls should be rolled in the direction as indicated in Figure 7 in order to prevent slackness around the core and the possibility of telescoping.

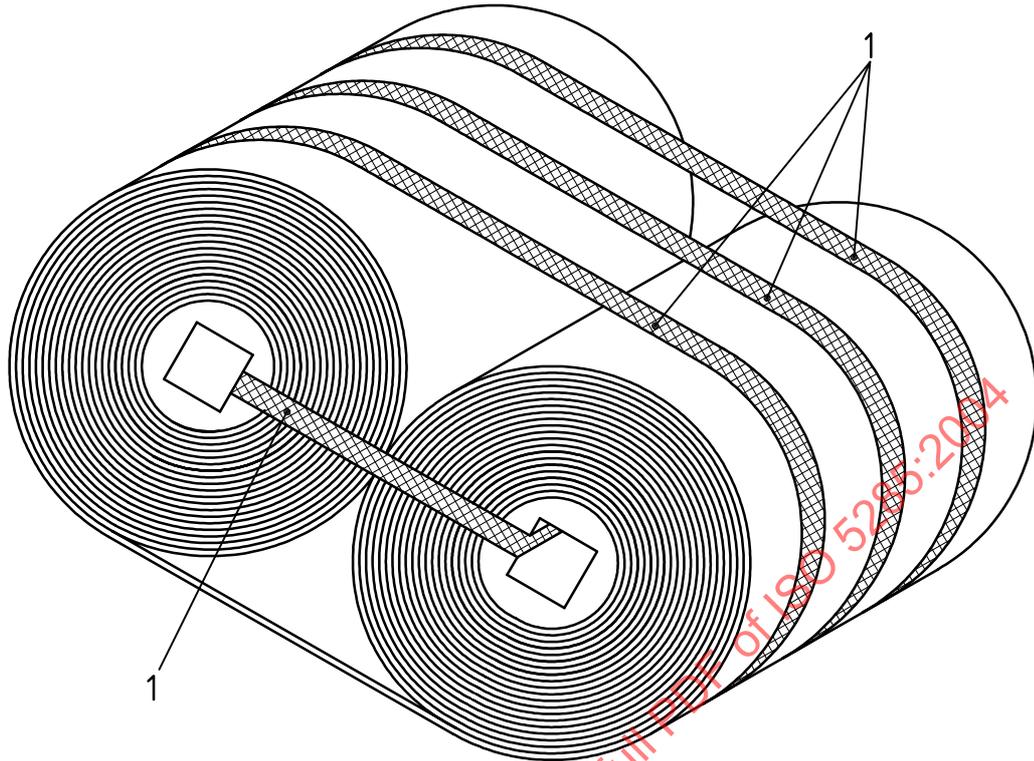
7 Running belt onto the structure

7.1 Existing structures

The roll of belting to be installed should be mounted in line with the conveyor structure on a bar supported by two A frames in such a manner that the top cover is correctly presented to the structure. The roll should be capable of turning easily, and being braked as necessary. It is usually convenient to attach the end of the new roll to the belt being removed, by means of a temporary joint, and then to draw the new belt on by pulling off the old belting.

7.2 New structures

A rope hawser should be attached securely to the end of the belt using a steel plate on the belt end. Suitable means of support of the belt end to prevent flapping and, for heavy belts, a "sledge" of suitable length should be used to guide the belt over the idler rollers.



Key

1 straps

Figure 1 — Double coiled — Configuration of strapping (minimum)

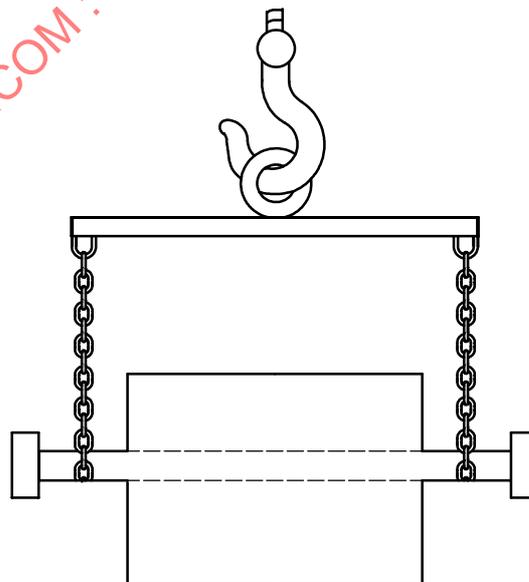


Figure 2 — Recommended method of lifting

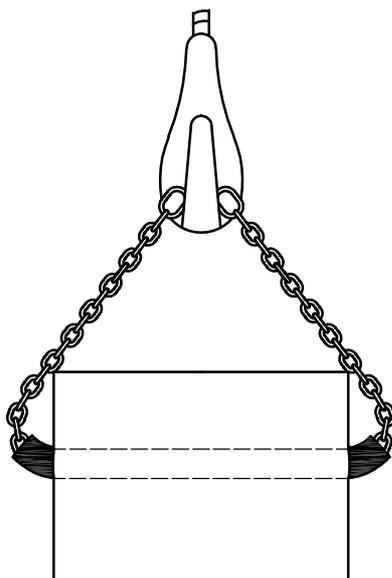


Figure 3 — Permissible method of lifting

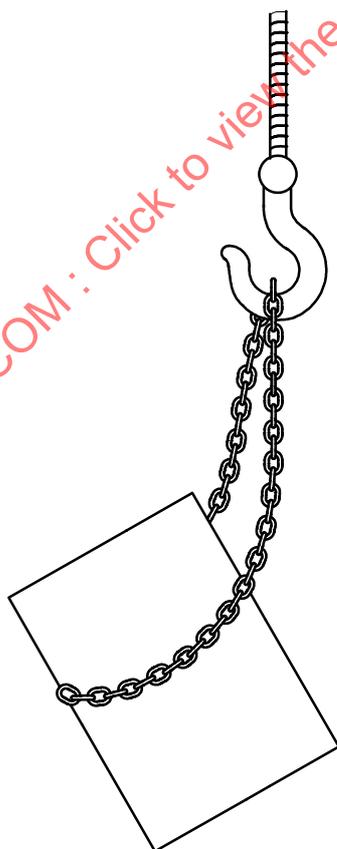


Figure 4 — Dangerous and unacceptable method of lifting

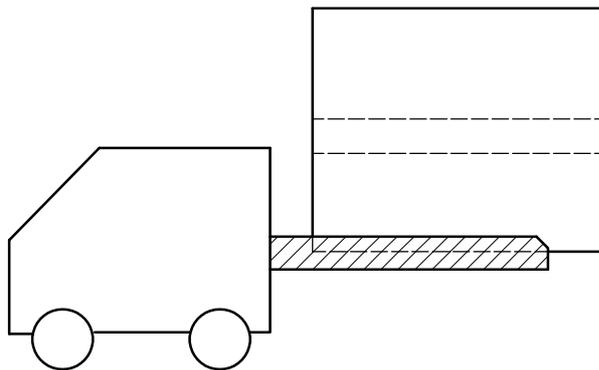


Figure 5 — Method of lifting to be used with caution

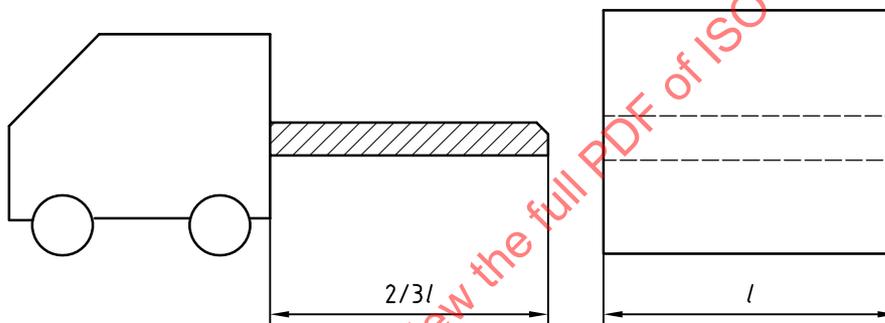


Figure 6 — Preferred method of fork-lift truck use with boom nose attachment

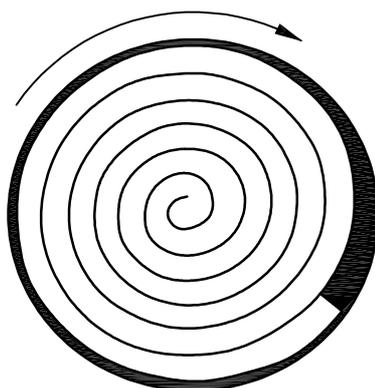


Figure 7 — Direction of rolling of strapped belts