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**Steel cord conveyor belts —**

Part 2:  
**Preferred belt types**

*Courroies transporteuses à câbles d'acier —  
Partie 2: Types de courroies recommandées*



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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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see [www.iso.org/directives](http://www.iso.org/directives)).

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For an explanation on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see the following URL: [www.iso.org/iso/foreword.html](http://www.iso.org/iso/foreword.html).

The committee responsible for this document is ISO/TC 41, *Pulleys and belts (including veebelts)*, Subcommittee SC 3, *Conveyor belts*.

This second edition cancels and replaces the first edition (ISO 15236-2:2004), which has been technically revised.

A list of all the parts in the ISO 15236 series can be found on the ISO website.

## Introduction

Steel cord conveyor belts are mainly long belts which are manufactured by joining several delivery lengths on the site. To achieve joints with a high dynamic capability from belts supplied by various manufacturers, it is necessary to standardize some features, e.g. thickness of carcass or cord pitch and cord diameter.



# Steel cord conveyor belts —

## Part 2: Preferred belt types

### 1 Scope

This document specifies preferred types of conveyor belts with steel cords in the longitudinal direction as reinforcement. The belt type series in this document are based on the general requirements for construction given in ISO 15236-1.

### 2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition indicated applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 15236-1:2016, *Steel cord conveyor belts — Part 1: Design, dimensions and mechanical requirements for conveyor belts for general use*

ISO 15236-4, *Steel cord conveyor belts — Part 4: Vulcanized belt joints*

### 3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- IEC Electropedia: available at <http://www.electropedia.org/>
- ISO Online browsing platform: available at <http://www.iso.org/obp>

### 4 Symbols and units

For the purposes of this document, the symbols and the units given in [Table 1](#) apply.

**Table 1 — Symbols and units**

| Symbol   | Explanation   | Unit |
|----------|---|------|
| $B$      | Belt width  | mm   |
| $F_{bs}$ | Breaking strength of the cord taken from the cured belt | kN   |
| $K_N$    | Nominal breaking strength per width of belt             | N/mm |
| $b_K$    | Calculated edge width                                   | mm   |
| $d$      | Cord diameter   | mm   |
| $n$      | Number of cords   | —    |
| $s$      | Cover thickness   | mm   |
| $s_6$    | Carcass thickness                                       | mm   |

**Table 1** (continued)

| Symbol | Explanation        | Unit |
|--------|--------------------|------|
| $t$    | Cord spacing/pitch | mm   |
| min    | Minimum value      | —    |
| max    | Maximum value      | —    |

## 5 General remarks

The belt types described in this document are a selection out of the unlimited number of possible constructions; belts of the types A and B have been manufactured and installed in large quantities.

It is the general conception of these belt types that belts of a certain nominal breaking strength have equal cords and cord pitches or at least equal thickness of the carcass.

The requirements regarding belt design, i.e. cord diameter and cord pitch, depend on the mode of joint that will be applied. In accordance with ISO 15236-4, there are three types of vulcanized joints:

- interlaced stepped joints;
- plain stepped joints;
- finger joints.

For high performance stepped joints, it is essential that the belts to be joined have equal cord pitch and cord diameter. For belts to be joined by finger joints, the cord pitch and cord diameter are of less importance; what matters is a similar thickness of the carcass. In [Tables 2, 3, 4](#) and [5](#), therefore, cord diameter, cord pitch and number of cords are specified only for those types which are usually joined by stepped joints, i.e. belt types A1, A2 and B2.

The cord numbers given in [Tables 2, 3](#) and [5](#) are for guidance only. They result from [Formula \(1\)](#):

$$n_{\min} = \frac{K_N \times B}{F_{bs} \times 1000} \quad (1)$$

and from the requirement that the edge width shall be not larger than 40 mm and not smaller than 15 mm, i.e.

$$15 \leq b_k \leq 40$$

A higher number of cords as well as a smaller number of cords can be applied provided that the requirements for minimum breaking strength specified in ISO 15236-1 and ISO 15236-4 are met. The belt breaking strengths are calculated by [Formula \(2\)](#):

$$K_N = \frac{F_{bs} \times n \times 1000}{B} \quad (2)$$

For the purposes of this document, the symbols and units given in [Table 1](#) apply.

## 6 Belt types A

Belt types A shall be manufactured with steel cords where the individual wires have been zinc coated by a hot dip process. Requirements for belt types A1 and A2 shall be as given in [Tables 2](#) and [3](#), respectively.

NOTE Belt types A are designed for interlaced stepped belt joints with numbers of steps between 1 and 4. The t/d ratio of the A2 belt types is somewhat lower than that of the belt types A1 resulting in thinner cords for comparable tensile strengths and in most cases a higher number of steps within the joint.



**Table 2 — Requirements for belt types A1**

| Type of belt                                 | Unit            | 500                  | 630  | 800  | 1 000 | 1 250 | 1 400 | 1 600 | 1 800 | 2 000 | 2 250 | 2 500 | 2 800 | 3 150 | 3 500 | 4 000 | 4 500 | 5 000 | 5 400 |
|--|-----------------|----------------------|------|------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Min. breaking strength $K_N$ min.            | N/mm            | 500                  | 630  | 800  | 1 000 | 1 250 | 1 400 | 1 600 | 1 800 | 2 000 | 2 250 | 2 500 | 2 800 | 3 150 | 3 500 | 4 000 | 4 500 | 5 000 | 5 400 |
| Max. cord diameter $d_{max}$ .               | mm              | 3,0                  | 3,0  | 3,7  | 4,2   | 4,9   | 5,0   | 5,6   | 5,6   | 5,6   | 5,6   | 7,2   | 7,2   | 8,1   | 8,6   | 8,9   | 9,7   | 10,9  | 11,3  |
| Min. breaking load of the cord $F_{bs}$ min. | kN              | 7,6                  | 7,6  | 10,3 | 12,9  | 18,4  | 20,6  | 26,2  | 25,5  | 25,5  | 26,2  | 39,7  | 39,7  | 50,0  | 55,5  | 63,5  | 75,0  | 90,3  | 96,0  |
| Cord pitch, $t$                              | mm              | 14,0                 | 11,0 | 12,0 | 12,0  | 14,0  | 14,0  | 15,0  | 13,5  | 12,0  | 11,0  | 15,0  | 13,5  | 15,0  | 15,0  | 15,0  | 16,0  | 17,0  | 17,0  |
| Min. thickness of covers $s_{min}$ .         | mm              | 4,0                  | 4,0  | 4,0  | 4,0   | 4,0   | 4,0   | 4,0   | 4,0   | 4,0   | 4,0   | 5,0   | 5,0   | 5,5   | 6,0   | 6,5   | 7,0   | 7,5   | 8,0   |
| Belt width $B$ in mm                         | Tolerance in mm | Number of cords, $n$ |      |      |       |       |       |       |       |       |       |       |       |       |       |       |       |       |       |
| 500  | +10/-5          | 33                   | 42   | 39   | 39    | 34    | 34    | 31    | N/A   | N/A   | N/A   | N/A   | N/A   | N/A   | N/A   | N/A   | N/A   | N/A   | N/A   |
| 650  | +10/-7          | 44                   | 54   | 51   | 51    | 45    | 45    | 41    | 46    | 52    | 56    | 41    | 46    | 41    | 41    | 41    | 39    | 36    | N/A   |
| 800  | +10/-8          | 54                   | 68   | 64   | 63    | 55    | 55    | 50    | 57    | 64    | 69    | 51    | 57    | 51    | 51    | 51    | 48    | 45    | 45    |
| 1 000  | ±10             | 68                   | 84   | 80   | 80    | 68    | 68    | 63    | 71    | 80    | 86    | 63    | 71    | 63    | 64    | 63    | 60    | 56    | 57    |
| 1 200  | ±10             | 84                   | 107  | 97   | 97    | 82    | 82    | 76    | 85    | 96    | 104   | 76    | 85    | 76    | 76    | 76    | 72    | 67    | 68    |
| 1 400  | ±12             | 96                   | 124  | 114  | 113   | 97    | 97    | 90    | 100   | 112   | 122   | 89    | 99    | 89    | 89    | 89    | 84    | 79    | 79    |
| 1 600  | ±12             | 111                  | 142  | 130  | 130   | 111   | 111   | 103   | 114   | 129   | 140   | 102   | 114   | 102   | 102   | 102   | 96    | 90    | 90    |
| 1 800  | ±14             | 125                  | 160  | 147  | 147   | 125   | 125   | 116   | 129   | 145   | 159   | 116   | 128   | 116   | 116   | 116   | 108   | 102   | 102   |
| 2 000  | ±14             | 139                  | 177  | 164  | 163   | 140   | 139   | 130   | 144   | 162   | 177   | 129   | 143   | 129   | 129   | 129   | 121   | 114   | 114   |
| 2 200  | ±15             | 153                  | 195  | 180  | 180   | 154   | 154   | 143   | 159   | 179   | 195   | 142   | 158   | 142   | 142   | 142   | 133   | 126   | 126   |
| 2 400  | ±15             | 167                  | 213  | 197  | 197   | 168   | 168   | 156   | 174   | 195   | 213   | 156   | 173   | 156   | 156   | 156   | 146   | 137   | 137   |
| 2 600  | ±15             | 181                  | 231  | 214  | 213   | 182   | 182   | 170   | 189   | 212   | 231   | 169   | 188   | 169   | 169   | 169   | 158   | 149   | 149   |
| 2 800  | ±15             | 196                  | 249  | 230  | 230   | 197   | 197   | 183   | 203   | 229   | 249   | 182   | 202   | 182   | 182   | 182   | 171   | 161   | 161   |
| 3 000  | ±15             | 210                  | 267  | 247  | 247   | 211   | 211   | 196   | 218   | 245   | 268   | 196   | 217   | 196   | 196   | 196   | 183   | 173   | 173   |
| 3 200  | ±15             | 224                  | 286  | 264  | 263   | 225   | 225   | 210   | 233   | 262   | 286   | 209   | 232   | 209   | 209   | 209   | 196   | 184   | 184   |

N/A = Not applicable because of troughability.

**Table 3 — Requirements for belt types A2**

| Type of belt   | Unit            | 1 000                | 1 250 | 1 400 | 1 600 | 1 800 | 2 000 | 2 250 | 2 500 | 2 800 | 3 150 | 3 500 |
|--|-----------------|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Min. breaking strength<br>$K_{N \text{ min.}}$         | N/mm            | 1 000                | 1 250 | 1 400 | 1 600 | 1 800 | 2 000 | 2 250 | 2 500 | 2 800 | 3 150 | 3 500 |
| Max. cord diameter<br>$d_{\text{max.}}$                | mm              | 3,7                  | 4,2   | 4,4   | 4,7   | 4,9   | 5,2   | 5,6   | 5,8   | 6,7   | 7,2   | 7,4   |
| Min. breaking load of the cord<br>$F_{\text{bs min.}}$ | kN              | 10,7                 | 13,3  | 14,9  | 17,1  | 19,2  | 21,3  | 24,0  | 26,6  | 35,9  | 40,4  | 44,9  |
| Cord pitch, $t$  | mm              | 10,0                 | 10,0  | 10,0  | 10,0  | 10,0  | 10,0  | 10,0  | 10,0  | 12,0  | 12,0  | 12,0  |
| Min. thickness of covers<br>$s_{\text{min.}}$          | mm              | 4,0                  | 4,0   | 4,0   | 4,0   | 4,0   | 4,0   | 4,0   | 4,0   | 5,0   | 5,0   | 6,0   |
| Belt width<br>$B$ in mm                                | Tolerance in mm | Number of cords, $n$ |       |       |       |       |       |       |       |       |       |       |
| 500  | +10/-5          | 47                   | 47    | 47    | 47    | 47    | 47    | 47    | 47    | 39    | 39    | 39    |
| 650  | +10/-7          | 61                   | 62    | 62    | 61    | 61    | 62    | 61    | 62    | 51    | 51    | 51    |
| 800  | +10/-8          | 76                   | 76    | 76    | 75    | 76    | 76    | 76    | 76    | 63    | 63    | 63    |
| 1 000  | ±10             | 96                   | 96    | 96    | 95    | 95    | 95    | 94    | 94    | 78    | 78    | 78    |
| 1 200  | ±10             | 116                  | 116   | 116   | 115   | 115   | 115   | 114   | 114   | 94    | 94    | 94    |
| 1 400  | ±12             | 136                  | 136   | 136   | 135   | 135   | 135   | 134   | 134   | 111   | 111   | 111   |
| 1 600  | ±12             | 156                  | 156   | 156   | 155   | 155   | 155   | 154   | 154   | 128   | 128   | 128   |
| 1 800  | ±14             | 176                  | 176   | 176   | 175   | 175   | 175   | 174   | 174   | 144   | 144   | 144   |
| 2 000  | ±14             | 196                  | 196   | 196   | 195   | 195   | 195   | 194   | 194   | 161   | 161   | 161   |
| 2 200  | ±15             | 216                  | 216   | 216   | 215   | 215   | 215   | 214   | 214   | 178   | 178   | 178   |
| 2 400  | ±15             | 236                  | 236   | 236   | 235   | 235   | 235   | 234   | 234   | 194   | 194   | 194   |
| 2 600  | ±15             | 256                  | 256   | 256   | 255   | 255   | 255   | 254   | 254   | 211   | 211   | 211   |
| 2 800  | ±15             | 276                  | 276   | 276   | 275   | 275   | 275   | 274   | 274   | 228   | 228   | 228   |
| 3 000  | ±15             | 296                  | 296   | 296   | 295   | 295   | 295   | 294   | 294   | 244   | 244   | 244   |
| 3 200  | ±15             | 316                  | 316   | 316   | 315   | 315   | 315   | 314   | 314   | 261   | 261   | 261   |

## 7 Belt types B

Compared with the belt types A, belt types B are built with transverse reinforcements as indicated in ISO 15236-1:2016, 5.2.

Belt types B are divided into two categories:

- belt types B1 with relatively high elongation “warp” cords;
- belt types B2 with standard elongation “warp” cords.

Requirements for belt types B1 and B2 shall be as given in [Tables 4](#) and [5](#), respectively.

A “weft” of steel cord with highly elastic elongation shall be arranged on top and below the longitudinal cords to form a carcass of the belt type ST S/S.

These belts may have only one weft of steel cords arranged above the longitudinal cords or with one weft of textile yarns arranged above and below the longitudinal cords. Each layer of cords shall be separated from each other by a rubber layer.

Belt types B shall be joined by

- “finger joints” or “plain stepped joints” for belt types B1, and
- “plain stepped joints” or “interlaced stepped joints” for belt types B2.

Table 4 — Requirements for belt types B1

| Type of belt                           | Unit | 500 | 630 | 800 | 1 000 | 1 250 | 1 400 |
|--|------|-----|-----|-----|-------|-------|-------|
| Min. breaking strength<br>$K_{Nmin.}$  | N/mm | 500 | 630 | 800 | 1 000 | 1 250 | 1 400 |
| Max. cord diameter<br>$d_{max.}$       | mm   | 3,0 | 3,0 | 3,0 | 3,0   | 3,0   | 3,0   |
| Thickness of the carcass with          |      |     |     |     |       |       |       |
| 2 textile wefts type ST T/T            | mm   | 5,6 | 5,6 | 5,6 | 5,6   | 5,6   | 5,6   |
| 1 metal weft type ST S/-               | mm   | 4,0 | 4,0 | 4,0 | 4,0   | 4,0   | 4,0   |
| 2 metal wefts type ST S/S              | mm   | 5,6 | 5,6 | 5,6 | 5,6   | 5,6   | 5,6   |
| Min. thickness of covers<br>$s_{min.}$ | mm   | 3,0 | 3,0 | 3,0 | 3,0   | 3,0   | 3,0   |

Table 5 — Requirements for belt types B2

| Type of belt                                    | Unit            | 800                  | 1 000 | 1 250 | 1 400 | 1 600 | 1 800 | 2 000 | 2 250 | 2 500 | 2 800 | 3 150 | 3 500 |
|---|-----------------|----------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Min. breaking strength<br>$K_{Nmin.}$           | N/mm            | 800                  | 1 000 | 1 250 | 1 400 | 1 600 | 1 800 | 2 000 | 2 250 | 2 500 | 2 800 | 3 150 | 3 500 |
| Max. cord diameter<br>$d_{max.}$                | mm              | 3,3                  | 3,3   | 3,3   | 3,3   | 3,3   | 3,3   | 3,3   | 3,3   | 5,4   | 5,4   | 7,1   | 7,4   |
| Min. breaking load of the cord<br>$F_{bs min.}$ | kN              | 10,5                 | 10,5  | 10,5  | 10,5  | 10,5  | 10,5  | 10,5  | 10,5  | 27,0  | 27,0  | 40,7  | 44,9  |
| Cord pitch, $t$                                 | mm              | 12,1                 | 9,7   | 7,7   | 6,9   | 6,1   | 5,4   | 4,8   | 4,4   | 9,9   | 9,3   | 11,0  | 12,0  |
| 2 textile wefts type ST T/T                     | mm              | 6,6                  | 6,6   | 6,6   | 6,6   | 6,6   | 6,6   | 6,6   | 6,6   | 8,6   | 8,6   | 10,6  | 10,6  |
| 1 metal weft type ST S/-                        | mm              | 5,5                  | 5,5   | 5,5   | 5,5   | 5,5   | 5,5   | 5,5   | 5,5   | 7,5   | 7,5   | 9,5   | 9,5   |
| 2 metal wefts type ST S/S                       | mm              | 7,0                  | 7,0   | 7,0   | 7,0   | 7,0   | 7,0   | 7,0   | 7,0   | 9,0   | 9,0   | 11,0  | 11,0  |
| Min. thickness of covers<br>$s_{min.}$ in mm    | mm              | 3,0                  | 3,0   | 3,0   | 3,0   | 3,0   | 3,0   | 3,0   | 3,0   | 4,0   | 4,0   | 5,0   | 5,0   |
| Belt width $B$ in mm                            | Tolerance in mm | Number of cords, $n$ |       |       |       |       |       |       |       |       |       |       |       |
| 650   | +10/-7          | 50                   | 62    | 78    | 87    | N/A   | N/A   | N/A   | N/A   | N/A   | N/A   | N/A   | N/A   |
| 800   | +10/-8          | 61                   | 77    | 96    | 107   | 122   | 138   | 153   | 172   | 75    | 83    | 70    | 64    |
| 1 000   | ±10             | 77                   | 96    | 123   | 134   | 153   | 172   | 193   | 215   | 94    | 104   | 88    | 80    |
| 1 200   | ±10             | 96                   | 119   | 149   | 163   | 185   | 209   | 235   | 258   | 114   | 125   | 105   | 96    |
| 1 400   | ±12             | 110                  | 137   | 175   | 192   | 218   | 246   | 276   | 301   | 134   | 146   | 123   | 112   |
| 1 600   | ±12             | 129                  | 158   | 198   | 221   | 250   | 283   | 318   | 347   | 154   | 166   | 140   | 128   |
| 1 800   | ±14             | 143                  | 178   | 224   | 250   | 283   | 320   | 360   | 392   | 175   | 187   | 158   | 144   |

N/A = Not applicable because of troughability.

## 8 Belt types C

The tension members of the belt types C shall be fabric-like constructions. For both types C1 and C2 the warp shall consist of brass or zinc coated steel cords.

NOTE The longitudinal steel cords in the belting of the belt types C1 have a higher elastic elongation than belt types C2.

The weft of belt types C1 shall either be of textile yarns or steel cords and be arranged either above or below or above and below the longitudinal cords.

The weft of C2 belting shall be of steel cords which are arranged either above or below or above and below the longitudinal cord.

Belt types C shall be joined by “finger joints” or “plain stepped joints”.

Requirements for belt types C1 and C2 shall be as given in [Tables 6](#) and [7](#), respectively.

**Table 6 — Requirements for belt types C1**

| Type of belt                                 | Unit | 500 | 630 | 800 | 1 000 | 1 250 | 1 400 | 1 600 | 1 800 | 2 000 | 2 250 | 2 500 | 2 800 |
|--|------|-----|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Min. breaking strength<br>$K_{Nmin.}$        | N/mm | 500 | 630 | 800 | 1 000 | 1 250 | 1 400 | 1 600 | 1 800 | 2 000 | 2 250 | 2 500 | 2 800 |
| Max. thickness of the carcass<br>$S_{6max.}$ | mm   | 5,3 | 5,3 | 6,1 | 6,1   | 8,0   | 8,0   | 8,0   | 8,0   | 8,0   | 10    | 10    | 10    |
| Min. thickness of covers<br>$S_{min.}$       | mm   | 3,0 | 3,0 | 3,0 | 3,0   | 4,0   | 4,0   | 4,0   | 4,0   | 4,0   | 4     | 4     | 4     |

**Table 7 — Requirements for belt types C2**

| Type of belt                                 | Unit | 630 | 800 | 1 000 | 1 250 | 1 400 | 1 600 | 1 800 | 2 000 | 2 250 | 2 500 | 2 800 | 3 150 |
|--|------|-----|-----|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Min. breaking strength<br>$K_{Nmin.}$        | N/mm | 630 | 800 | 1 000 | 1 250 | 1 400 | 1 600 | 1 800 | 2 000 | 2 250 | 2 500 | 2 800 | 3 150 |
| Max. thickness of the carcass<br>$S_{6max.}$ | mm   | 5,3 | 5,9 | 5,9   | 6,7   | 6,7   | 7,5   | 7,5   | 7,5   | 8     | 9,6   | 9,6   | 10,5  |
| Min. thickness of covers<br>$S_{min.}$       | mm   | 3,0 | 4,0 | 4,0   | 4,0   | 4,0   | 4,0   | 4,0   | 4,0   | 4     | 4     | 4     | 5     |



