STEELCORD /SEMPERCORD

STEEL CORD BELT AS PER DIN

SEMPERCORD steel cord belts are used in the following cases:

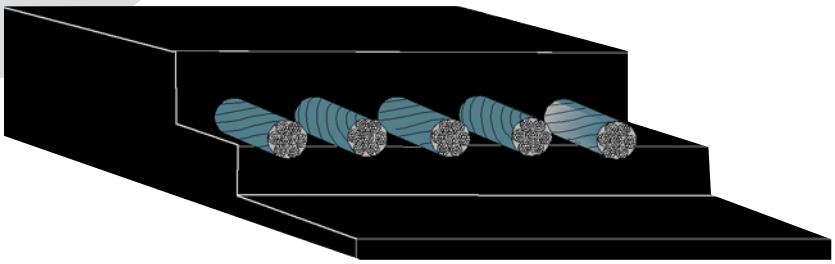
- severe conditions of use
- high outputs
- large centre distances and steep gradients
- high belt breaking strength

Areas of use:

- Coal mines
- Extraction industry
- Ore transformation installations
- Metallurgy
- Thermal power plants
- Sugar factories
- Port installations

Advantages of SEMPERCORD steel cord conveyor belts:

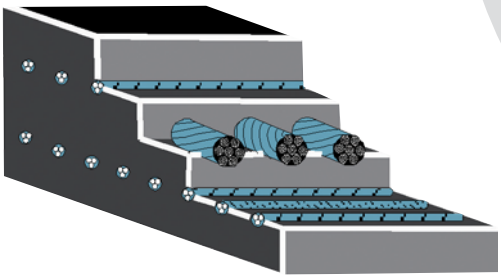
- Possibility of use in case of very high breaking strength (ST 7000 N/m)
- Low elongation, making possible the production of long conveyors with reduced tension travel
- Operating safety and long service life
- Good transverse flexibility allowing the use of deep troughs
- Capacity for use with low-diameter pulleys
- Resistance and service life of splices similar to those of the belt
- Belts complying with standards DIN 22131 and ISO 15236



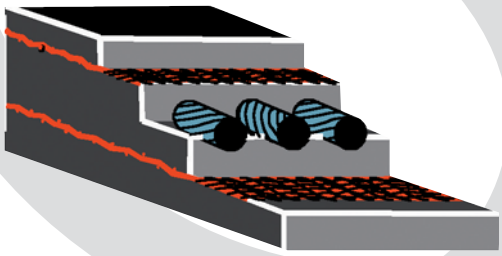
CONSTRUCTION OF BELTS WITH TRANSVERSE REINFORCEMENTS

The carcass is composed of warp cords with low elongation (elongation under reference load 0.2 – 0.3%).
Their number and diameter depend on the breaking strength of the belt. The transverse reinforcements consist:
- either of specific transverse metal cords with very high elasticity,
- or polyamide fabric.

These transverse reinforcements can be included in the carcass, in which case they are called the weft.
These transverse reinforcements can be included in the thickness of the cover, in which case they are called the breaker.

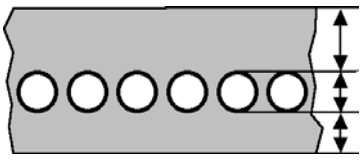


Metal belt with steel cords as per DIN 22131 / EN ISO 15236 with metal transverse reinforcements.

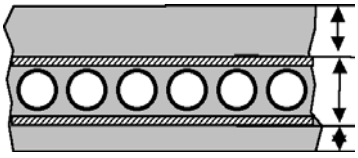


Metal belt with steel cords as per DIN 22131 / EN ISO 15236 with polyamide transverse reinforcements.

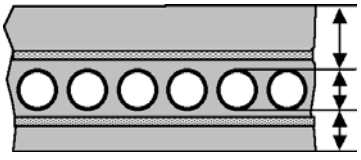
Depending on the working conditions, the transverse reinforcements may be placed on either side of the warp cords or on one side only.



Standard ST belt



ST belt with 2 metal wefts (ST S/S)



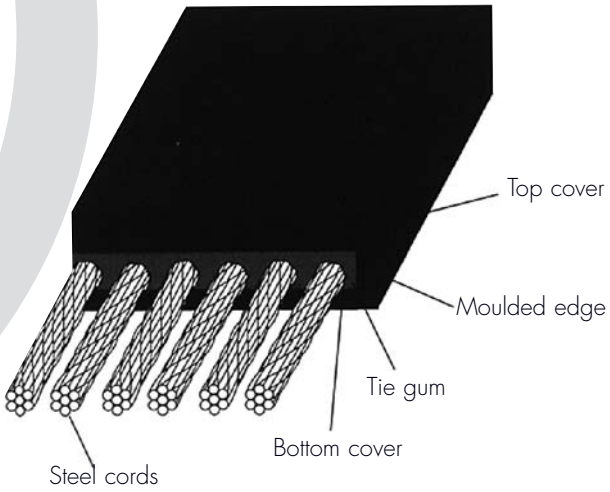
ST belt with 2 polyamide breakers

There are numerous solutions for the positioning of the transverse reinforcements. Please consult our technical departments to define the solution most appropriate for your needs.

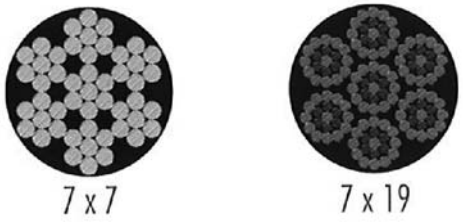
BELT CONSTRUCTION

Covers: excellent resistance to abrasion, ageing and light.
Bonder rubber: Adhesion to galvanised cords and to covers: excellent rubber penetration, high shear modulus, resistance to revulcanisation and ageing.

Transverse reinforcement: depending on the application, with or without transverse textile or metal breaker /weft.



Cord construction



The standard cords are hot-galvanised and have diameters of 3.7 to 11.2 mm and 7x7 or 7x19 constructions depending on the diameter (other constructions are possible). Brass-plated cords can be used. The construction of the cords enables good penetration and distribution of the rubber. Owing to an efficient chemical process, we obtain excellent rubber-metal adhesion. This chemical adhesion between cords and rubber and the construction of the cords guarantee excellent holding power which is in all cases greater than that demanded by the standards. The good penetration of the rubber and the good adhesion of each cord ensure that Sempercord belts have an exceptional service life.

The abrasion index, breaking strength and breaking elongation values of the covers depend on the grade of the cover mixtures chosen (X, Y, W, etc.).

MANUFACTURING STANDARD

Standards EN ISO 15236 and DIN 22131 define a number of belts. SEMPERTRANS® offers you an even greater choice (see table on page 32).

SEMPERTRANS RANGE®

- Range available: 630 to 5400 N/m with possibility of extension to 7000 N/m
- Cord diameter: 3.2 mm to 11.2 mm
- Belt width: 800 mm to 3200 mm
- Total belt thickness: 14 mm to 40 mm
- Cover thickness: wide range of pairs with a minimum according to the cord diameter used.
- Reel capacity: weight 35 T / lengths 500 to 700 m.

MIXTURES used for SEMPERCORD

Type of cover	Weight in kg/m² for 1mm of gum
X / 1S	1.11
Y	1.12
W	1.12
D	1.15
V	1.42
K	1.20
TEA / T1	1.12
R	1.13

Values given for information

The cover types and thicknesses are defined in accordance with the conditions of use of the belt, according to the following parameters.

- Condition of use of belt
- Materials conveyed
- Centre distances of conveyor
- Grain size of materials conveyed
- Density of materials conveyed
- Abrasiveness of materials
- Fire resistance required
- Temperature of material conveyed
- Resistance to chemical aggressions

RECOMMENDED MINIMUM COVER THICKNESS

Area of use	Type of materials	Top cover	Bottom cover
Bottom and surface conveyor	Graded coal, gravel, sterile materials	6-8	4-6
Bottom and surface conveyor	Raw coal, ores, sterile materials	8-10	5-6
Extractors, mobile belt conveyors, reloading stations	Blocks of coal, stone and ores	12-16	6-8

Standard range. "DIN" construction steel cord belt.

Belt type	ST 630	ST 800	**ST 1000**	**ST 1250**	ST 1400	ST 1500	**ST 1600**	ST 1800	**ST 2000**	ST 2250	**ST 2500**	**ST 3150**	**ST 3500**	**ST 4000**	**ST 4500**	**ST 5000**	**ST 5400**
Cord diameter (mm)	3.2	3.7	**3.7**	3.7 **4.4**	4.4 4.8	5.0 4.0	**5.2**	5.2 4.4	**5.2**	5.2	**6.8**	**7.6**	**8.2**	**8.8**	**9.3**	**10.6**	**11.2**
Cord construction	7x7	7x7	**7x7**	7x7	7x7	7x7	**7x7**	7x7	**7x7**	7x7	**7x19**	**7x19**	**7x19**	**7x19**	**7x19**	**7x19**	**7x19**
Pitch of cords t (mm)	15	15	**12**	10 **14**	12.7 15	15 10	**15**	13.5 10	**12**	11	**15**	**15**	**15**	**15**	**16**	**17**	**17**
Carcass weight (kg/m²)	6.1	8.5	**8.5**	9.0 **10.1**	10.6 11.3	11.6 10.5	**12.6**	13.3 11.8	**14.2**	14.8	**17.7**	**21.4**	**23.7**	**27.2**	**29.4**	**33.1**	**35.8**
Min. thickness of bottom cover (mm) DIN 22131	*	*	**4**	* **4**	* *	* *	**4**	* *	**4**	*	**5**	**5.5**	**6**	**6.5**	**7**	**7.5**	**8**
Usual thicknesses of covers	6+4	7+5	**8+6**	**8+6**	8+6	8+6	**8+6**	8+6	**8+6**	8+6	**10+6**	**14+7**	**14+7**	**15+8**	**16+10**	**16+10**	**16+10**
Belt thickness (mm) for these thicknesses	13.2	15.7	**17.7**	17.7 **18.4**	18.4 28.8	19.0 18.0	**19.2**	19.2 18.4	**19.2**	19.2	**22.8**	**28.6**	**29.2**	**31.8**	**35.3**	**36..6**	**37.2**
Rated width mm	Number of warp cords																
800±10	50	50	**64**	75 **55**	60 50	50 75	**50**	56 75	**64**	69	**50**	**50**	**50**				
1000±10	64	64	**81**	95 **69**	75 64	64 95	**64**	71 95	**81**	87	**64**	**64**	**64**	**64**	**59**	**55**	**55**
1200±10	77	77	**97**	116 **84**	92 77	77 116	**77**	86 116	**97**	105	**77**	**77**	**77**	**77**	**71**	**66**	**66**
1400±12	90	90	**114**	136 **98**	107 90	90 136	**90**	100 136	**114**	123	**90**	**90**	**90**	**90**	**84**	**78**	**78**
1600±12	104	104	**131**	155 **112**	123 104	104 155	**104**	115 155	**131**	141	**104**	**104**	**104**	**104**	**96**	**90**	**90**
1800±14	117	117	**147**	176 **127**	139 117	117 176	**117**	130 176	**147**	160	**117**	**117**	**117**	**117**	**109**	**102**	**102**
2000±14	130	130	**164**	195 **141**	154 130	130 195	**130**	145 195	**164**	178	**130**	**130**	**130**	**130**	**121**	**113**	**113**
2200±15	144	144	**181**	216 **155**	170 144	144 216	**144**	160 216	**181**	185	**144**	**144**	**144**	**144**	**134**	**125**	**125**
2250±15	147	147	**184**	221 **158**	174 147	147 221	**147**	163 221	**184**	201	**147**	**147**	**147**	**147**	**137**	**128**	**128**
2400±15	157	157	**197**	236 **169**	185 157	157 236	**157**	174 236	**197**	214	**157**	**157**	**157**	**157**	**146**	**137**	**137**
2450±15	161	161	**201**	240 **172**	190 181	161 240	**161**	178 240	**201**	219	**161**	**161**	**161**	**161**	**150**	**141**	**141**
2500±15	164	164	**206**	 **176**	194 164	164	**164**	182	**205**	224	**164**	**164**	**164**	**164**	**153**	**144**	**144**
2600±15	170	170	**213**	 **183**	202 170	170	**170**	190	**213**	235	**170**	**170**	**170**	**170**	**159**	**149**	**149**
2700±15	177	177	**222**	 **190**	209 177	177	**177**	187	**222**	240	**177**	**177**	**177**	**177**	**166**	**156**	**156**
2800±15	184	184	**231**	 **197**	217 184	184	**184**	204	**231**		**184**	**184**	**184**	**184**	**171**	**161**	**161**
3000±15	197	197		 **211**	233 197	197	**197**	219			**197**	**197**	**197**	**197**	**184**	**172**	**172**
3200±15	210	210		 **225**	 210	210	**210**				**210**	**210**	**210**	**210**	**195**	**184**	**184**

In bold the constructions not standardised in standards DIN 22131 / EN ISO 15236. The weights and thicknesses are given for information.

STANDARD RANGE
DIN CONSTRUCTION STEEL CORD BELT WITH METAL WEFTS

Belt type	ST 630	ST 800	**ST 1000**	**ST 1250**	ST 1400	ST 1500	**ST 1600**	ST 1800	**ST 2000**	ST 2250	**ST 2500**	**ST 3150**	**ST 3500**	**ST 4000**	**ST 4500**	**ST 5000**	**ST 5400**
Cord diameter (mm)	3.2	3.7	**3.7**	3.7 **4.4**	4.4 4.8	5.0 4.0	**5.2**	5.2 4.4	**5.2**	5.2	**6.8**	**7.6**	**8.2**	**8.8**	**9.3**	**10.6**	**11.2**
Cord construction	7x7	7x7	**7x7**	**7x7**	7x7	7x7	**7x7**	7x7	**7x7**	7x7	**7x19**	**7x19**	**7x19**	**7x19**	**7x19**	**7x19**	**7x19**
Pitch of cords t (mm)	15	15	**12**	10 **14**	12.7 15	15 10	**15**	13.5 10	**12**	11	**15**	**15**	**15**	**15**	**16**	**17**	**17**
Carcass thickness with 1 weft	5.4	5.9	**5.9**	5.9 **6.6**	6.6 7.0	7.2 6.2	**7.4**	7.4 6.6	**7.4**	7.4	**10.0**	**10.8**	**11.4**	**12.0**	**12.5**	**14.8**	**15.4**
Carcass weight (kg/m^2) with 1 weft	9.2	11.5	**11. 5**	12.1 **13.2**	13.7 14.3	13.5 14.6	**15.6**	16.4 14.9	**17.2**	17.9	**21.9**	**25.6**	**27.9**	**31.4**	**33.1**	**38.4**	**41.1**
Carcass thickness with 2 weft	6.8	7.3	**7.3**	7.3 **8.0**	8.0 8.4	8.6 7.6	**8.8**	8.8 8.0	**8.8**	8.8	**11.4**	**12.2**	**12.8**	**13.4**	**13.9**	**16.2**	**16.8**
Carcass weight ((kg/m^2) with 2 weft	12.0	14.3	**14.3**	14.9 **16.0**	16.5 17.1	17.4 16.3	**18.4**	19.2 17.7	**20.1**	20.7	**24.7**	**28.4**	**30.7**	**34.2**	**35.9**	**42.2**	**44.2**
Min. thickness of covers	4+4	4+4	**4+4**	**4+4**	4+4	4+4	**4+4**	4+4	**4+4**	4+4	**5+5**	**5.5 + 5.5**	**6+6**	**6.5 + 6.5**	**7+7**	**7.5 +**	**8+8**
Rated width mm	Number of warp cords																
800±10	50	50	**64**	75 **55**	60 50	50 75	**50**	56 75	**64**	69	**50**	**50**	**50**				
1000±10	64	64	**81**	95 **69**	75 64	64 95	**64**	71 95	**81**	87	**64**	**64**	**64**	**64**	**59**	**55**	**55**
1200±10	77	77	**97**	116 **84**	92 77	77 116	**77**	86 116	**97**	105	**77**	**77**	**77**	**77**	**71**	**66**	**66**
1400±12	90	90	**114**	136 **98**	107 90	90 136	**90**	100 136	**114**	123	**90**	**90**	**90**	**90**	**84**	**78**	**78**
1600±12	104	104	**131**	155 **112**	123 104	104 155	**104**	115 155	**131**	141	**104**	**104**	**104**	**104**	**96**	**90**	**90**
1800±14	117	117	**147**	176 **127**	139 117	117 176	**117**	130 176	**147**	160	**117**	**117**	**117**	**117**	**109**	**102**	**102**
2000±14	130	130	**164**	195 **141**	154 130	130 195	**130**	145 195	**164**	178	**130**	**130**	**130**	**130**	**121**	**113**	**113**
2200 to 3200	CONSULT OUR TECHNICAL DEPARTMENTS																

In bold the constructions not standardised in standards DIN 22131 / EN ISO 15236. The weights and thicknesses are given for information.

Weight and thickness of "DIN" construction STEEL CORD BELTS with TEXTILE REINFORCEMENTS (or BREAKERS) included in the thickness of the covers: take the values of the ST belts on page 33.

Reminder of definitions of transverse reinforcements

REINFORCEMENT (or BREAKER): transverse reinforcement of the cover; the width of this reinforcement must not be less than the width of the belt minus 100 mm. A reinforcement may be textile or metal.

WEFT: transverse reinforcement which is an integral part of the carcass; the width of this reinforcement must not be less than the width of the belt minus 50 mm. A weft may be textile or metal.

Examples of designation of belts (as per standard EN ISO 15236)

1 - Steel cord (ST) conveyor belt with a width of 2200 mm, minimum breaking strength of 2500 N/mm, top cover thickness 10 mm and bottom cover thickness 6 mm, grade X covers,
designation **2200 ST 2500 10+6 X**

2 - Steel cord (ST) conveyor belt with a width of 2000 mm, minimum breaking strength of 3150 N/mm, top cover thickness 12 mm and bottom cover thickness 8 mm, with transverse armatures (textile reinforcements) included in the thicknesses of the covers, grade X covers,
designation **2000 ST 3150 12T+8T X**

3 - Steel cord (ST) conveyor belt with a width of 2000 mm, minimum breaking strength of 3150 N/mm, top cover thickness 12 mm and bottom cover thickness 8 mm, with transverse armatures (metal reinforcements) included in the thicknesses of the covers, grade X covers,
designation **2000 ST 3150 12S+8S X**

4 - Steel cord (ST) conveyor belt with a width of 1800 mm, minimum breaking strength of 2000 N/mm, top cover thickness 8 mm and bottom cover thickness 5 mm, with transverse armatures (metal reinforcements) which are part of the carcass, grade W covers,
designation **1800 ST S/S 2000 8+5 W**

5 - Steel cord (ST) conveyor belt with a width of 1400 mm, minimum breaking strength of 1600 N/mm, top cover thickness 10 mm and bottom cover thickness 5 mm, with a transverse armature (metal reinforcement) included in the thickness of the top cover, grade Y covers,
designation **1400 ST 1600 10S+5 Y**

TECHNICAL SPECIFICATIONS (see page 66)

- Cover grade / resistance of covers to products conveyed
- Pulley diameter
- Tension travel
- Trough transition lengths
- Radius of curvature
- Turnover
- Idler spacing
- Roller skirt clearance
- Splicing

IMPORTANT NOTICE: This brochure has been prepared carefully, to advise our customers. The information stated therein is state of the art and the results of different tests carried out over several years. Individual operating conditions affect any product, which means that a product can only offer the safety that can be expected on the basis of the data provided in our product information. In the event that the product is used otherwise than in conformity with the specifications, such safety may not be assumed. Our responsibility is limited exclusively to delivery of the conveyor belt in accordance with the specifications.

The figures stated in our documents are mean approximate values for information but no specified or warranted values.

Please note: Before using the product in new areas of application which are not covered by the product information a Sempertrans engineer MUST be asked for advice.
Stocking, care and maintenance of all our products must be performed according to our stocking, care and maintenance guidelines and according to ISO 5285 standard ;

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