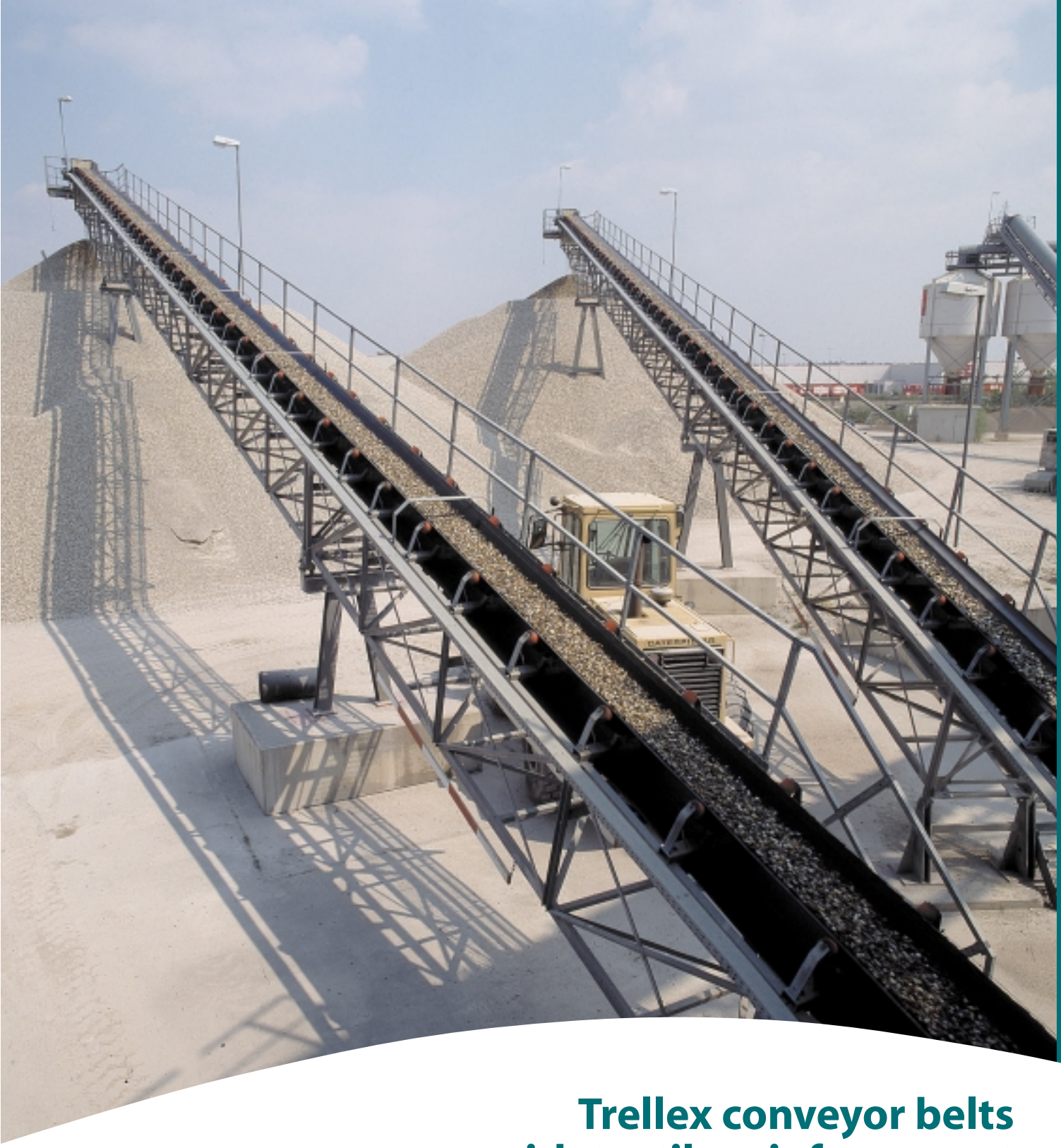


Conveyor Belts

www.metsominerals.com

Trellex conveyor belts with textile reinforcement

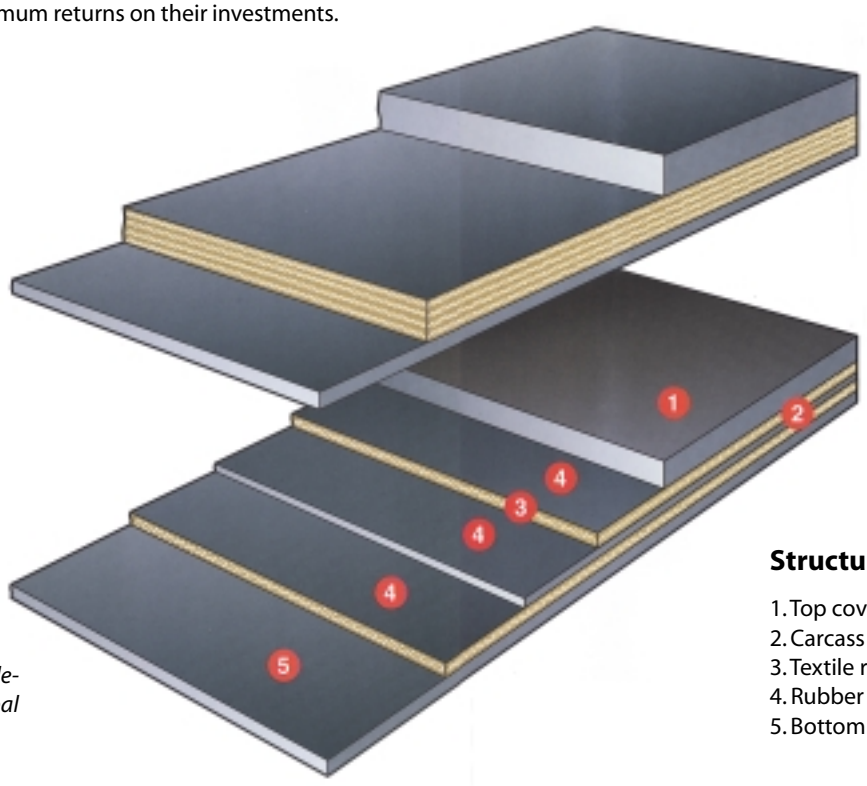
metso
minerals

The single source for textile belts

Metso Minerals delivers the world's most comprehensive range of conveyor belts. Based on more than 100 years of experience in development, manufacturing and applications know-how, Trellex conveyor belts and conveyor systems are designed to meet specific end-user requirements for high performance and cost-efficiency.
The Trellex range includes textile-reinforced belts, Trellex steelcord belts, Trellex aramid belts, Flexowell® sidewall belts and PVC belts, as well as a complete line of accessories for enhanced system performance. With subsidiaries in more than 40 countries and more than 200 service units in all parts of the world, Metso participates in engineering, design, installation, and service to ensure users of maximum returns on their investments.

Reinforcement

The reinforcement consists of a synthetic fabric called EP. The lengthwise or warp threads of this fabric are polyester (E), and the crosswise or weft threads are polyamide (P).
This fabric ensures high tensile-strength/weight ratio, excellent flexibility and outstanding troughing characteristics, as well as low elongation and high resistance to impact and chemicals.



The illustration shows the construction of a Trellex textile-reinforced belt and its principal characteristics.

Structure

1. Top cover
2. Carcass
3. Textile reinforcement
4. Rubber skim coat
5. Bottom cover

In-house quality asurance

The textile-reinforced belts are manufactured with state-of-the-art technology to ensure optimal price performance ratios, and every belt we deliver meets the strict criteria of the Metso Minerals Quality Assurance system.

Skim coat

Layer of rubber scaled to:
- Provide appropriate adhesion with reinforcement.
- Transmit and distribute tension between plies of reinforce ment.
- Absorb and distribute stress generated by impact.

Covers

The polymer used for the cover varies with the properties required for example styrene-butadiene or natural rubber are used for abrasion resistance, styrene-butadiene, butyl or ethylene/propylene rubber for heat resistance, chloroprene or styrene-butadiene rubber for flame resistance, chloroprene or nitrile rubber for oil resistance. Cleats or patterned surface are required for inclined belts.
Cover thickness depends on the characteristics of transported material and on loading conditions.

The Trellex range of textile-reinforced belts covers a broad spectrum of applications.

We got what it takes!

Heavy-duty transport of abrasive material

Trellex conveyor belts are designed for transport of heavy abrasive material such as rock, ore and gravel. The covers of these belts are made of extra-tough rubber with extremely high resistance to abrasion, shearing and impact. The fabric reinforcement is specially treated to ensure low elongation.
Trellex conveyor belts are anti-static, and have electrial surface resistance that complies by a wide margin with the maximum permissible limits of EN 20284. Trellex belts also comply fully with DIN, British Standard, Norme Française, ISO and EN.
Trellex conveyor belts can be delivered in any configuration to meet specific user requirements, in strengths of up to 3150 N/mm and widths of up to 2400 mm.
Belts exposed to very high impact force can be supplied with a breaker reinforcement.

Cover grades

Grade	ISO	DIN	Characteristics (example)
X, AA MM30	H	X	Wear resistant, heavy duty cover for sharp and lumpy material, or extreme drop heights
Y	L	Y	Wear resistant cover for standard applications
YW	D	Y, W	Wear resistant cover, for fine and abrasive material
Y-30	D	Y, W	Extremely wear resistant cover, for fine and abrasive material

Stock range of wear-resistant belts

Belt type	Cover thickness, mm Top	Bottom	Thickness (approx.) mm	Weight (approx.) kg/m²	Belt width mm
EP 160/2	2	1	4.6	5.6	300 - 1300
EP 200/2	2	1.5	5.6	6.4	300 - 1400
EP 250/2*	2	1	6	7.4	400 - 600
EP 250/2	3	1	6.3	7.7	400 - 1600
EP 250/2	3	1.5	6.8	8	400 - 1400
EP 315/2	4	1.5	7.9	9.4	500 - 1600
EP 315/3	3	1.5	7.3	8.2	800
EP 400/2	3	1	6.7	8.5	650 - 1600
EP 400/2	5	1.5	9.4	11.3	650 - 1600
EP 400/3	3	1	6.8	8.2	400 - 1000
EP 400/3	4	2	8.8	10.4	500 - 1200
EP 500/3	5	1.5	9.4	11.1	600 - 1600
EP 500/4	3	1	7.8	9.4	1000 - 1200
EP 500/4	4	2	9.8	11.6	1200 - 1400
EP 500/4	5	2	10.8	12.8	650 - 1000
EP 500/4	6	2	11.8	13.9	800
EP 630/4	5	2	11	13	2000 - 2400
EP 630/4	6	2	12	14.1	800 - 1600
EP 630/4	8	3	15	17.7	1000 - 1200
EP 630/5	5	1.5	11.3	13.5	800 - 1200
EP 800/5	6	2	12.8	16	1000 - 1200
EP 25/2	3	1	6.1	7	1300
EP 40/3	3	1	6.8	7.6	500 - 1500
EP 40/3	4	2	8.8	10	500 - 1500
EP 63/4	6	2	11.8	13.9	800 - 1200
EP 63/4	8	3	14.8	17.6	1000 - 1400

* with intermediate rubber

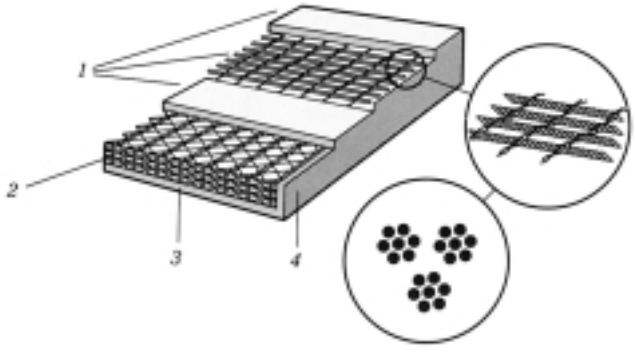
Wear-resistant

Some like it hot!

High-temperature applications

For high-temperature applications different types of belting are available – Retardant, High-Heat and Termo.
These belts are designed for transport of materials such as clinker, coke, foundry sand and slag.
Trellex heat-resistant conveyor belts can be used for transport of material at continuous temperatures of up to 150-190 °C, with peaks of up to 250 °C. Selection of belting depends on several factors, including the cooling rate and density of the material as well as the thermal coefficient of the belt. Users can rely on expertise from Metso engineers in order to identify appropriate belting for specific applications.

Quality	Elastomer	Permanent material tempera-tures up to	Occasional peaks up to
RETARDANT RETARDANT K	EPM	+190°C	+250°C
RETARDANT SUPER RETARDANT SUPER K	EPM	+190°C	+250°C
HIGH-HEAT	IIR/EPDM	+170°C	+190°C
TERMO	SBR	+150°C	+170°C



1 = Top cover incl. metal breaker
2 = Carcass
3 = Bottom cover
4 = Solid rubber edge

Retardant Super

Retardant Super is fitted with a metal breaker in the top cover which provides longer service life by protecting the carcass of the belt against burning by red-hot pockets in the material being conveyed.

Flame- and heat-resistant belts

In general, flame-resistant belts are not also heat-resistant.
Flame-resistant or self-extinguishing designs prevent fires from spreading over the entire belt.
Heat-resistant designs protect the belt from attack by hot materials that could otherwise reduce its service life.
For special applications, such as coke plants, belts that are both heat-resistant and flame-resistant can be supplied in the form of Retardant K or Retardant Super K.

Trellex flame-resistant and self-extinguishing belts

Belt type	Characteristics and Recommended applications	International Standard
K	Flame-resistant covers	ISO 340 EN 20340 ISO 284 EN 20284
S	Flame-resistant covers and carcass	
V	Self-extinguishing for under-ground coal mining	DIN 22109 (DIN 22118)
VT, VLS	Self-extinguishing for above ground coal mining	

Trellex belts can be supplied to meet other standards and/or specific user requirements.

Stock range of heat-resistant belts

Belt type	Cover thickness, mm Top	Bottom	Thickness (approx.) mm	Weight (approx.) kg/m²	Belt width mm
Termo EP 315/2	5	1.5	9.5	11	500 - 800
Termo EP 500/4	5	1,5	10.3	12.2	800 - 1000
Retardant EP 400/3	5	1.5	10	10.9	500 - 800
High Heat EP 400/3	4	2	9	10.3	650

When you have to keep in shape!

Trellex offers a total range of conveyor belts that are resistant to oil, grease and terpene.

Antioil G

Antioil is designed for use in highly aggressive oily environments. This grade means highest oil resistance of covers and carcass. Typical applications involve continuous exposure to mineral oil.

Trellex oil-resistant type GP

GP belts are used in sawmills and cellulose plants and are also highly appropriate for products with high oil content, such as oil plants or fertilizers.
The synthetic fabric reinforcement of a GP belt is impervious to oil, turps, moisture and rot. The top and bottom covers are made of oil- and terpene-resistant black rubber, so that they retain their shape, hardness and surface characteristics.
The covers are also colour-stable, so there is no risk of discolouring the material on the belt.

Pitch & Pine GPP

The Pitch & Pine grade has proven in the wood industry, for conveying woodchips or similar material. The cover is oil- and terpene-resistant, while the carcass consists of standard rubber.

Trellex XP3 sawmill belt

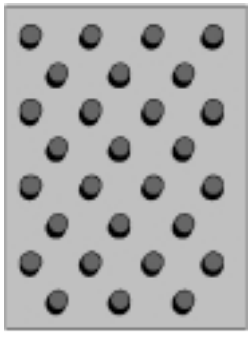
The top cover of the Trellex XP3 is made of light-coloured rubber, so that timber cannot be discoloured. The bottom cover is made of fabric to ensure low friction against the belt support.
The carcass of the Trellex XP3 is made of either 4 or 6 plies of synthetic material and features outstanding resistance to impact.

GAK belts

GAK can be used in areas where the risk for explosion is high eg. grain silos, sugar transport. This grade is oil- and fat-resistant, antistatic acc. to ISO 284 (EN 20284), flame-resistant acc. to ISO 340 (EN 20340). The belt type offers also FDA or BGA approval.

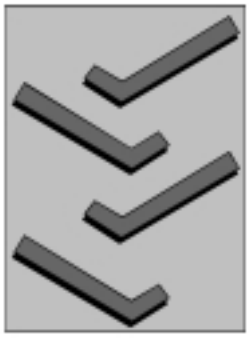
Profiled belts

Profiled belts are designed specifically for inclined transport of wood chips. The top cover has a nonslip pattern that ensures a secure grip at angles up to about 30°C.
Profiled belts are terpene-resistant and also retain their flexibility even at very low temperatures.

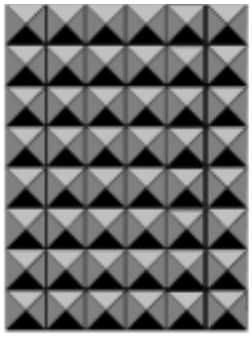


Nasta

Nappula



Ripa



Pyramid

Flame-resistant and oil-resistant GSR-, GK-belts

GSR-, GK-belts are resistant to both oil and flame. They are mainly used in the fertilizer industry since they have a good resistance against dust trapping agent (Lilamin).

Stock range of oil-resistant belts

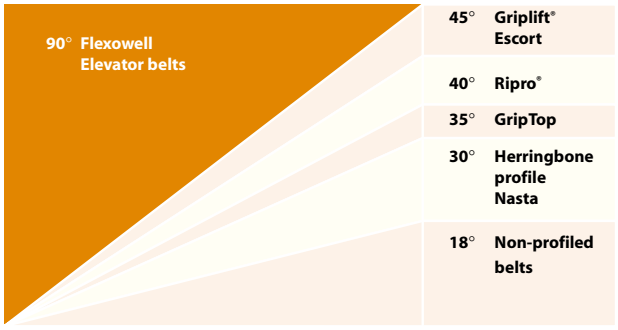
Belt type		Cover thickness, mm Top	Bottom	Thickness (approx.) mm	Weight (approx.) kg/m²	Belt width mm
GP	EP 315/2	3	1	6.5	7.2	500 - 1000
GP	EP 315/3	3	1.5	7.3	8.2	500 - 650
GP	EP 400/3	3	fabric	7	8.2	650 - 1300
GP	EP 400/3	4	2	8.8	10.4	800 - 1200
Pitch&Pine	EP 400/3	3	1	6.8	8.2	400 - 800
Trellex XP3	EP 500/4	0.2	fabric	4	4.6	200 - 1300
Trellex XP3	EP 500/6	0.2	fabric	5.5	6.4	300 - 1300

Oil & Terpene-resistant

A lift for your capacity!

Belts for inclined transport

Rubber conveyor belts with smooth surfaces are normally limited to applications with gradients of no more than 15-18°. Steeper angles call for belts with profiled or cleated surfaces that prevent bulk material or unit loads from sliding backward.



The data given above for angles of inclination are intended as guidelines.

Elevator belts

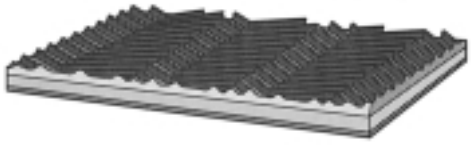
Vertical transport of abrasive goods such as gravel or crushed rock requires elevator belts with covers of wear-resistant rubber.
Trellex Elevator belts are also available in oil-, heat- or flame-resistant versions.

Escort

Supplied in version u-cleats and v-cleats for all types of bulkmaterial, such as rock, sand and gravel.
Escort is also suitable for material in sacks or bags.
Escort belts made of wear-resistant rubber are available from stock in the versions shown in the table. Escort is also available in various profiles, widths and rubber grades to meet specific user requirements.

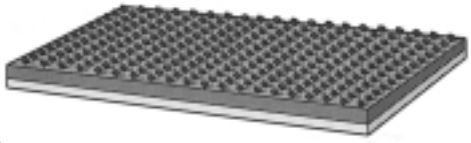
Nasta / Nappula / Ripa / Pyramide

Designed primarily for transport of wood chips. Nasta belts are available in wear-resistant qualities or terpene-resistant rubber.
For more details, see page 8.



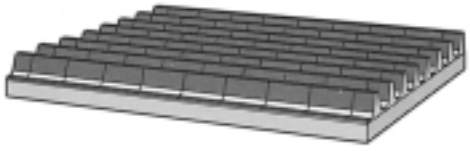
Herringbone profile

Herringbone belts are designed for unit loads such as sacks, boxes or parcels. These belts are also appropriate for bulk materials. They can be cleaned with brushes and are compatible with tandem drives.
Herringbone belts are available in wear-resistant, oil-resistant, flame-resistant or heat-resistant rubber.



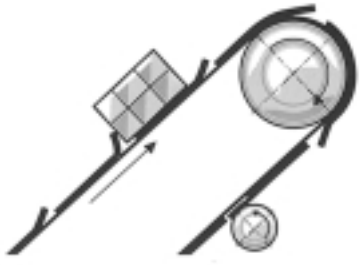
GripTop

GripTop is designed for transport of sacks, boxes and parcels. The top cover is made of black wear-resistant rubber with a non-slip pattern. The bottom side is made of fabric.
GripTop is also available with a top cover of green or brown rubber.



Ripro

Ripro belts are designed for transport of unit loads. The transverse ribs provide outstanding grip on sacks, boxes and parcels. The top cover is made of elastic rubber for enhanced grip.

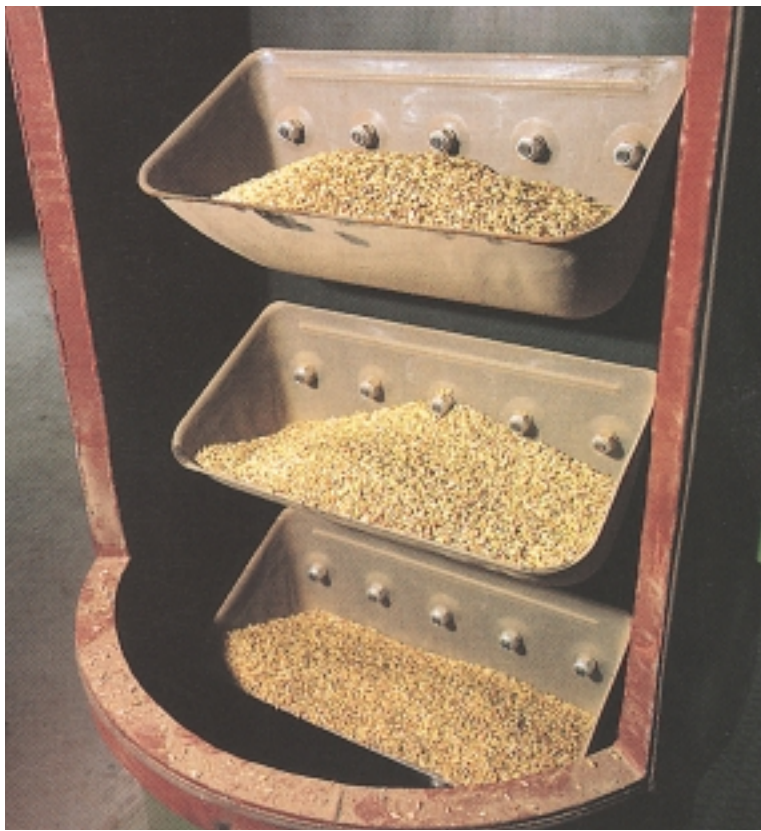


Griplift

This patented conveyor belt facilitates handling of boxes and parcels. It features folding cleats that are 25 mm high, spaced at intervals of 250 mm.

Stock range

Belt type		Cover thickness, mm Top	Bottom	Thickness (approx.) mm	Profile height mm	Belt width mm
ESCORT						
U-cleats						
FB 8	EP 250/2	2	1	5.0	15	300
	EP 250/2	2	1	5.0	15	400
	EP 250/2	2	1	5.0	15	500
FB 11	EP 250/2	2	1	5.0	15	400
	EP 250/2	2	1	5.0	15	500
FB 17	EP 250/2	2	1	5.0	15	500
FB 17	EP 400/3	2	1	6.0	15	600
	EP 400/3	2	1	6.0	15	650
FB 18	EP 400/3	2	1	6.0	15	650
	EP 400/3	2	1	6,0	15	800
	EP 400/3	3	1	7.0	15	1000
FB 28	EP 250/2	2	1	5.0	35	500
FB 28	EP 400/3	2	1	6.0	35	650
	EP 400/3	2	1	6.0	35	800
FB 35	EP 400/3	3	2	8.0	35	800
	EP 400/3	3	2	8.0	35	1000
V-cleats						
Nr. 101	EP 200/2	2	1.5	5.2	10	400
	EP 200/2	2	1.5	5.2	10	500
	EP 200/2	2	1.5	5.2	10	600
Nr. 130	EP 200/2	2	1.5	5.2	15	500
Nr. 131	EP 200/2	2	1.5	5.2	15	600
Nr. 140	EP 315/3	3	1.5	7.1	15	650
	EP 400/3	3	1.5	7.5	15	800
Nr. 141/25	EP 400/3	3	1.5	7.5	25	800
	EP 400/3	3	1.5	7.5	25	1000
Nr. 141/15	EP 400/3	3	1.5	7.5	15	1200
Nr. 142	EP 200/2	2	1.5	5.2	35	600
	EP 315/3	2	1.5	6.1	35	650
Carrier cleat						
Nr. 170	EP 250/2	3	1.5	6.5	70	300
	EP 250/2	3	1.5	6.5	70	400
	EP 250/2	3	1.5	6.5	70	600
	EP 250/2	3	1.5	6.5	70	800
GRIPTOP						
EE 200/2		2	fabric	6		300 - 1500
EP 400/3		3	1	8.6		650
RIPRO						
EP 250/2		4	0,5	7.7		400
B 200/3		4	fabric	8.5		500
ELEVATOR						
EP 630/4		2	2	8		300 - 1600
EP 1000/5		2	2	10.7		1600



From medicine to mining!

Belts for pharmaceuticals, food and electronic components White and light-coloured belts - types GA and A

Belts for pharmaceuticals, food and electronic components must meet extremely strict criteria for performance, reliability and hygiene, often under special chemical and thermal conditions.
These belts are made of white rubber so that dirt and /or contaminants on the belt are easily seen, and meet rigorous standards for taste- and odour-free functions. In addition, these light-coloured belts harmonize with the light and hygienic interiors of food-processing plants.

Grade GA

For all types of food and food products, these belts feature white covers that are resistant to oil and fat.

Grade GAN

GAN contains white Chloropren rubber. This grade is flame- and medium oil-resistant.

Grade GAK

GAK can be used in areas where the risk for explosion is high eg. grain silos, sugar transport. This grade is oil- and fat-resistant, antistatic and flame-resistant.

Grade A

For food and food products that do not contain oil, fats or similar substances.

Grade AQ

AQ is a white, highly abrasion resistant grade for food products, such as salt. It is also the right choice for demanding applications such as thrower belts.

Chemical-resistant belts – Chemopan

Chemopan belts are resistant to chemicals and have thus proven to be highly suitable for transport of chemical substances. These belts stand up to aggressive acids and high concentrations of various sorts of chemicals, and retain their effectiveness even in high-temperature environments.
Typical applications involve high concentrations of sulphur, potassium nitrate or hydrochloric acid.

Transport of paper rolls – PAP W

PAP belts are used for transport of paper rolls. The top cover of this belt is designed specifically for this purpose, and reliable performance is ensured by extremely strong reinforcement. PAP belts are also available with Aramid reinforcement.

Stock range PAP W

Belt type	No. of plies	Tensile strength N/mm	Width mm	Weight (approx.) kg/m²
EP 1000/3	3	1000	400	8.0
EP 1250/4	4	1250	400	9.0

Belts for plasterboard production

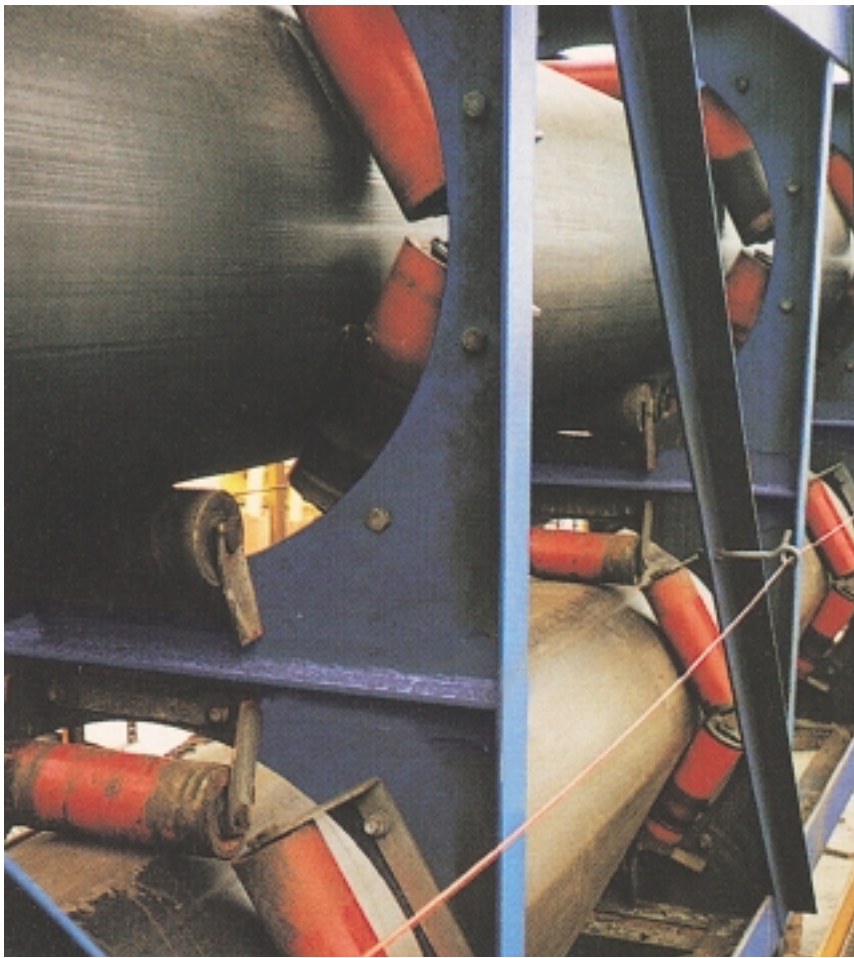
Trellex conveyor belts for production of plasterboard meet extremely high quality standards.
The covers are made of top-grade grey rubber that does not discolour the plasterboard.
The synthetic-fibre reinforcement is unaffected by moisture, in contrast to belts that are reinforced with cotton.
These belts are manufactured in a continuous process to avoid generating the press markings that are typical of conventional conveyor-belt production.

Trellex Pipe

The Trellex programme also covers belts for a closed system. This new conveyor system has many advantages compared with conventional conveyors. With this system it is possible to convey around narrow curves allowing the design of economic configurations. Since the belt runs in a pipe shape, the environment will be kept clean and the material is protected against external influences.
The Trellex Pipe belt is developed for the special requirements of closed conveyor systems. Please ask for our special leaflet.

If belts suitable for your transport are not shown in this leaflet, please contact Metso.


SWEDEN
STORAENSO
NYLTE MILL



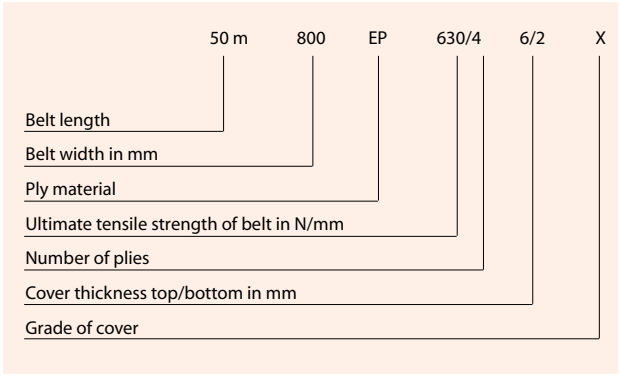
Market-driven technology

Trellex conveyor belts are developed in close cooperation with major manufacturers of conveyor systems. Along with the applications expertise acquired in over 100 years of belt production, this helps to keep Metso close to the real world in which our customers operate. Our belts are made to deliver benefits to users in the form of efficiency, reliability and long service life. These benefits are maximized by the global support provided by Metso engineers. We work with our customers around the world, from the planning stage, to installation and commissioning. We are on hand to deliver service and on-going consultancy for the lifetime of your conveyor-belt system.
The information below comprises recommendations for belt selection and conveyor design.

Tensile strengths

Trellex conveyor belts are manufactured as standard in the following tensile strengths (N/mm): 160, 200, 250, 315, 400, 500, 630, 800, 1000, 1250, 1600 and 2000.

The data that identify a belt



Belt widths

Trellex conveyor belts are manufactured as standard in the following widths (mm) 300, 400, 500, 600, 650, 800, 1000, 1200, 1400, 1600, 1800, 2000, 2200 and 2400.

Technical design

Metso's extensive know-how is always available to help you with the design of your conveyor, whether in the choice of the correct belt or in the calculation of curve radii, transition lengths or belt turnovers.
On these pages you will find standard values for determining minimum curve radii and transition lengths.

Curve radii

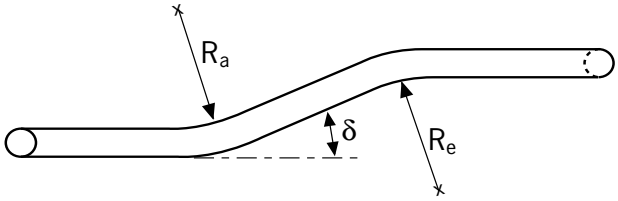
The minimum required curve radii for a standard three-roll troughing idler can be calculated as follows:

Standard values for curve radii

*) In the case of concave curves allowance also has to be made so that the belt is not lifted off the idlers when running empty. The minimum radius required can be determined as follows:

$$R_a \leq \frac{1000 \cdot T_x}{m'_G \cdot g \cdot \cos\delta} \text{ in m}$$

The larger radius (from the table or according to the formula) must be chosen.

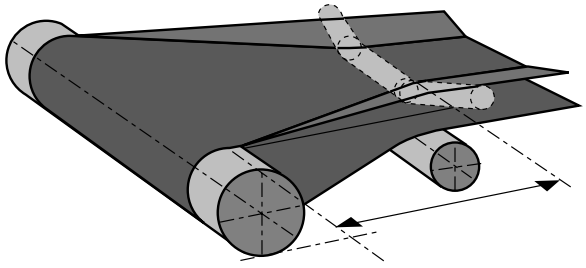


Standard values for minimum curve radii in mm		
troughing angle λ	concave curve R_a *)	convex curve R_e
20°	14 x B	20 x B
25°	17 x B	30 x B
30°	21 x B	40 x B
35°	24 x B	45 x B
40°	27 x B	50 x B
45°	30 x B	55 x B

R_a	m	Minimum radius, concave curve
R_e	m	Minimum radius, convex curve
B	mm	Belt width
λ	°	Troughing angle
T_x	kN	Local belt tension
m'_G	kg/m	Belt weight
g	m/s²	Acceleration due to gravity (g=9,81 m/s²)
δ	°	Angle of inclination in curve area

Standard values for transition lengths

(minimum transition length, troughed to flat with standard three-roll troughing idlers).



Standard values for minimum transition length in mm		
troughing angle λ	without pulley elevation	with pulley elevation*)
20°	0.9 x B	0.7 x B
25°	1.1 x B	0.8 x B
30°	1.3 x B	0.9 x B
35°	1.5 xB	1.0 x B
40°	1.7 x B	1.2 x B
45°	1.9 x B	1.3 x B

**) Pulley elevated 1/3 of the trough height above the centre idler roll.*

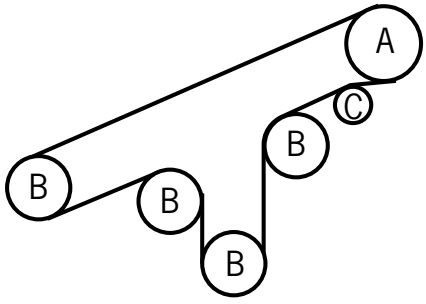
Recommended minimum pulley diameters

Minimum diameters are given in the table below for three different groups of pulleys:

Group A: Drive and discharge pulleys and all other pulleys where belt tension is relatively high.

Group B: Pulleys, where belt tension is relatively low.

Group C: Snub Pulleys, where belt wrap angle is ≤ 30°.



Belt type	Recommending diameter in mm (without lagging) based on % utilization of rated operating belt tension								
	over 60% to 100% Pulley group			over 30% to 60% Pulley group			up to 30% Pulley group		
	A	B	C	A	B	C	A	B	C
EP160/2	250	200	160	200	160	125	160	160	125
EP 250/2	250	200	160	200	160	125	160	160	125
EP 315/2	250	200	160	200	160	125	160	160	125
EP 315/3	315	250	200	250	200	160	200	200	160
EP 400/2	315	250	200	250	200	160	200	200	160
EP 400/3	315	250	200	250	200	160	200	200	160
EP 500/3	400	315	250	315	250	200	250	250	200
EP 500/4	500	400	315	400	315	250	315	315	250
EP 630/3	500	400	315	400	315	250	315	315	250
EP 630/4	500	400	315	400	315	250	315	315	250
EP 800/4	630	500	400	500	400	315	400	400	315
EP 800/5	630	500	400	500	400	315	400	400	315
EP 1000/3	630	500	400	500	400	315	400	400	315
EP 1000/4	630	500	400	500	400	315	400	400	315
EP 1000/5	800	630	500	630	500	400	500	500	400
EP 1250/4	800	630	500	630	500	400	500	500	400
EP 1250/5	800	630	500	630	500	400	500	500	400
EP 1600/4	1000	800	630	800	630	500	630	630	500
EP 1600/5	1000	800	630	800	630	500	630	630	500
EP 2000/5	1250	1000	800	1000	800	630	800	800	630

Please note that belts with profiled top covers may require larger diameter pulleys. Please contact us for information.

Trellex Conveyor Belts

Our range:

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- Cleat belts
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- Belts for vertical conveying
- Belts with profiled surface
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- Flat transmission belts
- Heat resistant belts
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- PU belts
- Wear resistant belts

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