

# TEXTER®



## Conveyor belting

**EP** inside: POLYESTER - NYLON MULTIPLY





SIG SpA was established in 1945 and during the years the growing of its experience in the field of rubber conveyor and elevator belts has been in constant evolution.

Today, we are in position to fulfil all the requirements for any conveyor belt application, as well as to supply the necessary technical support.

Thanks to our special efforts of these last years, we successfully obtained the certification ISO 9001:2000 by Lloyd Register.

Nowadays, two calendering lines and seven vulcanizing presses allow us to manufacture conveyor belting up to 2200mm wide with no longitudinal joints. Thanks to our special equipments, we can also manufacture rolls with 3,5mm diameter and over than 25 tons weight.

SIG main markets are minings, power stations, steel and cement works and all bulk material handling plants as harbour terminal, grain silos, waste processings.



## PRODUCT DESCRIPTION

Rubber conveyor belting is the cheapest system to convey bulk solid materials over any distance. It is the topic item of a conveyor system that allows the material handling. All rubber conveyor belts are composed by two different elements:

- A central resistant carcass, which gives the mechanical characteristics to the product, as tensile strength and elongation. Two main belting families exist: textile - as shown in this catalogue - and steel cord conveyor belts.
- Two rubber covers, named top and bottom covers, which protect the resistant carcass and characterize the belt, as described in this page. In order to guarantee safety and long life, also under hard working conditions, all type of rubber covers are antistatic and ozone protected. These pages aim to help you for the selection of the proper cover compounds according to the specific use and the characteristics of the conveyed material.

## COVER CHARACTERISTICS

### ABRASION SERVICE

**CL (L grade ISO 10247 - RMA II grade) Standard antiabrasive compound.** CL is a cover rubber recommended for all ground applications and for the majority part of the materials, where resistance to abrasion is required. Conveyor belts with CL compound are suitable to handle heavy and/or abrasive materials such as gravel, stone, sand, aggregates, coal, cement, etc.

**EC (W grade ISO 10247 - RMA I grade) Extra antiabrasive compound.** EC is a superior quality cover rubber, especially designed where maximum resistance to abrasion is required. The characteristics of resistance to cut, tear and ozone cracking, together with long duration, improve the quality of this cover. EC is expressly recommended for steel works and iron mines; however, it is recommended for heavy lump ore, coke, salt, limestone too.

**SC (H grade - ISO 10247) Superior cutting resistance compound.** SC is a cover rubber designed for specific use when the resistance to cut and tear is the most important requirement. SC also guarantees high abrasion resistance. Main applications are quartz and cullet conveyance.

### SELF-EXTINGUISH

**BS - Self-extinguish compound.** BS is a cover rubber designed to service both underground and above ground application where safety is fundamental and fire risk is high. It is recommended in particular for coal and potash applications. BS compound is self-extinguish and antistatic according ISO 340 and ISO 284, equivalent Grade K DIN 22102

**TS - Selfextinguish compound.** TS is a product typology designed to service both underground and above ground applications. It is highly recommended for the belt conveyors located in the back areas of the tunnels. TS is designed according to ISO 284 and ISO 340, equivalent Grade S DIN 22102.

**TV - Fireproof compound.** TV is a belt typology designed to work in underground applications where it is necessary that the belt does not burn and does not trigger centres of fire. It is recommended for the belt conveyors located close to the permanent work-stations in the tunnels. TV is designed according to ISO 284, ISO 340 and DIN 22100-1.

**AG - Self-extinguish and oil resistant compound.** AG is a nitrile rubber suitable for conveyor belts and bucket elevator systems of cereal terminals and silos. AG cover rubber provides superior resistances to vegetable oils and animal fats; it is also self-extinguish and antistatic according to ISO 340 and ISO 284 or equivalent in order to guarantee high safety to the conveyor plant.

### OIL SERVICE

**OM - Vegetable oil resistance compound.** OM is a cover rubber that guarantees a good belt resistance against the chemically aggressive effects due to the transport of materials with moderate oil presence, like corn, fertilizers and general vegetable oily materials. OM is expressly designed to resist the terpene of wooden chips and to convey solid urban waste materials.

**OH - High oil resistance compound.** OH is a premium quality cover rubber with maximum resistance to oils and characterized by low volume variations after immersion in highly aggressive mineral oils. OH is expressly realized for belts conveying materials sodden with mineral oils, as for example the mechanical manufacturing rejects.

### HEAT SERVICE

**CX - Medium temperature resistance.** CX is a rubber compound assuring a medium degree of abrasion resistance; it is formulated for continuous service with hot coarse materials at a temperature of 130 °C with peaks of 150 °C.

**MX - High temperature resistance.** MX is a rubber compound assuring a good abrasion resistance. It is designed for continuous service at temperature of 150 °C with peaks of 180 °C.

**TX - Superior temperature resistance.** TX is a cover rubber that assures the maximum heat resistance for a rubber compound. It is designed to resist with coarse materials at a maximum working temperature of 200 °C with peaks of 300 °C.

*All types of conveyor belts produced by SIG SpA are realized according to ISO standards; furthermore, they meet also the requirements of equivalent UNI, DIN, BS, NF, ASTM and RMA standards.*

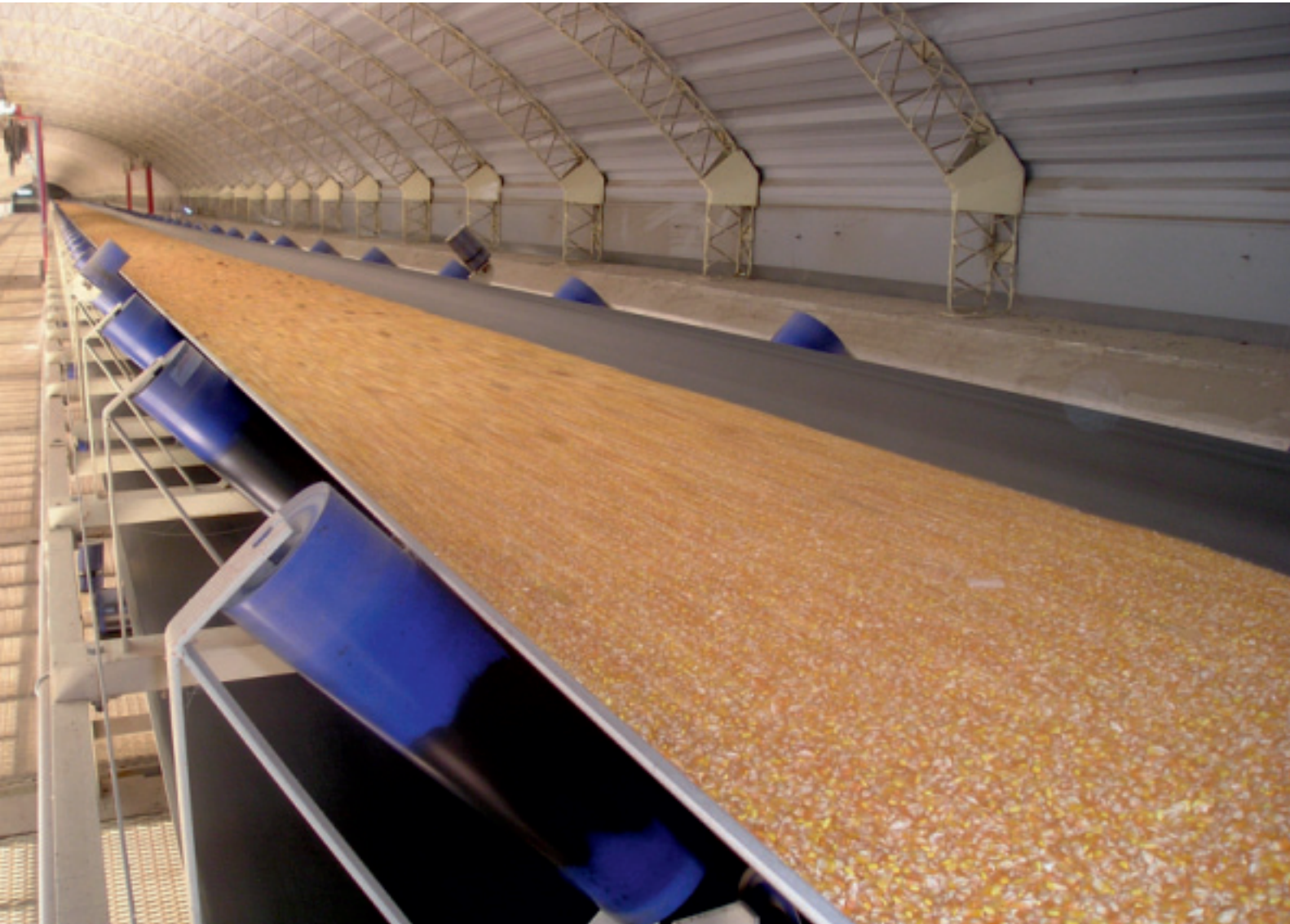
## COVER SELECTION

	Abrasion service			Heat service			Oil service		Self extinguish	
	CL	EC	SC	CX	MX	TX	OM	OH	AG	BS
Abrasion	★★★	★★★★	★★★	★★	★★	★★★	★	★	★	★★
Cut & tear	★★★	★★★★	★★★★	★★	★★	★★	★★	★★	★★★★	★★
Fire	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	★★★★	★★★★
Animal & vegetable oils	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	★★★★	★★★★	★★★★	N.A.
Mineral oils	N.A.	N.A.	N.A.	N.A.	N.A.	N.A.	★★	★★★★	★★★	N.A.
<b>CONTINUOUS WORKING SERVICE °C</b>										
Fine material	70	70	70	130	150	180	70	80	70	70
Coarse material	90	90	90	150	180	200	90	100	90	90
<b>MINIMUM WORKING TEMPERATURES °C</b>										
	-40	-40	-40	-30	-30	-30	-40	-25	-25	-30

N.A. not applicable; ★ fair; ★★ good; ★★★ very good; ★★★★ excellent.



... designed to provide high efficiency at lower cost



## ADVANTAGES & CHARACTERISTICS

- Polyester - Nylon carcass
  - Reinforced cut edges
- Excellent adhesion between plies and covers
  - Complete tension style
- Wide selection of cover compounds
  - Very low permanent elongations
    - Maximum load support
- High resistance to tear and cutting
  - Good impact resistance
- Apt to mechanical fasteners
  - Humidity proof

## TEXTER TECHNICAL DATA

Belt Style (Tensile strength)  KN/m	Number of plies	Max working tension		Carcass		Fabric range  N/mm
		Vulcanized	Fastened	Weight (Average) Kg/m <sup>2</sup>	Thickness (± 5%) mm	
		N/mm	N/mm			
250/2	2	25	20	2,2	1,9	125
315/2	2	32	25	2,7	2,3	160
400/3	3	40	32	3,3	2,9	125
500/3	3	50	40	4,1	3,5	160
500/4	4	50	40	4,4	3,8	125
630/3	3	63	50	4,9	4,0	200
630/4	4	63	50	5,4	4,6	160
800/3	3	80	63	6,0	4,9	250
800/4	4	80	63	6,5	5,4	200
1000/3	3	100	80	7,1	5,7	315
1000/4	4	100	80	8,0	6,4	250
1000/5	5	100	80	8,1	6,8	200
1250/3	3	125	–	9,0	6,9	400
1250/4	4	125	–	9,5	7,6	315
1250/5	5	125	–	10,0	8,0	250
1600/4	4	160	–	11,9	9,2	400
1600/5	5	160	–	11,9	9,5	315
2000/4	4	200	–	15,0	11,4	500
2000/5	5	200	–	15,0	11,4	400
2500/5	5	250	–	18,7	14,2	500
3150/6	6	315	–	22,3	17,4	500

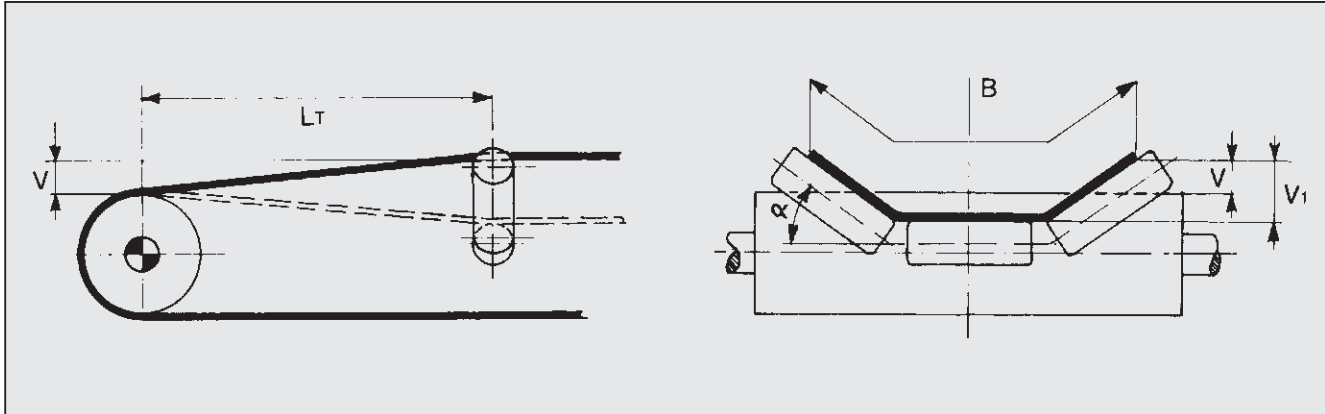
Total thickness = Carcass thickness + Cover thickness

Total weight for m<sup>2</sup> = Carcass weight (above table) + cover weight (below table)

## COVER WEIGHT kg/m<sup>2</sup>

Quality	Cover thickness							
	1 mm	2 mm	3 mm	4 mm	5 mm	6 mm	7 mm	8 mm
CL	1,18	2,36	3,54	4,72	5,90	7,08	8,26	9,44
EC	1,10	2,20	3,30	4,40	5,50	6,60	7,70	8,80
SC	1,18	2,36	3,54	4,72	5,90	7,08	8,26	9,44
BS	1,30	2,60	3,90	5,20	6,50	7,80	9,10	10,40
AG	1,35	2,70	4,05	5,40	6,75	8,10	9,45	10,80
OH	1,25	2,50	3,75	5,00	6,25	7,50	8,75	10,00
OM	1,25	2,50	3,75	5,00	6,25	7,50	8,75	10,00
CX	1,25	2,50	3,75	5,00	6,25	7,50	8,75	10,00
TX	1,10	2,20	3,30	4,40	5,50	6,60	7,70	8,80

## TRANSITION DISTANCE



The transition distance is the length of the section between head or tail pulley and the first troughing idler. In some cases, intermediate idlers are placed along the transition distance to favour the passage of the belt from the flat to the trough shape.

These conveyor sections are the most critical points of the whole plant as the elastic performances of the belt during the time depend on them.

If the transition distance is not correctly designed, high overtensions on the edges and abnormal compressions along the central axis of the belt are generated. Such phenomenon is the cause of unexpected defects, sometimes mistakenly attributed to the belt as wave on the edges and longitudinal fold of the belt carcass. According to the recommendation of the international standard ISO 5293/81, the calculation of the transition distance is performed in order to prevent belt centre from buckling and edge tension from exceeding 30% of the maximum recommended belt tension (RMBT). These conditions can be respected adopting the following formula:

$$L_T = 14,14 \times V \times K$$

Experimental trials, calculations and experiences have shown that average conditions of tension and compression are carried out with values of  $V$  equal to  $1/2 V_1$ .

Nevertheless, with larger sizes there is the tendency of backward rolling of the materials, for which in most cases values of  $V$  included between  $2/3$  and  $4/5$  of  $V_1$  are assumed.

So, the value of the transition distance  $L_T$  can be easily calculated for TEXTER belts in the most typical installations, with idlers of equal length, by means of the following formula:

$$L_T = L_1 \times B \times K$$

where:

$L_1$  = unitary transition distance

$B$  = belt width

$K$  = reduction factor depending on the working tension on the belt.

## UNITARY TRANSITION DISTANCE $L_1$

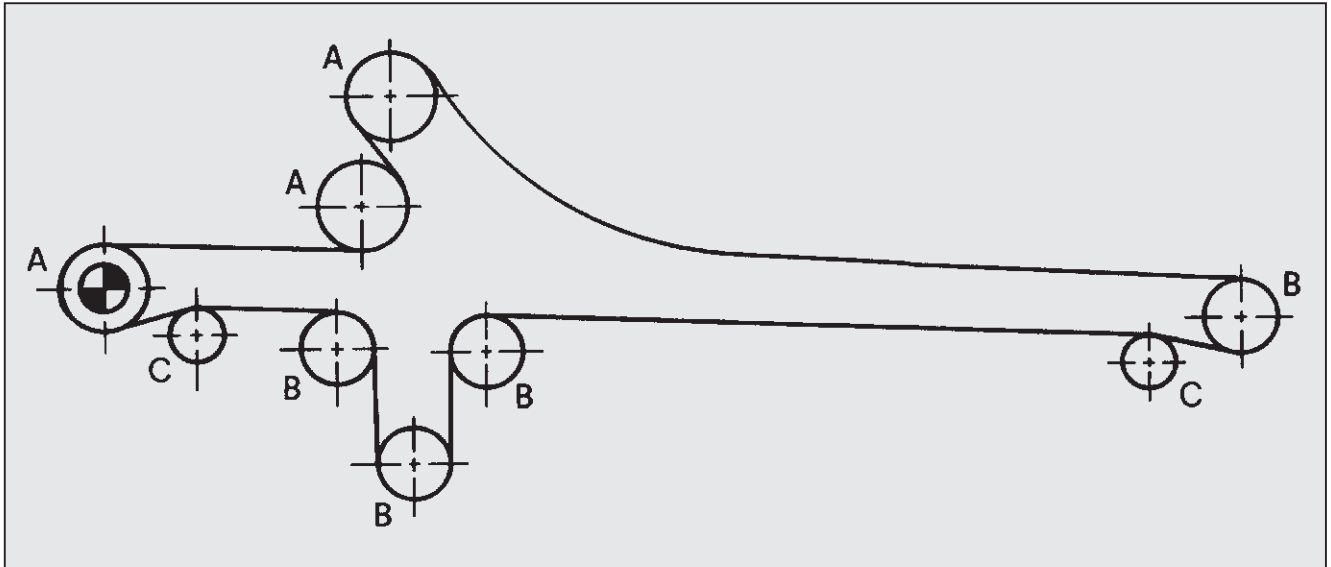
$V =$	Idler inclination				
	20°	27 1/2°	30°	35°	45°
$V_1$	1,61	2,18	2,36	2,70	3,33
$4/5 V_1$	1,29	1,74	1,88	2,16	2,67
$3/4 V_1$	1,21	1,63	1,77	2,03	2,50
$2/3 V_1$	1,07	1,45	1,57	1,80	2,22
$1/2 V_1$	0,81	1,09	1,18	1,35	1,67

## “K” FACTOR

% RMBT	1	0,9	0,8	0,7	0,6	0,2	0,1	0,05
K multiplier factor	1	0,93	0,82	0,74	0,71	0,83	1,22	1,74

RMBT = Recommended Maximum Belt Tension





**MINIMUM RECOMMENDED PULLEY DIAMETER (mm)**

Belt style	% RMBT								
	60% up to 100%			30% up to 60% Safety factor > 17			up to 30% Safety factor > 33		
	A	B	C	A	B	C	A	B	C
250/2	250	200	160	200	160	125	160	160	125
315/2	250	200	160	200	160	125	160	160	125
400/3	315	250	200	250	200	160	200	200	160
500/3	400	315	250	315	250	200	250	250	200
500/4	500	400	315	400	315	250	315	315	250
630/3	500	400	315	400	315	250	315	315	250
630/4	500	400	315	400	315	250	315	315	250
800/3	630	500	400	500	400	315	400	400	315
800/4	630	500	400	500	400	315	400	400	315
1000/3	630	500	400	500	400	315	400	400	315
1000/4	800	630	500	630	500	400	500	500	400
1000/5	800	630	500	630	500	400	500	500	400
1250/3	800	630	500	630	500	400	500	500	400
1250/4	1000	800	630	800	630	500	630	630	500
1250/5	1000	800	630	800	630	500	630	630	500
1600/4	1000	800	630	800	630	500	630	630	500
1600/5	1250	1000	800	1000	800	630	800	800	630
2000/4	1250	1000	800	1000	800	630	800	800	630
2000/5	1250	1000	800	1000	800	630	800	800	630
2500/5	1600	1250	1000	1250	1000	800	1000	1000	800
3150/6	2000	1600	1250	1600	1250	1000	1250	1250	1000

Notes: A = Drive and tripper pulleys;  
 B = Tail, return and take-up pulleys;  
 C = Snub pulleys.

## ELEMENTS FOR THE ORDER

To avoid errors or misunderstandings, we suggest using the belt designation of these examples:

Belt length (m)	Belt type	Belt style/ nr. plies (KN/m)	Cover thick. (mm)	Cover quality	Belt width (mm)
1000 m	TEXTER	1250/5	10+4	EC	2000

## REEL DIAMETER (m)

Length m	Total belt thickness (mm)															
	6	8	9	10	11	12	13	14	16	18	20	22	24	26	28	30
25	0,50	0,56	0,59	0,61	0,64	0,66	0,69	0,71	0,75	0,79	0,83	0,87	0,91	0,94	0,97	1,01
50	0,66	0,75	0,79	0,83	0,87	0,91	0,94	0,97	1,04	1,10	1,15	1,21	1,26	1,31	1,36	1,40
75	0,79	0,91	0,96	1,01	1,05	1,10	1,14	1,18	1,26	1,33	1,40	1,47	1,53	1,59	1,65	1,71
100	0,91	1,04	1,10	1,15	1,21	1,26	1,31	1,36	1,45	1,53	1,61	1,69	1,76	1,84	1,90	1,97
125	1,01	1,15	1,22	1,28	1,35	1,40	1,46	1,51	1,61	1,71	1,80	1,89	1,97	2,05	2,12	2,20
150	1,10	1,26	1,33	1,40	1,47	1,53	1,59	1,65	1,76	1,87	1,97	2,06	2,15	2,24	2,32	2,41
175	1,18	1,36	1,44	1,51	1,58	1,65	1,72	1,78	1,90	2,02	2,12	2,23	2,32	2,42	2,51	2,60
200	1,26	1,45	1,53	1,61	1,69	1,76	1,84	1,90	2,03	2,15	2,27	2,38	2,84	2,58	2,68	2,77
225	1,33	1,53	1,62	1,71	1,79	1,87	1,94	2,02	2,15	2,28	2,41	2,52	2,63	2,74	2,84	2,94
250	1,40	1,61	1,71	1,80	1,89	1,97	2,05	2,12	2,27	2,41	2,53	2,66	2,77	2,89	3,00	3,10
275	1,47	1,69	1,79	1,89	1,98	2,06	2,15	2,23	2,38	2,52	2,66	2,79	2,91	3,03	3,14	3,25
300	1,53	1,76	1,87	1,97	2,06	2,15	2,24	2,32	2,48	2,63	2,77	2,91	3,04	3,16	3,28	3,39
350	1,65	1,90	2,02	2,12	2,23	2,32	2,42	2,51	2,68	2,84	3,00	3,14	3,28	3,41	3,54	3,66
400	1,76	2,03	2,15	2,27	2,38	2,48	2,58	2,68	2,86	3,04	3,20	3,36	3,50	3,65	3,78	3,92
450	1,87	2,15	2,28	2,41	2,52	2,63	2,74	2,84	3,04	3,22	3,39	3,56	3,72	3,87	4,01	4,15
500	1,97	2,27	2,41	2,53	2,66	2,77	2,89	3,00	3,20	3,39	3,58	3,75	3,92	4,08	4,23	4,38

## REEL WEIGHT from 1m wide (Tons)

Length m	Total belt thickness (mm)															
	6	8	9	10	11	12	13	14	16	18	20	22	24	26	28	30
25	0,25	0,31	0,34	0,37	0,40	0,43	0,46	0,49	0,55	0,61	0,67	0,73	0,79	0,85	0,91	0,97
50	0,43	0,55	0,61	0,67	0,73	0,79	0,85	0,91	1,03	1,15	1,27	1,39	1,51	1,63	1,75	1,87
75	0,61	0,79	0,88	0,97	1,06	1,15	1,24	1,33	1,51	1,69	1,87	2,05	2,23	2,41	2,59	2,77
100	0,79	1,03	1,15	1,27	1,39	1,51	1,63	1,75	1,99	2,23	2,47	2,71	2,95	3,19	3,43	3,67
125	0,97	1,27	1,42	1,57	1,72	1,87	2,02	2,17	2,47	2,77	3,07	3,37	3,67	3,97	4,27	4,57
150	1,15	1,51	1,69	1,87	2,05	2,23	2,41	2,59	2,95	3,31	3,67	4,03	4,39	4,75	5,11	5,47
175	1,33	1,75	1,96	2,17	2,38	2,59	2,80	3,01	3,43	3,85	4,27	4,69	5,11	5,53	5,95	6,37
200	1,51	1,99	2,23	2,47	2,71	2,95	3,19	3,34	3,91	4,39	4,87	5,35	5,83	6,31	6,79	7,27
225	1,69	2,23	2,50	2,77	3,04	3,31	3,58	3,85	4,39	4,93	5,47	6,01	6,55	7,09	7,63	8,17
250	1,87	2,47	2,77	3,07	3,37	3,67	3,97	4,27	4,87	5,47	6,07	6,67	7,27	7,87	8,47	9,07
275	2,05	2,71	3,04	3,37	3,70	4,03	4,36	4,69	5,35	6,01	6,67	7,33	7,99	8,65	9,31	9,97
300	2,23	2,95	3,31	3,67	4,03	4,39	4,75	5,11	5,83	6,55	7,27	7,99	8,71	9,43	10,15	10,87
350	2,59	3,43	3,85	4,27	4,69	5,11	5,53	5,95	6,79	7,63	8,47	9,31	10,15	10,99	11,83	12,67
400	2,29	3,91	4,39	4,87	5,35	5,83	6,31	6,79	7,75	8,71	9,67	10,63	11,59	12,55	13,51	14,47
450	3,31	4,39	4,93	5,47	6,01	6,55	7,09	7,63	8,71	9,97	10,87	11,95	13,03	14,11	15,19	16,27
500	3,67	4,87	5,47	6,07	6,67	7,27	7,87	8,47	9,76	10,87	12,07	13,27	14,47	15,67	16,87	18,07

# TECHNICAL DATA SHEET

CUSTOMER:..... DATE:.....

REQUIRED BELT:.....

## MATERIAL CHARACTERISTICS

Material:..... Temperature..... Surcharge angle:..... °  
 Density:..... Ton/m<sup>3</sup> Average:..... °C Abrasiveness.....  
 Lump size:..... mm Max:..... °C Low  Medium  High

## CONVEYOR DATA

Center distance:..... m Design capacity..... Ton/h Speed:..... m/sec  
 Width:..... in Average capacity..... Ton/h Elevation:..... m  
 Radius of curve (if present):..... mm *If there are more than one vertical curve please enclose quoted drawing.*  
 Max tension T<sub>1</sub>:..... KN/m Min tension T<sub>2</sub>:..... KN/m

## DRIVE UNIT

Position of drive pulley(s) Head  Tail  Return side  Total wrap..... °  
 Drive pulley surface Steel  Rubber  Ceramic   
 Applied power:..... KW Starting device:.....

## IDLERS

	Inclination	Pitch	Diameter
Carrying side	..... °	..... mm	..... mm
Return side	..... °	..... mm	..... mm
Sliding plane	.....	.....	.....

## PULLEY DIAMETER AND TRANSITION DISTANCE

Drive pulley	Head pulley	Tail pulley	Take-up pulley	Tripper pulley
..... mm	..... mm	..... mm	..... mm	..... mm
Transition distance at head..... m			at tail..... m	

## TAKE-UP

Screw  Take-up travel:..... m  
 Counterweight  Applied counterweight:..... Ton  
 Winch  Distance from head:..... m

## SPLICING

## DISCHARGE

Vulcanized  Mechanical fasteners  Tail  Lateral   
 Type:..... Tripper  Tripper elevation:..... m

## PREVIOUS BELT

Type	Tensile strength	N° of plies	Cover thickness	Quality	Width
.....	..... KN/m	.....	..... + ..... mm	.....	..... mm
Producer:.....		Lifetime:.....			
Cause of failure:.....					



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**ISO 9001:2000 QUALITY SYSTEM CERTIFICATION**



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