

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.

Nowadays, two calendering lines and eight 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 - Y grade DIN 22102 - RMA II grade) - Standard abrasion resistant 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 (D grade ISO 10247 - W grade DIN 22102 - RMA I grade) - Extra abrasion resistant 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 - X grade DIN 22102) - 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.

AS - Rubber cover for extreme applications. AS rubber cover is studied to offer the maximum abrasion resistance in all the applications, where an increase in the standard abrasion resistant conveyor's service life is required. Moreover, its excellent mechanical characteristics allow a superior tearing and cut resistance, which permits its use with heavy materials, i.e. big-sized minerals, bauxite, etc. or in critical working situations characterized by atypical loading/unloading systems. AS grants and surpasses grade W - DIN 22102 and D - ISO 10247 assuring an abrasion resistance of 30-50 mm³.

FIRE RESISTANT

BS (K grade DIN 22102, class 2A EN 12882) - Self-extinguish product. BS is a product 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 is self-extinguish and antistatic according to ISO 340 and ISO 284 or equivalent.

TS (S grade DIN 22102, class 2B EN 12882) - Self-extinguish product. 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 340 and ISO 284 or equivalent.

TV (V grade DIN 22109, class 4 and 5 EN 12882) - Fireproof product. 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 340, ISO 284, EN 14973 or equivalent.

AG (K+G grade DIN 22102, class 2A EN 12882) - Self-extinguish and oil resistant product. 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 (G grade DIN 22102) - 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.

PL - Oil and heat resistant compound. PL is a compound specifically designed to handle pet coke during the production process when material can reach temperatures of 120 °C. The composition based on nitrile compound assures good oil resistance, too.

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			Fire resistant	
	CL	EC	AS	CX	MX	TX	OM	OH	PL	AG	BS
Abrasion	★★★	★★★★	★★★★	★★★	★★★	★★★	★	★	★	★	★★★
Cut & tear	★★★	★★★★	★★★	★★	★★	★★	★★	★★	★★	★★	★★★
Fire	N.A.	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.
CONTINUOUS WORKING SERVICE °C											
	70	70	70	130	150	200	70	70	120	70	70
MAXIMUM PEAKS OF TEMPERATURE °C											
	90	90	90	150	180	300	90	90	130	90	90
MINIMUM WORKING TEMPERATURES °C											
	-40	-50	-40	-40	-40	-30	-35	-25	-30	-25	-40

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 N/mm	Fastened N/mm	Weight (Average) Kg/m ²	Thickness (± 5%) 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

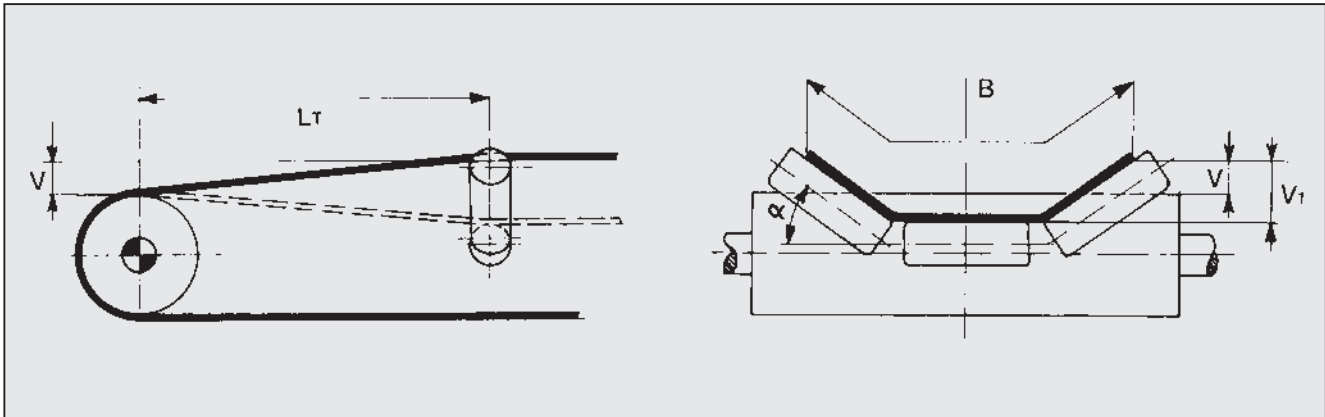
Total thickness = Carcass thickness + Cover thickness

Total weight for m² = Carcass weight (above table) + cover weight (below table)

COVER WEIGHT kg/m²

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	1,15	2,30	3,45	4,60	5,75	6,90	8,05	9,20
SC	1,12	2,24	3,36	4,48	5,60	6,72	7,84	8,96
AS	1,12	2,24	3,36	4,48	5,60	6,72	7,84	8,96
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
PL	1,25	2,50	3,75	5,00	6,25	7,50	8,75	10,00
CX	1,15	2,30	3,45	4,60	5,75	6,90	8,05	9,20
MX	1,15	2,30	3,45	4,60	5,75	6,90	8,05	9,20
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 phenomena 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, the calculation of the transition distance is performed in order to prevent belt centre from buckling and edge tension from exceeding 30% of the recommended maximum belt tension (RMBT). These conditions can be respected adopting the following formula:

$$L_T = 14,16 \times V \times K$$

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°	25°	30°	35°	40°	45°
V_1	1,61	2,00	2,39	2,78	3,17	3,54
$4/5 V_1$	1,29	1,60	1,91	2,23	2,54	2,83
$3/4 V_1$	1,21	1,50	1,79	2,09	2,38	2,65
$2/3 V_1$	1,08	1,34	1,60	1,86	2,12	2,37
$1/2 V_1$	0,80	1,00	1,20	1,39	1,59	1,77

“K” FACTOR

% RMBT	1	0,9	0,8	0,7	0,6	0,5	0,3	0,2	0,15	0,10	0,07	0,05
Safety factor	10	11	13	14	17	20	33	50	67	100	143	200
K factor	1	0,87	0,77	0,71	0,65	0,61	0,71	0,86	1,01	1,20	1,47	1,80

RMBT = Recommended Maximum Belt Tension

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	2,48	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/m³ 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 T₁:..... KN/m Min tension T₂:..... 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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