DUNLOP
BELTING PRODUCTS

DUNLOP CONVEYOR BELTING PORTFOLIO

Editor

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DUNLOP CONVEYOR BELTING PROTFOLIO

DUNLOP Conveyor belting portfolio

DUNLOP offers a full range of conveyor belting.
All products are available through the global DUNLOP network of subsidiaries and alliance-partners.

Whatever your requirements; textile reinforced, steel cord reinforced or special carcaſs, with or without breaker, we can supply the right product at the right time:

- Conveyor belts reinforced with high performance synthetic textiles
- Steel cord reinforced conveyor belting
- Solid woven construction
- Straight warp single or two ply carcaſses
- Steep incline conveyor belts
- High abrasion, low rolling resistant belting
- High impact-resistant rubber, PVC and PVG covers
- Heat-, oil- and chemical resistants belts
- Flame-retardant conveyor belts
- Pipe conveyor belting suitable for tunneling

Many, standard conveyor belts are immediately available from our local stock and logistic centres.

DUNLOP not only delivers products, we can also design, install, fabricate and maintain your conveying and material handling system:

With our **24 / 7 / 365** service mentality we guarantee system and proceſs availability.

DUNLOP Conveyor belting portfolio
Summary of product range

Description	Properties	Strength Range	Available Cover Types
Dunlop PowaCORD	Steel cord reinforced conveyor belting	500 - 6300	WearTECH A, E, M, N
Dunlop PowaCORD F	Fire retardant steel cord reinforced conveyor belting	500 - 6300	WearTECH F
Dunlop PowaFLEX I	Straight warp polyester/nylon carcaß conveyor belting	315 - 800	WearTECH A, E, M, N
Dunlop PowaFLEX II	Dual straight warp polyester/nylon carcaß conveyor belting	1000 - 1600	WearTECH A, E, M, N
Dunlop PowaMAX	Aramid / nylon carcaß rubber covered conveyor belting	800 - 3150	WearTECH A, E, M, N
Dunlop PowaPLY	Multiply textile reinforced conveyor belting.	200 - 3150	WearTECH A, AA, M, N, N+, U
Dunlop PowaSOL	Fire retardant solid woven carcaß conveyor belting	800 - 2500	WearTECH NBR-F, PVC
Dunlop PowaFLO	Textile reinforced PIPE conveyor belting	315 - 1250	WearTECH A, M, N, U
Dunlop LavaTECH	Heat-resistant multiply carcaß conveyor belting	315 - 2500	WearTECH T0, T1, T2, T3, T4
Dunlop FlameTECH I	Flame resistant and antistatic multiply rubber conveyor belting	315 - 2500	WearTECH K
Dunlop FlameTECH II	Flame retardant, flame propagation resistant and antistatic rubber multiply rubber conveyor belting	315 - 2500	WearTECH F

DUNLOP Conveyor belting portfolio

The mechanism of wear to conveyor belts is highly complex. An infinite mix of product size, sharpnef3 and shape that strikes the belt surface at many different velocities all play a role. Also affecting rate of wear are the operating conditions.

Developing belt conveyors that perform well in all these combinations can be a challenge without the huge database of knowledge gathered from continuous real time monitoring at a micro-level of the entire belt thicknef3 profile. The BTM Belt Thicknef3 Monitoring System designed by DUNLOP TECHNOLOGIES is the first conveyor belt monitoring system to continuously and automatically monitor the thicknef3 of the belt. Data captured by numerous units installed around the world is being used to monitor the performance of rubber compound. This information has led to the development of belt cover rubber compounds that uniquely fit the application.
WearTECH conveyor belt covers offer the ultimate protection to the belt carcaf3 because of the unique combination of elasticity coupled with impact, cut and tear resistance. A comprehensive range of special formulations have been developed to best suit operating conditions and belt property requirements.

Range of conveyor belt covers

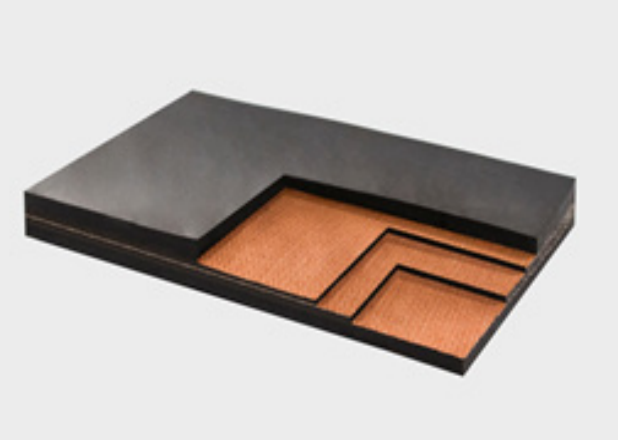
Cover Type			Cover Properties			Temperature range °C		
Dunlop WearTECH	DIN / ISO	SANS	Maximum Abrasion Lof3 (mm³)	Minimum Elongation at break (%)	SG	Min. ambient temperature	Constant material	Max. temporary material temperature
AA	_	-	130	400	1.14	-30	80	90
A	W/D	A	90	400	1.11	-30	80	90
E	-	E	150	450	1.10	-10	80	80
F	VT/V	F	180	350	1.36	-10	60	70
K	K/S	-	200	350	1.27	-20	60	70
M	X/H	M	120	450	1.14	-20	80	90
N	Y	N	150	400	1.14	-30	80	100
T0	-	-	180	400	1.21	-10	120	160
T1	T1	-	200	400	1.22	-20	150	170
T2	T2	-	200	400	1.32	-20	200	220
T3	-	-	200	400	1.33	-20	240	270
T4	-	-	200	350	1.35	-20	350	400
U	-	-	70	450	1.11	-20	80	90
PVC	-	PVC	250	250	1.40	-5	50	60
NBR-F	PVG	NBR-F	250	350	1.30	-10	50	70

MULTIPLY TEXTILE REINFORCED CONVEYOR BELTING RANGE
Wear-resistant and versatile

Dunlop Multiply Textile Reinforced conveyor belting is an all synthetic multiply construction available in a very wide range of strengths and number of plies.

High performance industrial polyester and polyamide yarns are woven together, then given a special treatment to ensure exceptional long lasting ability to bond to the inter-ply rubber. The inter-ply rubber is formulated to provide not only high adhesion to prevent separation even in the most arduous applications but also to impart exceptional impact absorbing properties. Polyester warp yarns and polyamide weft in the traditional EP fabrics result in low elongation, exceptional fatigue and impact resistance and the ability of the belt to be joined by either vulcanised splice or mechanical fasteners. Breaking away from tradition, many of the belt fabrics are also available in high performance, economic all polyester (EE) construction.

Dunlop Multiply Textile Reinforced can be offered with a wide range of rubber covers to suit a diverse range of applications from extreme abrasion, cutting and gouging to light duty conveying of non-abrasive materials.



Multiply construction

Specifications

Belt clafs	Maximum Tension (kN/m)		Properties of Carcafs	Number of Plies				
	CMMS*	Non Managed		2	3	4	5	6
200	25	20	Mafs (kg/m²) Thicknefs (mm)	2.5 1.8	- -	- -	- -	- -
250	32	25	Mafs (kg/m²) Thicknefs (mm)	2.6 1.9	- -	- -	- -	- -
315	40	32	Mafs (kg/m²) Thicknefs (mm)	2.7 2.2	3.7 2.9	- -	- -	- -
400	50	40	Mafs (kg/m²) Thicknefs (mm)	3.3 2.6	4.0 3.1	5.0 4.1	- -	- -
500	63	50	Mafs (kg/m²) Thicknefs (mm)	3.4 2.5	4.1 3.6	5.3 4.3	6.3 5.2	- -
630	80	63	Mafs (kg/m²) Thicknefs (mm)	3.9 3.0	4.9 4.1	5.5 4.9	6.6 5.5	7.5 6.3
800	100	80	Mafs (kg/m²) Thicknefs (mm)	4.7 3.9	5.1 4.0	6.6 5.7	6.9 6.2	7.9 6.7
1000	125	100	Mafs (kg/m²) Thicknefs (mm)	6.1 5.1	5.9 4.7	6.8 5.5	8.2 7.2	8.2 7.6
1250	160	125	Mafs (kg/m²) Thicknefs (mm)	- -	7.0 5.9	7.9 6.3	8.5 7.0	10.2 8.5
1600	200	160	Mafs (kg/m²) Thicknefs (mm)	- -	- -	7.9 6.3	9.9 8.0	11.8 9.7
2000	250	200	Mafs (kg/m²) Thicknefs (mm)	- -	- -	9.4 7.9	11.7 9.9	14.1 11.9
2500	320	250	Mafs (kg/m²) Thicknefs (mm)	- -	- -	12.3 10.6	15.4 13.4	16.1 12.9
3150	400	315	Mafs (kg/m²) Thicknefs (mm)	- -	- -	- -	- -	18.4 16.1

* Computer Maintenance Management System - a unique maintenance management system that maximises system efficiency, reduces downtime and optimises availability.

CONVEYOR BELTING

Recommended maximum belt width (mm) for correct load support

CLASS / PLY	A LIGHT DUTY LD VALUE UP TO 20	B LIGHT TO MEDIUM DUTY LD VALUE 21 - 60	C MEDIUM DUTY LD VALUE 61 - 160	D HEAVY DUTY LD VALUE 161 - 600	E EXTRA HEAVY DUTY LD VALUE GREATER THAN 600
200/2	900	800	600	NOT RECOMMENDED	NOT RECOMMENDED
250/2	1050	900	750	600	NOT RECOMMENDED
315/2	1050	900	750	600	NOT RECOMMENDED
315/3	1200	1050	1050	900	750
400/2	1200	1050	1050	900	750
400/3	1400	1200	1050	1050	900
400/4	1500	1400	1200	1200	1000
500/2	1400	1200	1050	1050	900
500/3	1500	1350	1200	1050	900
500/4	1650	1500	1350	1200	1050
500/5	2100	2000	1800	1650	1500
630/2	1500	1200	1200	1000	900
630/3	1650	1350	1200	1050	1000
630/4	1800	1650	1500	1500	1200
630/5	2100	2100	2100	1800	1500
800/2	1650	1500	1500	1350	1200
800/3	1800	1650	1500	1500	1350
800/4	2400	2200	2100	1800	1500
800/5	2400	2400	2400	2100	2100
1000/2	1800	1650	1500	1350	1200
1000/3	2400	1800	1500	1400	1400
1000/4	2400	2200	2200	1800	1500
1000/5	2400	2400	2400	2400	1800
1250/3	2400	2400	2200	2100	2100
1250/4	2400	2400	2400	2400	2400
1250/5	2400	2400	2400	2400	2400
1600/4	2400	2400	2400	2400	2400
1600/5	2400	2400	2400	2400	2400
2000/4	2400	2400	2400	2400	2400
2000/5	2400	2400	2400	2400	2400
2500/5	2400	2400	2400	2400	2400
3150/6	2400	2400	2400	2400	2400

LD - Material lump size (mm) multiplied by bulk density of the material (t/m^3)
Eg Crushed bituminous coal of 40 mm lump size and bulk density of 0.8 t/m^3 has an LD value of 40 x 0.8 = 32 and is therefore considered as group B material

CONVEYOR BELTING

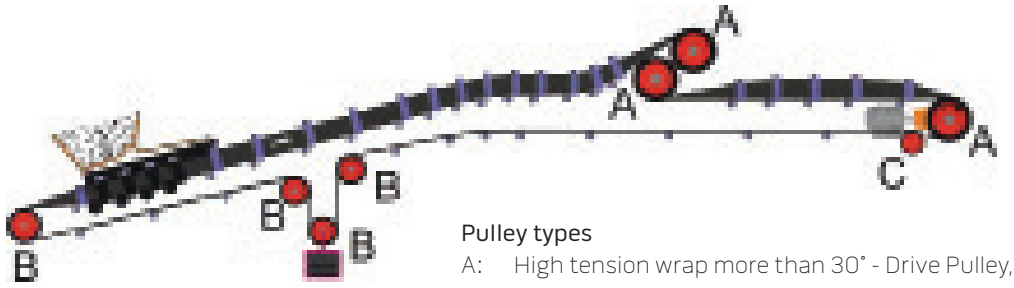
MAXIMUM NUMBER OF PLIES RECOMMENDED FOR CORRECT EMPTY BELT TROUGHING

	Belt Width (mm)												
Belt Class	450	600	750	900	1050	1200	1350	1500	1650	1800	2100	2200	Troughing Angle (degree)
200 250	2	2	2	2	2	2	2	2	2	2	2	2	20 35 45 60
315	3	3	3	3	3	3	3	3	3	3	3	3	20
	3	3	3	3	3	3	3	3	3	3	3	3	35
	3	3	3	3	3	3	3	3	3	3	3	3	45
	2	2	3	3	3	3	3	3	3	3	3	3	60
400	2	2	3	4	4	4	4	4	4	4	4	4	20
	2	2	3	3	4	4	4	4	4	4	4	4	35
	2	2	2	2	4	4	4	4	4	4	4	4	45
	2	2	2	2	3	3	4	4	4	4	4	4	60
500	2	2	3	4	5	5	5	5	5	5	5	5	20
	2	2	3	3	5	5	5	5	5	5	5	5	35
	2	2	3	3	4	5	5	5	5	5	5	5	45
	2	2	2	3	4	4	5	5	5	5	5	5	60
630	2	2	2	2	3	4	5	6	6	6	6	6	20
	2	2	3	3	4	4	5	5	5	6	6	6	35
	2	2	2	3	3	4	4	5	5	6	6	6	45
	-	-	2	2	3	3	4	4	5	6	6	6	60
800	-	2	2	2	3	3	4	5	6	6	6	6	20
	-	-	2	2	3	3	4	5	5	5	5	5	35
	-	-	-	2	2	3	4	4	5	6	6	6	45
	-	-	-	2	2	3	4	4	5	5	6	6	60
1000	-	-	-	2	2	3	3	4	4	4	5	5	20
	-	-	-	2	2	2	3	3	4	4	5	5	45
	-	-	-	-	2	2	3	3	3	4	4	5	60
1250	-	-	-	-	3	3	3	4	4	4	5	5	20
	-	-	-	-	-	3	3	3	4	4	5	5	35
	-	-	-	-	-	3	3	3	4	4	5	5	45
	-	-	-	-	-	3	3	3	3	4	4	5	60
1600	-	-	-	-	4	4	4	5	5	5	5	5	20
	-	-	-	-	-	4	4	4	4	5	5	5	35
	-	-	-	-	-	4	4	4	4	4	5	5	45
	-	-	-	-	-	4	4	4	4	4	4	5	60
2000	-	-	-	-	4	4	4	4	5	5	5	5	20
	-	-	-	-	4	4	4	4	4	5	5	5	35
	-	-	-	-	-	4	4	4	4	4	5	5	45
	-	-	-	-	-	-	4	4	4	4	5	5	60
2500	-	-	-	-	-	-	5	5	5	5	5	5	20
	-	-	-	-	-	-	-	5	5	5	5	5	35
	-	-	-	-	-	-	-	5	5	5	5	5	45
	-	-	-	-	-	-	-	-	5	5	5	5	60
3150	-	-	-	-	-	-	-	-	6	6	6	6	20
	-	-	-	-	-	-	-	-	-	6	6	6	35
	-	-	-	-	-	-	-	-	-	6	6	6	45
	-	-	-	-	-	-	-	-	-	-	6	6	60

DUNLOP CONVEYOR BELTING

Recommended minimum pulley diameter

Belt clafs	Pulley type	No. of plies				
		2	3	4	5	6
200	A / B / C	200 / 160 / 125				
250	A / B / C	200 / 160 / 125				
315	A / B / C	200 / 160 / 125	250 / 200 / 160			
400	A / B / C	250 / 200 / 160	315 / 250 / 200	400 / 315 / 250		
500	A / B / C	250 / 200 / 160	400 / 315 / 250	400 / 315 / 250	500 / 400 / 315	
630	A / B / C	315 / 250 / 200	400 / 315 / 250	500 / 400 / 315	500 / 400 / 315	630 / 500 / 400
800	A / B / C	400 / 315 / 250	400 / 315 / 250	630 / 500 / 400	630 / 500 / 400	630 / 500 / 400
1000	A / B / C	500 / 400 / 315	500 / 400 / 315	500 / 400 / 315	630 / 500 / 400	800 / 630 / 500
1250	A / B / C		630 / 500 / 400	630 / 500 / 400	630 / 500 / 400	800 / 630 / 500
1400	A / B / C		630 / 500 / 400	630 / 500 / 400	800 / 630 / 500	800 / 630 / 500
1600	A / B / C		800 / 630 / 500	800 / 630 / 500	800 / 630 / 500	1000 / 800 / 630
2000	A / B / C			1000 / 800 / 630	1000 / 800 / 630	1250 / 1000 / 800
2500	A / B / C				1250 / 1000 / 800	1250 / 1000 / 800
3150	A / B / C					1600 / 1250 / 1000



Pulley types

A: High tension wrap more than 30° - Drive Pulley, Head Pulley, Tripper pulley

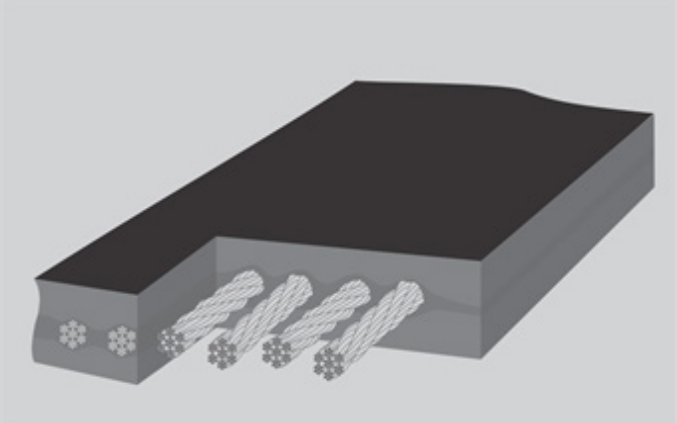
B: Low tension wrap more than 30° - Tail Pulley, Take-up Pulley, Take-up bend pulley
or
High tension bend pulley, wrap lefs than 30°

C: Low tension bend or snub pulley, wrap lefs than 30°

STEEL CORD REINFORCED CONVEYOR BELTING RANGE
High quality and extremely durable

Dunlop Steel Cord Belt is a steel cord reinforced conveyor belt incorporating the most current technology, many components have taken years of refinement to attain this technological precision.
Every belt is guaranteed to provide maximum performance and maximum life.

Dunlop Steel Cord Belt with galvanised steel cord strength carrying members embedded in a matrix of high performance rubber meets all demands for high strength, low elongation conveyor belting. The bonder rubber in the core is formulated to penetrate deep into the cords providing high cohesive and adhesive - bond for long lasting protection and extreme join efficiency. Dunlop Steel Cord Belt can be offered with a wide range of rubber covers to suit a diverse range of applications from extreme abrasion, cutting and gouging to less arduous conveying of non abrasive materials.



Steel cord construction

Specifications

Belt class	Belt thickness with minimum covers (mm)	Belt mass without covers (kg/m²)	Maximum Tension (kN/m)		Minimum cover thickness (mm)	Recommended minimum pulley diameters		
			CMMS*	Non Managed		Pulley type A	Pulley type B	Pulley type C
ST500	11.0	6.1	75	62	4.0	400	315	250
ST630	11.2	6.6	95	80	4.0	400	315	250
ST800	11.7	7.8	120	100	4.0	500	400	315
ST1000	12.1	9.0	150	125	4.0	500	400	315
ST1250	12.1	9.8	188	156	4.0	500	400	315
ST1600	13.2	10.1	266	240	4.5	630	500	400
ST1800	13.2	10.6	300	270	4.5	630	500	400
ST2000	16.4	11.0	333	300	5.5	800	630	500
ST2500	18.7	11.6	416	375	5.5	800	630	500
ST3150	20.6	12.2	525	472	6.5	800	630	500
ST3500	21.0	12.4	583	525	6.5	1000	800	630
ST4000	21.0	12.7	666	600	6.5	1000	800	630
ST4500	25.0	13.0	750	675	7.5	1000	800	630
ST5000	26.0	13.3	833	750	8.0	1250	1000	800
ST5400	27.4	13.6	900	810	8.5	1250	1000	800
ST6300	30.6	14.0	1050	945	9.5	1250	1000	800

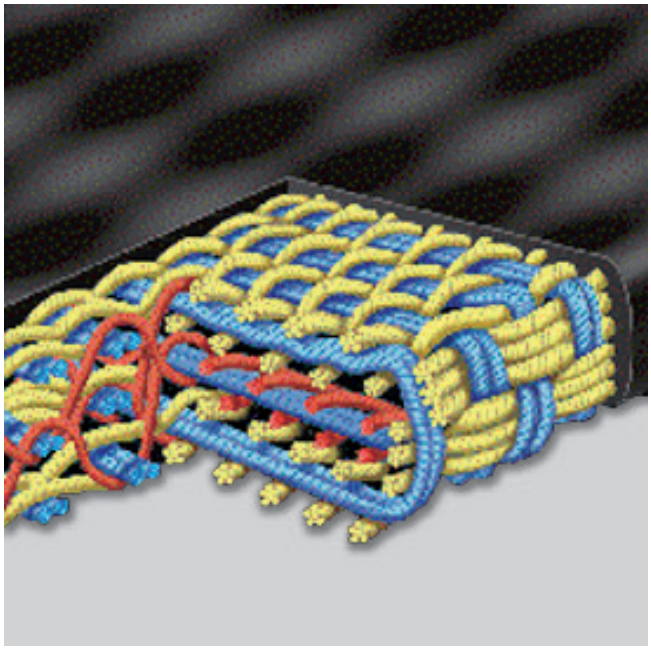
* Computer Maintenance Management System - a unique maintenance management system that maximises system efficiency, reduces downtime and optimises availability.

SOLID WOVEN CONVEYOR BELTING RANGE
Heavy duty, solid woven carcaf3 conveyor belting

Dunlop Solid Woven Belting Range is a solid woven construction conveyor belt having ultrafine polyester filaments combined with cotton yarn in the warp members and high strength polyester/cotton blend weft members.

The combination allows deep penetration of PVC into the carcaf3 that ensures the belt will not burn, meeting the most stringent standards of fire safety. Also the design ensures a tough belt that has superior rip resistance, excellent fastener holding capability and good abrasion resistance. Dunlop PowaSOL conveyor belting is offered with abrasion resistant synthetic rubber covers that are chemically crof3-linked to the PVC impregnation to ensure many years of trouble free service.

The cover thicknef3 can be varied according to customer requirements.



Specifications

Belt Claf3	Carcaf3 Maf3 (kg/m²)	Carcaf3 Thicknef3 (mm)	Minimum recommended pulley diameters (mm)				
			Maximum operating tensi-on (kN/m)	Belt Modu-lus (kN/m)	Head, Drive, Tripper	Tail, Take-up, HT Bend	LT Bend
630	10.5	6.2	63.0	3500	500	400	315
800	11.0	6.9	80.0	4440	500	400	315
1000	11.7	7.4	100.0	5550	630	500	400
1250	13.0	8.4	125.0	6900	800	630	500
1400	13.9	9.1	140.0	7750	800	630	500
1600	15.0	9.9	160.0	8890	1000	800	630
2000	18.0	12.4	200.0	11110	1000	800	630

* Maf3 of each millimetre of cover (NBR-F) 1.30 kg/m².
To obtain the total belt maf3 per unit of length, add the carcaf3 maf3 plus maf3 of each cover then multiply the result by the belt width in metres.

SOLID WOVEN CONVEYOR BELTING RANGE
Tough rip-resistant conveyor belts

Recommended maximum belt width (mm) for correct load support

Belt Class	Material classification LD - Lump size (mm) x Density (t/m³)			
	A LD 1 - 20	B LD 21 - 60	C LD 61 - 600	D LD >600
630	1400	1200	1000	800
800	1600	1400	1000	800
1000	1600	1400	1200	1000
1250	1800	1800	1600	1400
1400	1800	1800	1800	1800
1600	1800	1800	1800	1800
2000	1800	1800	1800	1800

Recommended minimum belt width (mm) for correct empty belt troughing

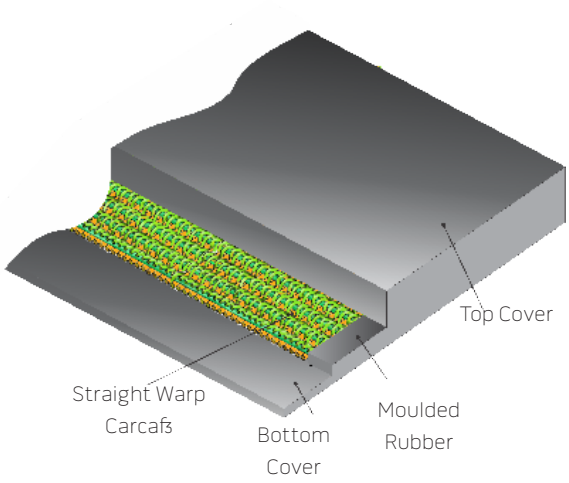
Belt Class	Trough angle (degree)			
	20	35	45	60
630	600	600	600	600
800	600	600	600	600
1000	600	800	800	800
1250	800	800	800	800
1400	800	800	800	1000
1600	800	800	800	1000
2000	1000	1000	1000	1000

POWAFLEX I

PowaFLEX I has a single ply straight-warp carcaß and is available in strengths from 400 kN/m – 800 kN/m
Dunlop PowaFLEX I has a polyester straight- warp single ply carcaß. The tension carrying warp yarns are protected on both top and bottom by nylon weft yarns bound to one another with nylon binder yarns.

Due to the relatively thin carcaß, Dunlop PowaFLEX I can be used with small diameter pulleys.

Straight-warp conveyor belts are used on heavy duty conveyors where resistance to the effects of heavy impacts and resistance to tearing are important characteristics, typically seen in quarrying, open cast mining and steel industries or in applications where heavy-duty and yet narrow belts are required, such as in tunnelling.
In addition to the exceptional impact and tear resistance offered by this carcaß construction extremely high adhesion levels are achieved ensuring extreme resistance to delamination.



Specifications of PowaFLEX I

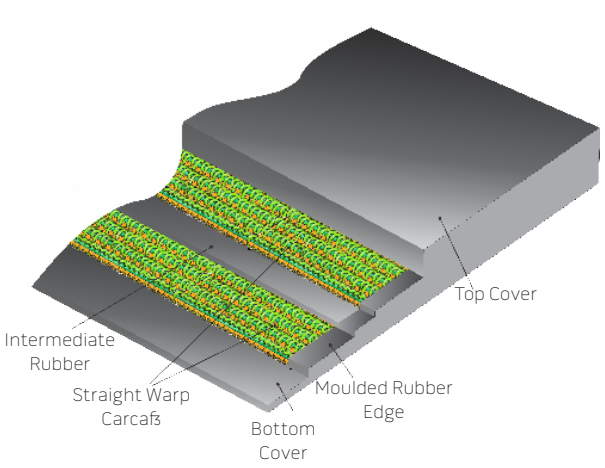
Belt Claß	400	500	630	800
Max Tension (kN/m)	50	63	80	100
Modulus (kN/m)	7140	9000	11420	14280
Carcaß Maß (kg/m²)	1.83	2.45	2.66	3.46
Carcaß thickneß (mm)	2.41	3.48	3.99	4.30
Minimum Pulley Diameters				
A	315	315	400	500
C	200	200	250	315
Minimum Belt width for Empty Belt Troughing				
20° trough angle	400	600	600	600
35° trough angle	500	600	600	750
45° trough angle	600	600	750	750
60° trough angle	750	750	750	900
Maximum Belt width for Load Support				
LD ≤ 20	1350	1500	1500	1800
LD = 21 - 60	1350	1350	1500	1650
LD = 61 - 160	1350	1350	1350	1500
LD = 161 - 600	1200	1200	1350	1350
LD > 600	1050	1050	1200	1200

POWAFLEX II

PowaFLEX II is a two ply straight warp carcaß construction in strength range from 1000 kN/m to 2000 kN/m
Dunlop PowaFLEX II has a polyester straight- warp carcaß of two plies. The tension carrying warp yarns are protected on both top and bottom by nylon weft yarns bound to one another with nylon binder yarns.

PowaFLEX II belts are used on very heavy duty conveyors where resistance to the effects of heavy impacts and resistance to tearing are important characteristics.

In addition to the exceptional impact and tear resistance offered by this carcaß construction extremely high adhesion levels are achieved ensuring extreme resistance to delamination.

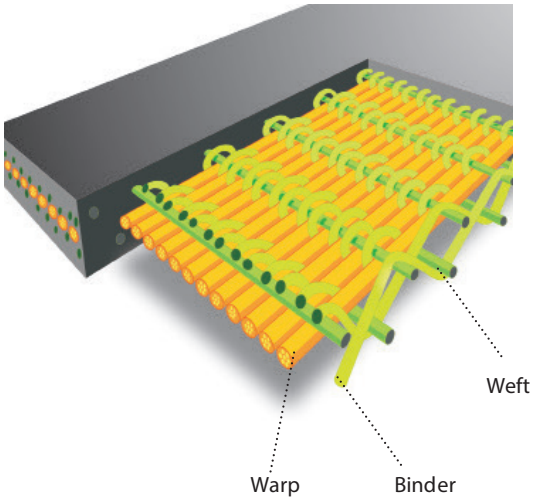


Specifications of PowaFLEX II

Belt Claß	1000	1250	1600	2000
Max Tension (kN/m)	125	160	200	250
Modulus (kN/m)	20830	26660	33330	41660
Carcaß Maß (kg/m²)	5.91	6.16	7.75	12.58
Carcaß thicknesß (mm)	6.10	6.62	7.75	8.21
Minimum Pulley Diameters				
A	800	800	1000	1000
C	500	500	630	630
Minimum Belt width for Empty Belt Troughing				
20° trough angle	750	750	750	750
35° trough angle	750	900	900	900
45° trough angle	900	900	900	1050
60° trough angle	900	900	1050	1050
Maximum Belt width for Load Support				
LD ≤ 20	1800	1800	1800	1800
LD = 21 - 60	1800	1800	1800	1800
LD = 61 - 160	1500	1800	1800	1800
LD = 161 - 600	1500	1650	1800	1800
LD > 600	1350	1500	1650	1800

STRAIGHT WRAP

Dunlop Straight Wrap Carcass has a single ply straight-warp carcass with Aramid warp, Nylon weft and binder members
Strength rating range from 800 - 3500 kN/m
Dunlop Straight Wrap Carcass has high tenacity aramid warp members which gives the belting exceptional strength to weight ratio. Lower weight ensures huge savings in power consumption. High elastic modulus of the aramid yarn ensures minimal elongation thereby reducing the belt length changes that occur with varying amount of load being conveyed.
Permanent elongation of Aramid yarn is so negligible that it can be ignored. Shorter take-up travel distance is required. Very long energy efficient belt conveyor systems are possible when the conveyor system is fitted withDunlop Straight Wrap Carcass belting.
The straight warp Aramid yarns are bound by nylon yarns to the straight weft yarns above and below. This unique construction provides exceptional rip and tear resistance. A wide range of the classic Dunlop belt cover compounds provide excellent protection to the carcass even in the most arduous operating conditions.Due to the thin carcass, Dunlop Straight Wrap Carcass can be used with small pulley diameters.



Specifications of Straught Wrap Carcafs

Belt Clafs	800	1000	1250	1600	2000	2500	3150	3500
Max Tension (kN/m)	100	125	160	200	250	315	400	450
Modulus (kN/m)	53200	66200	82450	105200	131200	163700	205950	228700
Carcafs Mafs (kg/m^2)	1.83	2.45	2.66	3.46	5.91	6.16	7.75	12.58
Carcafs thicknefs (mm)	2.41	3.48	3.99	4.30	6.10	6.62	7.75	8.21
Minimum Pulley Diameters								
A	315	315	400	500	800	800	1000	1000
C	200	200	250	315	500	500	630	630
Minimum Belt width for Empty Belt Troughing								
20° trough angle	400	600	600	600	750	750	750	750
35° trough angle	500	600	600	750	750	900	900	900
45° trough angle	600	600	750	750	900	900	900	1050
60° trough angle	750	750	750	900	900	900	1050	1050
Maximum Belt width for Load Support								
LD ≤ 20	1350	1500	1500	1800	1800	1800	1800	1800
LD = 21 - 60	1350	1350	1500	1650	1800	1800	1800	1800
LD = 61 - 160	1350	1350	1350	1500	1500	1800	1800	1800
LD = 161 - 600	1200	1200	1350	1350	1500	1650	1800	1800
LD > 600	1050	1050	1200	1200	1350	1500	1650	1800

LAVATECH
Heat-resistant HR GRADE

Dunlop LavaTECH conveyor belting is constructed from materials specifically developed for conveying hot product or operating in a hot environment.

Due to the enormous range of materials that are conveyed under widely different temperature ranges LavaTECH belting is offered in four alternative grades. For each grade we specify the maximum temperature for constant operation and the temperature that the belt can withstand on a short lived intermittent basis.

The duration of intermittent higher temperature material should be limited to a span that will prevent the belt surface attaining a temperature higher than the constant temperature rating. With all of this in mind we have developed and continue to develop and test our rubber covers so as to optimize heat requirement with optimal abrasion and cut resistant properties. Dunlop LavaTECH conveyor belting allows for permanent and intermittent temperatures from 100 to 220 degrees Celsius.

Specifications

Description	Strength Range (kN/m)	Cover Type	Temperature rating °C		Abrasion index (mm^3)
			Constant	Intermittent	
Dunlop LavaTECH D15	315 - 2500	T0	150	170	200
Dunlop LavaTECH D20	315 - 2500	T1	200	230	200
Dunlop LavaTECH D24	315 - 2500	T2	240	280	200
Dunlop LavaTECH D35	315 - 2500	T3	350	400	200

FLAMETECH
Fire retardant rubber conveyor belting

Dunlop FlameTECH is fire retardant conveyor belting which has rubber covers providing good tear, cut, impact and abrasion resistance.
The belt is available in a complete range of multiply strengths and also with steel cord reinforcement. Tests carried out on Dunlop FlameTECH conveyor belting for determining fire retarding properties.

1) Flame test - ISO 340:2013 test method
2) Electrical conductivity of the belt surface - ISO 284:2012 test method
3) Fire propagation test - EN 12881-1 test method C
4) Drum fiction test SANS 971:2013 and ISO 20238

Safety level	Standard norm/tests	Belting name	Risk
1	ISO 340 ISO 284	Dunlop FlameTECH EP or ST Level 1	Prevention of the propagation of accidental fire from a minor fire source above ground and the risk of explosion due to the accumulation of static electricity.
2	DIN EN ISO 12882 according to customer specification	Dunlop FlameTECH EP or ST Level 2	Prevention of the propagation of accidental fire from an extensive fire source aboveground and the risk of explosion due to the accumulation of static electricity.
3	DIN EN ISO 14973 according to customer specification SANS 971	Dunlop FlameTECH EP or ST Level 3	Prevention of the propagation of accidental fire from a minor or extensive fire source underground, the risk of explosion due to the accumulation of static electricity and the risk of belt slipping.

Specifications

Cover Type	Maximum Abrasion Lofs mm³)	Minimum Elongation at break (%)	Min. ambient temperature
K/S	200	350	14
VT or V	175	350	14
F	145	350	15

Fire retarding properties

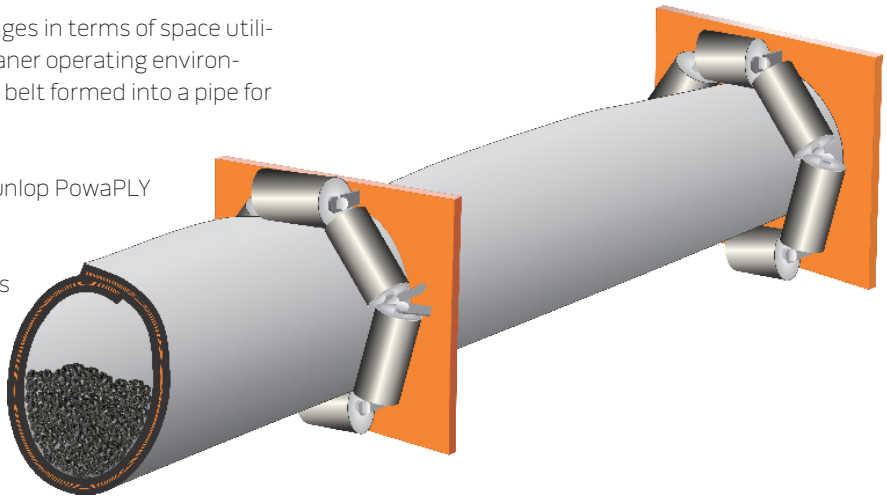
Property	Flame test	Electrical Resistan-	Fire propagation	Drum friction
Test method	ISO 340:2013	ISO 284: 2012	EN 12881 - 1 Method C	SANS 971:2013
Requirements	Total of 6 samples extinguish within 45 seconds. Maximum duration of flame or glow for any single sample is 15 seconds	Lefs than 300 Megaohm	The length of the test piece that remains undamaged acrofs the whole width of the test piece is greater than 600 mm Or maximum average temperature rise of three samples tested is lefs than 140°C and the length of test piece that remains undamaged is greater than 50 mm.	No flame or glow for durati-on of test

POWAFLO – PIPE CONVEYOR BELTING

Pipe conveyor systems offer many advantages in terms of space utilisation. They also provide potential for a cleaner operating environment as the product is fully enclosed in the belt formed into a pipe for the length of the conveying route.

Dunlop PowaFLO is a special adaption of Dunlop PowaPLY conveyor belting.

The unique carcaſs design, using textile plies ensures that the pipe form provides optimum fill croſs section throughout the service life of the belt. Also the more flexible belt edges allow tight pipe closure without increasing resistance to movement through the encircling idler rollers.



Belt Claſs/ply	400/2	400/3	500/2	500/3	630/2	630/3	800/3	1000/3
Max Tension (kN/m)	40	40	50	50	63	63	80	100
Modulus (kN/m)	4440	4440	5550	5550	7000	7000	8880	11110
Carcaſs Maſs (kg/m^2)	3.3	4.0	3.4	4.1	3.9	4.9	5.4	5.9
Carcaſs thickneſs (mm)	2.6	3.1	2.5	3.6	3.0	4.1	4.0	4.7
Minimum Pulley Diameters								
A	315	315	315	400	315	500	500	630
B	250	250	250	315	250	400	400	500
C	200	200	200	250	200	315	315	400

GUIDANCE FOR CONVEYOR TECHNOLOGY
Method for calculating conveyor belt tensions

In selecting the most suitable belt for a particular application, several factors have to be considered. One of the foremost considerations is that the tensile strength of the belt carcaß must be adequate to transmit the power required in conveying the material over the distance involved.

Belt Tensions

In order to calculate the maximum belt tension and hence the strength of belt that is required, it is first neceßary to calculate the effective tension. This is the force required to move the conveyor and the load it is conveying at constant speed. Since the calculation of effective tension is based on a constant speed conveyor, the forces required to move the conveyor and material are only those to overcome frictional resistance and gravitational force

Maß of Moving Parts - G

For the sake of simplicity the conveyor is considered to be made up of interconnected unit length components all of equal maß. The maß of each of these units is called the maß of the moving parts and is calculated by adding the total maß of the belting, the rotating maß of all the carrying and return idlers and the rotating maß of all pulleys.
This total is divided by the horizontal length of the conveyor to get the mean maß of all the components. At the outset the belt idlers and pulleys have not been selected and hence no maß for these components can be determined. Therefore an estimate of the maß of the moving parts equal in magnitude to 6% of the belt width expreßed in millimetres, is used.

$$G = 0.06W$$

Maß of the load per unit length

As is the case with the components the load that is conveyed is considered to be evenly distributed along the length of the conveyor. Given the peak capacity in ton per hour the maß of the load per unit length is given by:

$$\frac{\tau}{S}$$

Effective Tension

The effective tension is made up of 4 components

- The tension to move the empty belt T_x
- The tension to move the load horizontally T_y
- The tension to raise or lower the load T_z
- The tension to overcome the resistance of acceßories T_U
- The effective tension is the sum of these 4

$$T_e = T_x + T_y + T_z + T_U$$

$$T_x = 9.8G \cdot f_x \cdot L_C$$

$$T_y = 9.8Q \cdot f_y \cdot L_C$$

$$T_z = 9.8Q \cdot H$$

Various conveyor acceßories that add resistance to belt movement are standard on most conveyors. The most common are skirtboards at the loading point and belt scrapers. Other acceßories include movable trippers and belt plows. Tension required to overcome the resistance of skirtboards, T_{US}

$$T_{US} = \text{————}$$

Tension to overcome resistance of scrapers, T_{UC}

$$T_{UC} = A \cdot p \cdot f_c$$

In the case of a belt plow the additional tension required to overcome the resistance of each plow is given by the empirical formula

$$T_{up} = 1.5W$$

Moving trippers require additional pulleys in the system and therefore add tension. If the maß of the additional pulleys has been included in the maß of moving parts then no additional tension is added. However, if a separate calculation of the tension to overcome the resistance of the additional pulleys is required this can be determined for each additional pulley as follows

$$T_{Ut} = 0.01 \text{ ———}$$

Corrected length L_c

Short conveyors require relatively more force to overcome frictional resistance than longer conveyors and therefore an adjustment is made to the length of the conveyor used in determining the effective tension. The adjusted length is always greater than the actual horizontal length.

$$L_c = L + 70$$

The length correction factor C is

———

All conveyors require an additional tension in the belt to enable the drive pulley to transmit the effective tension into the belt without slipping. This tension, termed the slack side tension T_2, is induced by the take-up system. The slack side tension must also be sufficient to limit belt sag and sag factor used in calculating the amount of tension required is given belowIn the case of a simple horizontal conveyor the maximum belt tension T_1 is the sum of the effective tension T_e and the slack side tension T_2
i.e.

T_1 is the tight side tension and T_2 the slack side tension.

For a more complex conveyor profile that is inclined, additional tensions are induced due to the maß of the belt on the slope. This tension is termed the slope

The slack side tension is determined by consideration of two conditions that must be met in any conveyor. The first condition is that there must be sufficient tension on the slack side to prevent belt slip on the drive. The second condition is that there must be sufficient tension to prevent exceßive sag between the carrying idlers.

Minimum tension to prevent slip T_m

At the point of slipping the relationship between T_1 and T_2 is

$$\frac{T_1}{T_2} = e^{\mu\alpha}$$

Since $T_1 = T_e + T_2$

$$k = \frac{1}{(e^{\mu\alpha} - 1)}$$ T_e

The expreßion 'k' is called the drive factor. Also the value of T_2 that will be just sufficient to prevent slip is called the minimum tension to prevent slip T_m.
i.e.

$$T_m = k \cdot T_e$$

Minimum tension to limit belt sag T_s

The tension required to limit sag is dependent on the combined maß of belt and load, the spacing of the carry idlers and the amount of sag that is permißible.

$$T_s = 9.8G_i(B + Q)\, l_d$$

The value of the slack side tension must ensure that both conditions are met and therefore T_2 must be the larger of T_m or T_s

Slope tension T_h

$$T_h = 9.8B \cdot H$$

The slope tension is the product of the belt weight and the vertical lift and has its maximum value at the highest point of the conveyor.

Unit tension T

The maximum belt tension T has as its reference width the full width of the belt. Usually this is converted to the tension per unit of belt width as this is the reference dimension for belt strengths.

$$T = \frac{T_1}{W}$$

Definition of symbols

A	Area of scraper blade surface
b	Interskirt width (mm)
B	Belt mass (kg/m^2)
C	Length correction factor
d_s	Pulley shaft diameter (mm)
D_t	Pulley diameter (mm)
e	Napierian log constant (2.7271828)
f_c	Friction factor of belt cleaner
f_s	Friction factor of skirt seal
f_x	Friction factor for moving the empty belt
f_y	Friction factor for moving the loaded belt
G	Mass of moving parts (kg/m)
G_f	Sag factor
H	Overall change in elevation between tail and head of the conveyor (m)
k	Drive factor
L	Horizontal length between head and tail conveyor pulley centres (m)
L_c	Corrected length of the conveyor (m)
L_s	Length of skirt (m)
Q	Material load per unit of length (kg/m)
S	Belt speed (m/s)
T	Maximum belt tension per unit of width (kN/m)
T_1	Maximum belt tension (kN)
T_2	Slack side tension – belt tension immediately after the drive (kN)
T_e	Effective tension (kN)
T_h	Slope tension (kN)
T_m	Minimum value of T_2 tension to prevent belt slip on the drive
T_s	Minimum value of T_2 tension to limit belt sag to acceptable (design) level (kN)
T_w	Tension induced in the belt to overcome friction of accessories (kN)
T_x	Tension induced in the belt to overcome friction in moving the empty belt (kN)
T_y	Tension induced in the belt to overcome friction in moving the load (kN)
T_z	Tension induced in the belt to lift the load (kN)
W	Belt width (mm)
θ	Total angle of belt wrap on drive pulley (Radians)
μ	Coefficient of friction between belt and drive pulley
p	Pressure applied between the cleaner blade and the belt (kPa)
τ	Belt capacity (t/h)

NOTES

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Your contact

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