YOU CAN RELY ON HIGH-PERFORMANCE LOGISTICS & SERVICES

With a main logistics platform in Lille (France), offices and storage facilities in Poland, U.S.A and Australia we can provide our clients with :

- A wide range of belt specifications in stock
- Cutting services to customise belts to width and length
- Hole punching service for elevator belts
- A « one stop shop » for conveyor belt related products such as splice kits, glues, mechanical fasteners, idlers, loading stations, belt cleaners, vulcanising presses...
- Buckets for elevator belts together with related fastening and installation equipement (eg:bolts, clips...)
- Short delivery times

DEPREUX is part of the COBRA GROUP.
For further information on DEPREUX or the COBRA GROUP ACTIVITIES please contact your closest COBRA subsidiary or your head office.

DEPREUX

TRANSCO

indi

GORO

GO smart

CASA FONDATA NELL'ANNO 1013
Mossier

MSHA Approved UNDERGROUND CONVEYOR BELT

FABRIC CARCASE

- **Firewall / Firewall II**
  Multiply with rubber covers
- **Firemaster - PVG**
  Solid-woven with rubber covers
- **Fireshield**
  Straight-warp with rubber covers

STEEL CORD

- **Firemaster - ST**
  Steel cord with rubber covers

DEPREUX

COBRA AMERICA
8 Boswell Drive • Bristol TN 37620
www.cobraamerica.com
Toll Free: (866) 768-9700

MSHA Approved Conveyor Belt for Underground Applications

complying with European standard EN 14973

Preamble

This brochure describes the heavy-duty DEPREUX belts, to be used underground, that are antistatic and fire-resistant and that comply with the european standard, EN 14973.

This brochure describes the heavy duty DEPREUX conveyor belts for underground applications. They are fire resistant and comply with MSHA Part 14 standards.

Product Range: 150 PIW to 3200 PIW with a maximum width of 72"

Standard conveyor belting is a highly flammable product, as it is composed of chemical products derived from petrochemicals. Special agents are added in the dipping solution of the fabrics, the impregnation paste, and in the different rubber components that make up a safety belt. This process increases the fire resistance and decreases the friction factor of the metal elements. These agents act in synergy at different high temperature levels. These added fire resistant agents will generally degrade the mechanical properties of the covers.

The DEPREUX brand has more than 100 years of experience in designing safety belts that comply with the various world safety standards. While complying with the standards, DEPREUX has optimized the mechanical parameters for the different conveying applications which will ensure the belt longevity your company needs.

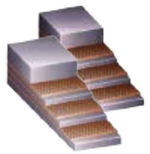
Applications

The conveyor belts described in this brochure are to be used for conveying material inunderground mines or tunneling applications. *A risk analysis should be done by the user in order to assess the extent of the following hazards:

i. Limited means of escape
ii. Potentially flammable environment
iii. Presence of flammable dust or transport of flammable material
iv. Presence of additional duel combustion elements such as wood, plastics, etc.

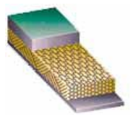
Range

DEPREUX offers different types of constructions and different types of covers as indicated herebelow :



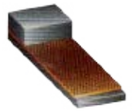
Firewall™ - Firewall II™

Traditional « multiply » construction , composed by several fabric plies, rubber interplies and rubber top and bottom covers.



Firemaster™ - PVG

These belts have a single ply textile carcase and rubber or PVC covers. This solid woven offers good impact resistance, and a long life expectancy.

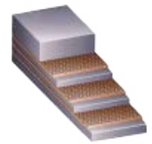


Fireshield™

DX-FLEXAMID is textile « straight-warp » belt, the warp is made of thick aramid twisted yarns, protected on two sides by a textile polyamide weft. DXFLEXAMID will offer better impact resistance and tear resistance than steel-cord, and could be used in case of emergency with mechanical fasteners.

Firemaster - ST™

Steel-cord carcase.
This belt is composed of steel-cords extending along the overall length of the belt. As a standard, the belt is proposed with no weft. However , as indicated in this drawing, a steel breaker (or a textile breaker) can be added in the top cover to offer some resistance to tearing.



Firewall™ - Firewall II™

Plied Belts for Underground Use

Application

Both Firewall and Firewall II are belts used for the transportation of bulk or other material in various underground mining and quarrying applications, or any application in which MSHA Part 14 fire resistance is a requirement.

Tensile strength

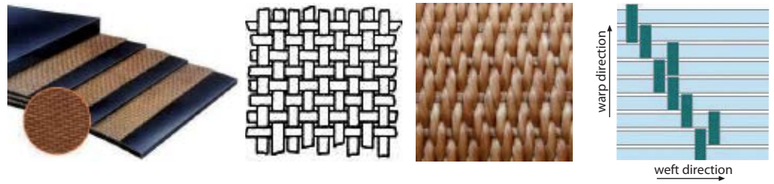
150 PIW to 1400 PIW using 2 to 5 plies.

Width and Length

Standard 60" maximum. DEPREUX can supply wider belts if required. The width tolerance is +/- 1%. Belts are supplied in standard 656 ft. rolls, but can be offered in as much as 1300 ft. rolls if required.
Please contact us for more information.

Belt structure

The Fireshield™ and Firewall II™ belt carcase is made up of layered fabrics, from 2-5 plies. Each ply is separated by a rubber interlayer which enables the belt to absorb shocks.



Main mechanical properties:

- Belt stretch
- Adhesion

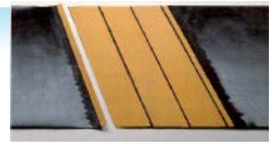
The fabric of each ply is made by using a standard 1/1 band or by using a Crows Foot Weave with bigger warp and weft yarns. This product providesa greater impact resistance and a lesser risk of longitudinal tearing.

- At 10% of belt nominal tensile strength: 1.5% max. Permanent stretch:around 0.7% and elastic stretch: around 0.5% for standard carcase
- The fabrics are dipped with RFL solution. The RFL and rubber composition is designed to ensure maximum adhesion between the plies. This needs to be adhesive high enough to ensure a longlife expectancy, but not so adhesive that it would hamper the operation of splicing the belt. Adhesion: > 4N/mm.

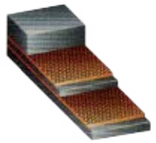
Belt joining

DEPREUX belts can be joined by any of the following methods:

- the «hot» vulcanized method, using DEPREUX or other jointing materials and a field press,
- the «cold» method: using special glues,
- with mechanical fasteners. In this case, DEPREUX can supply the required belt with fasteners ready for use at each end.



PRODUCT	OPERATING TEMPERATURE	TYPE OF COVER	ABRASIVE RESISTANCE (mm3)	TENSILE STRENGHT (Mpa)	ELONGATION AT BREAK (%)
FIREWALL™	0° to 50°	Chloroprene Rubber	<120	>18	>400
FIREWALL II™	0° to 50°	Nitrile Rubber / NBR	<180	>14	>380



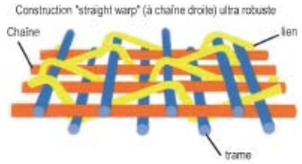
Fireshield™

Underground straight-warp belt

Application

The Fireshield™ belt has excellent properties of resistance to tearing and resistance to heavy impacts. Because the carcase is thin, Fireshield™ can also be used with smaller pulley diameters than textile plied or steel-cord belts. Ability of Fireshield™ to trough is much better than a plied conveyor belt. Fireshield™ can also be joined with mechanical fasteners. Fireshield™ is therefore utilised 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.

Construction



Fireshield™ is a textile belt «straight- warp « which means with a carcass composed of one or two plies , each ply is with straight warp, protected on both top and bottom sides by weft lines in textile as shown in the drawing below cons .The straight warp is composed of thick twisted (textile cables) in polyester . This warp is inserted between two planes of weft textile made of thick twisted in polyamide . The warp and the weft are connected by a small fine wire which ensures the maintenance of textile . The carcass frame thus constructed is adhered RFL and may be coated of different types of rubber cover, anti- abrasive (X , Y , SH , etc ...) and other.

• for a given ply , for average tensile strength greater than 500 PIW, it is necessary to have two levels of warp , and therefore three levels of weft protecting the warp and the binding of the assembly.

• For high resistance, it is preferable to use 2 plies straight- warp , separated by an interply in rubber to facilitate splicing .

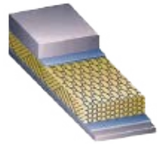
• To increase fastening resistance, tear and impact, the Fireshield™ belt can be offered in a version with carcass reinforced in weft: Fireshield™ RT

Tensile strength

Fireshield ranges from standards of 150 PIW in 1 Ply to 1000 PIW in 2 Ply. If greater strength is required, please contact us for more information.

Belt joining

Fireshield™ conveyor belts are normally jointed by hot vulcanising (ref. to DEPREUX splicing procedure). It is also possible to mechanically fasten Fireshield™ belts but you should consult with our technical representative for the appropriate type of fastener.



Firemaster™ -PVG

Solid Woven Carcase, PVC/Rubber blended covers for underground use.

Application

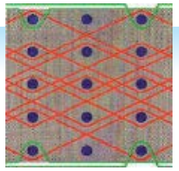
DEPREUX Firemaster-PVG belts are used when a long service life is sought. It is for use inapplications which are characterized by severe operating conditions such as high speed systems, presence of large material, risk of impact damage, longitudinal tearing, or edge wear.
Firemaster-PVG belts are also used for long distances and/or when the system faces a steep slope. This belt will be better for those applications than a standard plied or steel cord belt because of its high mechanical and corrosion resistance, the lower power requirement, ease of installation and maintenance, and its superior mechanical fastener holding.

Tensile strength

This belt ranges from a standard of 150 PIW to 2200 PIW.

Belt structure

The Depreux belts are made of a textile «solid-woven» carcase, impregnated with a special PVC The carcass is then protected with a proprietary DEPREUX cover providing the user with special characteristics insuring long life and superior performance.



Thicknesses and weights for different specifications, please contact us.

Main mechanical properties:

- Belt stretch
- Fasteners
- Mechanical resistance

Main mechanical properties : The «solid-woven» textile is made of polyester (E) yarns in the warp direction to minimize the stretching of the belt, and of polyamide (P) yarn in the weft direction for good belt flexibility.
- At 10% of nominal belt tensile strength: 1 % maximum Elastic stretch: 0.5% to 0.7% for standard carcase Permanent stretch : 0.4% to 0.7%.
- Excellent fastener holding capacity - from 50% to 90% - which makes this joining technique increasingly popular.
- The «solid-woven» carcase is covered with cotton pile yarns laid in the warp direction, and special edge reinforcements which make the belt exceptionally resistant:
- to impacts by sharp or large materials,
- to longitudinal tearing,
- to carcase wear in case of substantial damage in the rubber cover.
As the carcase is highly compact, the thickness of the outer rubber covers can be reduced.

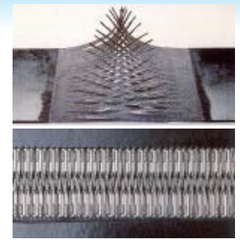
Advantages for the overall system

A major advantage over ply belts is that Firemaster-PVG belts need smaller drum diameters.
The advantage over steel-cord belts is that
Firemaster-PVG belts usually need less power to function.

Belt joining

Depreux belts can be joined by any of the following methods:

the «hot» vulcanized Finger splicing method, using DEPREUX or other jointing materials and a field press, - the «cold» Finger splicing method: using special glues,



- with mechanical fasteners. In this case, DEPREUX can supply the required length with fasteners ready for use at each end. Please note that a small increase in belt length is required to make the splice. Also, in the case of «hot» jointing, the splicing materials used have an effective shelf life of less than 6 months and should not be stored at high temperatures.

Firemaster™ PVG can be spliced into both plied and solid woven belting. Splicing procedures are available upon request.

Firemaster™ -ST

MSHA Approved Steel Cord Belt

Application

Steel cord belts are preferred to textile plied or solid-woven conveyor belts in the following situations:

- when the required tensile strength is high and the conveyor is narrow. The superior troughing capabilities of steel cord belt are suited to conveyors typically found in long overland conveyor systems, such as those between a mine and a power plant or steel works or tunnelling projects.
- when a very low elongation of the belt is required.
- when the life expectancy for the belt is the prime objective.
- when loading and transport conditions are compatible.

Tensile strength

The belt ranges from a standard ST630 N/mm to a ST5400 N/mm

Product description

A Firemaster-ST conveyor belt is composed of:

- Steel Cables placed at a constant pitch across the width of the belt.
- A special rubber-bonding layer to the cables and to the rubber covers.
- Top and bottom rubber covers.

The manufacture of a steel cord belt requires a heavy-duty steel cord production line together with an experienced, knowledgeable production team. DEPREUX Firemaster-ST belts are the result of 80 years experience.

Steel cable construction

Firemaster-ST utilizes the open type steel cord construction that allows the rubber to penetrate fully into the cable, which is a guarantee of the longevity for the belt. This technique optimises the adhesion and minimises corrosion to the steel cords in the case of damage to the belt.

Open steel cables also offer characteristics that enhance the impact absorption capability of the belt and makes for easy transition between the troughed position of the belt to flat and vice versa.

The steel cables are also protected against corrosion with special zinc plating.

Different bonding layer and cover combinations

The bonding layer is a key part of steel-cord belt. It has to be formulated to have:

- Good penetration in the cable
- Good adhesion with the cable
- Good adhesion with the cables, even after ageing
- Good adhesion with the cables even after the dynamic stresses of the conveyor operation

Type	Unité	ST 500	ST 630	ST 800	ST 1000	ST 1250	ST 1400	ST 1600	ST 1800	ST 2000	ST 2250	ST 2500	ST 2800	ST 3150	ST 3500	ST 4000	ST 4500	ST 5000	ST 5400
Tensile	N/mm	500	630	800	1000	1250	1400	1600	1800	2000	2250	2500	2800	3150	3500	4000	4500	5000	5400
Max. steel cord diameter	mm	3,0	3,0	3,7	4,2	4,9	5,0	5,6	5,6	5,6	5,6	7,2	7,2	8,1	8,6	8,9	9,7	10,9	11,3
Min cord tensile strength	KN	7,6	7,6	10,3	12,9	18,4	20,6	26,2	25,5	25,5	26,2	39,7	39,7	50,0	55,5	63,5	75,0	90,3	96,0
Space between cords (±1,5mm)	mm	14,0	11,0	12,0	12,0	14,0	14,0	15,0	13,5	12,0	11,0	15,0	13,5	15,0	15,0	15,0	16,0	17,0	17,0
Min Thickness cover	mm	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	4,0	5,0	5,0	5,5	6,0	6,5	7,0	7,5	8,0
Belt Width	tolerance (mm)	Cord numbers																	
600	+10/-5	33	42	39	39	34	34	31	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A
650	+10/-7	44	54	51	51	45	45	41	46	52	56	41	46	41	41	41	39	36	N/A
800	+10/-8	54	68	64	63	55	55	60	57	64	69	51	57	51	51	51	48	45	45
1000	±10	68	84	80	80	68	68	63	71	80	86	63	71	63	64	63	60	56	57
1200	±10	86	110	97	97	82	82	76	85	96	104	76	85	76	76	76	72	67	68
1400	±12	96	124	114	113	97	97	90	100	112	122	89	99	89	89	89	84	79	79
1600	±12	111	142	130	130	111	111	103	114	129	140	102	114	102	102	102	96	90	90
1800	±14	125	160	147	147	125	125	116	129	145	159	116	128	116	116	116	108	102	102
2000	±14	139	177	164	163	140	139	130	144	162	177	129	143	129	129	129	121	114	114
2200	±15	153	195	180	180	154	154	143	159	179	195	142	158	142	142	142	133	126	126
2400	±15	167	213	197	197	168	168	156	174	195	213	156	173	156	156	156	146	137	137

Recommended Pulley Diameters

Firewall / Firewall II									
Tensile Strength PIW	220	330	440	400	600	800	1000		
Number of plies	2	3	4	2	3	4	5		
Pulley High Tension	10″	16″	25″	16″	25″	32″	50″		
Pulley Low Tension	8″	12″	20″	12″	30″	25″	40″		

Fireshield									
Tensile Strength PIW	400	500	600	700	800	800	1000	1200	
Number of plies	1	1	1	1	1	2	2	2	
Pulley High Tension	12″	20″	20″	25″	25″	32″	40″	40″	
Pulley Low Tension	10″	16″	16″	20″	20″	25″	32″	32″	

Firemaster - PVG									
Tensile Strength PIW	400	500	600	700	800	1000	1200	1400	1800
Number of plies	1	1	1	1	1	1	1	1	1
Pulley High Tension	20″	20″	25″	32″	32″	32″	40″	40″	50″
Pulley Low Tension	16″	16″	20″	25″	25″	25″	32″	32″	40″

Firemaster - Steel Cord												
Tensile Strength N/mm	ST630	ST800	ST1000	ST1250	ST1600	ST2000	ST2500	ST3150	ST3500	ST4000	ST4500	ST5000
Pulley High Tension	20″	20″	25″	32″	40″	50″	55″	60″	63″	63″	63″	71″
Pulley Low Tension	16″	16″	20″	25″	32″	40″	40″	50″	50″	50″	50″	55″

*High tension pulleys Wrap: Head, Drive, Tripper

*Low tension pulleys Wrap: Tail, Take-up, Take-up bend