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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 equipment (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.



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groupesouris communication • 02 20 68 89 70 DEPREUX SÉCURITÉ POUR VERSION 03-ENG

SAFETY CONVEYOR OR ELEVATOR BELT FOR ABOVEGROUND APPLICATIONS IN COMPLIANCE WITH EUROPEAN NORM EN12882

TEXTILE CARCASSES

• DELTAFLAM
Multiply with rubber cover

• DYNAFLAM
Solid-Woven with rubber cover

• DX-FLEX
Straight-warp polyester with rubber cover

STEEL-CORD CARCASSES

• DX/ST
Steel-cord with rubber cover

• DX MAT
Steel-cord Straight-warp warp/weft weaving with rubber cover



Safety conveyor or elevator belt for aboveground applications in compliance with european norm EN12882



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Introduction

This brochure describes DEPREUX's heavy duty safety belting where there is a requirement for Anti Static and Flame Resistance in compliance with european norm EN12882.

Product range : 250N/mm to 5400N/mm and to a maximum width of 2400mm.

A standard conveyor belt is highly flammable, because it is principally composed of petrochemical components. Therefore it is highly combustible and difficult to extinguish. In a safety belt, components to promote the flow of static electric charges are added to the chemical formula of the elastomers in the carcass and of the cover ; and flame-retardant and special agent are added to contain the fire and the temperature build up.

Risk assessment

This brochure describes antistatic and flame resistant conveyor and elevator belts used in processing industries and storage facilities, for which there is a risk of explosion or fire hazard and propagation. In such cases, a risk analysis is to be performed by a user in order to classify the various areas in the plant, as without obvious risk, potential risk, and significant risk. Propagation of a fire along a conveyor belt from one area to another can be avoided by installing an appropriate belt.

Risk assessment can enable reduced insurance premiums.

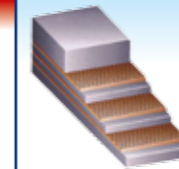
Belt construction

Conveyor and elevator belts are composed :

- **Textile or steel-cord carcass** (the different carcasses are described in the brochure « Conveyor or elevator belts for the transport of abrasive materials or with impact loading in ambient environment »)
- **two different rubber covers**, the top cover compatible with the material being conveyed and the bottom cover compatible with the support idler structure and pulley drums.

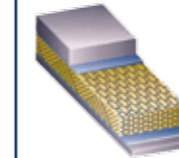
Different types of belts constructions and cover are described below.

Range



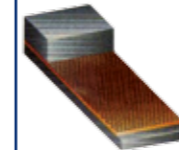
DELTAFLAM - Textile multiply belt

DELTA is a belt with a traditional « multiply » construction , composed by several fabric plies, rubber interplies and rubber top and bottom covers.



DYNAFLAM - Solid-Woven belt

DYNA has a « monoplex » textile carcass and rubber covers. Dynaflam offers good impact resistance, and a long life expectancy.



DX FLEX - Textile belt « straight-warp »

DX-FLEX is textile « straight-warp » belt, the warp is polyester, protected on two sides by a textile polyamide weft. DX-Flex has good tearing resistance, good impact damage resistance and strong mechanical fastener retention.



DX/ST - Steel-cord belt

DX-ST is belt composed of steel-cords extending along the overall length of the belt. In this construction there is no weft. (on the draft, DX-ST with steel-cord breaker in the top cover).



DX-MAT - Steel-cord Belt « straight warp »

Warp and weft is made using steel-cords



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Potential hazards

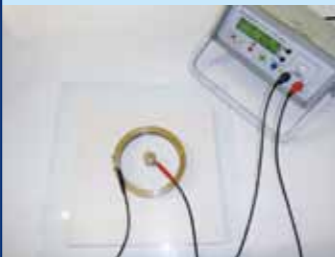
- 1 Hazard due to electrostatic charge build-up on the belt, which could cause an electrical spark to take place.
- 2 Hazard due to a localised small flame in contact with the cover and or in contact with the carcass when the conveyor is stopped.
- 3 Hazard due to a flame propagating along the length of a belt
- 4 Hazard due to overheating caused by friction of a conveyor belt stalled on a rotating pulley drum or a moving belt in contact with a stationary pulley drum or roller and part of the conveyor structure

The frequency of occurrence and the level of hazard is a function of the application and of the working environment. Consequently, the safety level of belt required, varies with each application and the level of risk.

Hazards mentioned above, are not the only characteristics to consider. Other aspects to be considered are health, safety and environmental impacts.

With the experience of one hundred years manufacturing fire resistant belt, DEPREUX is your trusted partner.

The different tests requirements for the different hazards



1 Electrostatic charge build-up hazard

EN ISO 284 : the belt is required to be conductive and therefore the electrical resistivity of the cover surface to be limited to 300 Mohm.



2 Localised small flame hazard

EN ISO 340 : Laboratory test with small burner. Test are in accordance with ISO 340. Three samples are cut longitudinally and three cut transversally. A propane gas burner with standardized nozzle has a flame temperature of 1000°C, each sample is placed in this flame for 45 seconds.

The time for the self extinction of the flame in each sample is recorded. The total time duration for all six samples to self extinguish must be less than 45 seconds and no individual sample time can exceed 15 seconds.



3 Fire hazard

EN 12881-1 : flame propagation test on a full width sample (up 1200mm) that is 2m long.

The belt sample is placed above the burner for 10 minutes with a forced and controlled air flow. Burner is turned off after a 10 min duration. The residual length of sample not damaged by the flame, must be more than 100 mm the longitudinal end and across the total width of the sample.



4 For drum friction risk

EN 1554 : Sample size : length 1500 mm width 150 mm is applied a dynamic pulley drum (250 mm diameter) rotating at a speed of 200 revolutions per minute, with a loading applied either of fix load (343N, method A1) or with a loadind that is increase gradually (343N to 1715N, method A2), to the belt. By counting the maximum temperature of the drum, observing the potential presence of flame or red glow points on the belt and when the belt breaks we can determine the test result with a maximum time of 1h00 (in the case of method A1) and 2h30 (in the case of method A2), checking if the belt break before the end of the time or not.

European standard EN 12882 This standard defines the different safety requirements for the different categories of risk identify by the user for the different applications.

The following table describes differents categories :

There are 5 safety categories. Category 1 is one risk and category 5 will cover the four risks. For certain categories, there are subcategories, A, B, C corresponding to refinements. A subcategory which cover less risk than C subcategory.

Hazard	1 Electrostatic discharge risk	2 Flame risk	3 Flame propagation risk	4 Drum friction risk
Category/Test	EN ISO 284	EN ISO 340	EN 12881-1:2005 Method A full width 2m long sample	EN 1554:1998
1	≤ 300 MΩ	-	-	-
2A	≤ 300 MΩ	With cover	-	-
2B	≤ 300 MΩ	With cover and without cover	-	-
3A	≤ 300 MΩ	With cover	-	Method A1 Constant load of 343N for 1 hour (no flame).
3B	≤ 300 MΩ	With cover and without cover	-	Method A1 Constant load of 343N for 1 hour (no flame).
4A	≤ 300 MΩ	-	Intact belt over 100 mm	-
4B	≤ 300 MΩ	-	Intact belt over 100 mm	Method A1 Constant load of 343N for 1 hour (no flame).
5A	≤ 300 MΩ	-	Intact belt over 100 mm	Method A2 Maximal load of 1715N total duration for 2h30 min (no flame).
5B	≤ 300 MΩ	-	Intact belt over 100 mm	Method A2 Maximal load of 1715N total duration for 2h30 min (no flame, no glowing).
5C	≤ 300 MΩ	-	Intact belt over 100 mm	Method A2 maximal load of 1715N total duration for 2h30 min (no flame, no glowing). Maximal Temperature of drum 400°C.

As DEPREUX belts are heavy belts for bulk material handling, the standart EN ISO 21178 and EN ISO 21179 (only for light belt application) do not apply.

Mechanical characteristics

For classes defined by standard EN 12282, DEPREUX proposes several grades of belt to suit different applications :

- different carcasses constructions
- different covers
- an optional requirement for the oil/grease resistance (medium or high)

THE DIFFERENT CATEGORIES OF SECURITY DEFINED BY THE EUROPEAN STANDARD EN 12882

Safety category	CARCASES					Operating temperature	
	DELTAFLAM	DYNAFLAM	DX-FLEX	DX/ST	DX MAT	Deltaflam, DX-Flex, DX/ST, DX MAT	Dynaflam
2A / 2B	X	X	X	X	X	-25°C to +80°C	+0°C to +50°C
3A / 3B	X	X	X	X	X	-25°C to +80°C	+0°C to +50°C
4A / 4B	X	X		X	X	-25°C to +80°C	+0°C to +50°C
5A	DELTA FORCE	X	X	X	X	-25°C to +140°C	+0°C to +50°C

THE DIFFERENT COVERS PROPOSED

Product	Specification	Abrasive resistance (mm3)	Tensile strength (Mpa)	Elongation at break (%)	Cover grade	Correspondence and former name
2A / 2B	STD	< 200	> 14	> 350	SBR	DIN22102 - DELTAFLAM K1 and S1 K1 for 2A, S1 for 2B
	Premium	< 120	> 20	> 400	SBR	DIN 22102 - DELTAFLAM K2 and S2 K2 for 2A, S2 for 2B
	MOR	< 170	> 13	> 450	SBR/NBR	DIN 22102 - DELTAFLAM K3 and S3 K3 for 2A, S3 for 2B
	SOR	< 170	> 13	> 350	NBR	
3A / 3B	STD	< 200	> 14	> 350	SBR	
4A						In development
4B						In development
5A	MOR	< 160	> 17	> 400	CR	DIN 22109-4 - DELTAFLAM VT

Premium : Higher Mechanical performance than STD
 MOR : Medium resistance at oil/grease
 SOR : Excellent resistance at oil/grease

Characteristics of carcase

All the characteristics of the carcase components for flame retardant conveyor or elevator belting are the same as described in the brochure « Conveyor or elevator belt to handle abrasive and sharp material, or with high loading impact in ambient temperature », especially a comparison of the different constructions was done on page 13 and recommendation for the minimum drum diameters was given on page 15.

Splicing

Splicing methods available on request

Denomination

DELTAFLAM EP 630/4 - 1000 - 6 + 2 - (3A) - STD
 DELTAFLAM : Flame Retardant Multiply textile belt
 EP : EP Warp polyester, weft polyamide
 630 : Minimum full longitudinal (warp) tensile strength N/mm
 4 : Number of ply
 1000 : Belt width, in mm
 6 + 2 : Thickness of the top and bottom cover, in mm
 (3A) : Safety category
 STD : Standart quality

