

Beltsiflex Aramid Belts



Innovación para la Industria Minera



Aramid 2000/1

Steelcord 2000

Ep 2000/5



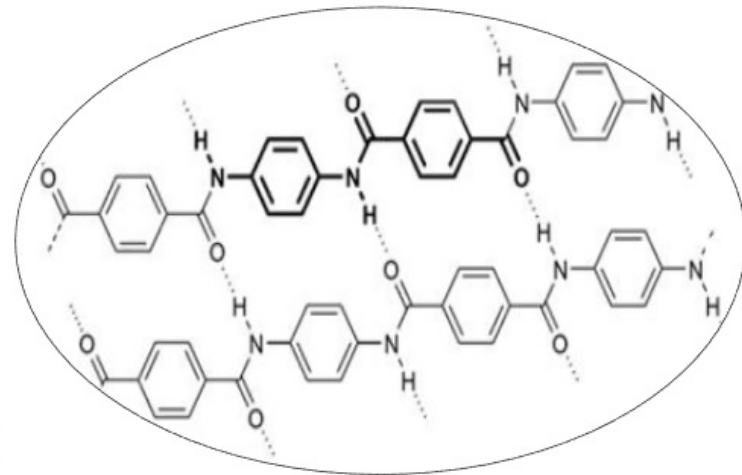
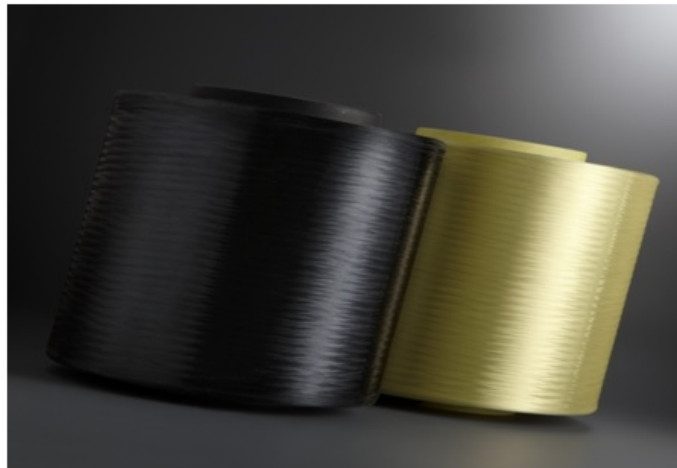
Beltsiflex Aramide Fabric

Conveyor Belt Application

Aramid Fiber

Aramid is a short form for “aromatic polyamide”.

The replacement of the aliphatic carbon backbone in polyamide by aromatic groups gives a considerable change in the properties of the fiber.

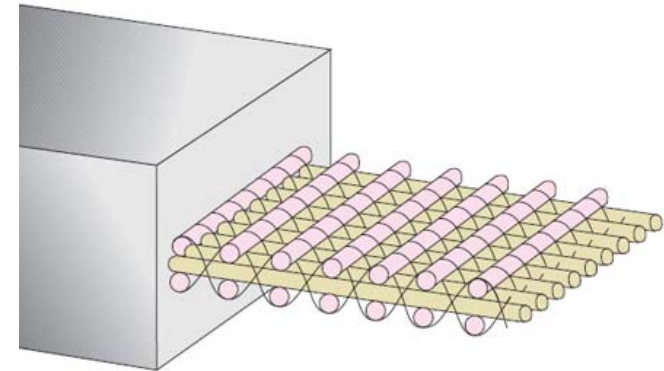


Common Aramid Carcasses

Aramid can be applied as reinforcement of a conveyor belt

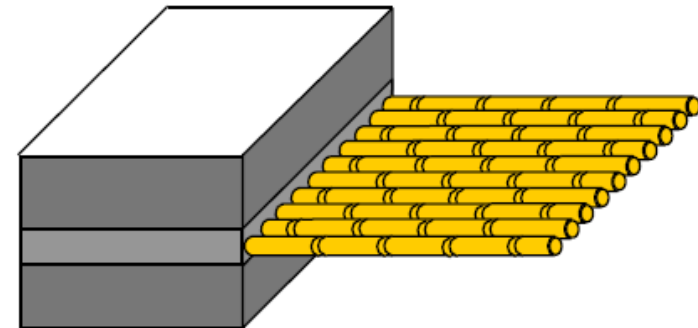
1) Straight-Warp (DPP) Fabric

- Straight Aramid cords
- Additional traverse Polyamide cords that protect the Aramid from both sides and gives additional strength and stiffness
- Low elongation and high strength
- Good impact and slit resistance



2) Cord Fabric

- Straight Aramid cords
- Transversal binder threads
- Thin carcass
- Good troughability and curveability



Common Aramid Carcasses

Aramid can be applied as reinforcement of a conveyor belt

3) Breaker Fabric

- Aramid reinforced breakers to improve damage resistance of conveyor belts
- Superior strength and cut resistance properties compared to polyamide



4) Cable

- Aramid cable to replace the steel cords in order to reduce the weight in the conveyor belt
- High Strength Range

Properties	Nominal
Weight (g/100m)	115
Cord diameter (mm)	4
Tensile Strength (kN)	13,3
Elongation at break (%)	5





Aramid fabric versus EP fabric

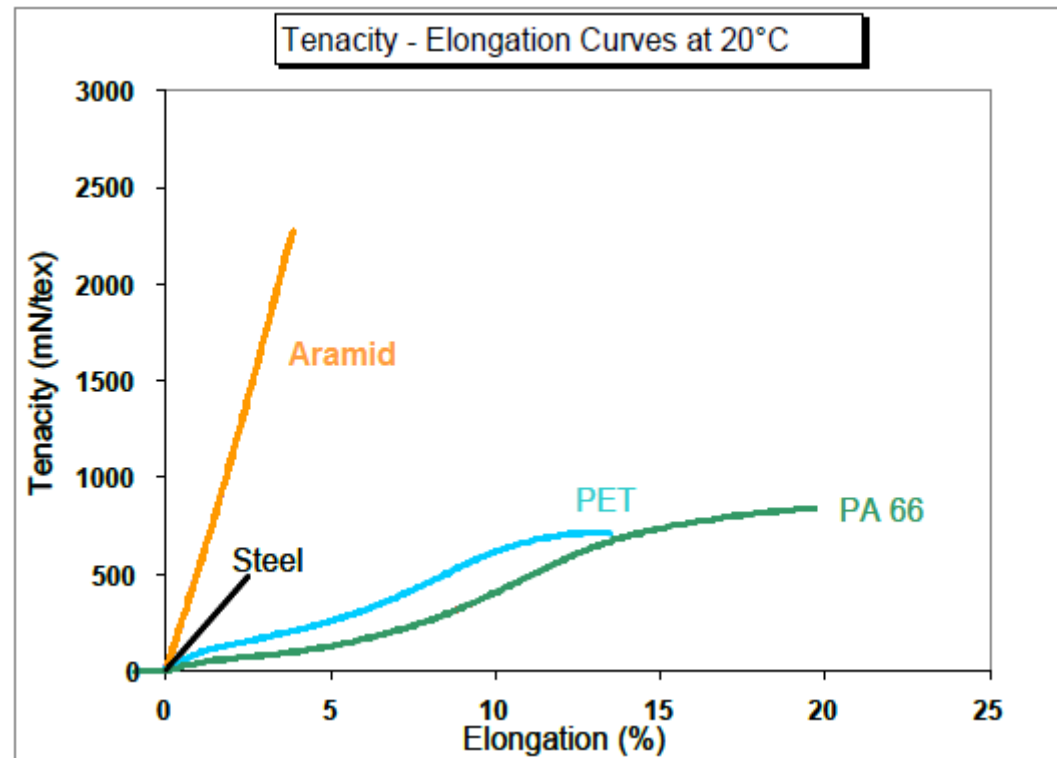
Aramid	EP
Higher Strength – Higher tension belts – Good troughability – Reduced number of plies • Thinner mono-ply belts • Less splices → Lower installation costs → Improved safety • Lower weight → Easier handling → Reduced energy consumption Lower Elongation – Low dynamic growth • Shorter take-up length – Longer distance belts • Lower installation costs Improved safety – Reduce fire propagation + heat resistance – Lower safety factor	Multi-ply bely – Impact Resistance – High transversal stiffness – Hook splice High elongation Easy splicing



Aramid versus Steel

Aramid	Steel
1. No Corrosion – Less repairs – Lower maintenance costs – Reduced replacement – Less production stops 2. Same strength, 5 times less weight – Reduced energy consumption – Easier handling 3. Reduced belt thickness – Lower weight – Reduced energy consumption; easier handling – Less splices – Lower installation cost; improved safety – Better flexibility 4. Higher elongation – Higher flexibility – Better curvability, good for small pulley diameter 5. Better impact resistance (for DPP SW fabric only) – Better slitting behavior	1. Shorter take-up length 2. Lower reinforcement price 3. Well-known and a lot of experience

Tensile Properties Comparison



Thickness Comparison

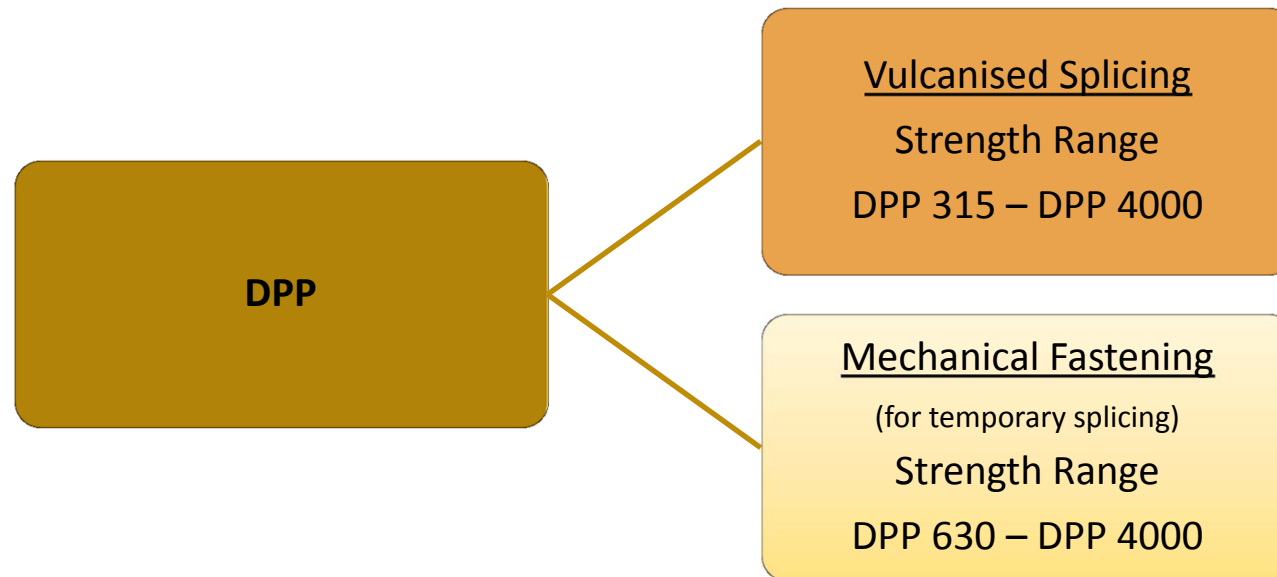


Effect of reduced weight on energy consumption

Properties	St 1400	DPP 1400
Capacity (MTPH)	2.200	
Installed Power (kW)	1.890	
Speed (m/s)	5,75	
Belt width (mm)	1.200	
Belt covers (mm)	6 + 4	
Rubber	80%NR / 20%SBR	
Length (m)	5.280	
Elevation change (m)	26,5	
Belt mass (kg)	31,7	- 41% → 18,8
Power req empty (kW)	294,7	- 41,7% → 113,6
Power req loaded (kW)	1266,0	- 15,5% → 423,6

St 900	DPP 900
1.800	
945	
5,75	
1.050	
6 + 4	
80%NR / 20%SBR	
3.720	
- 13,4	
22,6	- 30% → 15,9
241,1	- 31,9% → 164,3
464,8	- 14,6% → 397,1

DPP Straight-Warp Types



Data-sheets are available for further detailed information!

Breaker with Aramid

- Breakers are usually installed to protect the carcass of the conveyor belt
- Breakers with aramid experience less damage in the conveyor belt
- Better cut resistance
- Better slit resistance

		Breaker Fabric Aramid (PD)	Breaker Fabric Aramid / Nylon hybrid (PDp)	Breaker Fabric Nylon (PP)
tensile strength, warp	N/mm	18	18	17
tensile strength, weft	N/mm	199	165	190
elongation at break, warp	%	15	15	17
elongation at break, weft	%	4	7	30
weight, dipped	g/m ²	170	210	445
thickness	mm	1,10	1,70	2,40

Lower elongation
Lower weight
Lower thickness



Conveyor Belt Performance

	Aramid	EP	Steel
Tensile Strength	+++	+	+++
Lower Elongation	++	+	+++
Flexibility	++	+++	+
Lighter Weight	+++	+	++
Less Thickness	+++	+	++
Flame and Heat resistance	++	+	+++
Corrosion resistance	+++	++	+

+++ Excellent
++ Good
+ Satisfactory

Examples of Aramid reinforcement

- **Tunisian Phosphate Mines**
 - 10 years successful operation
 - Belt lengths 3 and 4 km
 - Aramid for corrosion resistance



- **Maritsa Iztok-2 Coal Power Plant Bulgaria**
 - 10% energy savings obtained
 - Belt lengths 2.5 and 5.6 km

