

Surface

Fire Resistance and Anti-Static Series

For industries such as electric power, chemical, metallurgy, and port facilities that require fire resistance or anti-static properties, the fire resistance properties of conveyor belts are particularly important. BOTON's fire resistance series conveyor belts adopt stringent standards and can provide better fire resistance effects while meeting the requirements of relevant national or international standards. The fire resistance series conveyor belts produced by BOTON include various carcasses and cover rubbers, allowing for customized conveyor belts according to scene requirements. Carcass materials include steel cord, Aramid, and fabric core belts, suitable for a range of applications. In addition to fire resistance properties, the cover rubber also possesses superior performance characteristics such as good load-bearing capacity, flexibility, high strength, impact resistance, and abrasion resistance, ensuring long-lasting durability. For specific application scenarios, relevant customized applications can also be provided; please contact a BOTON service engineer for details.

- ✔ Fire resistance
- ✔ Impact resistance
- ✔ Abrasion resistance
- ✔ Load-bearing capacity
- ✔ Flexibility
- ✔ High strength

*Note: For the BOTON Surface Fire Resistance Conveying Series, all products satisfy

- CN GB/T10822 HG/T3973
- AU AS1333/1332
- DE DIN22102
- JP JISK6324/6369
- INT ISO340/12882
- EU EN14937 EN12882



Fire Resistance Performance Grades for Surface Applications

[Compliant with ISO 340 and EN 14937]

For surface transport and industrial applications, BOTON conveyor belts are classified into performance grades based on the required fire risk mitigation and application severity. All grades listed below comply with international standards for flame propagation, self-extinguishing properties, and electrical conductivity (e.g., ISO 340, EN 14937).

Performance Grade (Based on Risk)

- 👍 **K1** : Highest fire resistance performance, suitable for high fire risk areas or flammable materials.
- K2** : Suitable for conveying environments with general fire resistance requirements.
- K3** : Suitable for general working conditions with lower fire risk, satisfying basic fire resistance needs.

Compliance and Safety Performance Requirements

Item	Performance Grade		
	K1	K2	K3
Duration of Flame	Total duration of flame for 3 covered and 3 bare samples must not exceed 45s. Single value for covered sample must not exceed 15s. Single value for bare sample must not exceed 20s.	Total duration of flame for 6 covered samples must not exceed 45s. Any single value must not exceed 15s.	Average duration of flame for 3 covered samples must not exceed 60s.
Electrical Conductivity	Must not exceed $3 \times 10^8 \Omega$		
Re-ignition	No re-ignition of flame shall occur on any sample.		



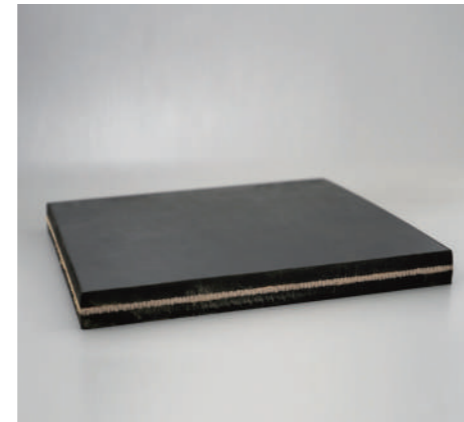
Surface Aramid Fire Resistance Conveyor Belt

DPP Higher Cost-Performance Ratio Low Energy Consumption

Key Features

Fire Resistance and Anti-Static Properties

Aramid is a high-performance synthetic fiber composed of aromatic polyamides. Thanks to its highly stable aromatic molecular structure, Aramid itself does not contain combustible groups and will not melt or drip when burned, possessing natural fire resistance and excellent self-extinguishing properties. This means that in high-temperature or open flame environments, Aramid conveyor belts can effectively suppress flame spread, extinguish immediately upon contact with fire, and significantly reduce the risk of fire propagation. For surface conveying systems, especially those involving flammable or spontaneously combustible materials (such as coal, fertilizer, biomass, etc.), Aramid conveyor belts can substantially lower the risk of flame spread, enhancing the overall safety and continuity of conveying operations.



- ✓ Model : DPP500 - DPP5000
- ✓ Width: 500 - 2400mm
- ✓ Thickness : 15 - 60mm

[Learn more about Aramid carcass material: P11](#)

Low Energy Consumption

Aramid conveyor belts feature lightweight characteristics, which can effectively reduce equipment energy consumption and help customers save on operating costs significantly.

Higher Cost-Performance Ratio

Relying on excellent abrasion resistance and stability, Aramid conveyor belts are not only durable but also achieve superior total lifecycle cost-effectiveness with lower energy consumption.

High Performance

The specially developed cover rubber by BOTON ensures fire resistance while also offering multiple properties such as abrasion resistance/oil resistance/impact resistance, providing the conveyor belt with multiple protective capabilities. Low Energy Consumption Aramid conveyor belts feature lightweight characteristics, which can effectively reduce equipment energy consumption and help customers save on operating costs significantly.

Surface Aramid Fire Resistance Conveyor Belt

Case Study / Power Plant Stacker-Reclaimer Replaces Steel Cord with Aramid Fire Resistance Conveyor Belt

Project Background

The original conveyor line for a stacker-reclaimer at a power plant in Fujian Province used steel cord conveyor belts, which led to high weight, energy consumption, short service life, and frequent maintenance. To meet the demands for improved system efficiency, the steel cord belt was replaced with an Aramid belt. This successful upgrade resulted in a 30% reduction in the conveying system's weight and extended the service life from 1.5 years to 4 years.



Operational Results

	Before	After
Belt Strength	ST1250	DPP1000
Top Cover Thickness(mm)	10	12 ▲ 20%
Conveyor Belt Weight per Unit Transport Area	/	/ ▼ 30%
Service Life	Approx. 1.5 years	Approx. 4 years
Power Consumption	/	/ ▼ 13%

Note: In the table, "-" indicates that the specific data is confidential internal information. The shown increase/decrease margins are relative reference values used to reflect the performance difference before and after the replacement.



Surface Steel Cord Fire Resistance Conveyor Belt

ST Excellent Troughability Long Distance High Capacity High Strength

Key Features

Fire Resistance and Anti-Static Properties

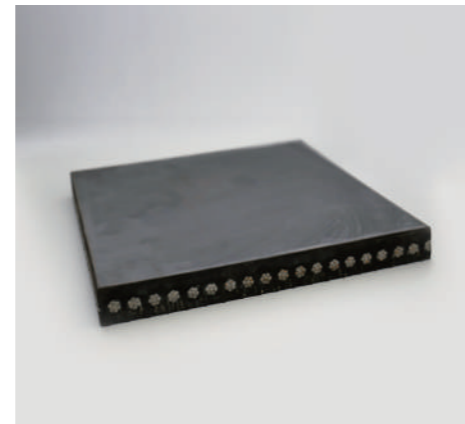
According to actual standard requirements, the product's fire resistance performance can meet K2 and K3 fire resistance requirements. For conditions prone to slippage, the risk of slippage and burning is avoided by optimizing the drum's friction characteristics.

Versatility

Steel cord conveyor belts possess high strength and low elongation, making them highly suitable for long-distance, high-capacity material conveying.

Troughability

The belt body is soft and highly pliable, providing stable support and quickly forming the ideal trough shape, ensuring efficient and stable material conveying while minimizing spillage and belt deviation.



- ✓ Model : ST/S630 - ST/S10000
- ✓ Width : 800 - 2800mm
- ✓ Thickness : 10 - 60mm

[Learn more about steel cord carcass material:P12](#)

Surface Fabric Ply Fire Resistance Conveyor Belt

EP Economical and Practical

Key Features

Fire Resistance and Anti-Static Properties

According to actual standard requirements, the product's fire resistance performance can meet K1, K2, and K3 fire resistance requirements. For conditions prone to slippage, the risk of friction and burning can be avoided by optimizing the drum's friction characteristics.

Economical

Achieve safe, reliable, and economical fire resistance conveying results at a lower cost.



- ✓ Model : EP100 - EP3500
- ✓ Width : 500 - 3000mm
- ✓ Thickness : 10 - 60mm

[Learn more about fabric ply carcass material:P09](#)

How to Select the Appropriate Surface Fire Resistance Conveyor Belt?

01 "Fire Resistance" is not the end goal; self-extinguishing is the minimum requirement for fire prevention.

Once a conveyor belt catches fire, it may not only cause casualties but also lead to asset losses and prolonged recovery work.

02 Easily Overlooked Factor: Anti-Static Performance

In flammable and explosive environments (such as coal mines, chemical plants), static electricity accumulated during conveyor belt operation can reach thousands of volts. If discharged, it can trigger dust explosions or gas combustion.

03 Targeted Selection of Conveyor Belts for Different Materials

In the industrial conveying field, there is no such thing as a "universal" fire resistance conveyor belt. Fire risks, material characteristics, and wear levels vary significantly under different working conditions, which necessitates the use of targeted fire resistance solutions.

In surface conveying environments, working conditions are diverse, commonly found in coal storage yards, ports, fertilizer plants, grain processing facilities, and other scenarios. They involve transporting flammable materials (such as coal, sulfur, biomass), which possess a tendency for spontaneous combustion. While the fire risk is relatively controllable, compliance with safety regulations is still necessary.

For surface applications, BOTON can provide multiple grades of fire resistance conveyor belts, ranging from economical to high-end models, tailored to material characteristics and fire prevention needs. These include various customized solutions such as halogen-free and environmentally friendly types, as well as abrasion-resistant types. This ensures compliance with basic fire resistance requirements while also balancing cost-effectiveness and environmental considerations, helping customers fulfill social responsibility while maintaining safe production.





Quick Selection Guide for Surface Fire Resistance and Anti-Static Series

Parameters	Surface Aramid Fire Resistance Conveyor Belt	Surface Steel Cord Fire Resistance Conveyor Belt	Surface Fabric Ply Fire Resistance Conveyor Belt
Scenario	Flammable Material Yards / Port Transfer	Long-Distance Trunk Lines / High-Load Continuous Transport	Short-Distance Transfer / Power Plant Transport
Carcass Material	Aramid Composite Fabric	Galvanized Steel Cord	Fire Resistance Composite Fabric
Tensile Strength	500-5000 N/mm	630-10000 N/mm	100-3500 N/mm
Corrosion Resistance	★★★★★★	★★★★	★★★★★
Impact Resistance	★★★★★	★★★★★	★★★★
Troughability	Excellent	Excellent	Good
Splicing Method	Hot Vulcanization/Mechanical Splice	Hot Vulcanization	Hot Vulcanization/Mechanical Splice
Max Inclination Angle	≤30°	≤30°	≤30°
Applicable Environment	General Use in Harsh Environments	General Use	General Use
Energy Efficiency	Excellent	Good	Excellent
Weight	Light	Heavy	Medium
Sample Images			

Underground Fire Resistance and Self-Extinguishing Series

For underground scenarios in coal mines or other types of mines where a higher level of fire resistance is required, the fire resistance performance of conveyor belts is particularly important. BOTON's Fire Resistance and Self-Extinguishing Series conveyor belts adopt stringent standards and can provide superior fire resistance effects while meeting the requirements of relevant national or international standards. The fire resistance series conveyor belts produced by BOTON include various carcasses and cover rubbers, allowing for customized conveyor belts according to scene requirements.

These include Aramid belts, steel cord belts, fabric ply belts, solid woven belts, etc., suitable for a range of applications. In addition to fire resistance properties, the cover rubber also possesses superior performance characteristics such as good load-bearing capacity, flexibility, high strength, impact resistance, and abrasion resistance, ensuring long-lasting durability. For specific application scenarios, relevant customized applications can also be provided; please contact a BOTON service engineer for details.

- Fire resistance
- Impact resistance
- Abrasion resistance
- Load-bearing capacity
- Flexibility
- High strength

*Note: For the BOTON Underground Fire Resistance Conveying Series, all products satisfy the following standards.

- CN MT/T668 MT/T914
- AU AS1333/1332/4606
- DE DIN22102/22109
- EU EN14973
- INT ISO340/14973
- JP JISK6324/6369
- US MSHA



National Standard for Underground Steel Cord Fire Resistance Conveyor Belts

[e.g., MSHA, EN 14973, ISO 340]

MT/T668 HG/T6090 standard is China's mandatory safety requirement for steel cord fire resistance conveyor belts in underground environments, explicitly defining key fire resistance performance requirements for high-risk settings. BOTON's underground fire resistance conveyor belts adhere to internal control standards that are stricter than national (and equivalent international) requirements, aiming to maximally prevent major safety accidents such as fires and explosions:

National Standard Parameters ST630~ST4000

Item	ST630	ST800	ST1000	ST1250	ST1600	ST2000	ST2500	ST2800	ST3150	ST3500	ST4000
Tensile Strength (N/mm)	630	800	1000	1250	1600	2000	2500	2800	3150	3500	4000
Maximum Nominal Diameter (mm)	3.0	3.5	4.0	4.5	5.0	6.0	7.2	7.5	8.1	8.6	8.9
Steel Cord Spacing (mm±1.5)	10	10	12	12	12	12	15	15	15	15	15
Top/Bottom Cover Thickness (≥mm) *	5+5	5+5	6+6	6+6	6+6	8+8	8+8	8+8	8+8	8+8	8+8
Conveyor Belt Thickness (≥mm) *	12.8	13.0	15.6	16	16.4	21.0	22.6	22.9	23.3	23.7	24.2
Conveyor Belt Reference Mass (Kg/m ²) *	19.0	19.5	23.0	24.5	27.0	35.0	40.5	42.5	43.0	45.0	47.0
Width (mm)	Number of Steel Cords										
800	75	75	63	63	63	63	50	50	50	50	-
1000	95	95	79	79	79	79	64	64	64	64	64
1200	113	113	94	94	94	94	76	76	76	76	76
1400	133	133	111	111	111	111	89	89	89	89	89
1600	151	151	126	126	126	126	101	101	101	101	101
1800	171	171	143	143	143	143	114	114	114	114	114
2000	196	196	159	159	159	159	128	128	128	128	128
2200	216	216	176	176	176	176	141	141	141	141	141
2400	236	236	193	193	193	193	155	155	155	155	155
2600	256	256	209	209	209	209	168	168	168	168	168
2800	276	276	230	230	230	230	184	184	184	184	184
3000	296	296	247	247	247	247	198	198	198	198	198
3200	316	316	264	264	264	264	211	211	211	211	211

National Standard Parameters ST4500~ST7500

Item	ST4500	ST5000	ST5400	ST6300	ST7000	ST7500
Tensile Strength (N/mm)	4500	5000	5400	6300	7000	7500
Maximum Nominal Diameter (mm)	9.7	10.9	11.3	12.8	13.5	15.0
Steel Cord Spacing (mm±1.5)	16	17	17	20	19	21
Top/Bottom Cover Thickness (≥mm) *	8+8	8.5+8.5	9+9	10+10	10+10	10+10
Conveyor Belt Thickness (≥mm) *	25.0	26.8	28.2	32.4	32.8	33.2
Conveyor Belt Reference Mass (Kg/m ²) *	49.5	53.4	55.6	67.5	73.2	78.9
Width (mm)	Number of Steel Cords					
800	-	-	-	-	-	-
1000	59	55	55	48	49	45
1200	71	66	66	58	59	54
1400	84	78	78	68	69	63
1600	96	90	90	78	80	72
1800	109	102	102	88	90	82
2000	121	113	113	98	101	91
2200	134	125	125	108	111	100
2400	146	137	137	118	121	109
2600	159	149	149	128	131	119
2800	171	161	161	138	142	129
3000	185	174	174	148	152	138
3200	198	186	186	158	162	147

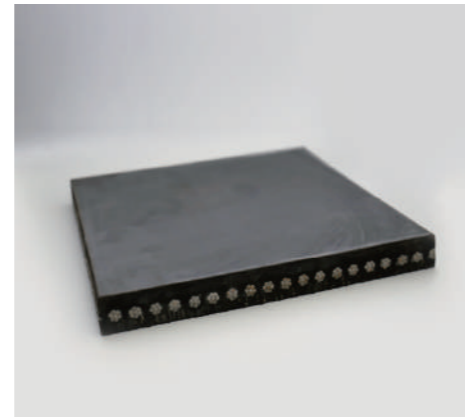
* Note: The above thicknesses are standard recommended values. If selecting other thicknesses, please contact a BOTON service engineer.



Underground Steel Cord Fire Resistance Conveyor Belt

ST Excellent Troughability Long Distance High Capacity

- Steel cord conveyor belts offer the advantages of high strength, long distance, and high-capacity material conveying. Combined with BOTON's specially developed fire resistance cover rubber, they ensure fire resistance while safely, reliably, and efficiently transporting various bulk materials under harsh working conditions, ensuring the conveyor belt's service life and reducing operating costs.
- They possess good versatility and cost-effectiveness.



✓ Model : ST/S630-ST/S10000
 ✓ Width : 800 - 2800mm
 ✓ Thickness : 10 - 60mm

[Learn more about steel cord carcass material:P12](#)



Underground Aramid/Ply Fabric Fire Resistance Conveyor Belt

【MT/T914 HG/T6091 Fire Resistance Standard Requirements】

MT/T914 HG/T6091 is China's mandatory safety standard for steel cord fire resistance conveyor belts designed for underground environments, which explicitly specifies key requirements for the belt's fire resistance performance in high-risk settings. BOTON's underground fire resistance conveyor belts comply with internal control standards that are stricter than the national standard, aimed at maximally preventing major safety accidents such as fires and explosions.

MT/T914 Standard Cover Rubber Performance Grades

Item	Tensile Strength (MPa)	Elongation at Break (%)	Abrasion Loss (mm ³)
MT/T914	≥15	≥350	≤200
BOTON Standard	≥18	≥450	≤150
BOTON Standard	≥20	≥450	≤150

Adhesion Strength

Unit: Newton per millimeter

Item	Adhesion Strength Between Plies	Adhesion Strength Between Cover and Carcass	
		Cover Thickness≤1.5mm	Cover Thickness≤1.5mm
Average Value	≥3.50	≥3.50	≥3.90
Minimum Value	≥3.25	≥2.60	≥2.60
BOTON Aramid Belt	/	≥10	

Note: The Aramid belt requires single ply strength assessment.

Troughability for Ply/Aramid Belts

Item	Troughability								
	20°	25°	30°	35°	40°	45°	50°	55°	60°
Carrier Roller Troughing Angle									
Troughability	≥0.08	≥0.10	≥0.12	≥0.14	≥0.16	≥0.18	≥0.20	≥0.23	≥0.26



Underground Aramid Fire Resistance Conveyor Belt

DPP Energy Saving Cut Resistance Corrosion Resistance

The Aramid fire resistance conveyor belt is the flagship product of BOTON's fire resistance series of carcass materials. Its warp yarns are woven from high-strength Aramid continuous filaments, and the weft yarns use high-strength nylon industrial filaments, employing a special fabric structure called Straight Warp (SW) construction. Aramid itself possesses excellent fire resistance properties, and combined with the robust SW structure, this conveyor belt features superb fire resistance, energy efficiency, cut resistance, and corrosion resistance.



✓ Width: 600 – 2400mm
 ✓ Strength: 800 – 5000N/mm

[Learn more about Aramid carcass material: P11](#)



Structure Type

SW

This structure features extremely strong impact resistance and tear resistance. The impact resistance is more than 1 time that of ordinary plain weave fabric, and the tear resistance is 4 times that of ordinary plain weave fabric. It possesses excellent load-bearing capacity and is widely used in various severe working conditions, especially in short-distance conveying scenarios to replace steel cord conveyor belts.

Key Features

Fire Resistance

Due to its special molecular structure, it possesses good fire resistance and self-extinguishing properties, making it an excellent fire resistance material.

Lightweight

Aramid possesses the same strength as steel cord, while its density is less than 20% of steel cord. This provides significant energy efficiency benefits on inclined conveying lines with large dip angles.

Stability

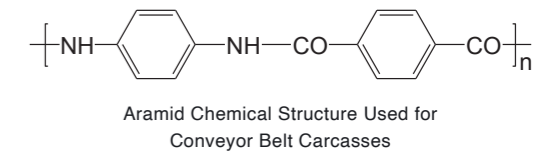
Aramid has excellent chemical resistance, making it more suitable for underground use in severe and corrosive working conditions.

Impact Resistance and Cut Resistance

The SW structure features excellent impact resistance, tear resistance, and cut resistance, which can effectively prevent damage from foreign objects and long-distance tearing.

Excellent Fire Resistance

Due to its special aromatic polyamide molecular structure, it possesses excellent fire resistance and self-extinguishing properties, as well as high temperature resistance and low toxicity, making it an excellent fire resistance material.



Intrinsic Fire Resistance, Longer Lasting Performance

Aramid requires no added flame retardants; it possesses excellent anti-combustion capability, self-extinguishes immediately when removed from fire, offers long-term stability, and is suitable for harsh underground environments.

Limiting Oxygen Index (LOI) 28%, Far Exceeding Conventional Materials

Cannot sustain combustion in normal air, effectively preventing the spread of fire, and meeting or exceeding fire resistance standards.

High Temperature Resistance, No Deformation

Decomposition temperature exceeds 500 ° C, does not soften or drip at high temperatures, maintaining the integrity of the conveyor belt structure.

Low Smoke and Low Toxicity, Greater Safety

Combustion is halogen-free with low smoke, significantly reducing the risk of smoke poisoning during underground operations.



Material Type	Limiting Oxygen Index(LOI)	Combustion Products	Fire Resistance Rating and Applicable Scenarios
Aramid	≥ 28%	Halogen-free, Low Smoke, Low Toxicity	High Gas, High Temperature, High Dust Underground Environments
Steel Cord	N/A	Rubber cover may produce toxic smoke	Long-distance, Heavy-load Underground Transportation
PVG Solid Woven	23–26%	Moderate smoke, contains chlorides	Underground Environments with Medium to High Fire Resistance Requirements
PVC Solid Woven	18–22%	High smoke, toxic gases	Underground Environments with General Fire Resistance Requirements

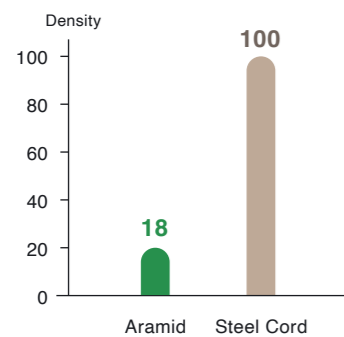
Lightweight for Energy Saving and Consumption Reduction

Aramid possesses the same strength as steel cord but its density is less than 20% of steel cord, resulting in a significantly lower dead weight.

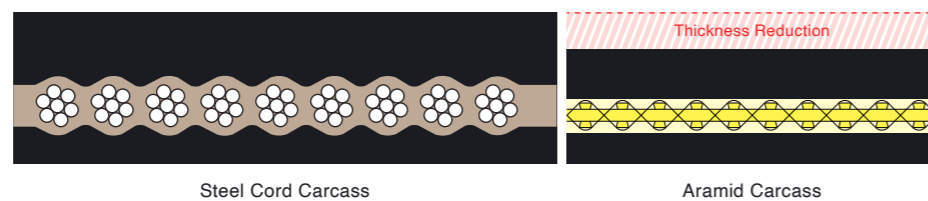
In ultra-high lift applications exceeding 200 meters underground, conventional steel cord conveyor belts often result in excessively high operating tension due to their heavy dead weight. Thanks to its low mass, the Aramid conveyor belt can effectively reduce the required total tension and decrease equipment load. For underground scenarios involving steep inclinations and high lifting heights, this property leads to substantial energy savings and enhances overall profitability.



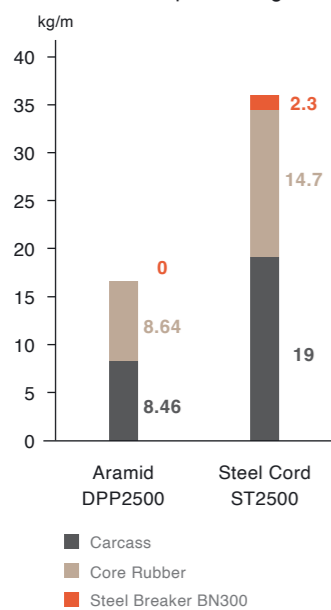
Comparison of Aramid and Steel Cord Density at Equal Strength



Same Strength, Aramid Conveyor Belt is Overall Thinner and Lighter



Weight Comparison of Aramid and Steel Cord at Equal Strength



**Aramid Conveyor Belt Carcass Weight Reduced by 52%,
Total Conveyor Belt Weight Reduced by 26%**

【Based on a comparison of Aramid DPP 2500 vs Steel Cord ST 2500 at equal strength 2500, with a belt width of 1800mm】

Item	Steel Cord ST2500	Aramid DPP2500	Change
Theoretical Strength (kN/m)	2680	3100	↑ 13.5%
Carcass(kg/m)	19	8.46	↓ 42.5%
Core/Skim Rubber(kg/m)	14.7	8.64	↓ 52.5%
Anti-Tear Breaker Mesh BN300(kg/m)	2.3	0	↓ 52.5%
Total Carcass Weight(kg/m)	36	17.1	↓ 35.1%
Total Conveyor Belt Weight(kg/m)	73.6	54.5	↓ 35.1%

Note: The steel cord weight is calculated as: 0.167kg/m × 114 cords = 19kg/m

Low Maintenance Cost

Fast Splicing, Easy Maintenance

Aramid fire-resistant conveyor belts have good adaptability to splicing processes. Splices are easy to make and dimensionally stable, compatible with both traditional vulcanization and various fast splicing technologies, significantly shortening the installation cycle and reducing maintenance workload and downtime.

Stable Operation, Reduced Failure Rate

Aramid material relies on its excellent impact and tear resistance, superior strength, and outstanding fatigue performance. Even under complex conditions such as heavy load, long distances, and multiple start points, it maintains long-term stable operation, reducing the risk of unplanned downtime and frequent repairs.

Underground Aramid Fire Resistance Conveyor Belt

Case Study / Underground Coal Mine Ultra-Long Distance Aramid Conveying System Project

Project Background

BOTON completed an upgrade project for an underground coal mine in Inner Mongolia, replacing a steel cord conveyor belt with an 11-kilometer Aramid conveyor belt system and simultaneously optimizing the conveyor system structure. Following the upgrade, the overall dead weight of the conveyor belt was significantly reduced, energy efficiency was improved, and operation became more stable and efficient. As the world's longest application of an Aramid conveyor belt in an underground coal mine to date, this project holds prominent demonstrative significance for energy conservation, consumption reduction, and the development of green mines.



Operating Results

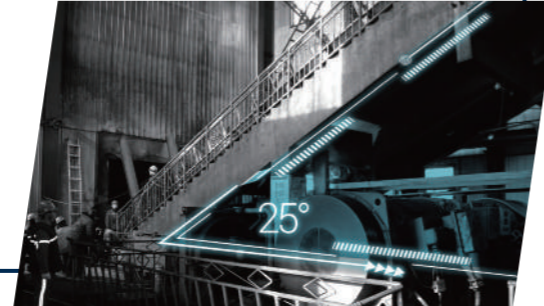
Key Indicator	Performance Metrics
Conveyor Belt Dead Weight	/ ↓ 23.6% 【Compared to the original steel cord dead weight】
Average Current Drop(A)	67 ↓ 16.8%
Daily Electricity Savings(kWh)	7,075
Annual Electricity Savings(MWh)	2,120 【Annual electricity calculated based on 300 days】
Annual Standard Coal Savings(t)	849 【Annual electricity calculated based on 300 days】
Annual CO2 Emission Reduction(t)	2,116

Underground Aramid Fire Resistance Conveyor Belt

Case Study / Replacement of Steel Cord Belt with 25° Steep Incline Aramid Conveyor Belt in Main Coal Mine Slope

Project Background

In early 2021, a coal mine in the Northwest region decided to fully replace the existing steel cord conveyor belt in its main slope with BOTON's fire-resistant Aramid conveyor belt for coal mines, aiming to improve conveying efficiency, reduce energy consumption, and enhance safety.



Operating Results

Key Indicator	Performance Metrics
Transportation Efficiency Improvement	Shortened single-day production time by 2hours ▲ 23.8%
Number of Splices Reduced(each)	Reduced from 23 to 10 ▼ 56.5%
Weight per Unit Transportation Area Reduced	/ ▼ 30%
Electricity Consumption per Ton of Coal Reduced(kWh/t)	Reduced from 2.33 to 1.82 ▼ 21.9%
Annual Standard Coal Savings(t)	420
Annual CO ₂ Emission Reduction(t)	1,047



Fire Resistant Fabric Conveyor Belt for Underground Coal Mine

FRS ● Excellent Troughability ✕ Abrasion Resistant ▲ Corrosion Resistant ❄ Cold Resistant

The BOTON Fire Resistant Fabric Conveyor Belt for Underground Coal Mine (FRS) is the flagship product among BOTON's flame-retardant carcass materials, and its performance not only fills the gap for fabric-ply fire-resistant belts in domestic coal mines but also achieves an international leading standard. The product passed the scientific and technological achievement appraisal organized by the China Petroleum and Chemical Industry Federation (CPCIF) and is an excellent carcass material for replacing PVC solid woven conveyor belts.



- ✓ Model : 1000SD - 3150SD
- ✓ Width : 500 - 3000mm
- ✓ Thickness : 10 - 20mm

Structure Type

FRS

- FRS is a BOTON original and uniquely structured material where fire-resistant rubber is permeated between the fabric plies, effectively achieving flame resistance, better troughability, and durability.
- It utilizes high-performance flame-retardant synthetic fibers, specifically a blend of meta-aramid or polyimide fibers with conventional polyester and nylon fibers. During a fire, the rubber tightly adheres to the non-burning and non-melting meta-aramid or polyimide fibers in the carcass. Even after the rubber turns into char (carbonized), it remains adhered to the belt surface without separating or falling off, which prevents the carcass structure from being directly exposed to the air and rapid combustion.
- Thanks to the use of rubber, the FRS offers excellent troughability, a soft body, and good slip/wet performance. The absence of cotton plies gives it significantly better corrosion resistance and a longer service life compared to solid woven belts.

Flex-Trough Fire Resistant Fabric Conveyor Belt

The BOTON Flex-Trough Fire Resistant Fabric Conveyor Belt is specially designed to adapt to complex roadways, multiple turns, and space-constrained transport conditions in coal mines.

Adapted for Curved and Complex Roadways:The ply structure combined with a special rubber compound allows the conveyor belt to maintain excellent operation even with small turning radii, multiple turns, and in complex roadways, offering outstanding belt body flexibility. The product features superior flexibility and good troughing capability.



Key Features

Durability

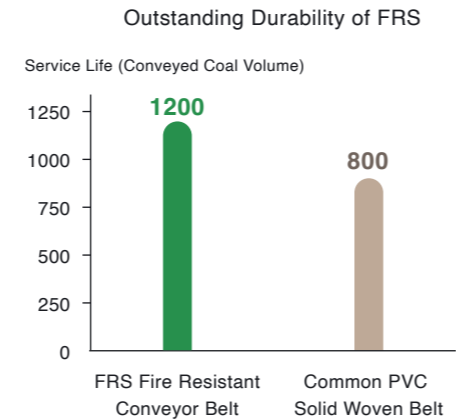
Matched with BOTON's specially developed ultra-abrasion-resistant cover rubber, the service life can reach 8 to 15 million tons of conveyed coal, which is 1.5 to 2 times that of PVC solid woven belts.

Troughability

As a rubber conveyor belt, it offers excellent troughing capability. The belt body is soft, has good slip/wet performance, and does not contain cotton plies. The ply fire-resistant conveyor belt therefore has far better corrosion resistance and a longer service life than solid woven belts.

Anti-Deviation

It adopts the same edge protection structure as surface polyester (EP) or nylon (NN) belts, which effectively enhances the abrasion resistance and damage resistance of the belt edge. This prevents the middle rubber layer from being rolled up or worn down after long-term use, which could lead to belt misalignment. This better protects the edges and ensures stable and efficient operation of the conveyor belt.



Cold Resistance

Under operating conditions down to minus 20 ° C, solid woven belts will harden and become brittle, whereas the FRS for underground applications remains soft and serviceable.

Underground Solid Woven Fabric Fire-Resistant Conveyor Belt

【Compliant with MT/T914 Fire Resistance Standard】

Product Specification Naming Convention

PVC/G 3100/1 - 1200 - 2+2

- Top and bottom cover rubber: 2mm each
- Belt width: 1200mm
- Carcass is a solid woven ply, with a longitudinal tensile strength of: 3100N/mm
- Cover Rubber Types

Solid Woven Belt Adhesion Strength

Unit: Newtons per Millimeter(N/mm)

Item	Cover-to-Carcass Adhesion(N/mm)	Internal Carcass Adhesion(N/mm)
Average Value	≥4.00	-
Minimum Value	≥3.25	≥6.5
BOTON Product	≥5	-

Technical Reference Chart

Classification	Belt Tensile Strength (N/mm)		Recommended Cover Thickness (mm)				Belt Carcass Width
	Warp≥	Weft≥	Coated PVC	Extruded PVC	Vulcanized PVG	Extruded PVG	
680S/Grade 4	680	265	1.0+1.0	1.5+1.5	1.5+1.5	1.5+1.5	500~2000
800S/Grade 5	800	280	1.0+1.0	1.5+1.5	1.5+1.5	1.5+1.5	
1000S/Grade 6	1000	300	1.0+1.0	1.5+1.5	1.5+1.5	1.5+1.5	
1250S/Grade 7	1250	350	1.0+1.0	2.0+1.5	2.5+1.5	2.0+1.5	
1400S/Grade 8	1400	350	1.0+1.0	2.5+1.5	2.5+1.5	2.5+1.5	
1600S/Grade 9	1600	400	1.0+1.0	2.5+1.5	3.0+2.0	2.5+1.5	
1800S/Grade 10	1800	400	1.0+1.0	3.0+2.0	3.0+2.0	3.0+2.0	
2000S/Grade 11	2000	400	1.0+1.0	3.0+3.0	3.0+3.0	3.0+3.0	
2240S/Grade 12	2240	450	/	/	3.0+3.0	3.0+3.0	
2500S/Grade 13	2500	450	/	/	5.0+3.0	5.0+3.0	
2800S/Grade 14	2800	450	/	/	5.0+3.0	5.0+3.0	
3100S/Grade 15	3100	450	/	/	5.0+3.0	5.0+3.0	

Minimum Pulley Diameter Recommendation

Strength Specification (According to Chinese Standard)	680/1	800/1	1000/1	1250/1	1400/1	1600/1	1800/1	2000/1	2240/1	2500/1	2800/1	3100/1	3400/1
T4	T4	T5	T6	T7	T8	T9	T10	T11	T12	T13	T14	T15	T16
Main Drive Pulley Diameter (mm)	400	500	630	750	750	800	800	1000	1250	1250	1500	1500	1600

Note: Production can be organized according to standards such as MT/T914, SANS971, AS4606, BS3289, and BC158

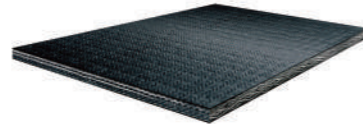
It is recommended to use molded PVC (PVG) instead of ordinary PVC belts due to longer service life and better mechanical splice strength.

Solid Woven Fire Resistant Conveyor Belt

PVG / PVC ⇒ Impact Resistant 🛡️ Tear Resistant

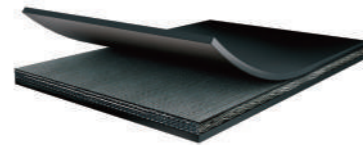
PVG Solid Woven Fire Resistant Conveyor Belt: This includes Plastic Cover PVC fire-resistant conveyor belts and Rubber Cover PVG fire-resistant conveyor belts. The products feature good overall performance, impact resistance, tear resistance, abrasion resistance, and light weight. They possess excellent fire resistance and anti-static properties, and can meet the requirements for high-capacity and long-distance material transport.

PVC

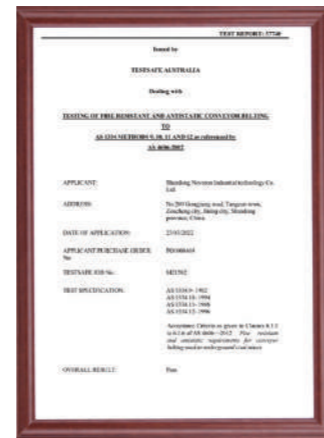


- Applied using a PVC paste coating process.
- The belt body is fire-resistant, anti-static, impact-resistant, and tear-resistant.
- Suitable for material conveying on inclines of 16° or less.

PVG



- Manufactured using NBR (Nitrile Butadiene Rubber) through extrusion, calendaring, and vulcanization.
- The belt body is fire-resistant, anti-static, impact-resistant, and tear-resistant.
- Suitable for material conveying on inclines of 22° or less. (PVG Solid Woven Fire Resistant Pattern Conveyor Belt is suitable for material conveying on inclines of 22° or less.)



PVC Solid Woven Belt

Case Study / Fire Resistant Solid Woven Belts Serving Key Australian Coal Mine Projects

Over 50,000 meters Exported

Project Background

BOTON has supplied PVC and PVG series solid woven fire-resistant conveyor belts to key Australian coal mine projects. To date, the cumulative export length has reached 59,072 meters. The product performance is stable with excellent customer feedback.



Conveyor Belt Type	Cumulative Length	Typical Model
PVC Solid Woven Fire Resistant Belt	15km	SW10000-1050 (3+2) mm SW12000-1600 (5+3) mm
PVG Solid Woven Fire Resistant Belt	4km	SW10000-1600 (2+2) mm SW6500-1500 (2+2) mm

Total Cumulative Export Volume (m) 59,072

PVG Solid Woven Belt

Case Study / PVG Fire Resistant Conveyor Belt for High-Capacity Fully Mechanized Face Gate Roadway Conveying System in Coal Mine

Project Background

A fully mechanized face gate roadway conveying system in a Shaanxi coal mine has an annual raw coal output of up to 35 million tons, and the high conveying strength and operating load pose severe challenges to equipment stability. After adopting the BOTON PVG solid woven fire-resistant conveyor belt in this project, the belt speed stably reached 4.5 m/s. The product demonstrated excellent durability under high-strength conditions, and the measured service life exceeded the industry average by 1.5 times, significantly improving the system's operational efficiency and reliability.



Key Indicators	Performance Metrics
Operating Speed	Belt speed reached 4.5 m/s, efficiently supporting ultra-high capacity of 3500 t/h ↑
Operating Status	The conveyor belt is operating well to date, with no structural damage or frequent maintenance
Service Life	Based on usage comparison, the product life is more than 1.5 times the industry average ↑
Downtime Risk	Maintenance frequency is greatly reduced, effectively mitigating the production impact of sudden downtime ↓
Operating Condition Validation	The project is a world-leading intelligent mine, and the product has undergone long-term validation under extre

How to Select the Appropriate Fire Resistant Conveyor Belt for Underground Use?

01 More Stringent Fire Resistance Testing

In underground operating environments, the combination of confined spaces, limited ventilation, and high dust concentrations makes the fire risk more severe. Therefore, underground fire-resistant conveyor belts must meet stricter fire resistance ratings and smoke toxicity requirements, and they must maintain their flame-retardant properties over the long term, even under high abrasion and high tension.

BOTON provides high-end solutions for underground conveying systems, including Aramid Fire Resistant products, Ply Fire Resistant products, and Snake Belts. Even if the top and bottom cover rubbers are severely worn, the core structure can still pass stringent fire resistance tests, minimizing the risk of underground fire and flame propagation, and ensuring personnel and equipment safety.

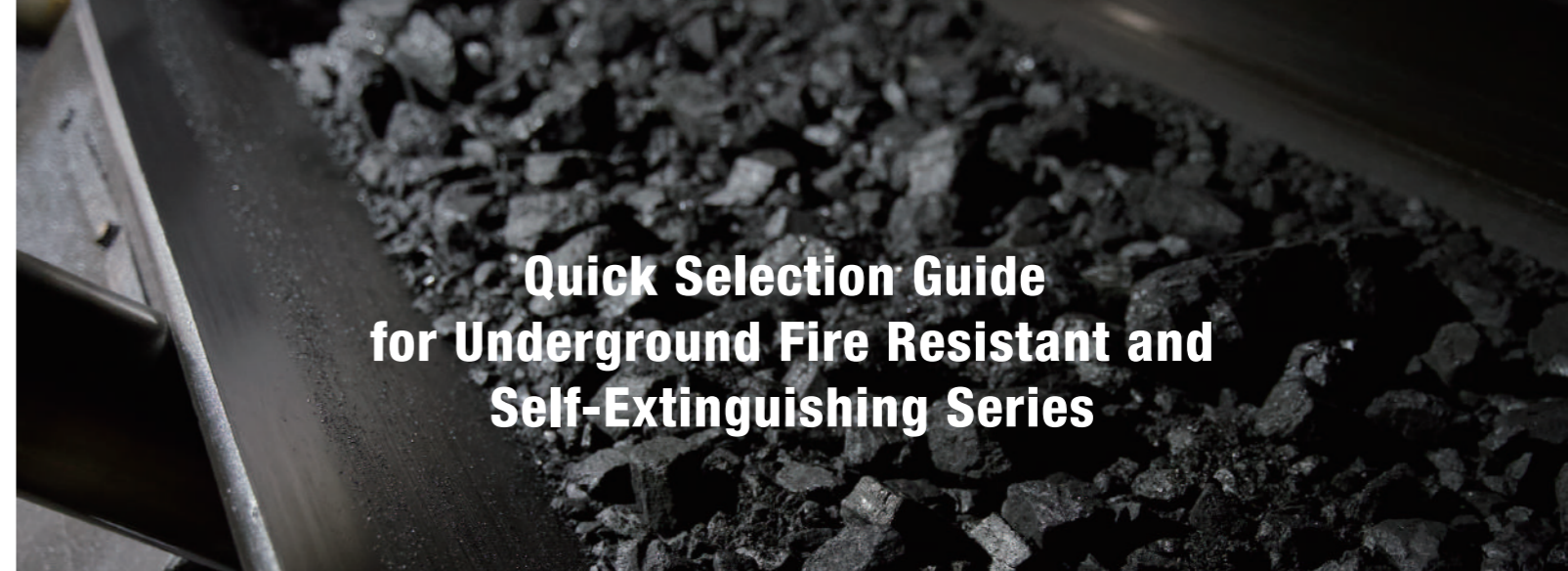
BOTON provides high-end solutions:

- ✓ **Aramid Fire Resistant Products**
- ✓ **Ply Fire Resistant Products**
- ✓ **Snake Belts**

02 Electrostatic Discharge is the Real Trigger for Explosions

In flammable and explosive environments (such as coal mines and chemical plants), the accumulation of static electricity generated by the conveyor belt's operation can reach several thousand volts, and once discharged, it can trigger dust explosions or gas deflagration.

BOTON products comply with relevant conductivity standards, with a surface resistance of $\leq 1 \times 10^9$ (far lower than the industry standard of $\leq 3 \times 10^9 \Omega$), which can effectively eliminate static electricity accumulation. This makes them suitable for high-risk areas such as coal mines, chemical plants, and grain processing, ensuring the conveying process is free from the hazard of electrostatic sparks.



Quick Selection Guide for Underground Fire Resistant and Self-Extinguishing Series

Parameter	Aramid Fire Resistant Belt	Steel Cord Fire Resistant Belt	FRS Ply Fire Resistant Belt	Solid Woven Fire Resistant Belt PVC/PVG
Application Scenario	General Purpose	General Purpose	General Purpose	Roadway / Wet Roadways
Carcass	Aramid Composite Fabric	Galvanized Steel Cord	Fire Resistant Polyester Dipped Fabric	Cotton Polyester / Polyester Cotton Woven Ply
Tensile Strength	500-5000 N/mm	500-10000 N/mm	100-3150 N/mm	≤ 3100 N/mm
Corrosion Resistance	★★★★★★	★★★	★★★★★★	★★★★
Impact Resistance	★★★★★★	★★★★	★★★★	★★★★★★
Troughability	★★★★★★	★★★★★★	★★★★★★	★★★
Splicing Method	Hot Vulcanization / Mechanical Splice	Hot Vulcanization	Hot Vulcanization / Mechanical Splice	Hot Vulcanization / Mechanical Splice
Energy Efficiency	★★★★★★	★★★★	★★★★★★	★★★★
Weight	Light	Heavy	Medium	Medium
Maximum Applicable Incline	$\leq 30^\circ$	$\leq 30^\circ$	$\leq 25^\circ$	$\leq 20^\circ$
Sample Images				