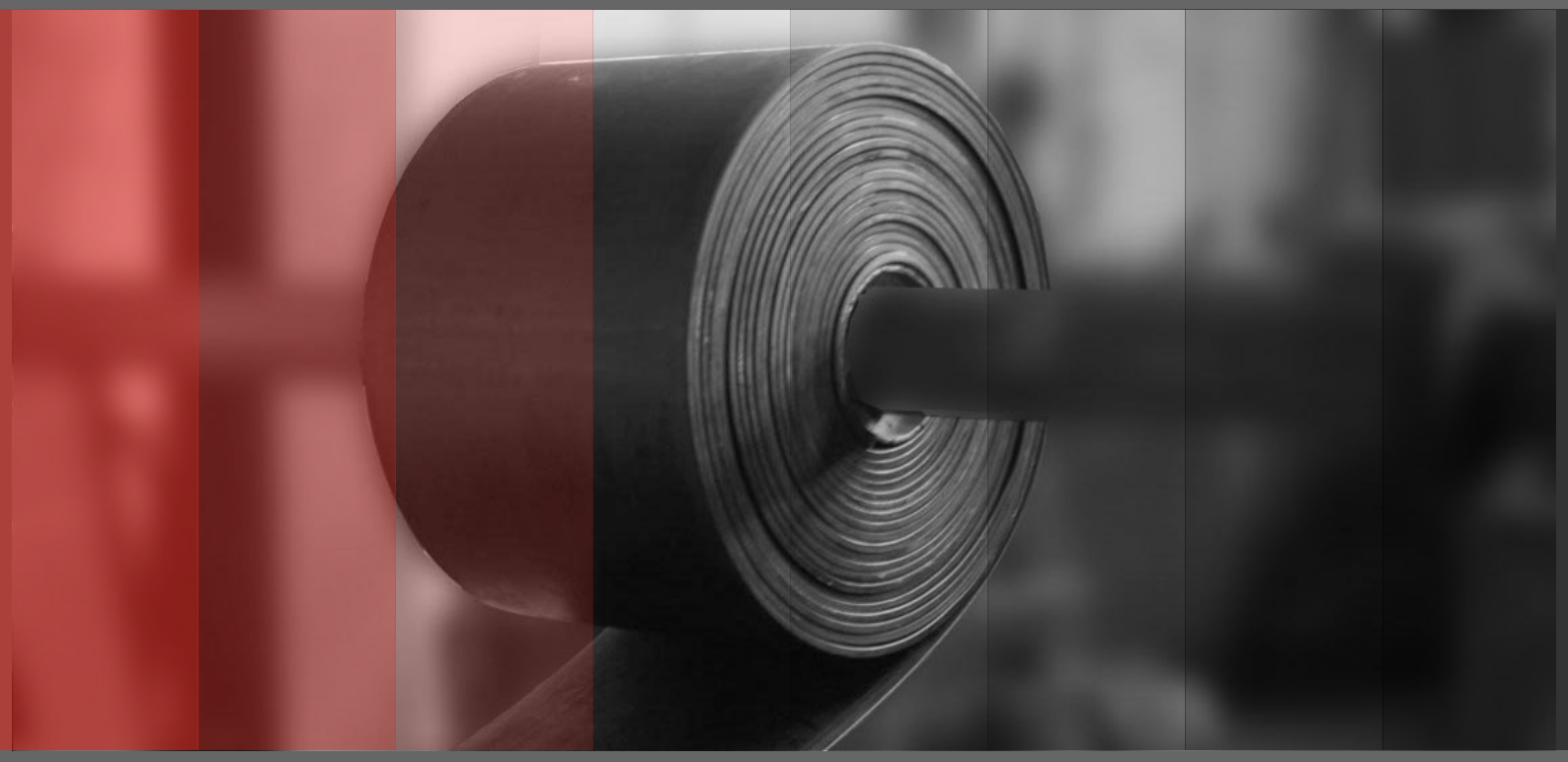
VULKAN GUME D.O.O. NIŠ



conveyor belts

en

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VULKAN

Mission

Development, production and market supplying with high quality rubber products within the maximally short terms of delivery and by competitive price. Our goal is long term partnership, that is why we consider the best interest of both sides the basis of successful cooperation.

Quality

We produce only high quality rubber products. All production processes are strictly controlled, beginning with the input control of materials all the way to the final product. Our production is made in accordance with requirements of European standards. System of Quality Management of company “VULKAN GUME LLC” is certified by international standards **ISO 9001:2008**, **ISO 14001:2004**, as well as **TECKO №UA.MQ.148**.

Reputation

In 75 years of factory's existence we have won the trust of many customers from Europe, the Middle East and Russia, as well as the countries of the Balkan region, where our regular buyers are majority of public and private companies: power plants, mines, factories and industrial plants.

Development

Our product line is constantly updated with new types of products, created at the request of customers. Our laboratory, in collaboration with technicians, regularly develops new recipes and masters the production of new products in order to satisfy the needs of our customers.

Logistics

Geographical location of the factory in the heart of Europe with a developed transport network gives us the advantage in the organization of logistics in terms of goods delivery and supplying of materials. This gives us an opportunity to significantly optimize transportation costs and reduce period of delivery.

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CONVEYOR BELTS

"VULKAN GUME" Rubber Industry is situated in the heart of Serbia, in the city of Nis. Founded in 1937, our company, the oldest rubber industry in the Balkans, has a long tradition of successful business. The favorable geographical and logistic position of the factory is only one of its advantages..

From the day of the foundation up to the present moment, we stick to the principles which distinguish us from our competitors. Those principles primarily concern the quality, individual approach to the client and maximally short terms of delivery.

The range of our products is applicable in the fields of mining, metallurgy and construction:

- **RUBBER CONVEYOR BELTS**
- pressure and pressure-suction hoses
- hoses for special purposes
- technical sheets
- rubber flooring sheets
- electro insulating mats and boots
- rubber technical goods

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"Vulkan gume" produces all types of conveyor belts with the maximum thickness of 35 mm and the ultimate tensile strength of 3500 N / mm. The belt width ranges from 300 mm to 2000 mm. The current capacity of our production is 30,000 m² per month of all types of conveyor belts. We produce belts in accordance with the following standards: DIN 22102, EN ISO 14890 and GOST 20-85.

GENERAL PURPOSE CONVEYOR BELTS

General Purpose Conveyor Belts are used in conditions with no special requirements in terms of working environment and characteristics of transported material. The belt's diverse application includes conveying stone, gravel, sand, cold clinker, neutral chemicals, crops, etc. The general recommendation is to convey materials up to 300 mm single size in order to prevent damage to the transportation system.

The structure of the belts consists of 2-6 plies (carcasses), the top and the bottom cover and protective edges. Textiles used for these belts are EP fabric (polyester - polyamide) or PP fabric (polyamide - polyamide).

Symbols used for labeling and ordering of the conveyor belts are as follows:

** in accordance with EN ISO 14890 standard*

14890	200	1400	EP	1250	5	6+3	H	1
manufactured in accordance with standard	*(m) quantity*	*(mm) width*	*type of textile*	*(N/mm) tensile strength*	*number of plies*	*(mm) top and bottom cover thickness*	*type of cover quality*	*safety category by EN 12882*

** in accordance with DIN 22102 standard*

DIN 22102	800	EP	630	4	5/2	Y
manufactured in accordance with standard	*(mm) width*	*type of textile*	*(N/mm) tensile strength*	*number of plies*	*(mm) top and bottom cover thickness*	*type of cover quality*

Physical and mechanical characteristics of the general purpose conveyor belt cover:

	Label	Unit of measure	Cover requirement						
			by EN ISO 14890			by DIN 22102			
			H	D	L	W	X	Y	Z
Tensile strength	TS	MPa	24	18	15	18	25	20	15
Elongation	Eb	%	450	400	350	400	450	400	350
Abrasion		mm³	120	100	200	90	120	150	200

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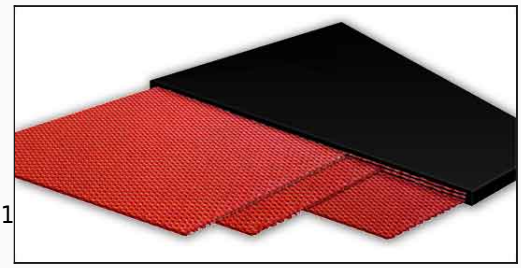
BELT THICKNESS S(mm)= S3 + (S1 + S2)
S3 – carcass thickness in mm (tabela ispod)
S1 – top cover thickness in mm (min 2 mm)
S2 – bottom cover thickness in mm (min 2 mm)

BELT WEIGHT M(kg/m2)= m1 + X(S1 + S2)
m1 – carcass weight (2 kg/m2)(table below)
X – the value of the belt depends on the type of the belt ~ 1.1
S1 – top cover (min 2 mm)
S1 – bottom cover (min 2 mm)



Belt type / number of plies	Standard width (mm)										Approximate carcass thickness S3 (mm)		Approximate gravity S3 (kg/m³)	
	500	600	650	800	1000	1200	1400	1600	1800	2000	EP	PP	EP	PP
400 / 3	x	x	x	x	x	x	x	-	-		3.6	-	4.9	-
500 / 3	x	x	x	x	x	x	x	-	-		3.6	-	4.9	-
650 / 3	x	x	x	x	x	x	x	x	x	x	4.5	4.2	5.4	5.1
650 / 4	x	x	x	x	x	x	x	-	-		4.8	-	6.5	-
800 / 3	x	x	x	x	x	x	x	x	x	x	5.1	4.8	5.8	5.5
800 / 4	x	x	x	x	x	x	x	x	x	x	6.0	5.6	7.2	6.8
800 / 5	x	x	x	x	x	x	x	-	-		6.0	-	8.2	-
1000 / 3	-	-	x	x	x	x	x	x	x	x	5.4	5.1	6.5	6.0
1000 / 4	-	-	x	x	x	x	x	x	x	x	6.8	6.0	7.8	7.0
1000 / 5	-	-	x	x	x	x	x	x	x	x	7.5	7.0	9.0	8.5
1250 / 3	-	-	x	x	x	x	x	x	x	x	6.9	6.3	8.3	7.5
1250 / 4	-	-	x	x	x	x	x	x	x	x	7.2	6.4	8.7	7.4
1250 / 5	-	-	x	x	x	x	x	x	x	x	8.5	7.5	9.7	8.8
1400 / 4	-	-	-	x	x	x	x	x	x	x	8.4	6.8	10.3	8.0
1600 / 4	-	-	-	-	x	x	x	x	x	x	9.2	8.4	11.1	10.0
1600 / 5	-	-	-	-	x	x	x	x	x	x	9.0	8.5	10.9	10.0
1800 / 4	-	-	-	-	-	x	x	x	x	x	9.6	10.4	11.5	11.5
1800 / 5	-	-	-	-	-	x	x	x	x	x	10.5	10.5	12.9	12.5
2000 / 4	-	-	-	-	-	x	x	x	x	x	9.6	10.4	11.5	11.5
2000 / 5	-	-	-	-	-	x	x	x	x	x	11.5	10.5	13.9	12.5
2500 / 4	-	-	-	-	-	-	-	-	-	-	12.8	11.2	14.5	12.8
2500 / 5	-	-	-	-	-	x	x	x	x	x	13.0	13.0	15.5	14.4
3150 / 5	-	-	-	-	-	x	x	x	x	x	13.5	13.5	16.2	15.4

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HEAT RESISTANT CONVEYOR BELTS

Heat-resistant conveyor belts are used for conveying of hot ash, slag, limestone and hot clinker. These belts can be classified in several categories, but the maximal temperature of transported material must not exceed 200°C. Due to protection of carcass from the hot materials, these are the recommended values of cover thickness:

- top cover 4 mm
- bottom cover 2 mm

The basic classification:

- T1 – for the materials up to 120 °C
- T2 – for the materials from 120 - 150 °C
- T3 – or the materials from 150 - 200 °C

Physical and mechanical characteristics of the cover:

	Label	Unit of measure	Cover requirement		
			T120	T150	T200
tensile strength	TS	MPa	15	15	12
elongation	Eb	%	350	350	400
abrasion (wear)		mm^3	150	150	150

Calculation of the total thickness and the width of the heat-resistant belt is the same as for the general purpose belt. The table below shows the basic parameters for ordering, where the parameter X represents the specific weight of the cover for:

T1 – 1,15 g/cm3
T2 – 1,15 g/cm3
T3 – 1,08 g/cm3

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Belt type / number of plies	Standard width (mm)									Maximal carcass thickness S3 (mm)		Approximate carcass gravity S3 (kg/m³)					
												T120		T150		T200	
	500	600	650	800	1000	1200	1400	1600	1800	EP	PP	EP	PP	EP	PP	EP	PP
400 / 3	x	x	x	x	x	x	x	-	-	4.2	-	5.6	-	5.6	-	5.5	-
500 / 3	x	x	x	x	x	x	x	-	-	4.2	-	5.6	-	5.6	-	5.5	-
630 / 3	x	x	x	x	x	x	x	x	x	5.1	4.8	6.1	5.8	6.1	5.8	6.0	5.7
630 / 4	x	x	x	x	x	x	x	-	-	5.6	-	7.5	-	7.5	-	7.3	-
800 / 3	x	x	x	x	x	x	x	x	x	5.7	5.4	6.9	6.3	6.5	6.2	6.4	6.1
800 / 4	x	x	x	x	x	x	x	x	x	6.8	6.4	8.2	7.8	8.1	7.7	8.0	7.6
800 / 5	x	x	x	x	x	x	x	-	-	7.0	-	9.4	-	9.3	-	9.2	-
1000 / 3	-	-	x	x	x	x	x	x	x	6.0	5.7	7.3	6.7	7.2	6.7	7.1	6.6
1000 / 4	-	-	x	x	x	x	x	x	x	7.6	6.8	9.2	8.0	9.2	8.0	9.0	7.8
1000 / 5	-	-	x	x	x	x	x	x	x	8.5	8.0	10.2	9.7	10.2	9.7	10.0	9.5
1250 / 3	-	-	x	x	x	x	x	x	x	6.9	6.3	8.3	7.4	8.2	7.4	8.1	7.3
1250 / 4	-	-	x	x	x	x	x	x	x	8.0	7.2	9.7	8.3	9.6	8.3	9.5	8.1
1250 / 5	-	-	x	x	x	x	x	x	x	9.5	8.5	11.6	10.0	10.9	10.0	10.7	9.8
1400 / 4	-	-	-	x	x	x	x	x	x	8.4	7.6	10.2	8.9	10.2	8.9	10.0	8.7
1600 / 4	-	-	-	-	x	x	x	x	x	9.2	8.4	11.0	9.9	11.0	9.9	10.8	9.7
1600 / 5	-	-	-	-	x	x	x	x	x	10.0	9.5	12.1	11.2	12.1	11.1	11.9	11.0
1800 / 4	-	-	-	-	-	x	x	x	x	9.6	10.4	11.4	12.4	11.4	11.4	11.2	11.3
1800 / 5	-	-	-	-	-	x	x	x	x	10.5	10.5	12.8	11.5	12.7	12.4	12.6	12.2
2000 / 4	-	-	-	-	-	x	x	x	x	9.6	10.4	11.4	11.5	11.4	11.4	11.2	11.3
2000 / 5	-	-	-	-	-	x	x	x	x	11.5	10.5	13.8	12.5	13.7	12.4	13.6	12.2
2500 / 4	-	-	-	-	-	-	-	-	-	12.8	11.2	14.9	12.8	14.9	12.7	14.7	12.5
2500 / 5	-	-	-	-	-	x	x	x	x	13.0	13.0	15.4	14.3	15.4	14.3	15.2	14.1
3150 / 5	-	-	-	-	-	x	x	x	x	13.5	13.5	16.2	15.4	-	-	-	-

OIL-RESISTANT BELTS

Oil-resistant belts are used for conveying materials that contain certain amount of mineral oils or some other kind of fat. Covers of this type of belt are made of high quality NBR rubber. These belts may also contain a component resistant to high temperatures.

Physical and mechanical characteristics of the cover:

	Label	Unit of measure	Cover requirement
			G
tensile strength	TS	MPa	15
elongation	Eb	%	350
abrasion (wear)		mm³	200

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FIRE RETARDANT BELTS - GRADE K AND S

Fire retardant belts - grade K

Fire retardant conveyor belts are designed to perform in conditions of increased fire danger while working on the ground surface, at the coal transportation in power plants, for example, in coke ovens and the systems with the high risk of static electricity.

Fire retardant belts - grade S

Fire retardant belts - grade S are belts of the special purpose with the self-distinguishing cover. They are used for conveying bulk materials in underground mines. For the purpose of protection, it is recommended that the granulation load does not exceed 300 mm. The temperature range of the environment may vary from -25°C to +60°C. The most common fields for their application are coal mines.

These belts are made in the following widths, tensile strength and the number of plies:

- type 800 (800 kN/m) – 3 and 4 covers
- type 1000 (1000 kN/m) – 3, 4 and 5 covers
- type 1250 (1250 kN/m) – 3, 4 and 5 covers
- type 1400 (1400 kN/m) – 3 and 4 covers
- type 1600 (1600 kN/m) – 3, 4 and 5 covers
- type 1800 (1800 kN/m) – 4 and 5 covers
- type 2000 (2000 kN/m) – 4 and 5 covers
- type 2500 (2500 kN/m) – 4 and 5 covers

Physical and mechanical characteristics of the cover:

	Label	Unit of measure	Cover requirements of the fire retardant belts				
			H	D	L	Y	Z
tensile strength	TS	MPa	24	18	15	20	15
elongation	Eb	%	450	400	350	400	350
abrasion (wear)		mm³	120	100	200	150	200

Standard types for ordering and calculation are represented in the table below:

Belt label	Tensile strength (N/mm)	Carcass weight (kg/m2)	Carcass thickness (mm)
EP 800 3	800	7.92	5.7
EP 800 4		9.98	6.8
EP 1000 3	1000	8.00	6.0
EP 1000 4		10.55	7.6
EP 1000 5		12.48	8.5
EP 1250 3	1250	9.12	7.5
EP 1250 4		11.17	8.0
EP 1250 5		13.20	9.5
EP 1400 3	1400	10.04	8.0
EP 1400 4		11.39	9.2
EP 1600 3	1600	10.65	7.2
EP 1600 4		13.58	10.0
EP 1600 5		13.98	10.0
EP 1800 4	1800	13.39	10.0
EP 1800 5		16.02	11.5
EP 2000 4	2000	14.35	10.4
EP 2000 5		16.98	12.5
EP 2500 4	2500	16.86	13.6
EP 2500 5		18.58	14.0
EP 3000 5	3150	19.6	15.5

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TUBULAR RUBBER CONVEYOR BELT

Company «VULKAN GUME» LLC has mastered and started mass production of tubular conveyor belts. This type of conveyor belts is gaining popularity in different countries (USA, Canada, Germany, Italy, Bulgaria, etc.) due to the increasing demands for environmental safety, as well as for the undisputed benefits that it has in comparison with the other types of conveyor belts.

APPLICATION

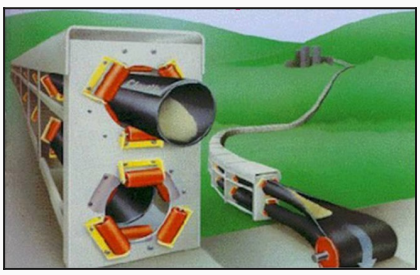
Tubular conveyor belts are used for transportation of toxic materials in the form of dust and shreds in the conditions of complete isolation from the environment. They are also used for transportation in vertical and horizontal direction in confined spaces (mines and tunnels) or on uneven terrain.

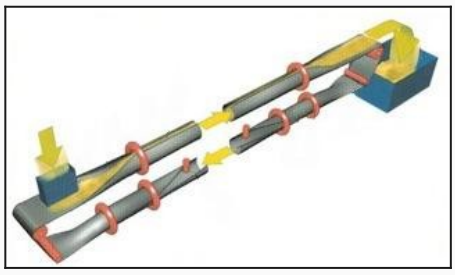
The main consumers of tubular conveyor belts are chemical, agricultural and waste disposal companies using them for transportation of dangerous toxic substances; steel and cement factories and other powder substances processing companies; coal mines, and other types of mines, heating plants for transporting coal, ore, etc.

TUBULAR CONVEYOR BELT STRUCTURE

Tubular conveyor belts have the tube form in their main section which opens and closes only at the moment of loading and unloading.

Carcass of the belt consists of one or more layers and upper and the lower lining made of rubber of different classes, dipending on the type of the belt (standart, heat resistant, oil resistant, non-flammable, anti-abrasive).





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For the production of this belt is used EP-fabric (polyester-polyamide) or aramid fabric. Both variants can be further strengthened with the steel cord to increase the elasticity and durability of the conveyor belt.

Use of aramid fabric belt provides several advantages in comparison with analogue EP- based fabrics. Aramid is several times stronger than steel, while its weight is virtually identical to the weight of polyamide or polyester. Aramid fabric is resistant to aggressive chemicals and high temperatures, which in combination with the right type of the lining of this belt can be used in extreme operating conditions. The total thickness of the carcass due to the presence of only one layer of fabric with a tensile strength from 630 to 2500 N / mm does not exceed 5 mm, allowing the belt to fold easily into a tube.

Basic parameters of tubular belt

Tube diameter (mm)	Belt width (mm)	Material section on themoving belt (m2)	Recommended belt speed (m/s)	Estimated productivity of the conveyor line (t/h)	Max. size of piece (mm)
150	550	0.045	2.0	176	0.1 - 50
170	650	0.081	2.2	338	0.1 - 56
220	800	0.126	2.33	564	0.1 - 70
280	1000	0.182	2.5	884	0.1 - 90
330	1200	0.247	2.9	1371	0.1 - 110
390	1400	0.323	3.4	2073	0.1 - 130
450	1600	0.505	3.8	3632	0.1 - 150
550	1800	0.727	4.2	5796	0.1 - 180
640	2000	0.989	4.6	8659	0.1 - 215

Minimal radius of belt turn 30-150 m, length of of the transition section from 2.5 - 12.5 m.

ADVANTAGES OF TUBULAR BELTS

- reduction of energy consumption
- reduction of resource consumption
- reduction of dust dirt in the working areas
- improvement of environmental situation
- exclusion of material loss on the track
- possibility of installing of conveyor on curvilinear parts with the different angles of turn and with the uplift up to 30°
- length of the route of the conveyor from 100 m to 10 km
- performance up to 20-30 tons / h
- increase of the belt life and lower rollers life 2 - 3 times

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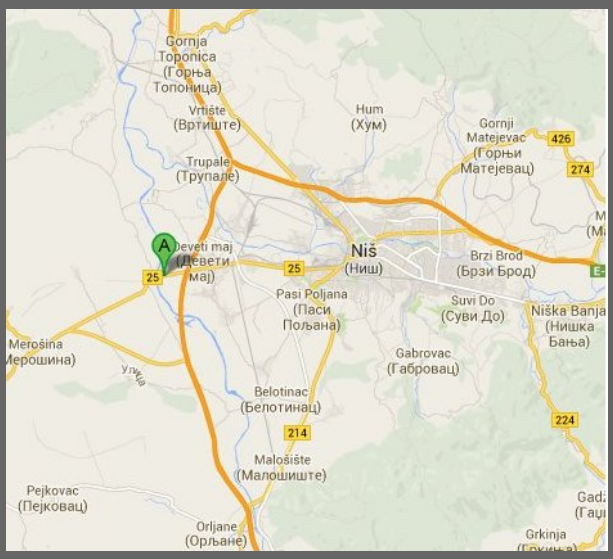

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