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**T&T MACHINE - EQUIPMENT
IMPORT EXPORT JOIN STOCK COMPANY**

HEESUNG RUBBER CONVEYOR BELT

INTRODUCTION

T&T Machine - Equipment import and export company was established in March, 2009 with primary focus on importing, distributing, manufacturing and processing products including magnets, rubber conveyor belts, magnetic separators, iron removal filters, and vibrating screen machines

T&T Machine Equipment Import - Export Joint Stock Company

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VISION

Becoming a prestigiously developed company with famous reputation in Viet Nam and the leader in the concerned product fields



MISSION

- * Bring customers and society values and benefits by providing them high quality products and service, optimal and creative solutions, and competitive prices which best meet the customer satisfaction
- * Provide our staff a better physical and mental wellbeing



BUSSINESS PHYLOSOPHY

1. Considering **"Morality"** and **"Reputation"** as guideline for all of our activities
2. Customer centricity and qualified human resources are the core element for sustainble development.
3. Integrity, passion and responsibility are the company cultural foundations.

VALUE

- 1. Quality assurance – Customer centricity:** T&T assures that we always provide customers high quality products, creative solutions, considerate warranties which bring customers optimum benefits and values. Customer demands and satisfaction are the primary focus of our company.
- 2. Innovation – Creativity – Unique:** At T&T, we are aware that uniqueness greatly contributes to the company development. Hence, we have invested a great deal of effort and time in searching and producing new optimal solutions by combining current advances and new ideas in order to fulfil customer demands. We appreciate all ideas even the smallest.
- 3. Cooperation – Listen – Share:** We, at T&T, listen to understand each other and cooperate with customers, partners, and staff on a win-win basis to create shared sustainable long-term benefits
- 4. Building a healthy company culture:** At T&T, we highly value responsibility, creation, and dedication in our behaviour culture. We are a solidarity which is cooperative, sharing, humble, deligent, honest, and open-minded towards a prosperous development of the company as a whole and each individual
- 5. Adequate remuneration and incentives:** At T&T, humans are the most important resource for sustainable development so we have the reasonable remuneration policy regarding staff capacity and dedication. We also create an active and positive environment to nurture staff capacity and creativity, attract and retain talents with good morality which hopefully create breakthroughs in the development process of T&T.

HEESUNG PREMIUM CONVEYOR BELTS

PRODUCTS

- | | |
|----|---|
| 01 | Rubber conveyor belt |
| 02 | Chevron conveyor belt type V |
| 03 | EP, NN, PN fabric conveyor belt |
| 04 | Sidewall cleated conveyor belt |
| 05 | Steel cord conveyor belt |
| 06 | Heat resistant conveyor belt |
| 07 | Fire resistant conveyor belt |
| 08 | Oil resistant conveyor belt |
| 09 | Chemical resistant conveyor belts |
| 10 | Conveyor belt connecting supplies and services. |



A. HEESUNG CONVEYOR BELT INTRODUCTION

- HEESUNG conveyor belts are high-quality products which have been exclusively distributed by T&T company since 2013.
- The products are manufactured in China following the Korean technology and standards.

B. CLASSIFICATION

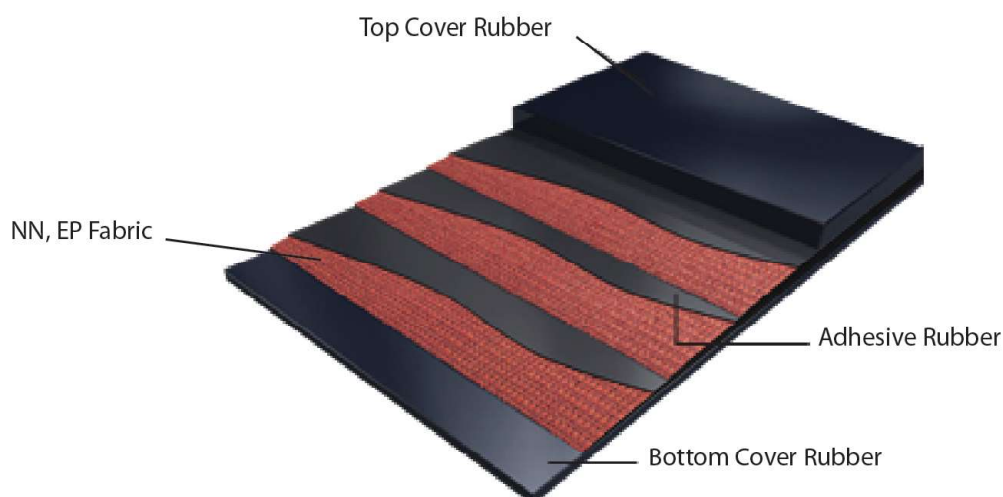
I. EP HEESUNG CONVEYOR BELT

1. Composition and Characteristics.

Kind of Fabric belts	Characteristics
<ul style="list-style-type: none"> - Synthetic polyester fabric (EP) - Warp: Polyester - Weft: Polyester 	<ul style="list-style-type: none"> - High belt tension - High transmission capacity - Low Elongation - High Speed - Long belt - High Impact resistance.

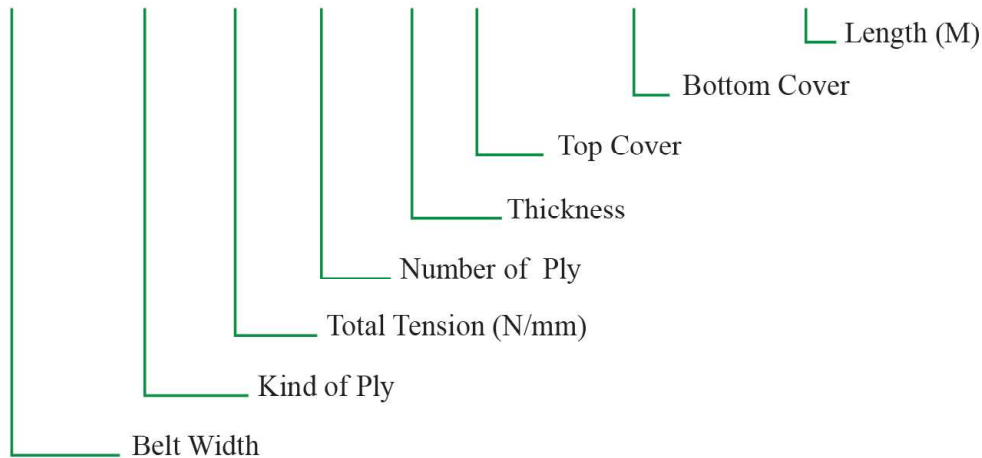
2 - Standard Specifications

Kind of Conveyor Belt	Structure of Ply		Kind of Ply	Ply thickness (mm/P)	Maximum tension (N/mm)					Rubber coverage (mm)		Belt width (mm)	Length (m)
	Warp	Weft			2 Ply	3 Ply	4 Ply	5 Ply	6 Ply	Top Cover	Bottom Cover		
EP	Polyester	Polyester	EP-100	0.85	200	300	400	500	600	1.0~10	0.1~4.5	300~2500	≤400
			EP-150	0.90	250	375	500	625	750				
			EP-150	1.00	300	450	600	750	900				
			EP-200	1.10	400	600	800	1000	1200			500~2500	
			EP-250	1.25	500	750	1000	1250	1500				
			EP-300	1.35	600	900	1200	1500	1800				
			EP-350	1.45	-	1050	1400	1750	2100			800~2500	
			EP-400	1.55	-	-	1600	2000	2400				
			EP-500	1.70	-	-	2000	2500	3000				



Belt Structure

B.1000 X EP 1000/5 X 15 (6MM + 3MM) X 300M



3 - Applications

Heesung EP conveyor belts are popularly used in industries such as coal and rock minning, wood logging and processing, cement producing, and thermal power plants.

II. PN HEESUNG CONVEYOR BELT

1. Composition and characteristics

PN rubber conveyor belts consist of Polyester warp and Nylon weft, a layer of nylon fabric and rubber cover with good elasticity. PN rubber conveyor belts are used to transmit medium-sized and granular materials with medium length and less outside impacts.

Kind of Fabric belts	Feature
<ul style="list-style-type: none"> - Polyester and Nylon fiber - Warp: Polyester - Weft: Nylon 	<ul style="list-style-type: none"> - High belt tension - Low Elongation - High impact resistance - Good groove making ability - Suitable for small Pulley

2 - Standard Specifications

Kind of Conveyor Belt	Structure of Ply		Kind of Ply	Ply Thickness (mm/P)	Maximum tension (N/mm)					Rubber coverage (mm)		Belt width (mm)	Length (m)
	Warp	Weft			2 Ply	3 Ply	4 Ply	5 Ply	6 Ply	Top Cover	Bottom Cover		
PN	Polyester	Nylon	PN-100	0.85	200	300	400	500	600	1.0~10	0.1~4.5	300~2500	≤400
			PN-150	0.90	250	375	500	625	750				
			PN-150	1.00	300	450	600	750	900				
			PN-200	1.10	400	600	800	1000	1200			500~2500	
			PN-250	1.25	500	750	1000	1250	1500				
			PN-300	1.35	600	900	1200	1500	1800				
			PN-350	1.45	-	1050	1400	1750	2100			800~2500	
			PN-400	1.55	-	-	1600	2000	2400			1000~2500	
			PN-500	1.70	-	-	2000	2500	3000				

3 - Applications:







PN conveyor belts are popularly used in industries including mining and processing. However, PN is not as popular as EP at present.

III. CHEVRON CONVEYOR BELT TYPE V

1 - Composition and characteristics

- Chevron conveyor belt Type V have similar characteristics to the ordinary ones except for the V cleats on the conveyor belt surface which increase friction for the belts to transmiss materials in slope areas.

2 - Type of V Cleat

Item	Drawing	Cleat Height	Cleat Width	Pitch	Belt Width
Type V5		5mm	400-1000mm	16.5mm	500-1000mm
Type V6		6mm	400-1000mm	80mm	500-1000mm
Type V15		15mm	450mm	250mm	500-1000mm
Type Open V15		15mm	500mm	250mm	500-1000mm
Type V17		17mm	550mm	330mm	600-1000mm
Type V25		25mm	750mm	330mm	900-1000mm

3 - Application

- It is suitable for conveying heavy bags to 40-50 degree slopes

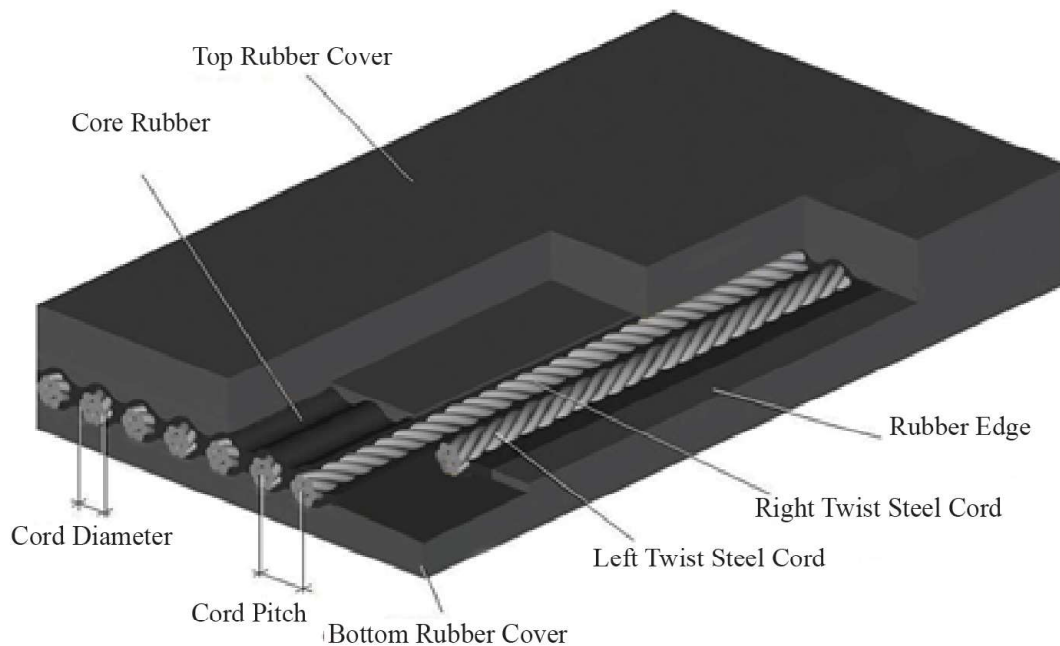
Warning: Do not convey large solid blocks because they may slip down which is dangerous for people

IV. HEESUNG STEEL CORD CONVEYOR BELTS

The steel cord conveyor belts have steel cords which are suitable for long lines, heavy and wide materials.

Characteristics:

- High tension and very low elongation
- Steel cords and rubber are processed under special technology to assure the durability between steel and rubber when conveying products.
- Impact resistant, tear resistant, and abrasion resistant rubber



STANDARD SPECIFICATIONS

Specification (st-No)	Cord diameter (mm)	Cord structure	Cord pitch (mm)	Maximum tension (N/mm)	Top cover x bottom cover (mm)	Ponderosity (Kg/m ²)	Roller Diameter (mm)	Traction KN/piece
ST - 630	3.0	6 x 7 + IWS	10	90	5 x 5	20.0	800	6.93
ST - 800	3.5	6 x 7 + IWS	10	110	5 x 5	20.6	800	8.8
ST - 1000	4.0	6 x 7 + IWS	12	140	6 x 6	24.7	800	13.2
ST - 1250	4.5	6 x 7 + IWS	12	175	6 x 6	25.4	800	16.5
ST - 1600	5.0	6 x 19 + IWS	12	225	6 x 6	26.0	1000	21.12
ST - 2000	6.0	6 x 19 + IWS	12	285	8 x 6	30.0	1000	26.4
ST - 2500	7.5	6 x 19w + IWS	15	355	8 x 6	32.2	1250	41.25
ST - 3150	8.1	6 x 19w + IWS	15	450	8 x 6	35.7	1400	51.98
ST - 4000	9.1	6 x 19w + IWS	17	370	8 x 6	37.8	1600	74.8
ST - 4500	9.7	6 x 19w + IWS	16	645	8 x 6	38.7	1800	79.2
ST - 5000	10.9	6 x 19w + IWS	17	715	8.5 x 8.5	41.9	1800	93.5
ST - 5400	11.3	6 x 19w + IWS	17	760	9 x 9	43.9	2000	101
ST - 6300	12.3	6 x 19w + IWS	18	900	10 x 10	48.3	2000	124.74

STEEL CORD HEESUNG CONVEYOR BELTS

ST1600	ST2000	ST2500	ST3150	ST4000	ST4500	ST5000	ST5400	ST6300
63	63	50	50					
79	79	64	64	56	60	56	56	52
94	94	76	76	68	72	68	68	63
111	111	89	89	79	84	79	79	74
126	126	101	101	91	96	91	91	85
143	143	114	114	103	107	103	103	96
159	159	128	128	114	120	114	114	107
	176	141	141	125	133	125	125	118
	193	155	155	137	146	137	137	129

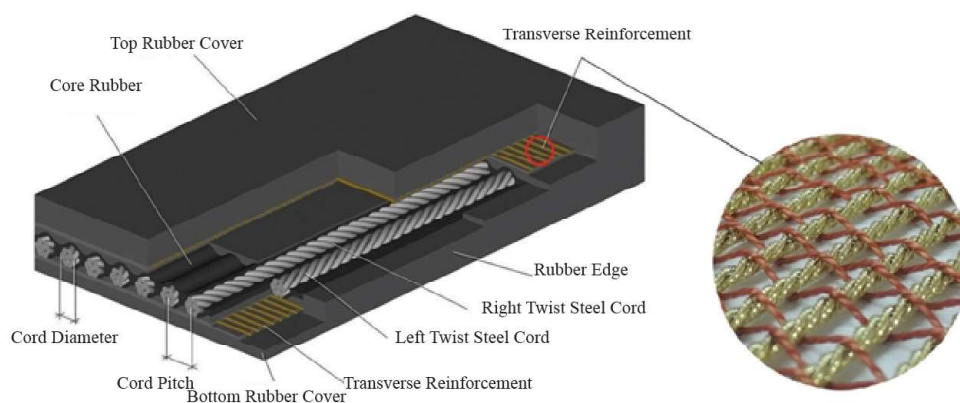
CHARACTERISTICS AND CATEGORIES

Specification		Standard				
		GB 700-88		DIN22131-88		
		H	M	W	X	Y
Tensile Strength (MPa)	Mpa \geq	17.65	13.73	18	25	20
Elongation (%)	% \geq	450	400	400	450	400
Change rate	%	-25 - +25	-25 - +25	-25 - +25	-25 - +25	-25 - +25

ADHESIVENESS

Intensity	St630	St800	St1000	St1250	St1600	St2000	St2500	St3150	St4000	St4500	St5000	St5400	St6300
Adhesiveness N/mm GB9770-88	54	60	64	69	74	84	98	108	118				
Adhesiveness N/mm DIN22131-88	60	70	80	95	105	105	130	140	145	150	165	175	180

Beside high belt tension and low elongation , steel cord conveyor belts have a special layer of transverse reinforcement to prevent the belt from vertical tear when in use.



HORIZONTAL STEEL LAYER SPECIFICATIONS

No	Specification	Measure	Type 1	Type 2	Type 3	Type 4
1	Structure	-	2+2 x 0.35HT	3x4x0.22HT	3x7x0.20HE	3x7x0.22HE
2	Maximum tension	N	1000	1000	1360	1650
3	Cord pitch	mm	8	8	6.4	5.5
4	Cord diameter	mm	1.0 + 0.1	1.18 + 0.1	1.39 + 0.1	1.52 + 0.1
5	Polyester fiber structure	-	1100 DTEX 1x2			
6	Polyester yarn pull off vertically	N	140	140	140	140
7	Distance between polyester cord follow vertical	mm	12.5	12.5	12.5	12.5
8	Polyeste diameter follow vertical	mm	0.3	0.3	0.3	

Application:

Heesung Steel cord conveyor belts are popularly used in heavy industries, coal minning,thermal power plants, iron and steel plants.

V. SPECIAL CONVEYOR BELT

1 - HEAT RESISTANT CONVEYOR BELT

It is more economical to use thermostable conveyor belts when transporting materials at 60°C or higher. The belt durability varies depending on temperature and material size so it is worth considering the manufacturing conditions carefully before purchasing the belts. Moreover, customers need to understand the relation between cargos and belt surface because heat loss on lines is the result of temperature difference between cargos and the belt surface though heat loss varies deepnding on the cargo shape, belth length, speed, operation, environment and operating time.



Grade	Features	Applications
HRS	Being a belt made of heat - hardening SBR materials, it has good abrasion resistance though somecracks are generated as cover rub - ber gets hardened by heat if used for a long time.	High abrasion resistance, Medium temperature
HRB	Being a belt made of heat-softening IIR materials, it has good resis - tance against cracks though its cover rubber gets softened by heat if used for a long time. It is suitable to transport cement or clinker with little abrasion.	Crack resistance, Medium high temperature
HRP	Being a belt made of EPR materials, it demonstrates outstanding performance in transporting hot materials as it has high resistance against abrasion and cracks.	High abrasion resistance, Crack resistance, High temperature
HRP (plus)	Being a new concept HRP product whose crack resistance is rein - forced, you may experience a longer life span	High abrasion resistance, Crack resistance, High temperature

Options of Belts by Material Type and Temperature.

Grain shape	Rain shape						Lump materials				
Material handled	Cement	Chemical	Fertilizer	Soda ash	Casting sand	Clinker	Sintered ore	Cokes	Limestone	Iron Ore	Clinker
Maximum temperature of material handled		120	150	200	200	400		200	200	400	400
		□	□	□	□	□		□	□	□	□
Average temperature of material handled	60	80	100	120	150	180	60	100	120	150	200
Maximum temperature of belt surface	50	80	100	120	150	180	50	80	100	130	180
HRS (SBR)											
HRB (Butyl)											
HRP (EPR)/HRP (plus)											

Relation between Material and Belt Surface Temperature

Belt surface temperature varies depending on material types, shapes, sizes, belt cycle time, and trough angle. The heat - resistant belts should be selected based on their surface temperature as their life span depends on the belt surface temperature.

Material handled	Temperature of material handled (°C)	Belt surface temperature (°C)	Used grade
Sintered ore	200~350	90~150	90~150
Cokes	60~200	40~60	40~60
Clinker	200~300	100~150	100~150
Clinker	300~400	150~180	150~180
Cement	110~140	100~110	100~110
Fertilizer	80~100	60~80	60~80
Casting cast	~100	60~80	60~80
	100~150	110~130	110~130

2 - FIRE RESISTANT CONVEYOR BELT

This type of belt is used to prevent line loss while reducing damage to the belt from flames by suppressing ignition. It is mainly used to transport grains, fertilizer, or coal.



Item Standard	Laboratory flame test		Drum friction test	Electric resistance	Other Items
	Flame	Glow			
JIS	Each less than 15 sec. Total of 6 samples less than 45 sec	None	None	None	None
ISO	Each less than 15 sec. Total of 6 samples less than 45 sec	None	None	Less than $3 \times 10^8 \Omega$	None
DIN	Each less than 15 sec. Total of 6 samples less than 45 sec	None	None	Less than $3 \times 10^8 \Omega$	None
MSHA (USA)	Avr. less than 60 sec	Avr. less than 180 sec	None	Less than $3 \times 10^8 \Omega$	None
AS (Australia)	Avr. less than 10 sec Each less than 15 sec	Avr. less than 120 sec Each less than 180 sec	Less than 325° on drum surface and no glow	Less than $3 \times 10^8 \Omega$	Oxygen index test in accordance with ISO 4589 Gallery flame test
CSA (Canada)	Avr. less than 60 sec	Avr. less than 180 sec	Less than 400° on drum surface and no glow	Less than $3 \times 10^8 \Omega$	None

MSHA(U.S), CAN/CSA-M422(Canada), MDA-M5010(Australia) certified

3 - OIL RESISTANT CONVEYOR BELT

Ordinary belts are easily damaged when cover rubber is oil or chemical absorbent and oil flow reverses in the belt trough if oily materials are transported. Hence, oil resistant belts should be used to transport oily materials.

Grade	Color	Key Applications
ORN	White, Green, Black	Resistant to metal, animal or vegetable oil excluding aromatic compounds (benzene, toluene etc.) halogen hydrocarbon, ketone, and ester family. Further, the cover rubber is highly resistant to abrasion.
ORN-30	White, Black	Used for slightly oily materials. It is suitable for transporting wood chips or frozen meat
HOR	White, Black	It is suitable for animal or vegetable oil transported at a relatively high temperature (up to 100°C)

4 - CHEMISTRY - PREVENTION CONVEYOR BELT

5 - BUCKET ELEVATOR BELT



VI. CONVEYOR BELT ROLLER

1. Conveyor Return Roller

- Precise and deep groove ball bearing
- High water and dust resistance.
- Low turning friction
- Excellent dynamic balancing
- Better loading capacity and durability
- Electrostatic coating



Model	Belt width	ΦD	I	L	SL	C	t	Φd	Bearing No
TT-040-RA/B	400	89.1	460	480	505	8	11/14	17/20	6203-2RS/6204-2RS
TT-045-RA/B	450	89.1	510	530	555	8	11/14	17/20	6203-2RS/6204-2RS
TT-050-RA/B	500	89.1	560	580	605	8	11/14	17/20	6203-2RS/6204-2RS
TT-060-RA/B	600	89.1	660	680	705	8	11/14	17/20	6203-2RS/6204-2RS
TT-075-R	750	114.3	850	880	905	8	14	20	6204-2RS
TT-090-R	900	114.3	1000	1030	1055	8	14	20	6204-2RS
TT-105-R	1050	139.8	1150	1180	1215	11.2	18	25	6205-2RS
TT-120-R	1200	139.8	1300	1330	1365	11.2	18	25	6205-2RS
TT-0140-R	1400	165.2	1530	1550	1585	11.2	22.4	30	6206-2RS
TT-160-R	1600	165.2	1730	1750	1785	11.2	22.4	30	6206-2RS
TT-180-R	1800	165.2	2000	2040	2075	11.2	25	35	6207-2RS
TT-200-R	2000	165.2	2200	2240	2275	11.2	25	35	6207-2RS

2. Conveyor Side Guide Roller Idlers



3. Impact roller conveyor belts



4. Carrying roller conveyor belts



STEEL CARRIER



HDPE CARRIER



TRANSITION CARRIER



SELF ALIGNING CARRIER



IMPACT ROLLER



WEIGH ROLLER



GARLAND CARRIER



FLAT RETURN



RUBBER DISC RETURN



SPIRAL RETURN



V RETURN

VII. SPLICING CONVEYOR BELTS, REPAIRING BELTS

1. Materials for fixing rubber conveyor belts

T&T are rubber conveyor connecting equipment distributor of Rema Tiptop-Germany.

1.1. Equipment for Vulcanization

- Non Vulcanized Core Rubber



- Washing water CF-R4 (Rema Tiptop)



- VULCANIZING HL - T4



- Vulcanizer DLCBV-800 and DLCBV-1200



1.2. Equipment for connecting conveyor belts under normal temperature

- SC2000 Glues has two components (Tiptop- Germany).



- Ribbon to mend Conveyor belts



2. Conveyor belt connecting methods.

- Connecting conveyor belts under normal temperature: Use SC2000 glue (Rema-Tiptop Germany)



- Vulcanization method: Use materials Rema-Tiptop Germany)



- Connecting conveyor belt with Pins: Use Flexco pins





C. CUSTOMER

COAL INDUSTRY	
01	Vang Danh coal
02	Dong Bac Coal
03	45 coal
04	Cam Pha coal
05	Ha Long coal

CEMENT INDUSTRY	
01	Vicem Hai Phong cement
02	Vicem Hoang Thach cement
03	Song Gianh Cement
04	Nghi Son Cement
05	Cam Pha cement

MINERAL EXPLOIT	
01	Mien Trung mineral joint stock company
02	Thai Nguyen Black Metallurgical JSC
03	Thai Nguyen steel joint stock company
04	Viscostone joint stock company
05	Ha Nam stone joint company

BRICK MANUFACTURING INDUSTRY	
01	Viglacera Ha Long
02	Thach Ban brick
03	Hoang Tien brick
04	Prime group
05	CMC joint stock company

D. OUR HUGE PROJECT

Steel cord conveyor belt project that T&T has supply Formosa Ha Tinh



Vang Danh Coal factory



Dung Quat Port



Vicem Hai Phong



Nghi Son Cement



Conveyor belt at port



Mineral Exploit



Coal conveyor belt at Uong Bi therma power station

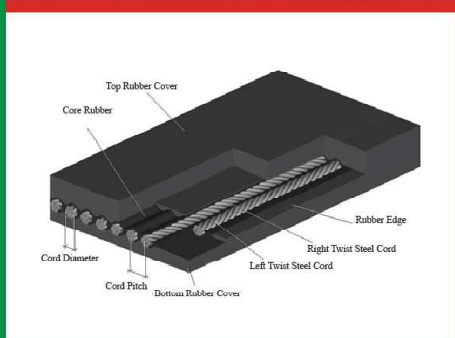


Concrete Batching Plant



Conveyor belt at Batching Plant





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