

YOKOHAMA CONVEYOR BELT



YOKOHAMA is the official shirt partner of Chelsea FC.

INTRODUCTION

THE YOKOHAMA RUBBER COMPANY, LIMITED is a diversified rubber products manufacturer with operations started in 1917. YOKOHAMA products are used all over the world in various segments from transportation, civil construction, oil industry, mining, aviation, maritime ports.

YOKOHAMA conveyor belts are recognized for the high quality and excellent performance across mining, cement, steel and fertilizer industries. Our conveyor belts are available in a broad range of specifications relating to cover compound, carcass and structure.

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THE YOKOHAMA ADVANTAGES

- Over 60 years of experience in manufacturing conveyor belts and over 90 years of experience in manufacturing rubber products
- R&D Center located in the manufacturing plant complex
- YOKOHAMA has its own in-plant rubber compounding facility
- Advice on most suitable specification for customer's operations
- Global technical support

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STEEL CORD CONVEYOR BELTS

YOKOHAMA steel cord conveyor belts are excellent for long distance, high abusive and demanding applications. High durability given by superior splice efficiency and tight bonding between steel cords and rubber realize longer service life, even under the severe conditions.

FEATURES AND BENEFITS:

- **High Belt Strength**

Available belt strength ranges from 500N/mm up to 5,400N/mm covering a variety of applications.

- **Available Cover Compounds**

YOKOHAMA offers a wide range of abrasion, impact, cut & gouge, temperature, flame, and other specialized grades.

- **Low Elongation**

Realize minimum take up travel, best suited for long distance or other specialized conveyors with short transitions, small pulleys and yet high throughput rates.

Recommended Take up Travel

Belt Type	Take up (%)
Steel Cord	0.2 of C-C Distance
Nylon Fabric	2.4 of C-C Distance
Polyester Fabric	1.5 of C-C Distance
MF Fabric	1.0 of C-C Distance

- **Superior Troughability**

Belt runs true and prevents spillage.

- **Excellent Durability**

Superior flexural fatigue resistance and outstanding rubber adhesion to the steel realize longer service life.

STANDARD BELT SPECIFICATION:

ST-No.	Unit	500	630	800	1000	1250	1400	1800	2000	2500	3150	3500	4000	4500	5000	5400
Min. Elongation at break	N/mm	500	630	800	1000	1250	1400	1800	2000	2500	3150	3500	4000	4500	5000	5400
Max. cord dia.	mm	2.5	2.8	3.1	3.5	4.0	4.2	4.8	5.1	5.9	6.9W	7.4W	7.8W	8.7W	9.4W	10.2W
Cord pitch	mm	12	12	12	12	12	12	12	12	12	15	15	15	16	16	17
Min. Bottom cover thickness	mm	4	4	4	5	5	5	5	5	5	6	6	6	6.5	7.0	7.5
Belt width (mm)		Number of steel cords														
800		63	63	63	63	63	63	63	63	63	50	50	50	47	47	-
1000		79	79	79	79	79	79	79	79	79	64	64	64	59	59	56
1200		94	94	94	94	94	94	94	94	76	76	76	76	71	71	67
1400		111	111	111	111	111	111	111	111	111	89	89	89	83	83	78
1600		126	126	126	126	126	126	126	126	126	101	101	101	95	95	89
1800		143	143	143	143	143	143	143	143	143	114	114	114	107	107	101
2000		159	159	159	159	159	159	159	159	159	128	128	128	120	120	113
2200		176	176	176	176	176	176	176	176	176	141	141	141	132	132	124
2400		193	193	193	193	193	193	193	193	193	154	154	154	145	145	136
2600		209	209	209	209	209	209	209	209	209	168	168	168	157	157	148
2800		226	226	226	226	226	226	226	226	226	181	181	181	170	170	160

Above table illustrates cord specifications as per YOKOHAMA standard. YOKOHAMA also manufactures steel cord belts as per DIN22131, ISO15236, AS1333 and customers private specifications, please enquire.

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FABRIC CONVEYOR BELTS

YOKOHAMA fabric conveyor belts have been supplied to a wide range of applications. From mine to port, power plants to cement, chemicals, fertilizers and agribusiness, the performance is proven in many different industries.

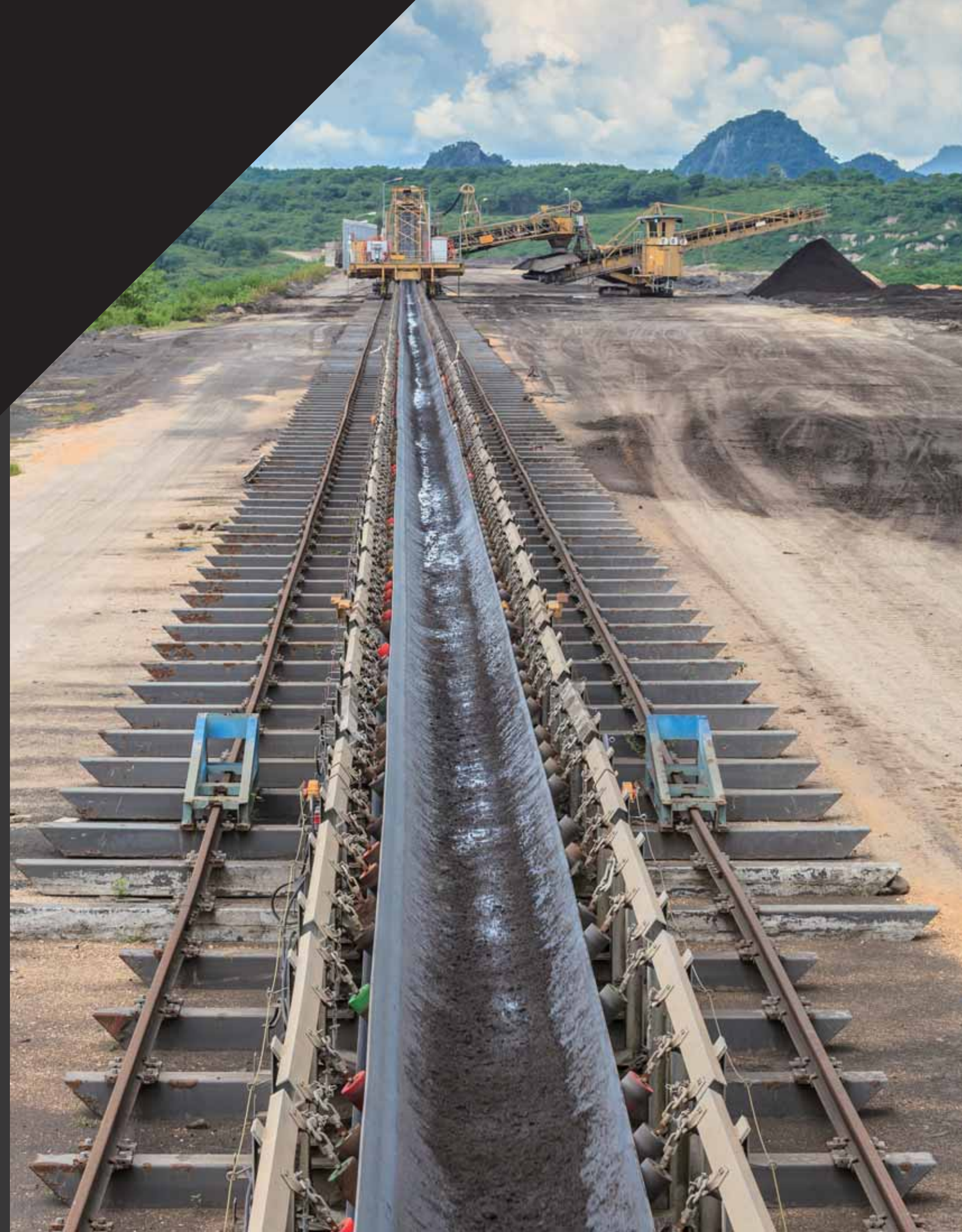
FEATURES AND BENEFITS:

- **Wide Selection of Belt Strengths**
Available belt strengths ranges from 100N/mm up to 2,500N/mm covering a variety of applications.
- **Cover Compounds and Cover Gauges**
Most of YOKOHAMA's original high performance cover compounds are available with wide range of cover gauges.
- **Excellent Durability**
Superior resistance to bending fatigue and outstanding rubber adhesion to fabric realize longer service life.
- **Perfect Load Support**
Ensure maximum conveying capacity.
- **Reliable Vulcanized Splices**
Hot vulcanized splice is recommended. YOKOHAMA offers industry proven splice technology.

BELT SELECTION:

Carcasses : Nylon/Nylon (NN) and Polyester/Nylon (EP)
Belt strength : from 100N/mm to 2,500N/mm
Belt width : 300mm - 2,400mm

Please consult with your local YOKOHAMA sales representative for more belt strength and size availability.



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MJ-TYPE CONVEYOR BELTS



FEATURES AND BENEFITS:

- Excellent Fastner Holding**
 YOKOHAMA's original carcass design allows outstanding fastner holding.
- Easy and Quick Installation**
 Eliminate long vulcanizing time and complex splice process.
- Easy Maintenance**
- Excellent Flexibility**
 Applicable to conveyor with smaller pulleys.

YOKOHAMA MJ CONVEYOR BELT DATA:

GRADES		150	220	330	440	550	
CONSTRUCTION		MJ-75 X 2P	MJ-110 X 2P	MJ-110 X 3P	MJ-110 X 4P	MJ-110 X 5P	
TENSTION RATING VULCANIZED AND FASTENER	(N/mm) (lbs/in)	25 150	40 220	60 330	80 440	95 550	
APPROX. BELT THICKNESS (1/8" X 1/16" COVERS)	(mm) (in)	8.1 0.319	8.0 0.315	9.7 0.382	11.7 0.461	13.7 0.539	
APPROX BELT WEIGHT (1/8" X 1/16" COVERS)	(kg/m2) (lbs/ft2)	9.3 1.9	9.2 1.9	11.2 2.3	13.5 2.8	15.8 3.2	
MIN. WIDTH FOR TROUGHING EMPTY 35° IDLERS	(mm) (in)	400 16	450 18	600 24	750 30	900 36	
MAX. WIDTH ON 35° IDLERS FULLY LOADED WITH 100# MATERIAL	(mm) (in)	750 30	900 36	1200 48	1500 60	1800 72	
RECOMMENDED MIN. PULLEY DIAMETERS	OVER 80% TENSION	(mm) (in)	400 16	450 18	600 24	750 30	900 36
	OVER 60 TO 80% TENSION	(mm) (in)	350 14	400 16	500 20	600 24	750 30
	OVER 40 TO 60% TENSION	(mm) (in)	300 12	350 14	400 16	500 20	600 24
	TO 40% TENSION	(mm) (in)	250 10	300 12	350 14	450 18	500 20
	TAIL & SNUB	(mm) (in)	250 10	300 12	350 14	450 18	500 20
RECOMMENDED FASTENERS		FLEXCO #140 FLEXCO R5	FLEXCO #190 FLEXCO R5	FLEXCO #140 FLEXCO R5	FLEXCO #190 FLEXCO R6	FLEXCO #2 FLEXCO R6	
RECOMMENDED TAKE UP TRAVEL AS % OF CENTER DISTANCE		MIN. 1.5% FOR POLYESTER AND MIN. 2.4% FOR NYLON (MIN. 500 MM OR 2")					

5 PROTEX - MF FABRIC CONVEYOR BELTS

BELT SELECTION:

BELT STRENGTH (N/MM)	NO. OF PLYES	COVER RUBBER THICKNESS	BELT WIDTH									BELT THICKNESS	LENGTH /R	
			500	600	700	750	800	900	1000	1050	1200			1400
500	2	6.0 x 3.0		*		*		*	*	*	*		12.4	200
630	2	8.0 x 3.0						*		*	*	*	15.1	200

*Belt strength such as 1000/4 and 1250/4 for large lump material transportation or other than above specifications are available.

APPLICATIONS:

YOKOHAMA PROTEX is designed to be virtually "Maintenance Free" belt for portable quarry crushing equipment, first and secondary crushers and other high abuse equipments. PROTEX belts give you greater peace-of-mind with the lowest cost per tonnage and best ROI on the market today.

FEATURES AND BENEFITS:

- Excellent Resistance to Trapped Material and Build-up on Pulleys
Prevent the belt from longitudinal rip and other serious damages.

Trapped Material Test



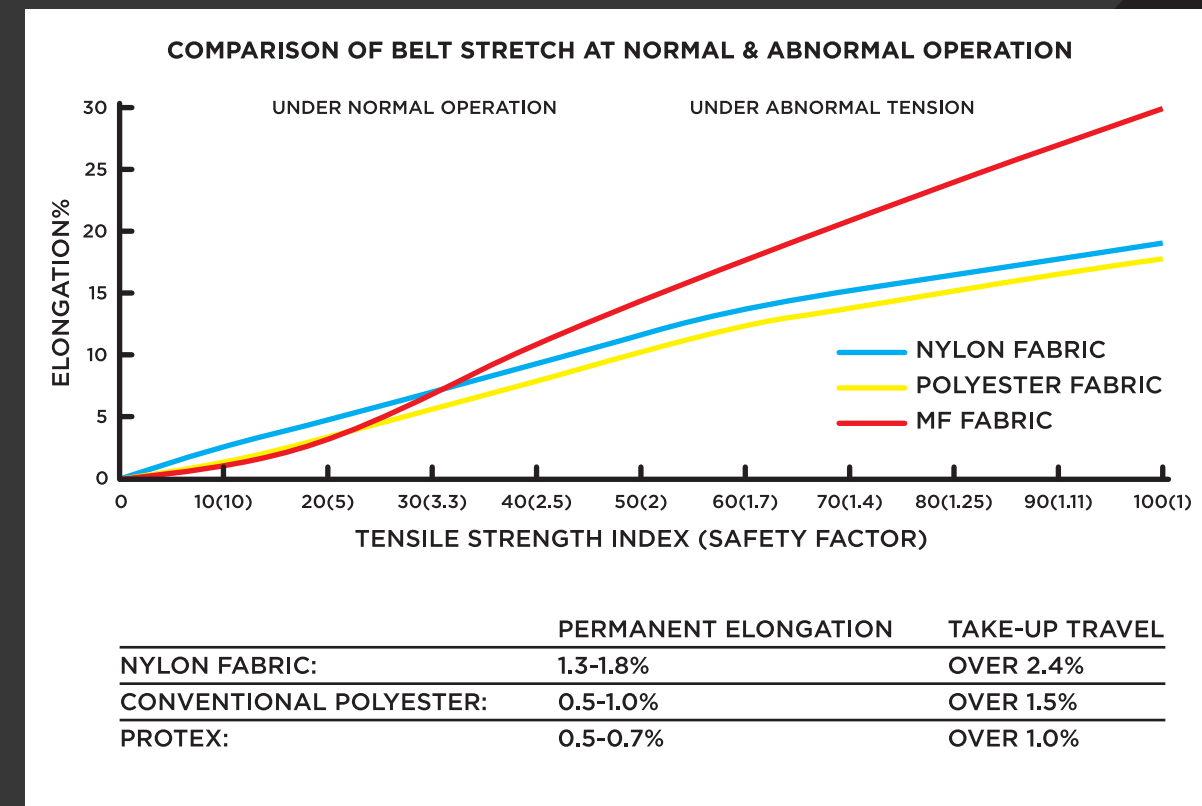
Nylon Fabric Belt
(Retained Strength: 0%)

Polyester Fabric Belt
(Retained Strength: 0%)

PROTEX
(Retained Strength: 89%)

- **YOKOHAMA PROTEX Belt with UR Cover**
UR cover is initially developed by YOKOHAMA to handle heavy limestone rocks before and after primary crushers. UR cover belts have succeeded in improving service life with superior impact and gouge resistance features.

- **MF Fabric - Special High Elongation Polyester Fabric**



MF fabric elongates 1.8 times higher than nylon fabric whereas the stretch under normal operating tension is less than that of conventional polyester fabric.

6 HEAT RESISTANT CONVEYOR BELTS

YOKOHAMA breakthroughs in heat tolerance, abrasion resistance and splice adhesion properties have been industry-proven throughout the world in cement plants, lime kilns, potash, foundries, coke oven plants, iron ore pelletizing, steel plants and others.



FEATURES AND BENEFITS:

- Superior Abrasion Resistance Under Extreme Conditions**
 Hamaheat belts show significantly less cover loss in abrasion tests realizing longer service life.
- Lowest Cost-per-tonnage and Best ROI**
 In side-by-side tests with conventional high-heat belts, Hamaheat belts lasted significantly longer carrying a wide variety of hot materials.
- Vulcanized Splices Remain Intact for the Life of Your Belt**
 You can count on splices to last the life of your belt when properly vulcanized. Hamaheat belts eliminate the need for mechanical splices, allowing you to take advantage of belt cleaners and further reduce the cost cycle associated with carry-back material and clean up.
- Extreme-Heat Carcass Design**
 Hamaheat's extreme heat technology strength starts at the core. The carcass is made from a proprietary fabric and dipping process that resists delamination and flexural fatigue.

APPLICATIONS:

- Sinter
- Cement Clinker
- Coke Oven
- Burnt Lime
- Cement
- Potash
- Chemical
- Iron Ore Pellet
- Foundry
- High Temperature Powdery Materials

AVAILABLE COVER COMPOUNDS:

	TYPE	TEMPERATURE RANGE OF MATERIALS	BELT SURFACE TEMPERATURE RANGE
LOW-MEDIUM TEMPERATURES	Hamaheat #2110	Lumpy Materials: 70-200° C Powdery Materials: 70-150° C	60-120° C
HIGH TEMPERATURES	Hamaheat Super 50	100-400° C	60-200° C
	Hamaheat Super 100		

Available carcass, belt strength and width vary depending on the cover compounds. Please consult with your local YOKOHAMA sales representative for your belting needs.

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OIL RESISTANT CONVEYOR BELTS

YOKOHAMA's superior oil resistant belts are designed to withstand the maximum degree of oil resistance for various applications and industries.

APPLICATIONS:

- Plants Carrying Parts and Components Coated with Machine Oil
- Heavy Oil Treated Coal in Coking Plants
- Electric Power Generating Plants

AVAILABLE COVER COMPOUNDS:

TYPE	WORKING TEMPERATURE	TYPE (NAME) OF OIL
200	-20 to 100° C	palm oil, lard, fish oil, soybean oil, sesame oil, cottonseed oil, tempura cooking oil, oily sewage, human waste, grease, anti-rust oil, roller oil, machine oil, light oil
300	-20 to 65° C	type A heavy oil, type B heavy oil type C heavy oil, Valvolin oil, waste products from heat-treatment

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FLAME RESISTANT CONVEYOR BELTS

With advanced technology in flame resistant polymer, YOKOHAMA offers a wide selection of compounds which meet most of the international standards.

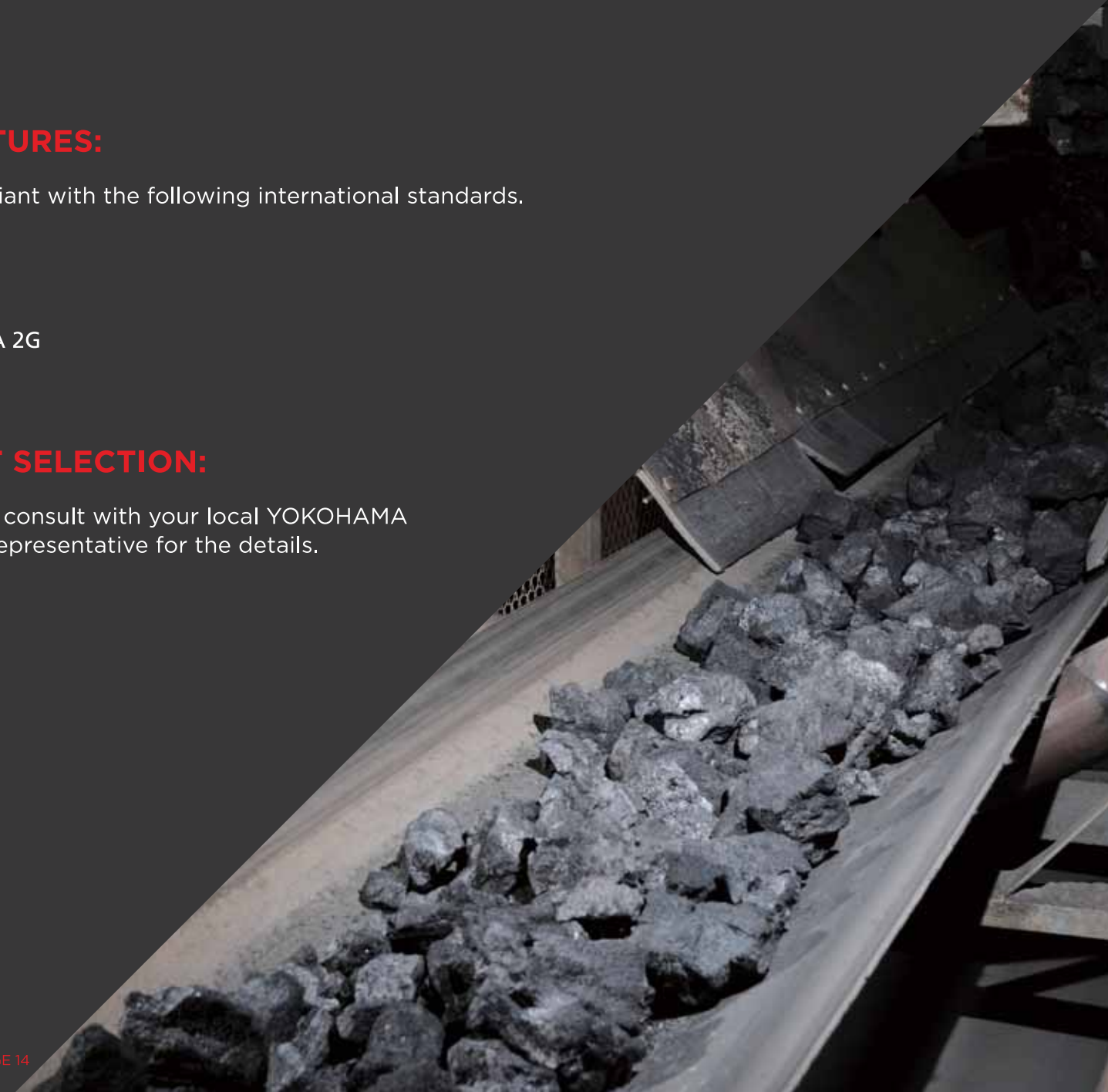
FEATURES:

Compliant with the following international standards.

- ISO
- DIN
- AS
- MSHA 2G
- CSA
- JIS

BELT SELECTION:

Please consult with your local YOKOHAMA sales representative for the details.



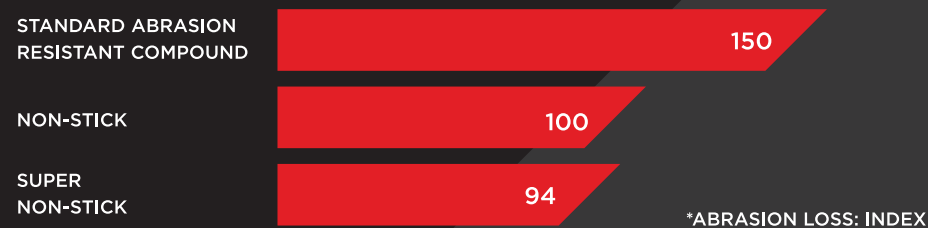
9 NON-STICK CONVEYOR BELTS

YOKOHAMA's Non-stick conveyor belts feature a specially developed compound containing a lubricating agent that reduces the carry-back associated with a standard belt. The anti-adhesive performance will last for the life of the belt and promote a clean environment and efficient operation of your facilities.

FEATURES AND BENEFITS:

- Outstanding Performance in Reducing Carry-Back**
 YOKOHAMA's Non-stick belts are ideal when needing to carry powdery and moist materials. Its special lubricating agent prevents materials from adhering on the belt surface thereby reducing the amount of carry-back remarkably.
- Performance Lasts for the Life of the Belt**
 Since the lubricating agent is not coated on the top of the belt surface but mixed with other polymers, the anti-adhesive performance will last for the life of the belt.
- Superior Abrasion Resistance**
 YOKOHAMA's Non-stick belts have superior abrasions resistance that allows combined use of belt cleaners.

ABRASION RESISTANCE (DIN WEAR TEST)



- Lower Facility Maintenance Costs**
 Since the carry-back is reduced by using the Yokohama non-stick belts, your facility will stay cleaner and your maintenance costs will be less.

AVAILABLE COVER COMPOUNDS:

Choose from Non-stick, Heat Resistant Non-stick and Super Non-stick belts to find the most suitable belt for your application. Use of belt cleaner is recommended in order to maximize the benefits of Non-stick belts.

NON-STICK

Compound with lubricant agent minimizes build-up

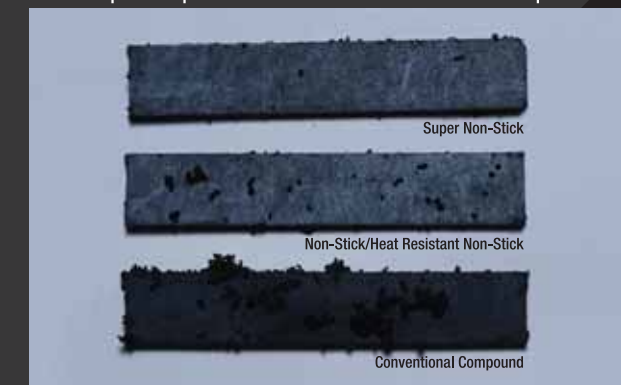
HEAT RESISTANT NON-STICK

Non-stick with excellent heat resistance (300F)

SUPER NON-STICK

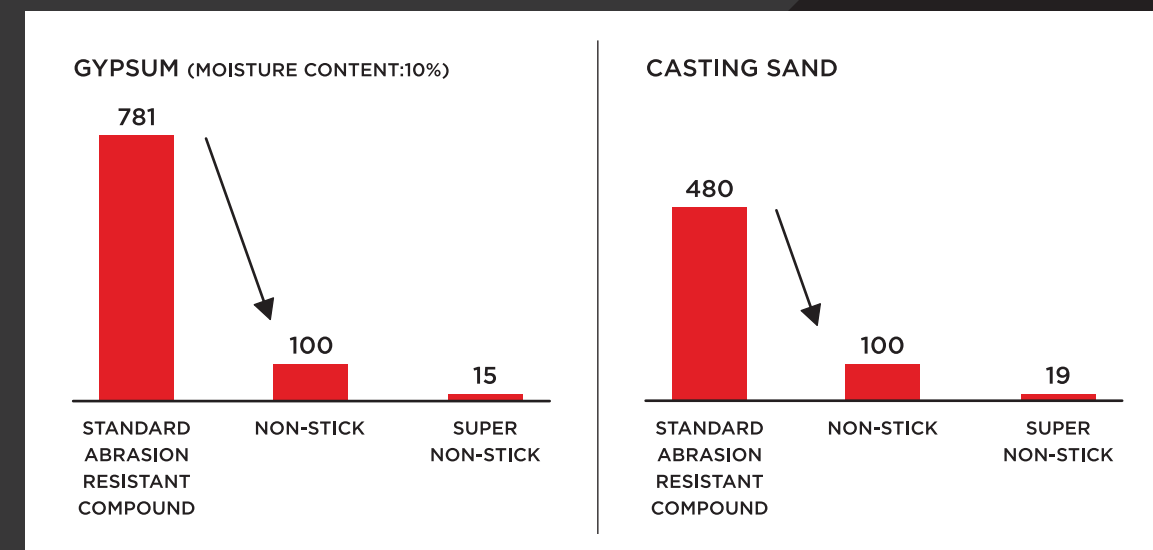
Improved build-up resistance with special resin material

Build-up Comparison with Conventional Compounds



DISCOVER THE DIFFERENCE WITH NON-STICK BELTS:

Our laboratory tests show the remarkable reduction in carry-back for some of the powdery materials.



BUILD-UP VOLUME: INDEX

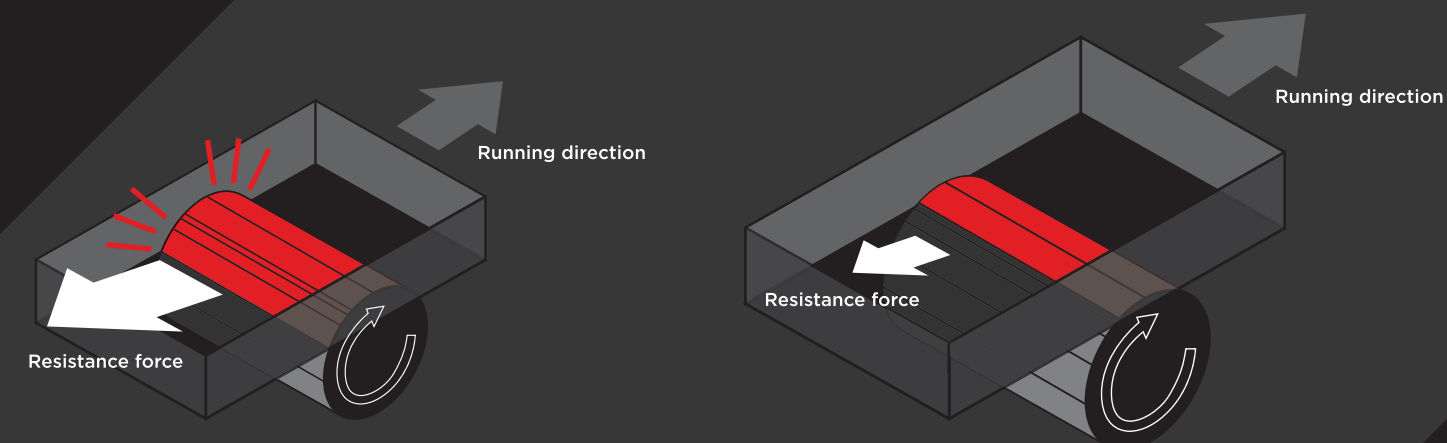
10 ENERGY SAVING CONVEYOR BELTS

YOKOHAMA has developed Energy Saving Conveyor Belt, which extends the advantages of conveyor belts, allowing reduced power consumption and reduced operational cost of the conveyors with innovative and highly engineered cover compound technology.



FEATURES AND BENEFITS:

- Remarkably Reduces Energy Consumption
Specially developed high elasticity compound reduces energy loss.

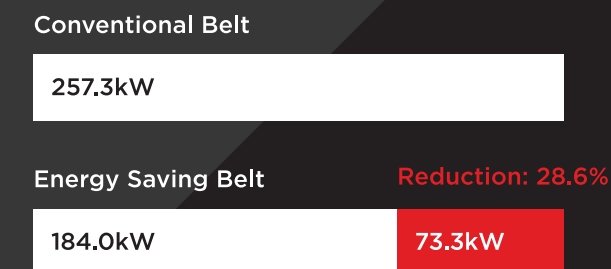


CONVENTIONAL COMPOUND
High Resistance

ENERGY SAVING COMPOUND
Low Resistance

SIDE-BY-SIDE COMPARISON OF POWER CONSUMPTION

Customer	Cement Company
Belt Spec	ST-1400 900mmx6.0mmx5.0mm
Length of Conveyor	7,741m
Lift	140.4 (declined)
Carried Material	Limestone (1,500t/hr)
Belt Speed	200m/min.
Drive System	300kW x2



- **Environmentally Friendly**
Less energy consumption enables you to reduce CO₂ emission.
- **Economically Efficient**
Substantial savings in power consumption when continuously operated. Such savings in power consumption can yield additional returns to the plant.
- **Downsizing Motors and Pulleys**
Belt strength may be decreased by 20%, which could allow customers to design smaller motors when installing a new conveyor.

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CLEATED CONVEYOR BELTS

YOKOHAMA's cleated conveyor belts are the best solutions for carrying coal and mineral ore, also powdery materials such as sand, fine coal and grain.

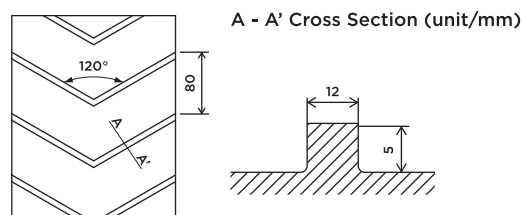
FEATURES AND BENEFITS:

- **Capable of Carrying Materials at Inclined Applications**
Capable of carrying loose materials at angle of 17-18 degree. and bagged materials at 30-35 degree.
- **Seamless Bonding between Cleats and Belt Surface Ensures Durability**

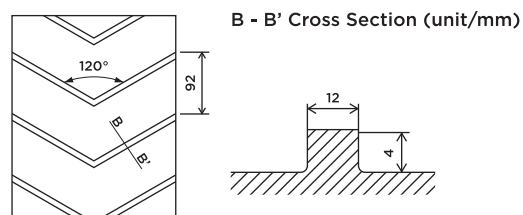
BELT SELECTION:

Construction of the cleats varies depending on the belt width.

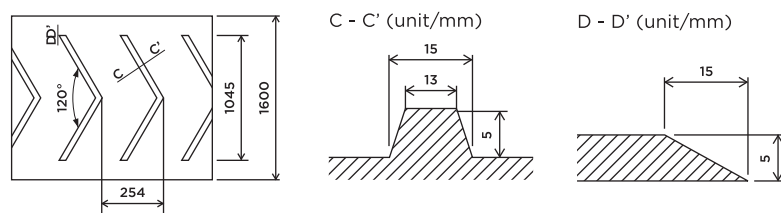
Less than 400mm



More than 400mm and less than 900mm



More than 1050mm and less than 1600mm



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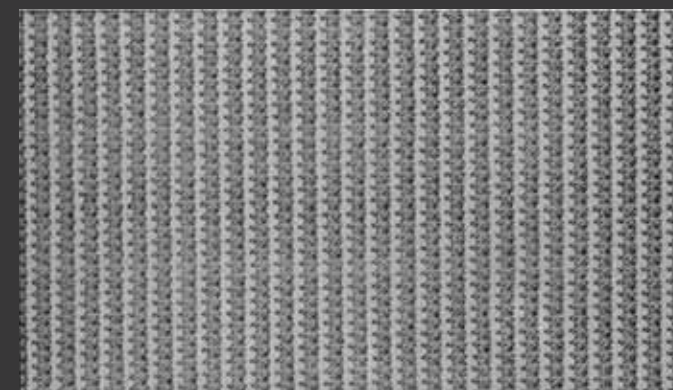
ROUGH TOP CONVEYOR BELTS

Ideal for carrying goods which are fragile and easily deformed such as boxes, bags, automotive parts.

FEATURES AND BENEFITS:

- **Prevent Goods from Deformation**
The cushioning effect of the surface make these belts ideal for carrying goods which are fragile and easily deformed.
- **Capable of Carrying Goods at Angles of 20-30 Degree**

ROUGH TOP CONVEYOR BELTS SURFACE





Required Information For Ordering A New Belt

Conveyor No.					
Installed at		Outdoor, Indoor, Underground,			
Belt Width, Length		Width	mm in	Length	m ft
Center Distance		m ft			
Lift or Drop		Up	Down	m ft	
Drive	Type	Ordinary, Labyrinth, Other			
	Trough Angle	Carrying	°x	sets	Return °x sets
	Spacing	Carrying	m ft	Return	m ft
Inclination	Up	Down			
	Speed	m/min.		ft/min.	
Capacity	Max	t/h	Av.	t/h	
	Tripper	Yes	set (Height $\frac{m}{ft}$)		NO
Material Carried	Kinds	Bulk density			
	Lump Size	Max. Lump size		mm in	
	Temperature				
	Other Characteristic				
Chuting Condition	Total Fall Height	m ft		Angle	
	Direct Fall Height	m		ft	
Chuting Condition	Cushion Roller	Yes	Spacing	m ft	NO
	Type	Screw, Gravity, Power (Winch) Type			
Chuting Condition	Location	Just behind drive, Tail, Head, Middle			
	Stroke	m		Weight kg	
Drive	Type	Single, Dual, Multi, Other			
	Location	Hand, Near head, Tail, Near tail, Middle, Other			
	Wrapping	180° 200° 210° 220° 230° 240° 360° 400° 420° 440°			
	Pulley Surface	Bare, Rubber Lagged			
	Arrangement of Motor	First	kW or HP X	set	
		Second	kW or HP X	set	
		Tail	kW or HP X	set	
Middle	kW or HP X	set			
Required spec.	Kind of Carcass				
	Cover Thickness				
Required spec.	Strength				
	Reinforcement				
Conveyor Profile		hours/day days/year			

Required Information For Replacing A Belt

Conveyor No.				Type	Single, Dual, Multi-drive, Other	
Cover Rubber		Brand:			Location	Head, Near head, Trail, Near tail, Middle, Other
Kind Of Carcass. Strength	Width	mm in	X	Top Cover Ply X		mm in
	Bottom Cover	mm in	X		mm in	X
Size	Width	mm in	X	Top Cover Ply X	mm in	X
	Bottom Cover	mm in	X		mm in	X
Reinforcement	Breaker					
Name of Manufacturer						
Information of Existing Belt	Belt Length					m ft
	Life					
	Total Tonnage					
	State of Damage					
	Improvement to be Required					
Material Carried	Kind	Bulk density		Tripper	Yes	set (Height $\frac{m}{ft}$)
	Lump Size	Max. Lump Size			NO	
	Temperature					
	Other Characteristic					
Chuting Condition	Total Fall Height	m ft		Angle		
	Direct Fall Height	m		ft		
	Cushion Idler	Yes	Spacing	m ft		
Take-up	Type					
	Location	Just behind drive, Tail, Head, Middle				
Pulley Diameter	Stroke	m ft		Weight kg lbs		
	Head, Drive					
Pulley Diameter	Tail					
	Take-up					
Pulley Diameter	Snub					
	Bend					
Idler	Type	Ordinary, Labyrinth, Other				
	Trough Angle	Carrying	x	Sets,	Return	x Sets
	Spacing	Carrying	mm ft	Return	mm ft	
Conveyor Profile						

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SAFETY & HANDLING INFORMATION



TRANSPORTATION:

Do not roll the belt to move it, as this may result in someone getting crushed by the belt.

Beware of open flames. Do not store near any heating equipment or devices that emit electrical sparks. Avoid steam, oil, and chemicals.

When hoisting the belt, use lifting gear corresponding to the weight of the belt.

Store in a flat, dry place not exposed to direct sunlight, wind, or rain. The temperature of the storage area should be -10 to 40°C.

Use chocks to prevent the belt from rolling and secure it from toppling over.

Do not store or transport the belt on its side, in a leaning position, or any other state that subjects the belt to abnormal stress.

When lifting the belt, use the protective cover and keep the belt level to avoid damaging the edges of the belt.

DAILY CHECKS

CHECK ITEM	REMEDY
Belt Worn or Damaged	Repair or Replace
Splicing Portion Damaged or Coming Apart	Repair
Idlers Not Rotating Properly	Adjust or Replace
Cake and Deposit Around Pulleys and Idlers	Remove Matter
Take-up Movement	Adjust
Function of Cleaner Skirt	Adjust
Chuting Condition	Adjust
Trapped Material	Remove

DURING OPERATION:

Install a protective barrier and cover to reduce the risk of someone getting squeezed or caught between the belt and conveyor.

Stay outside the protective barrier.

Avoid wearing neckties, strings, ribbons, or any other similar accessories that may get caught up and draw the wearer into the equipment.

Do not ride on the belt or place a hand or any other part of the body on the belt.

Do not place on the belt cigarette ends or anything else that can cause fire.

Confirm the location of switchboards, emergency stop pull-wires, and emergency exits before starting the belt.

Do not exceed the maximum carrying capacity of the belt. Exceeding the maximum load may cause operational difficulties and/or damage.

Place loads properly to avoid spillage. Install appropriate devices to maintain correct operation. Examples of such devices include anti-reversing devices, belt off-center detectors, and emergency stop devices.

If there are any abnormal noises, the belt runs off-center, or any other such problems, stop operation immediately and check the equipment.

Do not walk under the conveyor or take up portion. Do not clean up caking, deposits, or spills during operation.



SHUTTING DOWN:

To avoid errors, switch off the conveyor and hang an "OFF" tag on the switch.

Do not walk or ride on the belt unless it is necessary.

Do not stop the belt while high-temperature loads are being conveyed, as this can cause fires.

Before restarting the conveyor, check the whole line to ensure that it is safe to do so.

When getting on the belt for repair work, do not wear spikes or any other footwear that can damage the belt.

Make sure that the belt is not subjected to oil, chemicals, sparks, heavy objects, or anything else that can have an adverse effect on the belt.

BELT SPLICING:

Open flames are strictly prohibited at the splicing site.

While making a splice, avoid direct sunlight, moisture, and dust which can lower adhesion.

Make sure that there is good ventilation while using rubber cement and solvents, whose fumes can be hazardous to health.

Do not leave rubber cement and solvents at the splicing site, as they may cause fire.

Splicing work should be done in accordance with the method and procedure specified by the manufacturer.

Use the splicing kit specified by the belt manufacturer, and observe the specified shelf life.

PRECAUTIONS RELATED TO PROPERTIES:

Use the belt within the scope of the application for which it is designed (cover rubber, tensile strength, safety factor, material, etc.).

In the case of heat resistant belts, do not use the belt to carry material that exceeds the permissible temperature described in the catalog. Heat-resistant belts are not fire-resistant.

Fire-resistance properties are based on various fire safety standards; there is a possibility that the belt may burn under certain conditions.

Do not use an ordinary belt for special purposes such as heat resistance, oil resistance, or fire resistance.

Use a food handling belt for loose food.