Continental
The Future in Motion

Pulley Strip Lagging Portfolio Overview

One Source, Many Solutions

www.continental-industry.com

Continental Conveying Solutions

We are the leading expert for conveyor belt solutions offering customers worldwide the most complete and advanced product, technology, and service portfolio for industry and mining applications. We support our customers, partners, and distributors with a growing range of value-added services along the entire lifetime of a conveyor belt operation, from planning and commissioning, to technical advice, training, digital monitoring, and on-site maintenance. Our cost-effective, sustainable, safe and innovative conveying solutions reduce down times through state of the art condition monitoring and predictive maintenance practices.

We support mining, construction and plant engineering projects around the world as a development partner.

Customers benefit from our experience of more than 150 years in high-performance conveyor belts. A network of 1,300 experienced service technicians covers key regions including Africa, Asia, Australia, Europe, North America, and Latin America. With this unique expertise and global footprint, Continental is close to its customers providing not only high-quality, long-life products, but also comprehensive support and service — tailored to customers' specific needs and requirements.

elastotec
ENGINEERED TO PERFORM

Continental

Continental's and Elastotec's global partnership delivers comprehensive expertise in offering product and performance solutions to our valued customers. A mutually shared vision focuses on providing solutions that result in optimized conveyor performance, reduced maintenance requirements, and extended conveyor system life.

Combining Continental's 150 years of developing pioneering technologies and services for sustainable, safe, and affordable conveyor solutions with Elastotec's belief that pulley lagging for all conveying industries should be designed to last as long as the mechanical components of a pulley, presents customers with application specific engineered lagging solutions. Elastotec's full range of pulley lagging products and unique support services are complimented through a dedicated and ongoing R&D program, striving to present cutting edge solutions to address ever evolving customers and application needs.

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Strip Lagging Type Overview

Rubber Lagging

Features

- Hot vulcanizing
- Cold bonding
- NAT (Natural Rubber)
- FRAS (Fire Retardant Anti Static Rubber)

Flexible and high abrasion resistant lagging to provide protection to drive and non-drive pulleys and grip for drive pulleys. Designed for medium belt tension and wet and dry applications.

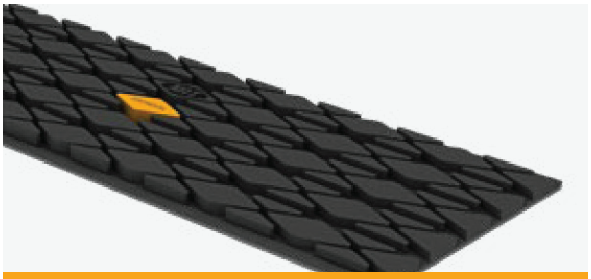
Rubber Slide Lagging

Features

- NAT (Natural Rubber)
- FRAS (Fire Retardant Anti Static Rubber)
- Oil Resistant, Extreme and EPDM

Fast changeable lagging that can be applied on site. Easy to replace without removing pulley from conveyor. Easy installation, quick replacement for increased productivity. Recommended for mining, quarry, grain, and concrete industries. New pulleys or onsite repairs.

Crowned Diamond Rubber Lagging



Features

- Hot vulcanizing
- Cold bonding
- NAT (Natural Rubber)
- FRAS (Fire Retardant Anti Static Rubber)

Improved belt tracking in low to medium tension applications.

Hot Vulcanized Wear Indicator Rubber Lagging

Features

- Hot vulcanizing
- Cold bonding
- NAT (Natural Rubber)
- FRAS (Fire Retardant Anti Static Rubber)

Visual indication of lagging wear to help identify requirements for planned lagging replacement without having to stop the conveyor. Cold bonded or hot vulcanized.

High Tension Bending/ Extreme Rubber Lagging

Features

- Hot vulcanizing
- Cold bonding
- NAT (Natural Rubber)
- Low coefficient of friction material
- Rejects carry back and material build-up
- Performs well in high wearing application (Abrasion resistant materials)
- Suitable for non-drive applications only
- Large non drive pulleys on high power belt conveyors that are in contact with the dirty side of the belt. This includes gearless drive conveyors with power ratings of up to 6MW.

Polyurethane Lagging

Features

- Pulleys where high levels of carry back are present.
- Pulleys in locations that are difficult to access and where pulley change out is difficult.
- Critical locations where unplanned conveyor downtime due to lagging failure must be eliminated.
- Conveyors that operate across a wide temperature range.
- Pulleys subjected to high localized shear forces due to uneven belt profile caused by wear of the belt top cover.

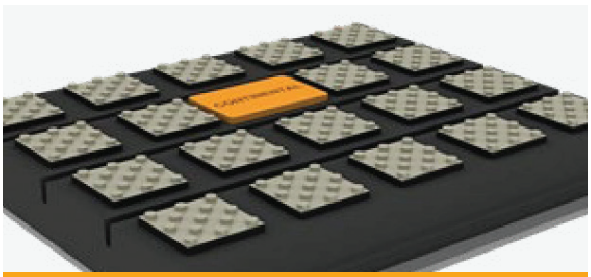
Oil-Resistant Rubber & Ceramic Lagging

Features

- Hot vulcanizing
- Cold bonding
- FRAS (Fire Retardant Anti Static Rubber)

Longer service life when handling oily materials such as bitumen, tar, sand, and various grains.

Ceramic Slide Lagging

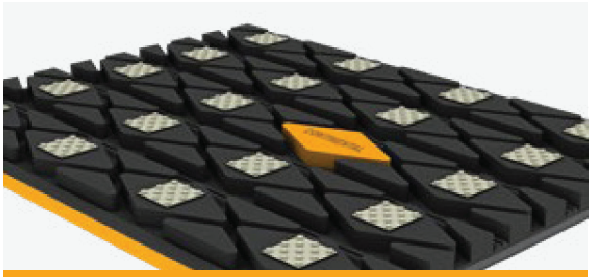


Features

- NAT (Natural Rubber)
- FRAS (Fire Retardant Anti Static Rubber)

Fast changeable lagging that can be applied on site. Easy to replace without removing pulley from conveyor. For drive pulleys with requirement for extra grip (dimple tiles). Increased resistance to wear and service life (smooth tiles). Recommended for mining, quarry, grain, and concrete industries. New pulleys or onsite repairs.

15% Ceramic Diamond Lagging



Features

- Hot vulcanizing
- Cold bonding
- NAT (Natural Rubber)
- FRAS (Fire Retardant Anti Static Rubber)

Fast changeable lagging that can be applied on site. Easy to replace without removing pulley from conveyor. For drive pulleys with requirement for extra grip (dimple tiles). Increased resistance to wear and service life (smooth tiles). Recommended for mining, quarry, grain, and concrete industries. New pulleys or onsite repairs.

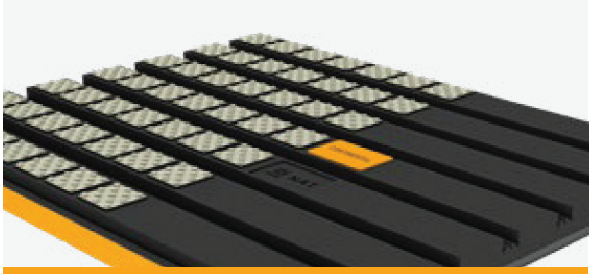
20% Ceramic Lagging

Features

- Hot vulcanizing
- Cold bonding
- NAT (Natural Rubber)
- FRAS (Fire Retardant Anti Static Rubber)

20% ceramic coverage for extra grip compared to rubber lagging.

38% Ceramic Medium Single Row Lagging

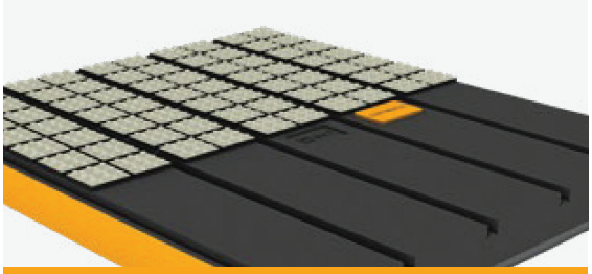


Features

- Hot vulcanizing
- Cold bonding
- NAT (Natural Rubber)
- FRAS (Fire Retardant Anti Static Rubber)

Grip increase compared to rubber lagging for drive pulleys (dimple tiles). Increased resistance to wear and service life (smooth tiles). 38% ceramic coverage.

80% Full Ceramic Lagging



Features

- Hot vulcanizing
- Cold bonding
- NAT (Natural Rubber)
- FRAS (Fire Retardant Anti Static Rubber)

Maximum ceramic coverage to minimize risk of physical damage on rubber surface area.

Lagging Types Overview

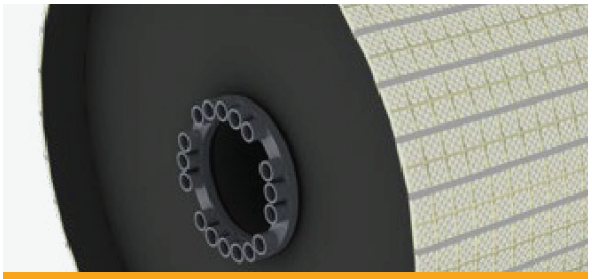
Extreme Ceramic Lagging

Features

- Hot vulcanizing
- NAT (Natural Rubber)
- FRAS (Fire Retardant Anti Static Rubber)

Increased flexibility and toughness for high tension applications. Heavy duty tiles, higher tile adhesion strength, and increased dimple size. Hot vulcanized application. New or refurbished pulleys.

Direct Bond Ceramic Lagging



Features

- Two part epoxy
- Highest level of ceramic coverage for maximum wear resistance.

Maintenance free wear resistance surface. Increased traction with high strength bonding system for drive pulleys and smooth low friction surface for non-drive pulleys. New or refurbished pulleys.

Imagine the consequences of making the wrong lagging selection that results in the lagging not lasting as long as the bearings and locking elements.

Additional Information

FRAS (Fire Retardant Anti Static Rubber)

FRAS (Fire Retardant Anti Static Rubber) Lagging has passed MDG3608 and MSHA testing requirements. Used for applications where there is a risk of fire and/or explosion as a safety precaution. Underground coal mines, power stations, grain handling, and sugar terminals. Identified with red colored logos.

Bonding System

› **Cold bonding:** Emergency repair on site or when there's no access to an autoclave.
› **Hot vulcanized:** Applications when there's a requirement for zero risk of lagging debonding from pulley shell. New and refurbished pulleys.

Lagging Design	Ceramic Coverage %	Selection Criteria
Diamond Ceramic Lagging	15	To replace rubber lagging on drives where slippage is a problem and the end user wants to avoid the expense of a ceramic lagging with higher ceramic coverage.
Checkered Pattern Ceramic Lagging	20	A lower cost alternative to medium ceramic lagging – usually used on non-drive pulleys for increased wear and improved belt tracking where the end user is concerned about cost.
Medium Ceramic Lagging	38	Medium ceramic lagging is the standard design most commonly used on drive and non-drive pulleys.
Full Ceramic Lagging	80	Full ceramic lagging is used to reduce the shear forces between the lagging tiles and the bottom belt cover. This is done to protect both the bottom belt cover and the lagging from damage. Full ceramic lagging is recommended to be used on drive pulleys in the following conditions: › where T1/T2 ratios >1.75 exist › for steel cord belts
Extreme Full Ceramic Lagging (tile thickness increased from 6 to 12mm)	80	Extreme full ceramic lagging is used in applications where full ceramic lagging has been used and carry back is present and is damaging the tiles. Also used on large high tension (> 1,000 kN/m) drive pulleys where service life of > 5 years is required.
Direct Bond Ceramic Lagging (DBCL)	100	High performance ceramic lagging for drive and non-drive pulleys. Always carry out lagging analysis for drive pulleys as DBCL is rigid and is more likely to cause bottom belt cover wear. Not recommended for use on drive pulleys with high tension fabric belts due to risk of bottom belt cover wear. For non-drive pulleys do not use with applications handling wet and/or sticky materials due to buildup that can damage the belt and cause belt tracking problems.
Ceramic Slide Lagging	38	Slide lagging is used where lagging replacement on site is required and/or where access to the pulley for lagging replacement is restricted. The most common application for ceramic slide lagging is drive pulleys on bucket elevators.

Important Notes

1. Hot vulcanized bonding is preferred in all applications where service life is required to exceed that of the bearings and locking elements.
2. For drive and high tension bend pulleys, it is recommended that an engineering analysis is done via the 'LaggingSelect' program to ensure the correct lagging is selected for the application. This can help to prevent slip, eliminate bottom cover wear, extend splice life, prevent steel cord issues, and improve the overall health and performance of the conveyor system.
3. For applications that operate in any kind of extreme conditions (i.e. extreme weather, high tensions, powerful drives, critical pulleys etc.), options such as extreme ceramic lagging or extreme rubber lagging should be considered.
4. Ceramic lagging is not the solution for all wear life issues and in some applications is not the best performing lagging. Contact Continental for assistance with specific lagging performance problems.

Lagging Comparison

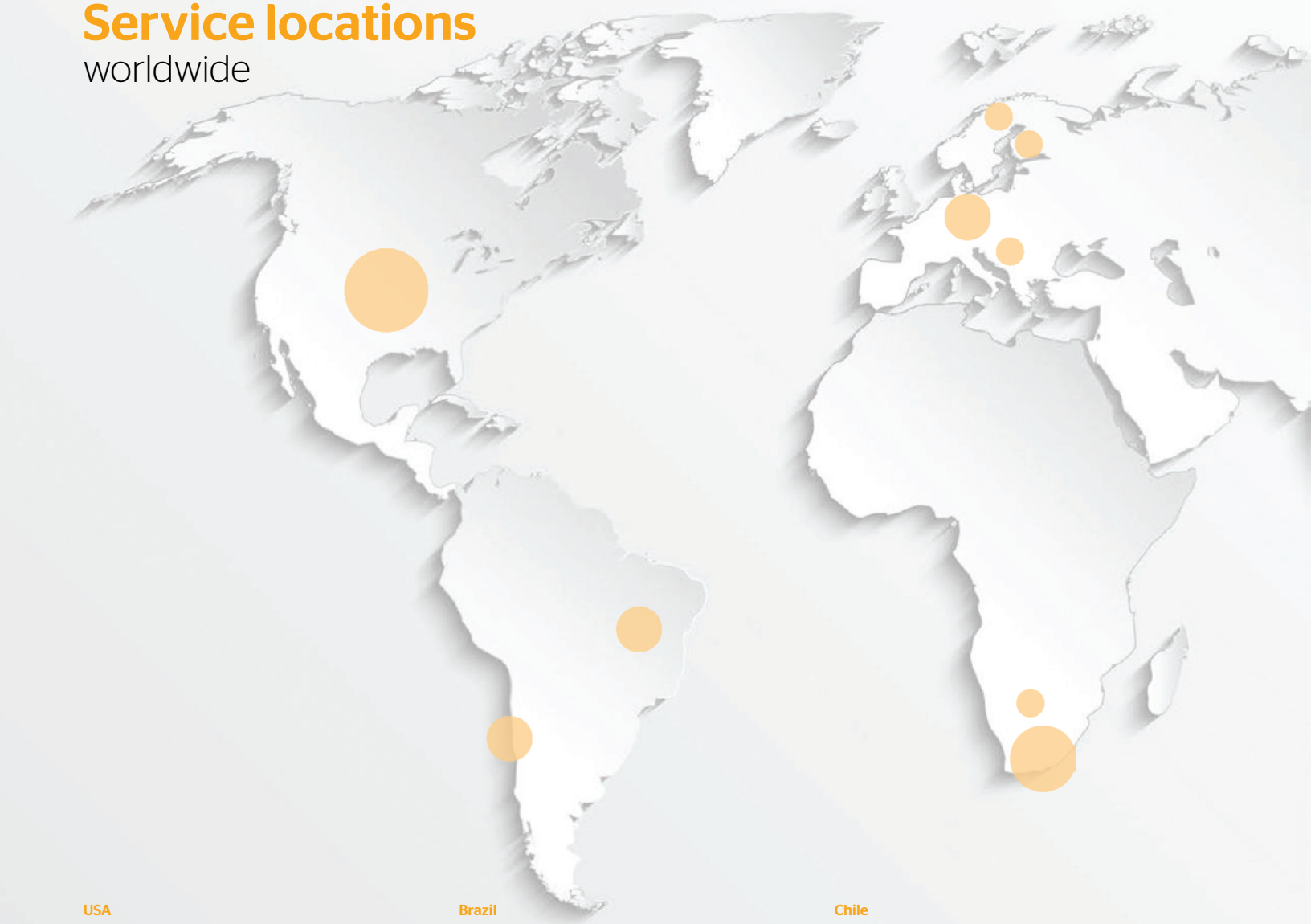
Parameter	Cold Bond	Hot Vulcanized	Direct Bond
Bond Failure Lagging to Pulley	Minimal Rubber Tear	100% Rubber Tear	100% Epoxy Tear
Adhesion strength to Pulley	>9.0 (N/mm2)	>20.0 (N/mm2)	>20.0 (MPa)
Adhesion strength to Ceramic Tile	>6.0 (MPa)	>6.0 (MPa)	>20.0 (MPa)
On site application	✓	✗	✗
Factory application	✓	✓	✓
Stable rubber hardness	✓	✓	N/A
Joints	Cold Bond Adhesive	Full Hot Vulcanized Seal	N/A
Curing	Room Temp	130-1400C	Room Temp
Bonding Pressure	Rubber Hammer	Autoclave 400-600KPa	N/A
Bonding Pressure Duration	Seconds	4 hours	N/A
Belt Cover Wear	✗	✗	Yes for Drive Pulleys
Time required for Lagging (hours)	8	12	48
Factory Application - Drive Pulleys	Yes	Preferred	Yes, may cause belt cover wear
Factory Application - Non-Drive Pulleys	Yes	Preferred	Yes
Field Application - Drive Pulleys	Yes	✗	✗
Field Application - Non-Drive Pulleys	Yes	✗	✗

N/A = Not Applicable

Rubber backed ceramic lagging thickness to minimize slippage and belt cover wear

12mm Low Belt Tensions
15mm Medium Belt Tensions
20mm High Belt Tensions

Service locations
worldwide



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