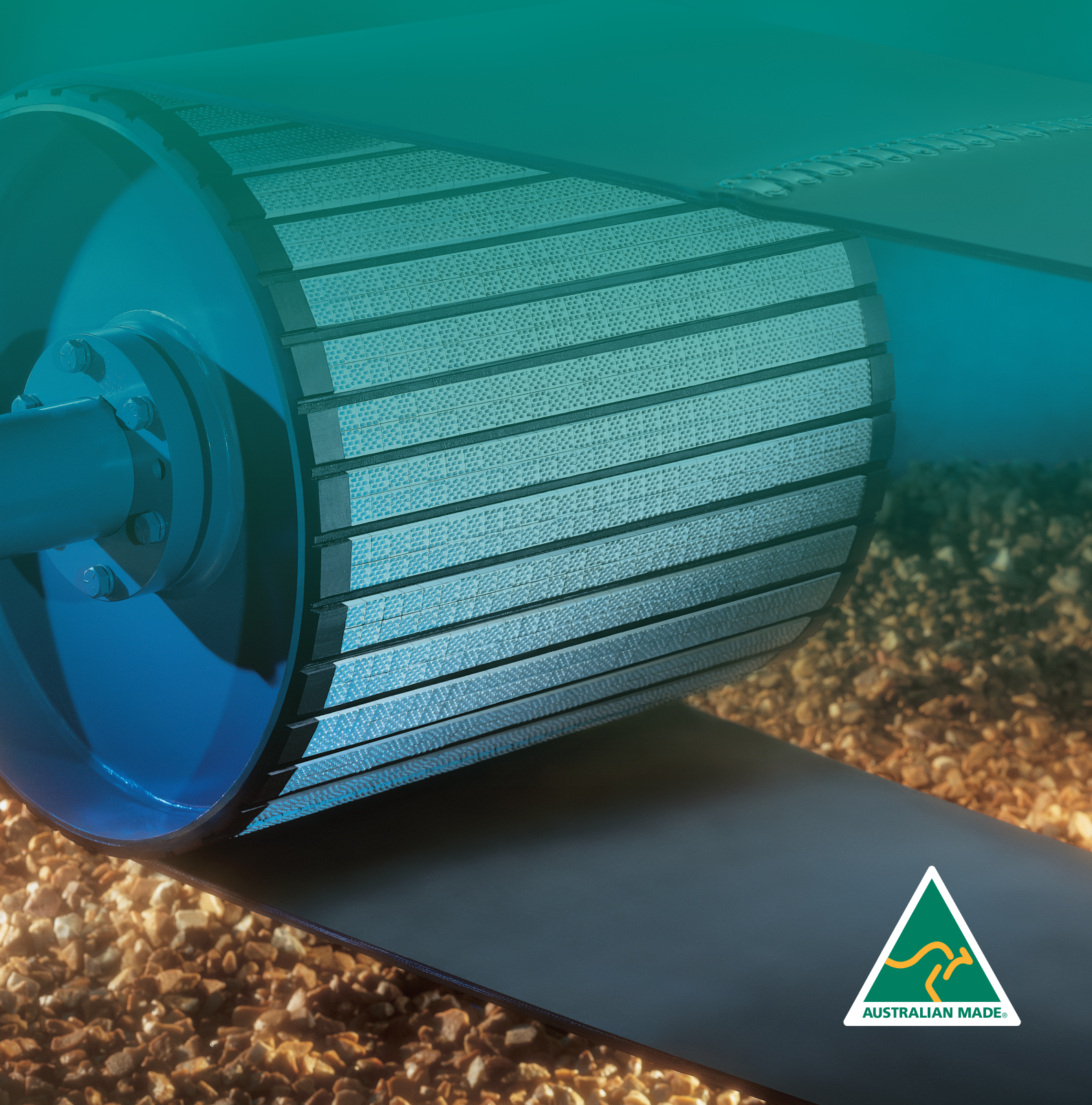




*Partners in Productivity*

# FLEX-LAG<sup>®</sup> Pulley Lagging







# Our Story

Flexco Australia has been manufacturing quality, engineered ceramic and rubber lagging for over 35 years in Sydney, Australia as well as exporting to 13 Flexco subsidiaries around the world.

We are proud of our Australian made lagging not only for the jobs it provides to Australians but because we have the ability to trace every single piece of lagging back to its manufacture date for the best quality assurance possible. On top of this, we oversee the process every single day to offer you the most consistent product possible.



# WHERE TO BEGIN CHOOSING THE RIGHT LAGGING FOR YOUR APPLICATION

In the last 40 years, the market has become over-saturated with lagging options; and it's become increasingly hard to select the right product for your application with confidence. So, we've broken it down for you by outlining the most important considerations.

## 1. Consider your conveyor dynamics

- What is your belt rating? (kN/m)
- Belt thickness?
- Pulley diameter?

## 2. Pulley configuration

- Where on the conveyor is the pulley positioned?  
Drive, head, tail or bend?

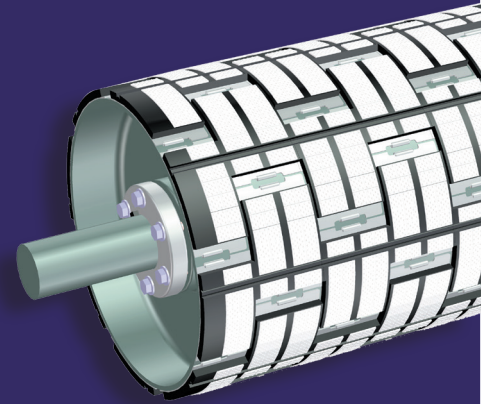
## 3. Environment

- Extreme heat or cold can effect rubber adhesion and weld-on or hot vulcanized lagging may be required

## 4. FRAS Requirements

- If the lagging is going to be used underground or in a high risk area, FRAS lagging will be required

## 5. Does your site have a specific requirements in regard to adhesion strength, tile hardness, etc?



Use the following chart to identify the best Flex-Lag® Pulley Lagging for your needs.

Criteria	Flex-Lag® Rubber			Flex-Lag® Ceramic			Flex-Lag® Weld-On™	
	Light Duty	Plain	Diamond	Diamond Pattern	Medium Ceramic	Full Ceramic	Rubber Diamond	Full Ceramic
Thickness Range Available*	7.5 mm	10 – 25 mm	10 – 30 mm	12 – 30mm	12 – 30 mm	12 – 30mm	15 mm	15 mm
Belt Width*	Any Width	Any Width	Any Width	Any Width	450 – 3000 mm	450 – 3200 mm	450 – 3200 mm	450 – 3200 mm
Minimum Pulley Diameter**	50 mm	300 mm	300 mm	300 mm	300 mm	300 mm	400 mm	400 mm
Dry Friction	Very Good	Excellent	Very Good	Very Good	Excellent	Excellent	Very Good	Excellent
Wet Friction	Average	Average	Good	Very Good	Excellent	Excellent	Good	Excellent
Wet/Muddy Friction	—	Average	Very Good	Very Good	Very Good	Very Good	Very Good	Very Good
Wear Life	Good	Good	Good	Very Good	Excellent	Best	Good	Best
Ease of Installation	Good	Good	Good	Good	Good	Good	Best	Best
Drainage Grooves	No	Yes						
FRAS (Fire Resistant Anti-Static)	No	Available						
Rubber Compound	SBR							
Hardness (Shore A)	68 +/- 3							
Ceramic Compound	—	—	—	Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	Al <sub>2</sub> O <sub>3</sub>	—	Al <sub>2</sub> O <sub>3</sub>
Ceramic Coverage	—	—	—	15%	39%	80%	—	74%
Can be used in an autoclave (with application of uncured rubber)	Yes	Yes	Yes	Yes	Yes	Yes	No	No
Operating Temperature	-15° – 85° C							
COF Values	Ask Your Local Sales Representative							

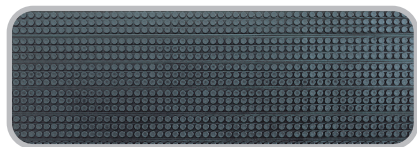
\* Additional thicknesses and widths available as special orders. For weld-on lagging, thickness includes the backing plate.

\*\* Minimum pulley diameters are based on 10-12mm lagging thicknesses.

# FLEX-LAG® PULLEY LAGGING

## Light-Duty Rubber Lagging

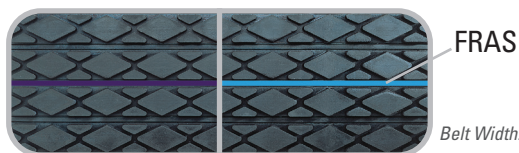
- Specially designed for pulleys with diameters as small as 50 mm.
- Moisture is channeled between small raised buttons that support and grip the belt and deliver superior traction.
- Available in SBR.
- Can be made in rolls up to 75m long, dependent on lagging thickness.



Belt Width: Any Width

## Diamond Pattern Rubber Lagging

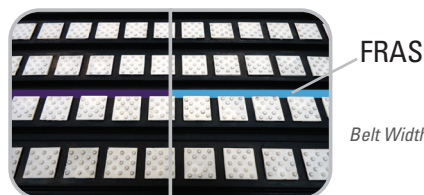
- Diamond pattern features a bidirectional design for superior water-shedding characteristics.
- Horizontal grooves provide a second method to disperse water and debris off the lagging and prevent hydroplaning.
- Performs well in both dry and wet applications.
- Available with FRAS approved rubber, marked in blue for easy identification on site.
- Available in rolls up to 75m.



Belt Width: Any Width

## Medium Ceramic Lagging

- 39% tile coverage.
- Ceramic tiles increase coefficient of friction between the belt and drive pulley in wet or variable conditions.
- Constructed from individual ceramic tiles molded into a high-durometer rubber for excellent abrasion resistance.
- Molded ceramic buttons grip the belt's underside for positive traction.
- Excellent friction for mid-range tension belts.
- Available with FRAS approved rubber, marked in blue for easy identification on site.
- Smooth ceramic available on demand. Also available in 40m rolls.



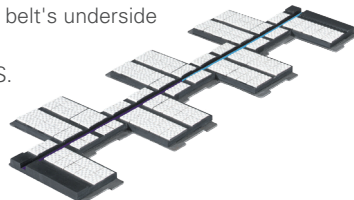
Belt Width: from 450 - 3000 mm

## Weld-On Ceramic Lagging

- 74% tile coverage.
- Weld-On design allows for quick, in-situ installation.
- Gear-tooth layout protects cleaners on pulley from experiencing "chatter" and premature wear.
- Constructed from hundreds of individual ceramic tiles molded into a durable rubber backing.
- Most consistent performance in dry, wet or muddy applications.
- Molded ceramic buttons grip the belt's underside for positive traction.
- Also available in rubber and FRAS.

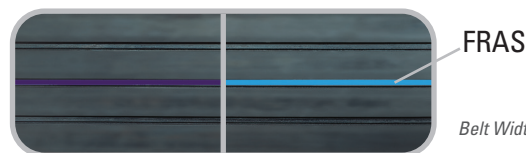
Minimum Pulley Diameter: 400 mm

Belt Width: from 450 - 1800 mm



## Plain Pattern Rubber Lagging

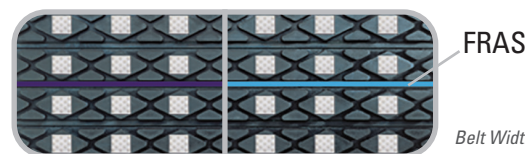
- Helps prevent belt slippage in dry environments.
- Provides larger surface contact area relative to other patterned lagging.
- Horizontal grooves channel water and debris while providing a better dynamic interaction with the belt compared to sheet lagging.
- Available with FRAS approved rubber, marked in blue for easy identification on site.



Belt Width: Any Width

## Diamond Pattern Ceramic Lagging

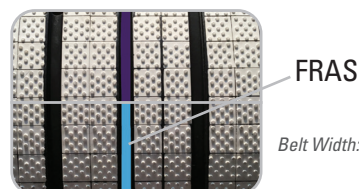
- 15% tile coverage.
- Large ceramic tile is molded into the diamond section, providing an increased coefficient of friction vs. Diamond-Pattern Rubber.
- Also features a bidirectional design for superior water-shedding characteristics.
- Uses the advantages of a ceramic product at a more affordable cost in light or medium duty applications.
- Available with FRAS approved rubber, marked in blue for easy identification on site.



Belt Width: Any Width

## Full Ceramic Lagging

- 80% tile coverage.
- Ceramic tiles increase coefficient of friction between the belt and drive pulley in wet or variable conditions.
- Constructed from hundreds of individual ceramic tiles molded into a durable rubber backing with a higher coverage than Medium Ceramic for best-in-class abrasion resistance.
- Molded ceramic buttons grip the belt's underside for positive traction.
- Best for high-tension belts.
- Available with FRAS approved rubber, marked in blue for easy identification on site.
- Smooth ceramic available on demand.



Belt Width: from 450 - 3000 mm



# WHERE TO BEGIN CHOOSING THE RIGHT LAGGING FOR YOUR APPLICATION

## Bonding Methods

At Flexco, we offer a wide variety of bonding methods. All have different advantages depending on what is most important for your operation, we've broken it down below to make it easy for you to choose.

Adhesion Type	Cold Bond	Hot Vulcanised	CN Lined Bonding	Weld-On
Method	The cold bonding method requires the lagging strips to be bonded directly to the steel pulley shell by using a primer, rubber based adhesives and an activator chemical.	This process involves heat, pressure and time to cure uncured rubber to the pulley shell. This process is carried out in an autoclave.	Another cold bonding method utilising a 1.5mm CN filler to line the entire pulley face. The CN filler adhesion is the perfect substrate for increased adhesion and sealing of joins and edges.	The rubber or ceramic is molded to a steel plate and then welded to the pulley, alternatively; tracks are welded to the pulley for the metal backed strips to slide in.
Lagging Type	Suitable for natural and FRAS rubber as well as ceramic lagging			
Adhesion Strength	12-15N/mm	18-20N/mm	14-20N/mm	20N/mm
Installation Time (based on a pulley with diameter of 800mm and 1950mm face)	4 hours	14 hours	5.5 hours	5 hours
Installation Location	Workshop, onsite or in-situ	Workshop only	Workshop, onsite or in-situ	Workshop or onsite

## FLEX-LAG® ADHESIVES

Flex-Lag Adhesives are a two-part cold bonding system designed specifically for use with rubber-to-rubber and rubber-to-metal adhesion. Flex-Lag Adhesives are also produced without using chlorinated hydrocarbons (CFCs). An excellent bond is achieved while using the minimal amount of cement and primer thanks to high adhesion during installation and after curing.

### Specifications and Guidelines

- **Temperature Rating**  
Up to 80° C (176° F) with spikes to 100° C (212° F)
- **Primary Compound**  
Polychloroprene rubber
- **Pot Life**  
3-5 hours at 22° C (72° F)
- **Shelf Life**  
18 months at 22° C (72° F)  
production date on can/bottle
- **Primary Diluent**  
Ethyl acetate
- **Color**  
Black





## WHO TO TRUST

At Flexco, we're honest about our test results and share them all; and we only use the best testing standards. But, don't take our word for it – ask us for a copy of our most recent test results at anytime!

### Rubber Lagging

Test requirements	Natural	FRAS	Test Standard
Hardness, Shore "A" Duro	68 +3	68 +3	ATSM D2240
Specific Gravity g/cm <sup>3</sup>	1.13	1.29	D297
Tensile Strength MPa	18.7	19.3	D412
Elongation @ Break %	540	645	D412
Tear Resistance, Angle, N/mm	61.1	55.4	D624-00 Die C
Abrasion Loss, mm <sup>3</sup>	64.7	184.5	AS1683.21
Adhesion Test, N/mm	>12	>12	D429

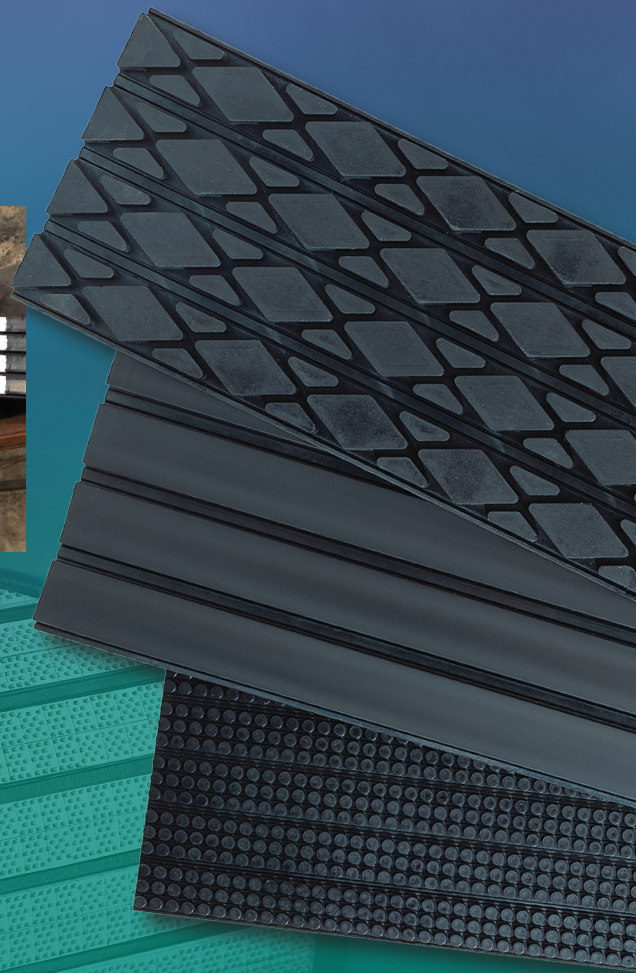
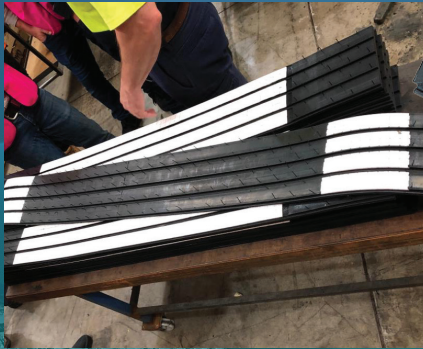
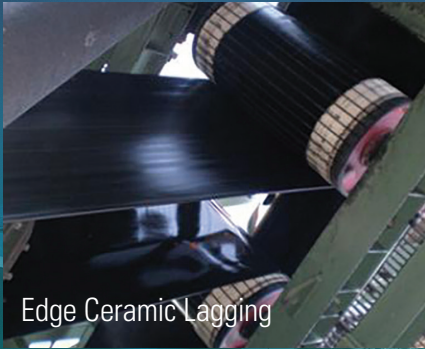
- **Rubber Hardness** – The rubber hardness is measured with a durometer on every strip. The shore "A" duro is similar to the hardness of the rubber conveyor belt covers.
- **Specific Gravity** – The mechanical property of the product to estimate the weight of a lagged pulley.
- **Tensile Strength** – The higher the tensile strength the more tolerant it is to harsher conditions and friction, specifically between the belt and the pulley without tearing.
- **Elongation** – The higher the elongation, the more flexible the rubber is. It can conform more without permanent deformation to the rubber in harsh conditions.
- **Tear Resistance** – Similar to tensile strength. The difference is it's done with intentional damage made to the sample, to see how it reacts to a situation and propagates through.
- **Adhesion Test** – Measures the bond strength between the rubber and steel.

### Flex-Lag® Ceramic Specifications and Testing

Test requirements	Result	Test Standard
Ceramic Tile Vickers Hardness	>1500	GB/T 16534
Aluminum Oxide	95%	ICP-AES
Tile to Rubber adhesion	100% Rubber Tear	Pull test
Impact resistance	0.34 J	D5420-04

- **Spectrometric Test** – Analyses the chemical composition of the tile and measures the amount of each element. The spectrometric testing is carried out to ensure all of the ceramic tiles used are made of the same chemical composition.
- **Vickers Test** – Measures the hardness of the ceramic tile. The greater the hardness, the greater the impact resistance will be, which will ensure the tiles will not chip or crack. This is important when considering the coefficient of friction between ceramic dimple tiles and the belt when the tiles encounter hard material stuck between the belt and the pulley.
- **Tile Bond Strength** – To test that the bond between the tiles and the rubber is greater than the rubber tear resistance. This will ensure the tiles will not debond and fall out; even in the harshest conditions.
- **Impact Resistance** – Ensures the tiles will not chip and crack when they come in contact with material between the belt and the pulley





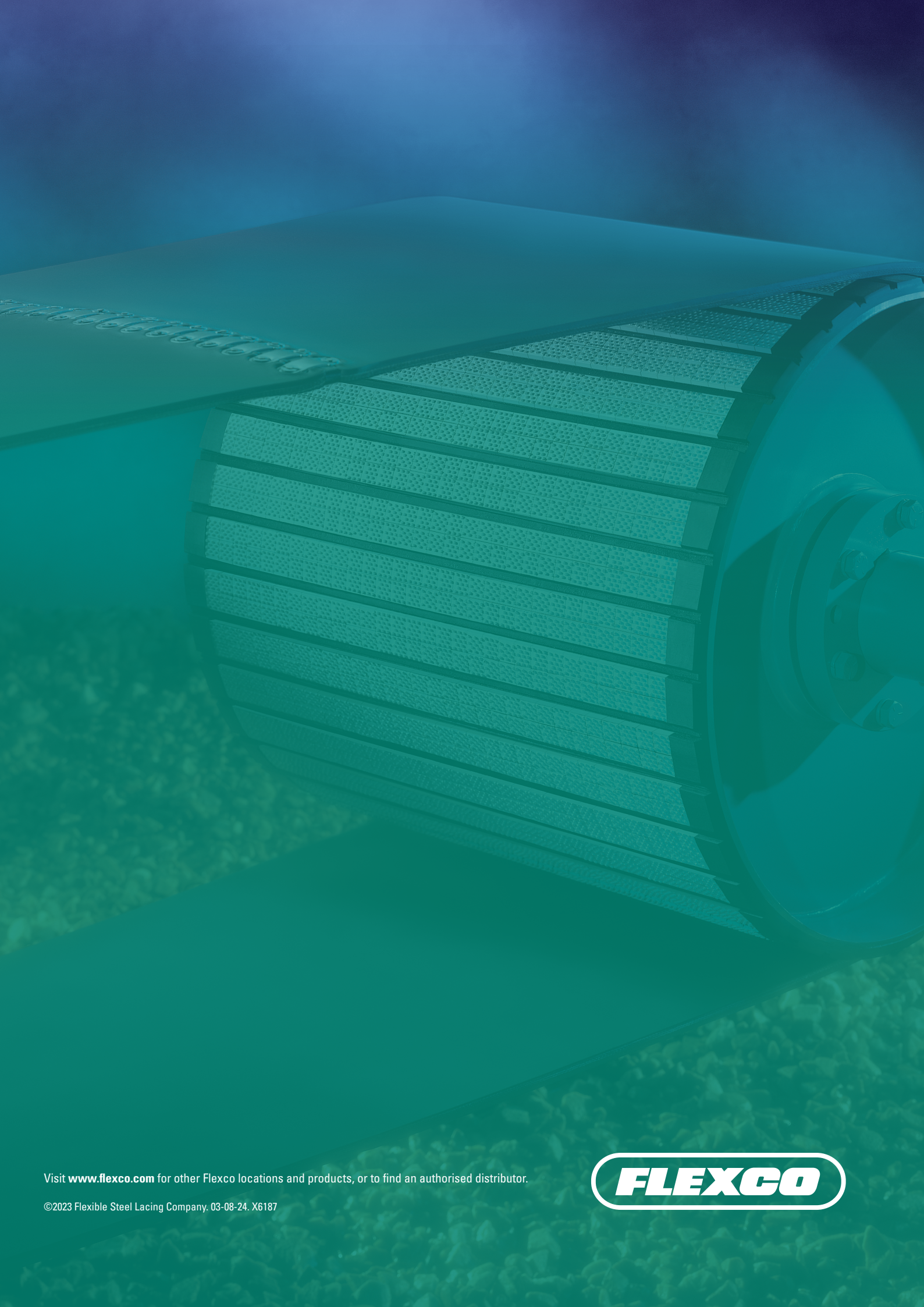
# OUR WORK

We're proud of our Australian made lagging. We produce it for Flexco subsidiaries around the world and it's been tested in the harshest global conditions. We have application profiles and a white paper written by chief engineer, Brett Devries, on the implication of lagging on conveyor design available on [www.flexlag.com](http://www.flexlag.com), access by scanning the QR code below.



If you need assistance in specifying the right lagging for your conveyor, we have a team of lagging specialists ready to help! Simply send your enquiry to [salesau@flexco.com](mailto:salesau@flexco.com) or call 02 8818 2000.





Visit [www.flexco.com](http://www.flexco.com) for other Flexco locations and products, or to find an authorised distributor.

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