Metso

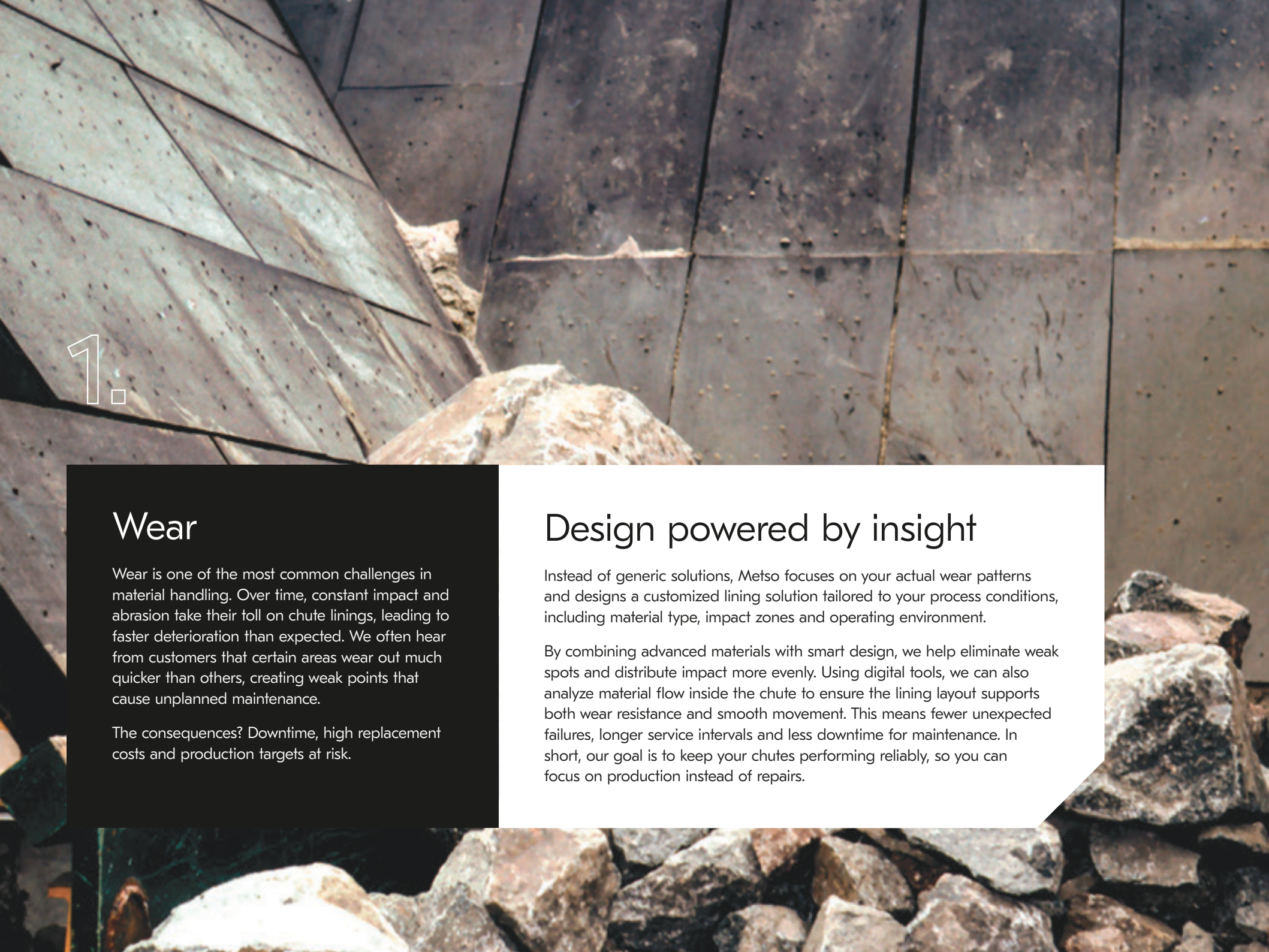
# Three common chute lining challenges and how to solve them

Expert advice to prevent downtime and improve performance

**What if?**
Your production is running smoothly, everything on track. Then, without warning, the flow starts to decline. A quick inspection reveals that material is building up in the chute, slowing throughput and causing delays, putting your production timeline at serious risk.

For many operations this is a familiar scenario. The underlying causes are often the same. Excessive wear that shortens component life, poor material flow that reduces capacity and safety risks that make maintenance more challenging. These issues don't just slow you down – they drive up costs, cause unplanned downtime and put your entire operation under pressure.

Metso's wear lining solutions for chutes are designed to change that. By improving wear resistance, optimizing material flow and enhancing safety during maintenance, we help you keep production running reliably and efficiently, day after day.



1.

## Wear

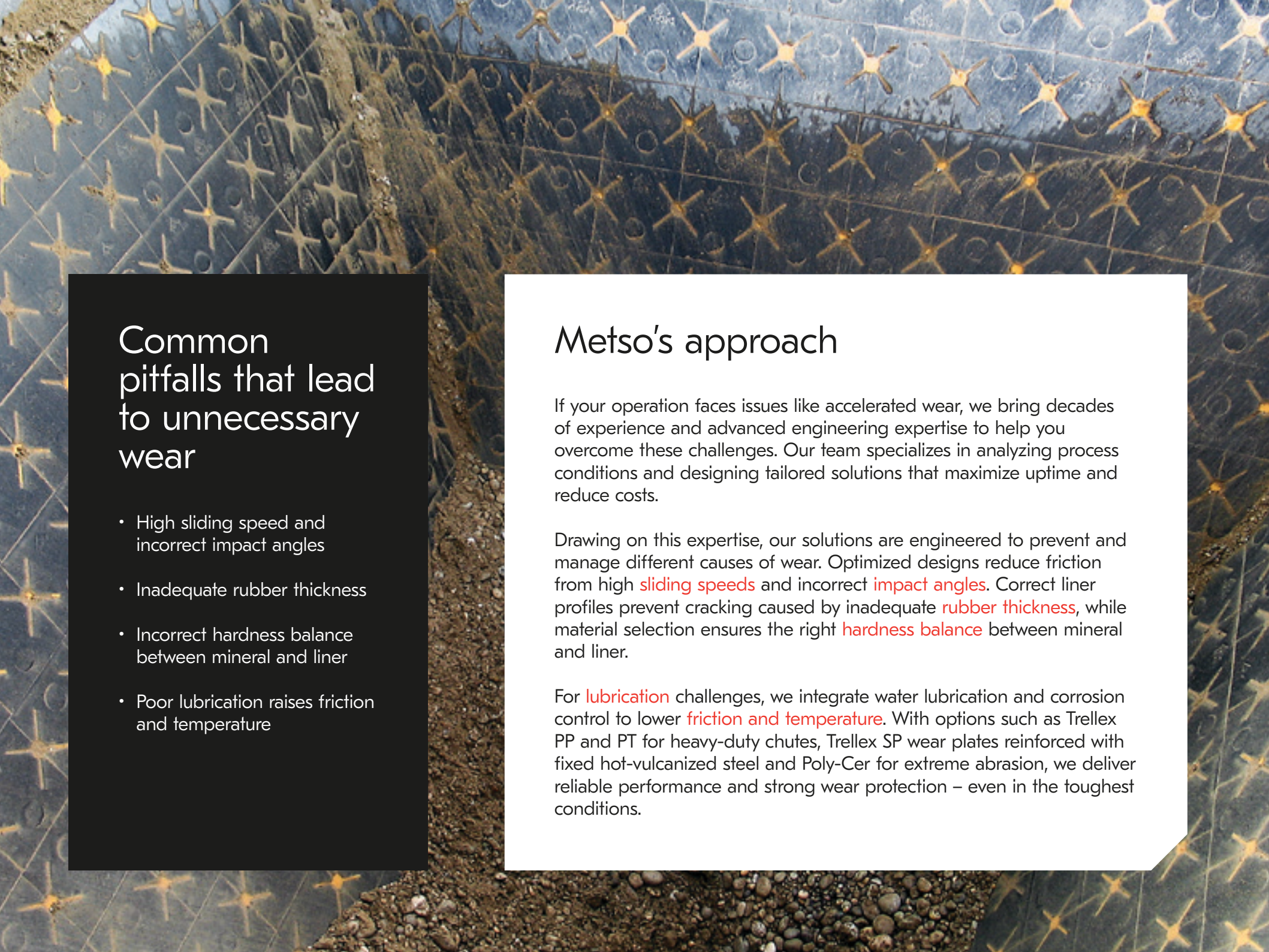
Wear is one of the most common challenges in material handling. Over time, constant impact and abrasion take their toll on chute linings, leading to faster deterioration than expected. We often hear from customers that certain areas wear out much quicker than others, creating weak points that cause unplanned maintenance.

The consequences? Downtime, high replacement costs and production targets at risk.

## Design powered by insight

Instead of generic solutions, Metso focuses on your actual wear patterns and designs a customized lining solution tailored to your process conditions, including material type, impact zones and operating environment.

By combining advanced materials with smart design, we help eliminate weak spots and distribute impact more evenly. Using digital tools, we can also analyze material flow inside the chute to ensure the lining layout supports both wear resistance and smooth movement. This means fewer unexpected failures, longer service intervals and less downtime for maintenance. In short, our goal is to keep your chutes performing reliably, so you can focus on production instead of repairs.



## Common pitfalls that lead to unnecessary wear

- High sliding speed and incorrect impact angles
- Inadequate rubber thickness
- Incorrect hardness balance between mineral and liner
- Poor lubrication raises friction and temperature

## Metso's approach

If your operation faces issues like accelerated wear, we bring decades of experience and advanced engineering expertise to help you overcome these challenges. Our team specializes in analyzing process conditions and designing tailored solutions that maximize uptime and reduce costs.

Drawing on this expertise, our solutions are engineered to prevent and manage different causes of wear. Optimized designs reduce friction from high sliding speeds and incorrect impact angles. Correct liner profiles prevent cracking caused by inadequate rubber thickness, while material selection ensures the right hardness balance between mineral and liner.

For lubrication challenges, we integrate water lubrication and corrosion control to lower friction and temperature. With options such as Trellex PP and PT for heavy-duty chutes, Trellex SP wear plates reinforced with fixed hot-vulcanized steel and Poly-Cer for extreme abrasion, we deliver reliable performance and strong wear protection – even in the toughest conditions.

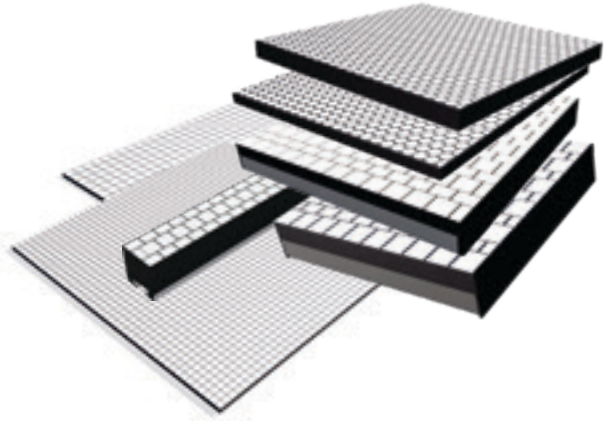
## Trellex Poly-Cer™

### Wear elements made of rubber and ceramic

- Unique design
- Excellent wear resistance
- Impact absorption

Excellent wear resistance in applications with sliding wear and high material speeds, particularly where the material has only a slight impact angle. The unique design of ceramic inserts improves wear life and impact resistance. Trellex Poly-Cer also reduces noise and vibration in the application.

Trellex Poly-Cer 10S, 20S, 38S and 70S are engineered using T60 wear rubber with built-in ceramics and enhanced with fixed, hot-vulcanized steel reinforcement. The steel backing prevents small particles from getting under the lining and guarantees secure fixing.

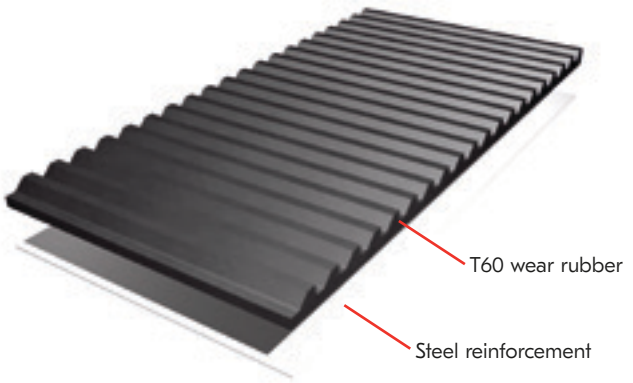


## Trellex® SP

### Excellent wear protection with serrated surface

- Handles flow with low impact angle
- High wear-resistance rubber
- Hot-vulcanized steel reinforcement

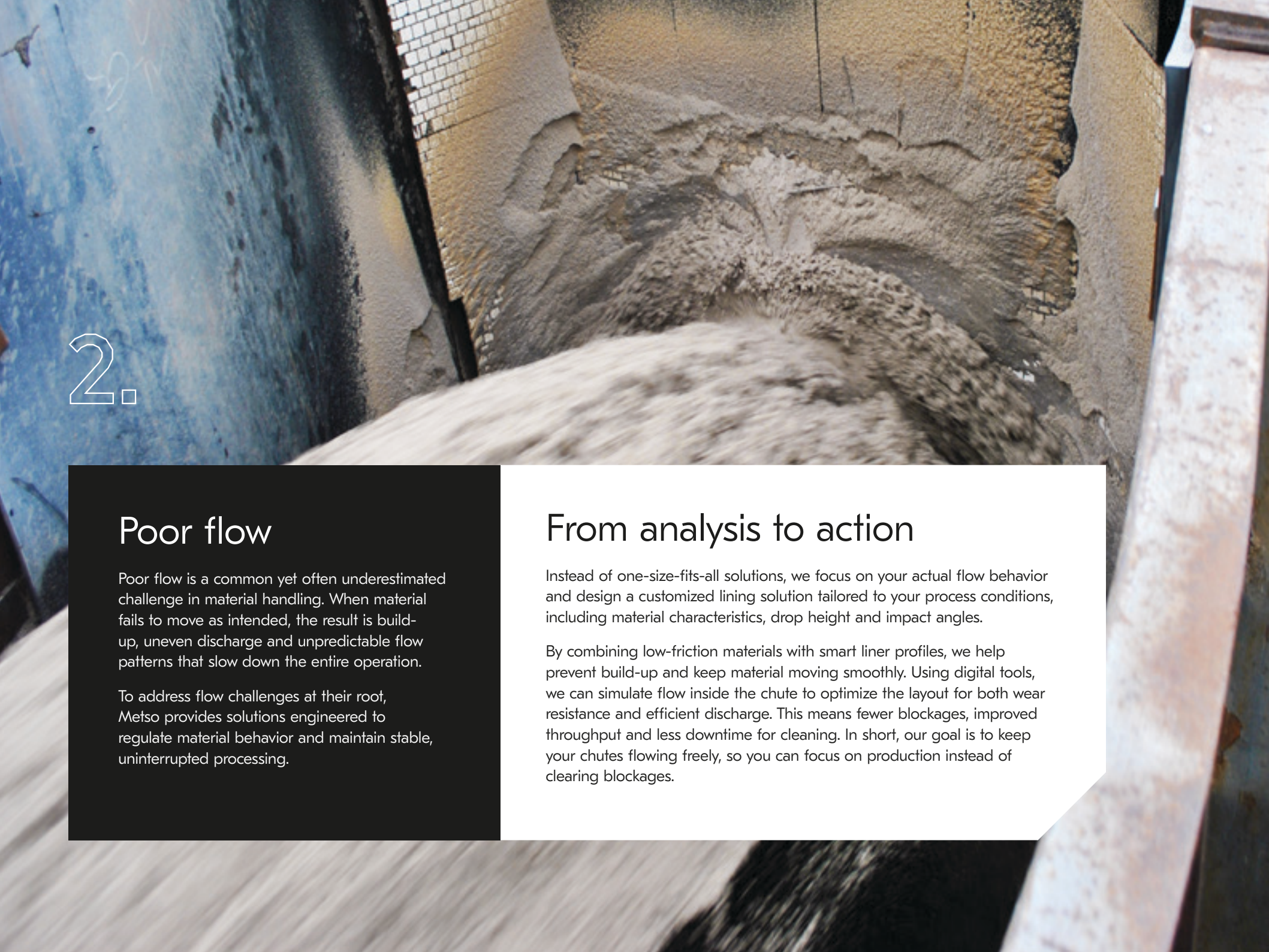
Trellex SP wear plates are manufactured from wear-resistant rubber and have a serrated surface. The serrated surface has been designed to provide optimal life for material with impact angles between 15° and 50°. Trellex SP wear plates are reinforced with fixed hot-vulcanized steel. The steel backing guarantees secure fixing so that the wear plates remain together even if the lining is exposed to extremely abrasive and sharp particles.




## Wear-life improvement

Protect your critical assets and maximize wear life with rubber and ceramic elements. Designed for wet or dry conditions, they handle a wide range of material sizes and impact angles, ensuring maximum durability and optimized production performance.

Read more about Metso wear lining solutions



2.

## Poor flow

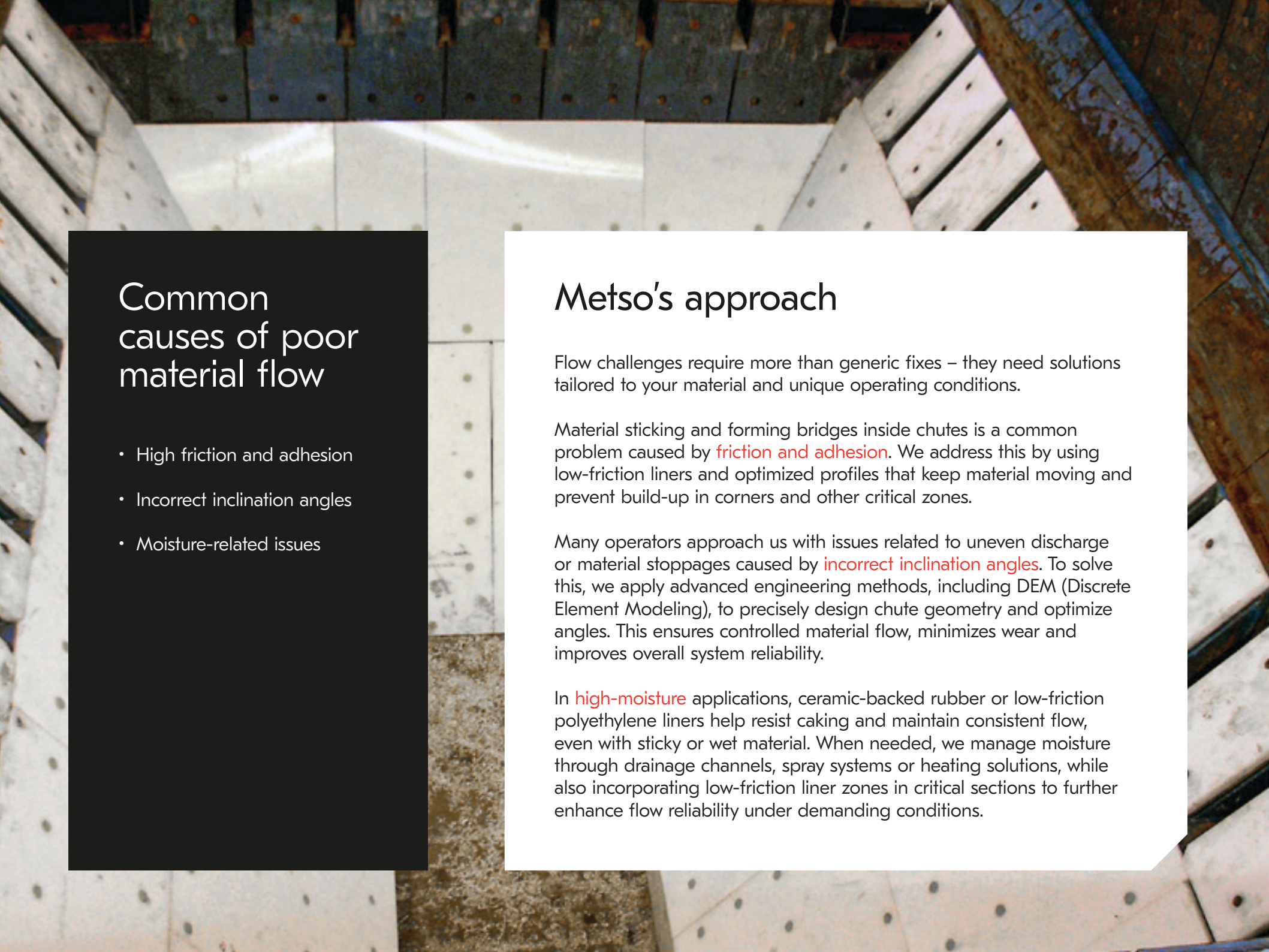
Poor flow is a common yet often underestimated challenge in material handling. When material fails to move as intended, the result is build-up, uneven discharge and unpredictable flow patterns that slow down the entire operation.

To address flow challenges at their root, Metso provides solutions engineered to regulate material behavior and maintain stable, uninterrupted processing.

## From analysis to action

Instead of one-size-fits-all solutions, we focus on your actual flow behavior and design a customized lining solution tailored to your process conditions, including material characteristics, drop height and impact angles.

By combining low-friction materials with smart liner profiles, we help prevent build-up and keep material moving smoothly. Using digital tools, we can simulate flow inside the chute to optimize the layout for both wear resistance and efficient discharge. This means fewer blockages, improved throughput and less downtime for cleaning. In short, our goal is to keep your chutes flowing freely, so you can focus on production instead of clearing blockages.



## Common causes of poor material flow

- High friction and adhesion
- Incorrect inclination angles
- Moisture-related issues

## Metso's approach

Flow challenges require more than generic fixes – they need solutions tailored to your material and unique operating conditions.

Material sticking and forming bridges inside chutes is a common problem caused by friction and adhesion. We address this by using low-friction liners and optimized profiles that keep material moving and prevent build-up in corners and other critical zones.

Many operators approach us with issues related to uneven discharge or material stoppages caused by incorrect inclination angles. To solve this, we apply advanced engineering methods, including DEM (Discrete Element Modeling), to precisely design chute geometry and optimize angles. This ensures controlled material flow, minimizes wear and improves overall system reliability.

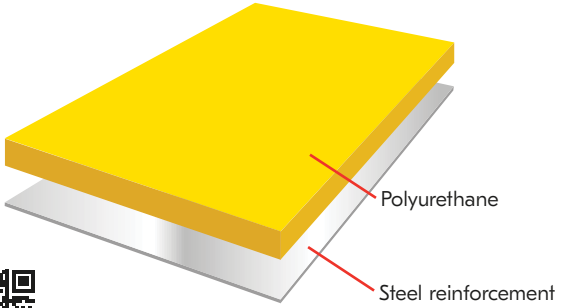
In high-moisture applications, ceramic-backed rubber or low-friction polyethylene liners help resist caking and maintain consistent flow, even with sticky or wet material. When needed, we manage moisture through drainage channels, spray systems or heating solutions, while also incorporating low-friction liner zones in critical sections to further enhance flow reliability under demanding conditions.

## Trellex® PPU

**Wear plates made of polyurethane and backed with a cast-in steel reinforcement**

- Wear-resistant polyurethane
- Steel reinforced
- Highly resistant to most chemicals

Excellent wear resistance in any applications with sliding wear. The steel reinforcement prevents the risk of small particles getting under the lining. The steel reinforcement also guarantees secure fixing so that the wear plates remain together even if the lining is exposed to extremely abrasive and sharp particles. In addition, Trellex PPU wear plates reduce noise and vibrations and are lighter than conventional steel linings.



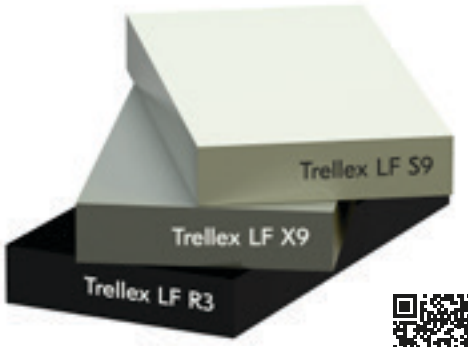

Read more about Trellex PPU

## Trellex® LF

**Engineered for applications requiring minimal friction**

- Ultra-high molecular weight polyethylene
- Low friction
- Minimizes clogging

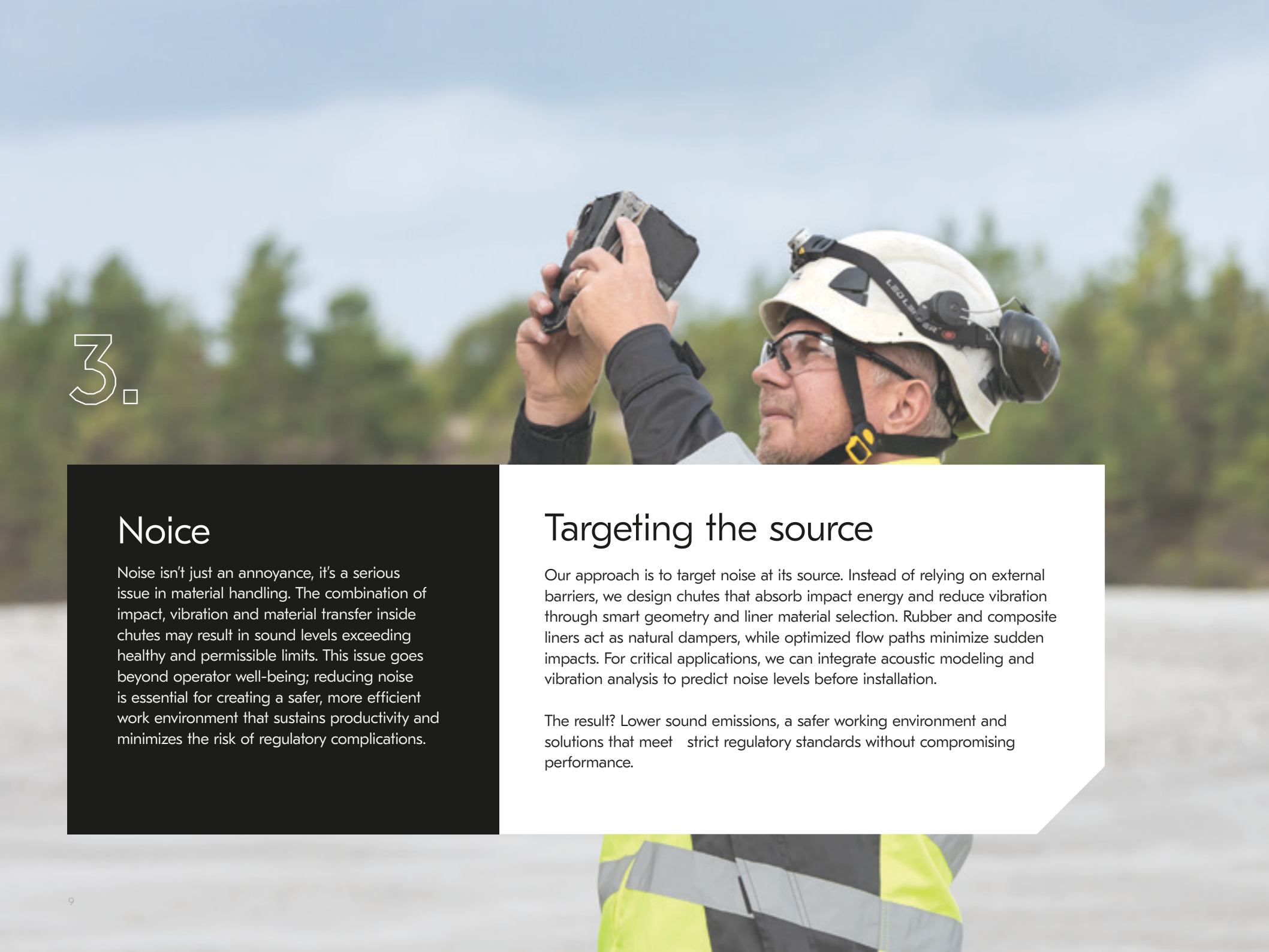
Trellex LF elements are made of an ultra-high molecular weight polyethylene which minimizes surface friction to prevent material sticking. They provide an excellent solution for bins, chutes, silos and other low wear applications that have flow problems with sticky materials. Suitable for light-duty applications with clogging problems.




Read more about Trellex LF

## Polyurethane and polyethylene

Polyurethane offers outstanding abrasion resistance and toughness for demanding applications, while polyethylene (PE-UHMW) provides ultra-low friction for light-duty areas with sticky materials. Together, they deliver superior wear protection and improved material flow.



3.

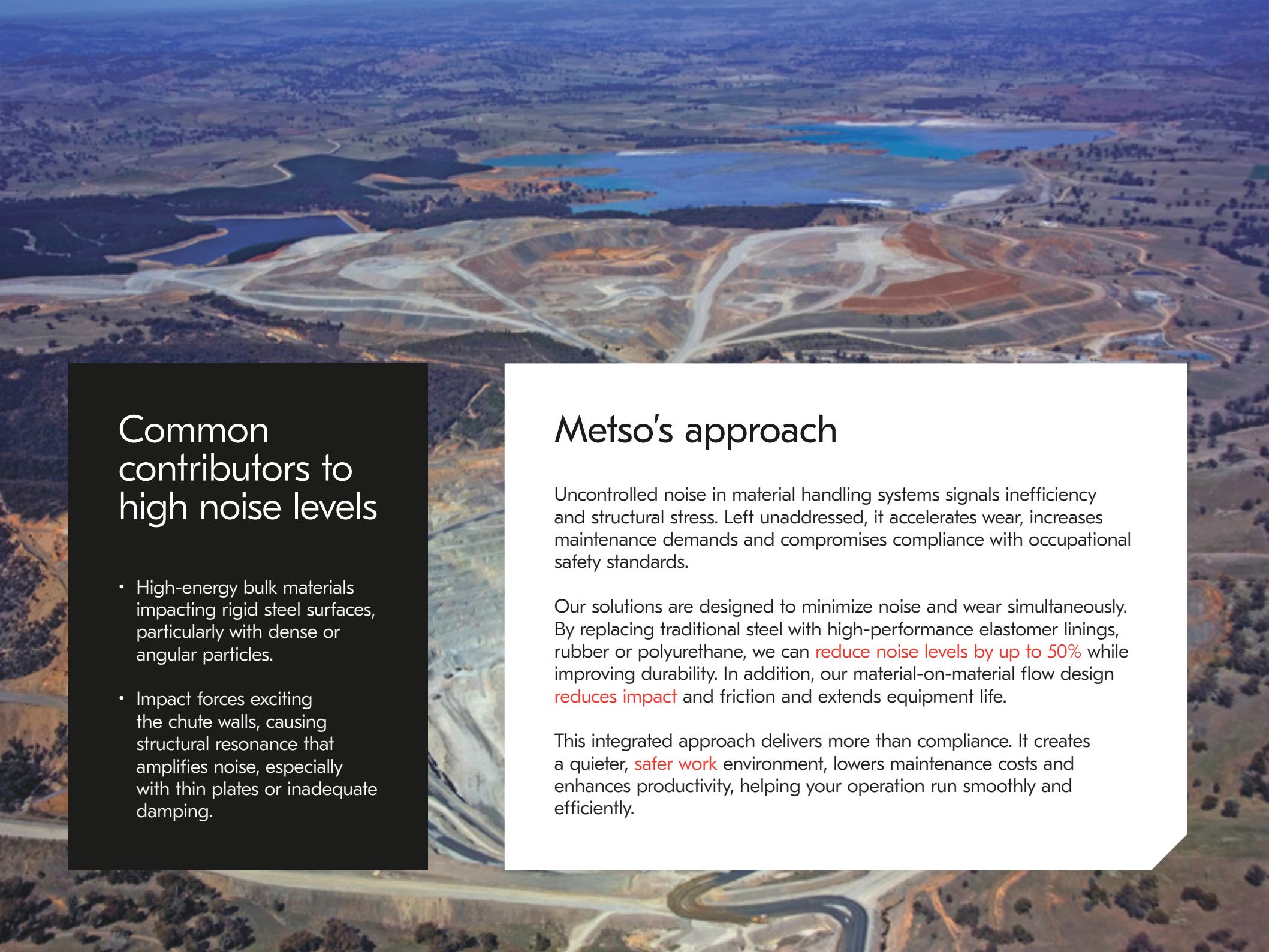
## Noice

Noise isn't just an annoyance, it's a serious issue in material handling. The combination of impact, vibration and material transfer inside chutes may result in sound levels exceeding healthy and permissible limits. This issue goes beyond operator well-being; reducing noise is essential for creating a safer, more efficient work environment that sustains productivity and minimizes the risk of regulatory complications.

## Targeting the source

Our approach is to target noise at its source. Instead of relying on external barriers, we design chutes that absorb impact energy and reduce vibration through smart geometry and liner material selection. Rubber and composite liners act as natural dampers, while optimized flow paths minimize sudden impacts. For critical applications, we can integrate acoustic modeling and vibration analysis to predict noise levels before installation.

The result? Lower sound emissions, a safer working environment and solutions that meet strict regulatory standards without compromising performance.



## Common contributors to high noise levels

- High-energy bulk materials impacting rigid steel surfaces, particularly with dense or angular particles.
- Impact forces exciting the chute walls, causing structural resonance that amplifies noise, especially with thin plates or inadequate damping.

## Metso's approach

Uncontrolled noise in material handling systems signals inefficiency and structural stress. Left unaddressed, it accelerates wear, increases maintenance demands and compromises compliance with occupational safety standards.

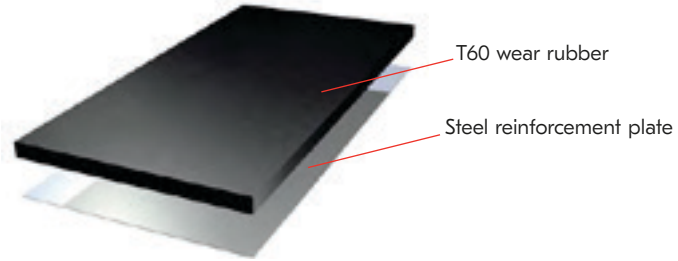
Our solutions are designed to minimize noise and wear simultaneously. By replacing traditional steel with high-performance elastomer linings, rubber or polyurethane, we can reduce noise levels by up to 50% while improving durability. In addition, our material-on-material flow design reduces impact and friction and extends equipment life.

This integrated approach delivers more than compliance. It creates a quieter, safer work environment, lowers maintenance costs and enhances productivity, helping your operation run smoothly and efficiently.

## Trellex® PP

### High-performance wear protection for applications with both impact and sliding wear

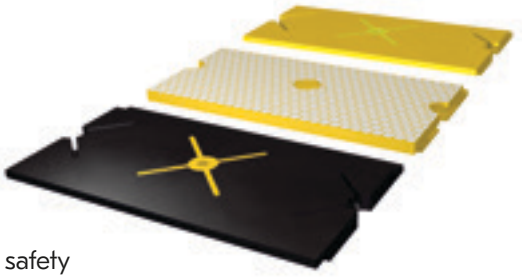
- Excellent wear resistance
- Outstanding impact absorpation
- Hot-vulcanized steel reinforcement




Offers excellent wear resistance in applications with both impact and sliding wear. The steel backing prevents small particles from getting beneath the lining and ensures secure fixing. Rubber wear plates also reduce noise and vibrations while being significantly lighter than conventional steel linings.

## Trellex® SQ 300 polyurethane

### Fully recyclable modular system



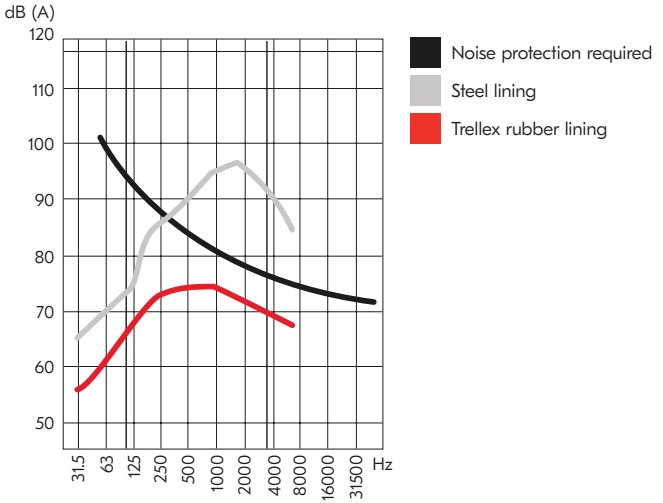
- Reduced noise – protects workers' hearing
- Modular system for easier handling
- Simplified cutting for reduced footprint
- No welding required for safer operation
- PAH-free composition for improved health and safety

A high-performance wear protection system that reduces impacts and improves health and safety in a variety of important ways – all without increasing costs or sacrificing operational efficiency. Trellex SQ 300 is designed for simple installation and minimal downtime, thanks to its patented fastening system. It can be easily cut to size using a knife or an aluminum-cutting machine.

### General noise reduction lining guide

Excessive noise is a problem in mining and aggregate operations. Managing noise pollution is more important than ever. Trellex wear rubber products help reduce noise levels by up to 20 decibels. A 10-decibel reduction corresponds to the perceived effect of cutting noise in half.

Diagram sound level – primary chute




Read more about Trellex wear liners

# Every chute tells a story

Impact, flow and the relentless fight against wear and noise shape that story. Left unchecked, these challenges don't just slow production, they drain resources and compromise safety.

Metso turns that story around. By combining engineering expertise with advanced materials, we transform chutes from weak points into performance assets. Our solutions tackle wear, optimize flow and cut noise, creating a safer and more efficient operation.

### Increased uptime

Minimized unplanned stoppages and extended equipment life for consistent productivity.

### Improved safety

Reduced maintenance risks and fewer hot work situations.

### Lower OPEX

Reduced operational cost per ton and improved sustainability through the use of less wear material and fewer maintenance hours.

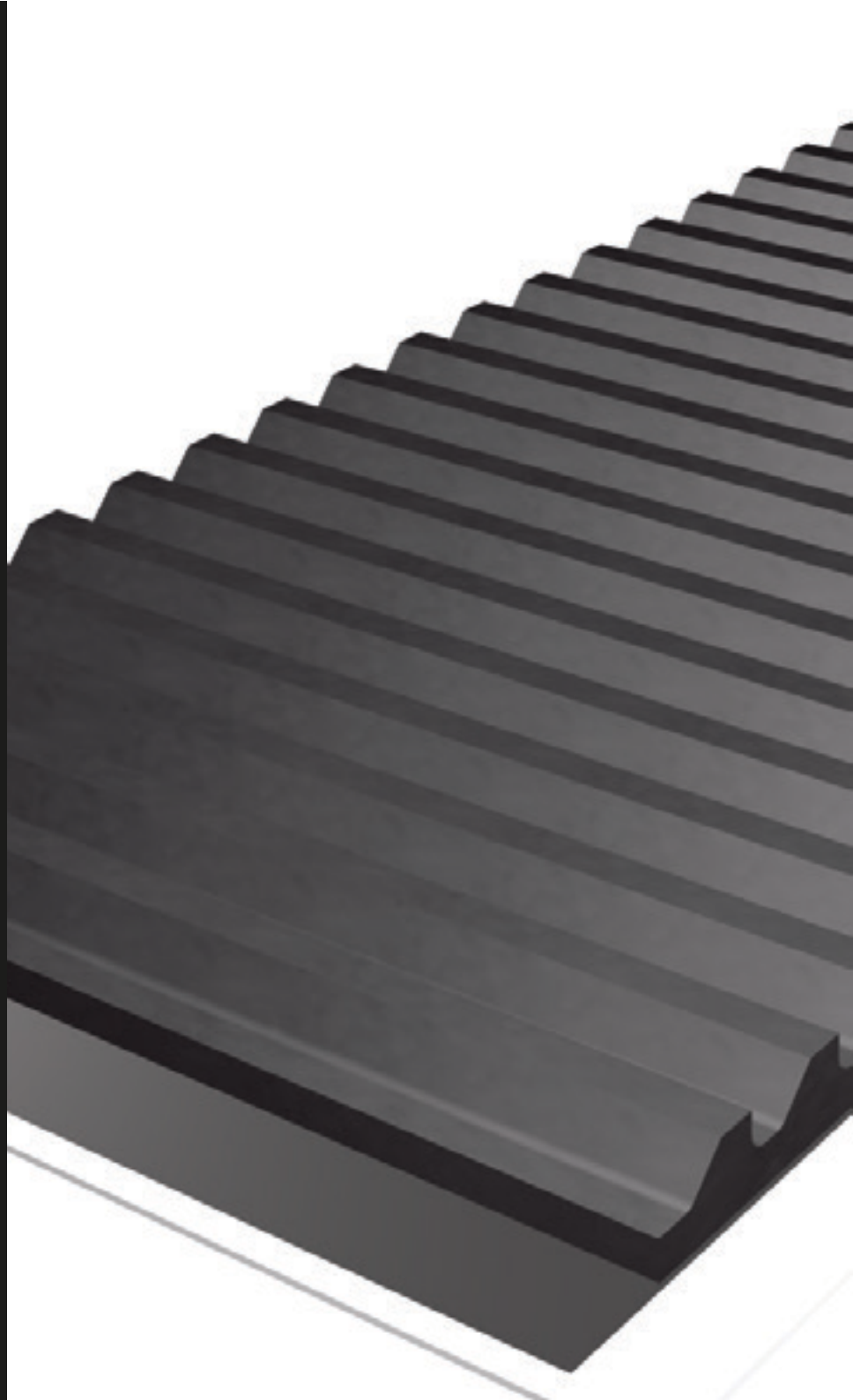
# Discover more of Metso's chute wear lining solutions

Metso wear lining solutions

Rubber wear liners

Polyethylene wear liners

Polyurethane wear liners



Metso is a frontrunner in sustainable technologies, end-to-end solutions and services for the aggregates, minerals processing and metals refining industries globally. We improve our customers' energy and water efficiency, increase their productivity, and reduce environmental risks with our product and service expertise. We are the **partner for positive change.**

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