If you’re moving millions of rocks a day, you better be sure.
Industrial mining is tough work. Every day, at different locations across the world, millions of tons of rock are moved from A to B. Conveyor belts are critical in making this happen. To enable the best results, these conveyor belts need to be able to work day and night, without fail, and with minimal operational and environmental costs. What’s more, conveyor belt uptime is crucial in enabling safe and efficient operations within the mine facilities.

Hand in hand with conveyor-belt manufacturers, Teijin Aramid is helping to change the game. With Twaron® aramid technology, conveyor belts can be made lighter and stronger, resulting in less downtime, lower energy costs and higher durability.

An award-winning proposition
Effort brings success. In 2016, Teijin Aramid received the Global Enabling Technology Leadership Award from leading independent market research firm Frost & Sullivan. This award recognizes the unmatched performance of conveyor belts reinforced with Twaron®, which enables the industry to realize a lower cost of ownership, longer lifetime and less energy consumption in conveyor belts.

Mariano Kimbara
Frost & Sullivan Industry Analyst

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Key benefits when using Twaron®:
> Superior strength and durability
> Lower energy consumption and environmental impact
> Lower operational costs
> Resistance to corrosion, heat and flame

Read more on our website
www.teijinaramid.com/conveyorbelts
High strength, low weight

True strength comes from within, and Twaron® is no exception. Our unique manufacturing process enables a material structure that offers an extraordinary set of chemical and physical properties. Weight for weight, Twaron® is five times stronger than steel and three times stronger than polyester (PET). In particular, with Twaron® straight warp fabric, conveyor belts can offer higher impact and slit resistance, as well as improved stiffness.

This strength opens new horizons for a significantly better performance. A Twaron®-reinforced conveyor belt is considerably lighter than a belt reinforced with steel or polyester, leading to lower operating costs and less CO₂ emission. Equally, because the Twaron®-reinforced belt design is thinner and less rubber is required, more individual sections can be transported, enabling the increased length of individual sections. And that’s not all. The reduction in the overall number of belt splices ultimately makes belt installation faster and easier, translating into reduced capital expenditure.

Properties tenacity/elongation

<table>
<thead>
<tr>
<th>Material</th>
<th>Tenacity (mN/tex)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Steel</td>
<td>1,500</td>
</tr>
<tr>
<td>Polyester</td>
<td>1,000</td>
</tr>
<tr>
<td>Polyamide 66</td>
<td>500</td>
</tr>
<tr>
<td>Twaron®</td>
<td>2,000</td>
</tr>
<tr>
<td></td>
<td>2,500</td>
</tr>
</tbody>
</table>

Driving emission reductions

Building a better, brighter world for tomorrow starts with making positive changes today. We enable companies to become more energy-efficient, reducing their energy costs and carbon footprint. Twaron®-reinforced conveyor belts deliver the right improvements in the right areas: they can weigh up to 40% less and have less rolling resistance, resulting in energy savings of up to 25% and reduced emissions.

In this way, Twaron®-reinforced conveyor belts can also help companies comply with stricter emission regulations and legislative pressure. With authorities around the world looking to implement carbon emission taxes and eco-efficiency rules, adopting responsible operational practices is no longer a “nice” extra – it’s the key to futureproofing the mining industry.

The integration of aramid materials can also reduce the total cost of raw materials, especially since conveyor belts can be made thinner. As such, the benefits of integrating responsible mining solutions can help the bottom line of companies across the value chain. Come with us to a brighter future!

Taking ‘tough’ to new levels

The characteristics of Twaron® straight warp fabric include straight Twaron® cords and transverse polyamide cords for additional weft strength and stiffness. The resulting conveyor belt is lighter, leading to energy savings, and more flexibility, making it more resistant to impact.
Eco-efficiency within reach

At Teijin Aramid, eco-efficiency underpins who we are and where we want to go. We aim to optimize the environmental footprint of all our solutions, resulting in cost savings across the entire value chain. We take this task seriously, and we regularly assess the total eco-efficiency impact of our solutions. How? We undertake function-based analyses for particular products or solutions over their whole lifecycle, rather than just comparing the raw materials required for its manufacture.

Count your savings

At Teijin Aramid, we're confident our aramid solutions can help deliver more responsible mining practices, but we also want to quantify these improvements by measuring a product’s sustainability value. To this end, we developed a unique Customer Benefit Model (CBM) for conveyor belts, based on industry standards DIN 22 101 and ISO 14040/4. This model quantifies both the economic and environmental impact for the mine operators of different conveyor belt designs. The CBM compares Twaron®-based conveyor belts to existing (standard) polyester- and steel-reinforced conveyor belts. Specifically, these different belts are compared for levels of energy use, CO₂ emissions and cost savings. Quantifiable improvements? Check!

With impact comes responsibility. Yanzhou Coal Mining Company is China's fourth biggest coal mining company, producing around 75,000 kilotonnes of coal every year, and works hard to optimize its total environmental footprint. To improve the efficiency of their processes, in 2015, Yanzhou Coal began to use Twaron® conveyor belts at the Baodian Coal Mine in Shandong. The result? Yanzhou reported the new conveyor belts to have delivered total energy savings of 25% and minimized downtime. In view of these operational improvements, Yanzhou Coal will scale up implementation of this technology in the coming years. A greener future is within reach.

All across the world

Twaron®-reinforced conveyor belt technology is a well-established proposition. To this day, over 400 aramid conveyor belts have been installed. They help to improve the efficiency, reliability and environmental impact of their operations. Below you can see in which applications Twaron® conveyor belts are making a difference.

- Thermal power plant
- Phosphate mine
- Copper mine
- Limestone mine
- Coal mine
- Gold mine
- Zinc mine
- Steel Plant

Input
- Technical specifications
- Financial data
- Environmental data

Output

Financial and environmental comparison between steel and polyester reinforced belts.
At Teijin Aramid, everything we do is guided by our ambition to shape a better future for generations to come. Day after day, we move forward, continuously improving our processes, our technology and ourselves. As market leaders, we drive progress through collaboration and set new standards for high performance. We connect with our customers at every level, wherever they are in the world. Because we believe that, together, we can be something bigger. Together, we can challenge conformity.

From automotive and oil & gas, to civil engineering, ballistic protection and beyond, our products are empowering excellence in diverse markets and applications around the globe. By enabling lighter, stronger and more resistant materials. And by taking durability, protection and efficiency to new levels. Whether you choose Twaron®, Teijinconex®, Technora® or Endumax®, our high-performance materials are an enduring guarantee of reliability. You can be sure of that.