TEIJIN

A high-performance meta-aramid that drives protection.

Teijinconex®

Aramids by Teijin

Be sure.

From protective garments and industrial applications, including hoses, filters and copy cleaners, Teijinconex® offers safety and protection across key applications. Thanks to its excellent resistance to heat, flames and chemicals, our meta-aramid Teijinconex® keeps professionals safe, even in the most challenging environments – every time. It has become the brand of choice for manufacturers of personal protective apparel across the world.

Teijinconex®

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What is Teijinconex®?

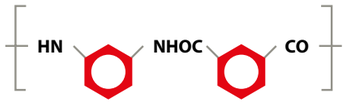
Produced by Teijin Aramid, Teijinconex® is a high-performance, meta-aramid fiber. Across the world, the unique value-added qualities of our material allow customers to continue raising performance across different industries – delivering better, safer products for end-users.

Comprised of polymetaphenylene isophthalic aramid, this organic lightweight synthetic fiber offers excellent resistance to heat, flame, and chemicals – enabling applications that are stronger, lighter and more durable. In particular, Teijinconex® is ideal for the manufacture of protective clothing and other industrial applications, including automotive hoses, industrial felt, filters, copy cleaners and much more.

Because of its unique qualities, over the last 40 years, Teijinconex® has become established among manufacturers as a high-performance fiber. Nevertheless, we'll never stop refining and improving our solutions – we're always looking to leverage new spinning technology innovations to deliver product lines that enhance our customers' applications in the most sustainable and eco-friendly way possible.

Teijinconex® and Teijinconex® neo can be tailored to specific requirements and different production processes. For example, Teijinconex® can be supplied in different fiber lengths, linear densities, and colors. It's available not only in raw white, but also in a range of dope-dyed colors with excellent color fastness. Meanwhile, Teijinconex® neo is easily dyed in any color, allowing organizations to have protective workwear in their company colors.

Both Teijinconex® and Teijinconex® neo meet or exceed all the safety and regulatory standards required by today's markets, ensuring high-quality protection at all times.



Mr. Prajug Kittirujirakul | Plant Manager Thailand
Teijin Aramid

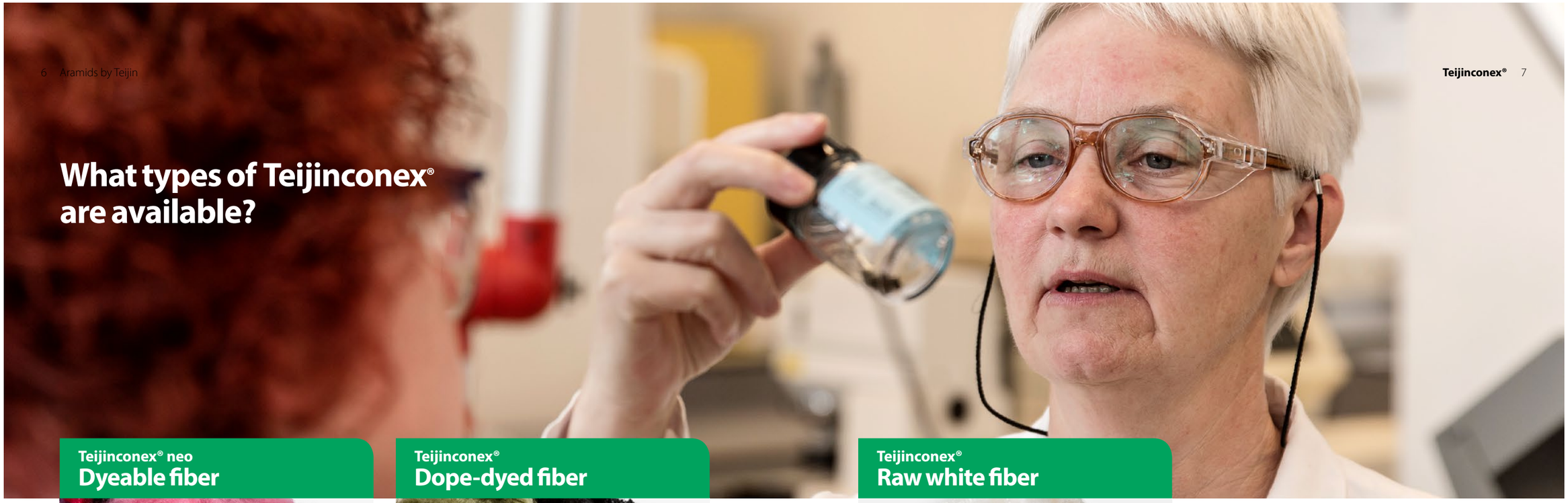
Read more on our website
www.teijinaramid.com/teijinconex

"We make Teijinconex® and Teijinconex® neo as the first and only aramid producer in Thailand. Teijinconex® neo has the unique characteristics of a dyeable meta-aramid fiber that complies with global standards."

What are its key benefits?

With its unique combination of characteristics, Teijinconex® is not like other synthetic fibers. These are just some of its key qualities:

- **Excellent heat and flame resistance**
- **High thermal protection**
- **Outstanding strength-to-weight properties**
- **Superior durability and thermal dimensional stability**
- **Excellent chemical resistance**
- **Electrical isolation**
- **Enables multiple product properties and colors**
- **Compliant with global environmental regulations**



What types of Teijinconex® are available?

Teijinconex® neo
Dyeable fiber

Teijinconex® neo is a natural cluster of easily dyeable meta-aramid fibers that add value to protective apparel by enabling excellent dyeability. Producers of yarns and fabrics are able to dye their products to various colors according to the customer's requirement. It also allows more flexible and efficient stock management.

Linear density (dtex)	Length (mm)	Typical application
1.7	51	Protective clothing

Teijinconex®
Dope-dyed fiber

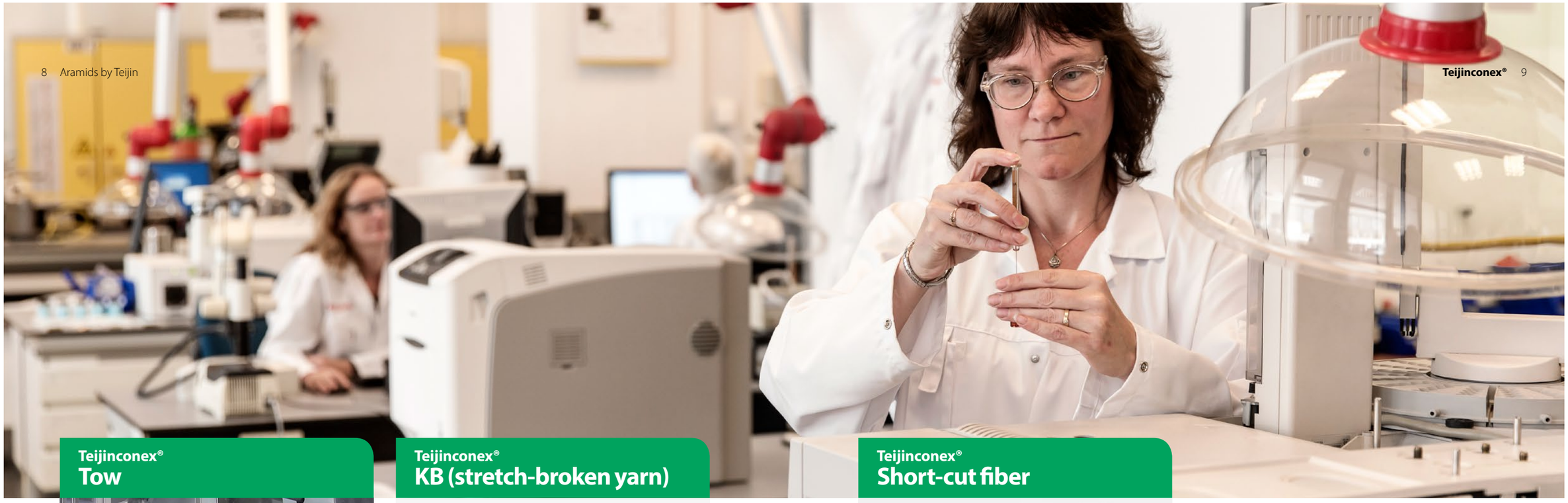
Available in more than 30 colors, Teijinconex® dope-dyed fiber is a natural cluster of meta-aramid fibers designed to raise the performance levels of protective apparel. Our solution is easily integrated into manufacturing processes. And because our fibers have a high level of color fastness, they allow protective clothing to retain its natural color even after repeated laundering and exposure to sunlight.

Linear density (dtex)	Length (mm)	Typical application
1.7/2.2	51/76 - 102	Protective clothing

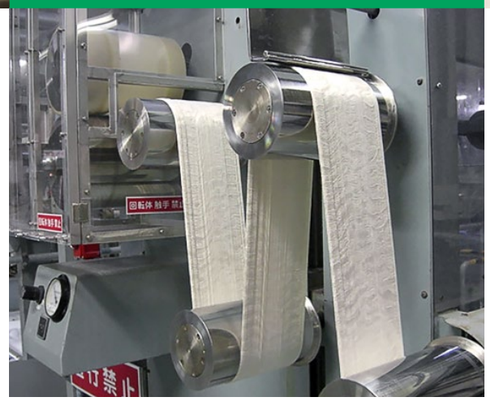
Teijinconex®
Raw white fiber

Teijinconex® raw white fiber is a natural cluster of meta-aramid fibers that have not been treated for color. The material's high-performance mechanical properties – including its high tenacity type and linear densities (0.9 - 14.4 dtex) – can be leveraged to enhance a wide range of applications. From protective clothing to automotive hoses, industrial felt, copy-cleaners and filtration systems – the possibilities are very wide-ranging.

Type	Linear density (dtex)	Length (mm)	Typical application
Teijinconex® TB (regular type for spinning)	1.7/2.2	51	Spun yarn for mechanical rubber goods, protective clothing, industrial belts
Teijinconex® TF B (regular type for felt)	2.2	51/76	Industrial felt, inner liner of protective clothing
Teijinconex® B (middle tenacity type)	2.2	51	Mechanical rubber goods (automotive hose)
Teijinconex® HT B (high tenacity type)	2.2	51	Sewing thread, mechanical rubber goods (automotive hose, belt)
Teijinconex® HG B	0.9	38	Industrial felt with fine structure
Teijinconex® B	5.6	76	Laundry felt, industrial felt
Teijinconex® B	14.4	76	Laundry felt, industrial felt



Teijinconex® Tow



The high tenacity of Teijinconex® tow is ideal for conversion into high-tenacity yarn. It is commonly used for producing high-strength sewing threads.

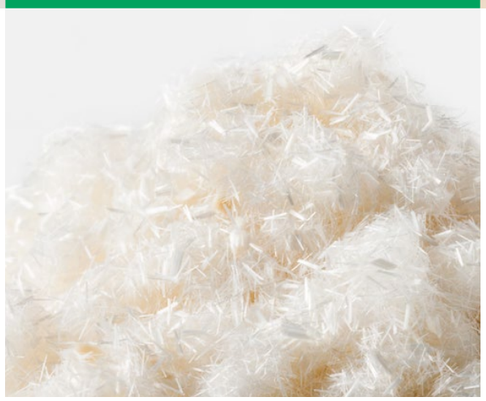
Linear density (dtex)	Typical application
2.2	Sewing thread

Teijinconex® KB (stretch-broken yarn)

Teijinconex® KB is a stretch-broken yarn that offers outstanding strength, durability and tenacity. It is typically used by manufacturers for applications that require long-term heat resistance and higher strength, such as automotive hose reinforcement.

Linear density (dtex)	Typical application
1100, 1100/2, 1100/3	Mechanical rubber goods (Automotive hose)

Teijinconex® Short-cut fiber



Teijinconex® short-cut fiber is composed of finely chopped strands cut with lengths of between 1 mm and 6 mm. This solution is typically used by manufacturers to reinforce engineering plastics and rubber compounds. Due to its excellent heat resistance, Teijinconex® short-cut fiber does not degrade with the high temperatures required for molding plastics or vulcanizing rubber. These qualities make it ideal for improving the abrasion resistance of rubber or plastic parts.

Easy-to-integrate thermal protection

Fiber properties

Teijinconex® offers excellent heat resistance compared to other synthetic fibers. In addition, Teijinconex® delivers mechanical properties that are comparable with existing general-purpose synthetic fibers, such as polyester and natural organic fibers. What's more, it is easy to process, offers a high degree of flexibility, and feels soft to the touch.

Non-flammability

With a limited oxygen index (LOI) of > 27, Teijinconex® is inherently flameproof and heat resistant up to 400 °C (750 °F) – a property that doesn't diminish with repeated laundering. It doesn't burn or melt either. So, when the heat is on, protective clothing made with Teijinconex® performs, and won't stick to skin.

Properties	Typical value
LOI	27 - 38 %
Melting point	Does not melt
Decomposition point	> 400 °C

Long-term heat resistance

Teijinconex® offers excellent long-term heat resistance. Because of this, it provides a longer lifetime for automotive hoses, industrial felt, filtration bags, and other products that operate in severe heat conditions.

Properties	Condition	Strength retention
Heat resistance	230 °C, 100 hours	100 %

Thermal protection

Teijinconex® has a low thermal conductivity coefficient, with typically 0.04 - 0.05 W/mK (measured in a fabric). It means Teijinconex®-based protective clothing shields wearers from the heat of the flame, minimizing skin damage.

"Our Teijinconex® plant is evolving its performance with the latest machinery and our technological approach. We will continue doing our very best to deliver the best quality and the highest productivity levels in the world."

How does Teijinconex® compare to other fibers?

		Teijinconex® (meta-aramid)			Polyester	Cotton	Polyamide-imide	Moda-crylic	Twaron®	Technora®
		Regular	Middle tenacity	High tenacity					Staple fiber	Staple fiber
Tenacity	cN/dtex	3.7	4.94	6.18	4.9	3.8	4 - 4.4	2.5	19 - 25	23 - 25
Elongation at break	%	45	39.5	28	35	8	18 - 19	25	2.3 - 4.2	3.9 - 4.5
Density	g/cm³	1.38	1.38	1.38	1.4	1.5	1.3		1.44 - 1.45	1.39
Moisture	%	5.25	5.25	5.25	0.45	7	~ 4	0.8	2 - 7	1.9
Decomposition or melting temperature	°C	> 400	> 400	> 400	258	145	> 400		500	500

Mr. Kenichi Kawaguchi | Plant Manager Japan
Teijin Aramid

Exhibit 2016
Ningde Amperex Technology Ltd.
IPR2023-00587, U.S. Patent No. 10,964,987
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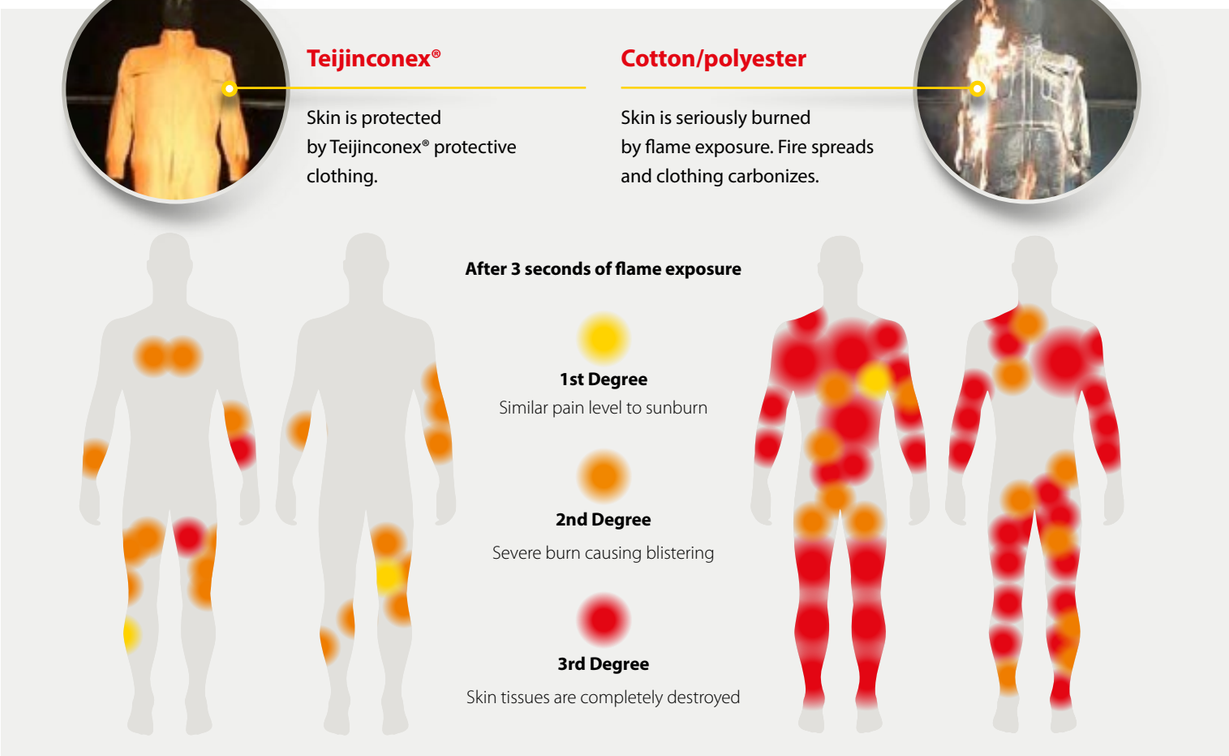
PLIFF: Teijin Aramid's burn evaluation system

At Teijin Aramid, innovation and product development never stop. Thanks to our state-of-the-art R&D locations – including our Technical Center in Shanghai, the Teijin Product Development China Company in Nantong, and our Solution Development Department in Matsuyama, Japan – we are continuously optimizing and improving the high-performance qualities of our thermal protection materials.

As part of our continuing efforts, we have established our own internationally recognized burn evaluation system (ISO 13506), known as Protect Life From Fire (PLIFF). This evaluation system uses a ceramic mannequin to record the effects of different protective garments in minimizing varying degrees of body burns, in temperatures of up to 1,200 °C (2,192 °F).

The test results clearly reveal that Teijinconex®-based protective clothing helps minimize skin damage by providing high-performance thermal protection.



How is Teijinconex® used?

Personal protective apparel

Firefighters and other professionals risk their lives through exposure to heat, and flame, and the severe hazards associated with electric arcs and flashfires. Their clothing needs to deliver the highest levels of thermal protection, as well as comfort, flexibility, and breathability.

Personal protective apparel made with Teijinconex® means products that deliver higher protection, maximum comfort, and 100 % reliability. And it means products that fulfill ever-more stringent requirements for protection, thermal insulation, and wearer comfort. What's more, Teijinconex® is easily integrated into production processes without the need for special equipment.

Rubber reinforcement

Engines, heavy machinery, and oil and gas exploration systems are evolving at a rapid pace. Meanwhile, the rubber parts used in these applications are subject to increasingly challenging conditions and performance standards.

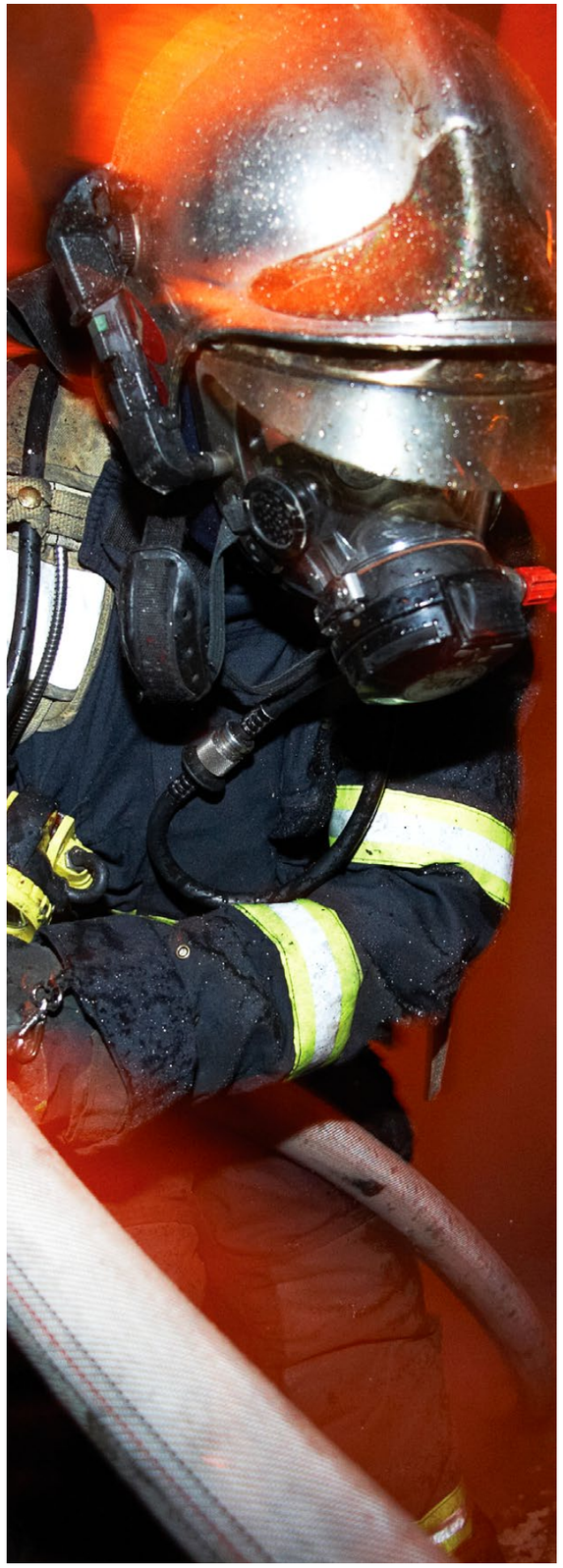
Integrating Teijinconex® into product development processes efficiently improves a wide variety of elastomer products – maximizing strength, reducing weight, and enhancing heat and chemical resistance. In this way, around the world, we're helping customers to deliver superior solutions – from automotive transmission belts to industrial and agricultural belts, radiator and air conditioning hoses, turbo charger hoses, and many other rubber compound reinforcements.

Filter systems and other applications

Filter systems, industrial felts and copy cleaners often operate at high temperatures and are exposed to agressive chemicals, making a high level of thermal and chemical resistance essential.

In protecting against heat and chemicals, Teijinconex® can make all the difference. The unique resistance qualities of our material enable applications that work better, for longer. And, because of its excellent compatibility with other key ingredients, Teijinconex® is easily be integrated into different manufacturing processes.

Our deep experience working with a wide range of filter system applications means we can provide our customers with tailor-made advice and solutions to meet their specific needs.



Value throughout the chain

The world in which Teijin Aramid operates is constantly changing. Teijin Aramid aims to be the best aramid company in the world and believes that sustainable value creation and cost awareness are critical success factors. This means making products that match customers' needs as efficiently as possible, while ensuring that they meet the required performance level.

The Customer Benefit Model

To these ends, Teijin Aramid will continue to proactively initiate collaboration with partners in the chain whenever there is an opportunity.

In particular, Teijin Aramid believes that a sustainable approach will contribute to lower costs and add value to products, and subsequently to those of customers. Customers are eager to know which financial and sustainability-related benefits the use of materials offers in a specific application. Teijin Aramid has focused on this issue for many years by using its eco-efficiency methodology. The idea behind this methodology has now been translated into a concrete model: the Customer Benefit Model (CBM).

Together with the user or end-user, Teijin Aramid can use the CBM to calculate the effect of applying aramid, both in terms of financial cost savings and the reduced impact on the environment. In 2013, the CBM reached maturity. Together with TÜV Rheinland LGA Products GmbH, Teijin Aramid started preparations for submitting the CBM for certification. This official certification gave us a model that is internationally recognized and which, in collaboration with customers, Teijin Aramid can apply to all relevant aramid applications.

The aramid products in Teijin Aramid's portfolio are intrinsically capable of enabling sustainability. For example, with their exceptional resistance to extreme conditions, these materials contribute to global trends in sustainability such as saving weight, conserving scarce raw materials, and making products that are tougher and more durable.

Partnering

Sustainability benefits strongly from innovation and cooperation. Teijin Aramid is constantly improving products and working towards innovative solutions, for existing markets and for new markets, together with its partners in a large number of R&D locations. These include Teijin Aramid's Central Research Facilities, at the Technical Textile Institute (TTI), as well as in the Application Competence Center, the Technology Development Center in Matsuyama, Japan, and the Teijin Product Development Company in Nantong, China. Teijin Aramid aims to drive these developments together with customers and other partners in the value chain.

Quality, Health, Safety and Environment (QHSE)

Around the world, all our global site operations are underpinned by a rigorous system that ensures compliance with relevant laws and regulations. As such, our operations meet high quality, health and environmental standards. Our materials also meet the highest regulatory standards. Teijinconex® has been awarded OEKO-TEX® Standard 100, while Teijin Aramid has been granted a Gold recognition level based on the EcoVadis CSR rating.

Our Teijinconex® facilities have received the following certifications:

- **The Teijinconex® Iwakuni production plant in Japan is certified for ISO9001: 2015 and OHSAS 18001: 2007**
- **The Teijinconex® Iwakuni production site is certified for ISO14001: 2015**
- **The Teijinconex® Ayutthaya production plant is certified for ISO9001: 2015**
- **The Teijinconex® Ayutthaya production site is certified for ISO14001: 2004**

Be sure.

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.

For more information

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