

Teijinconex[®]

High-performance protection

TEIJIN ARAMID

Teijinconex[®]



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Danger
compressor

Materializing ambitions

At Teijin Aramid, everything we do is guided by our ambition to help our partners create better products and even more innovative solutions for end users. As market leaders, we drive progress through collaboration and set new standards for high performance.

We help our partners to deliver dependable products and services. From automotive, aerospace, and renewable energy to protective wear and ballistic protection, our products are used in diverse markets and applications around the globe, enabling the manufacturing of lighter, stronger and more resistant materials.

Our high-performance aramids take durability, protection and efficiency to new levels. Whether you choose Twaron®, Teijinconex® or Technora®, they are all a choice for quality and reliability.

What is Teijinconex®?

Teijinconex® is a high-performance, meta-aramid fiber produced by Teijin Aramid. Our lightweight synthetic fiber offers high-performance protection with excellent resistance to heat, flame, and chemicals, enabling end-use products that are stronger, lighter and more durable in many applications.

This makes Teijinconex® ideal for manufacturing protective wear garments and other industrial applications, such as automotive hoses, filters, and speaker dampers and cones.



**When performance matters,
the choice is clear**



Superior performance protective garments.

Because of its unique qualities, Teijinconex® has become established over the last 50 years as a high-performance fiber. Nevertheless, we're constantly innovating to make even more durable, effective Teijinconex® products. In addition, we're always developing new technology that delivers products in the most sustainable and eco-friendly way possible.



Adaptable fibers which can be spun & woven to specific needs.

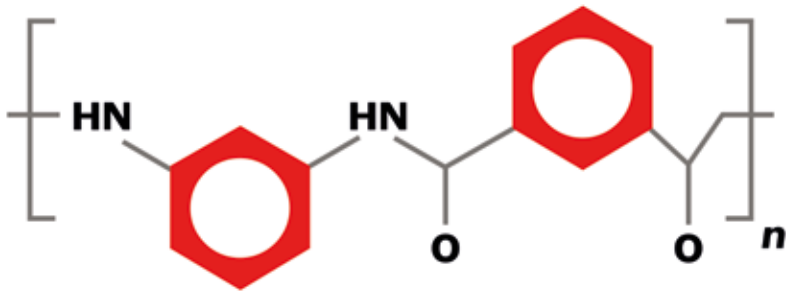


Meta-aramid dope-dyed fibers can achieve almost any color.

Teijinconex® and Teijinconex® neo can be tailored for specific requirements and different production processes. For example, Teijinconex® can be supplied in different fiber lengths, linear densities, and colors.

It's available in raw white, and our dope-dyed range now covers approximately 75% of Pantone colors. It consumes less water to produce rich colors that maintain their color after a lifetime of launderings. Meanwhile, Teijinconex® neo is easily dyed in many colors, facilitating color-fast protective wear in brand colors.

Both Teijinconex® and Teijinconex® neo can be used to meet the regulatory and performance standards required by customers, ensuring high-quality protection at all times.



Teijinconex® meta-aramid structure



With its unique combination of characteristics, **Teijinconex®** provides the following benefits:

- Inherent heat and flame resistance
- Will not melt or drip
- Vibrant colors to fit various end-user needs
- Outstanding thermal stability at high temperatures
- Superior color-fastness





Where does Teijinconex® add value?

Personal protective apparel

Teijin Aramid's fibers are among the most trusted names in personal protection. Garments made using these remarkable fibers are lightweight, strong, and can be worn for extended periods during demanding physical activity, making them the ideal choice for workwear, firefighting gear and military apparel.

Firefighters, security and defense professionals, and workers in high-risk environments are exposed to heat, flame and the severe hazards associated with electric arcs and flashfires. In demanding combat situations, their garments need to deliver the highest

levels of thermal protection, as well as flexibility and durability. Protective apparel containing Teijinconex® delivers unparalleled safety through maximum protection and superior durability when compared to traditional garments in the same class.

From industrial workers and police to emergency responders and beyond, our priority is flame resistance and durability that doesn't compromise on protection.



Rubber reinforcement

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

Integrating Teijinconex® into product development processes can improve a wide variety of elastomer products – maximizing strength, reducing weight, and enhancing heat and chemical resistance. In this way we're helping customers to deliver superior solutions – from automotive turbocharger hoses to 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 aggressive 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 qualities of our material enable applications that work better, for longer. And, because of its excellent compatibility with other key ingredients, Teijinconex® can easily be integrated into different manufacturing processes.

Our trusted 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.





What types of Teijinconex[®] do we offer?

Teijinconex[®] neo fiber for customization

Teijinconex[®] neo is a dyeable meta-aramid staple fiber. Its excellent dyeability means that producers of yarns and fabrics are able to dye their products to various colors according to the customer's requirement. This also allows more flexible and efficient stock management.

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

Teijinconex[®] neo fiber specifications



Teijinconex[®] dope-dyed fiber for color choice

Dope-dyed fibers bring cost savings and a wide range of colors to protective apparel. Unlike conventional methods such as piece dyeing, this technique is more energy-efficient, conserves water, and results in significantly lower carbon emissions. In addition, dope-dyed fibers retain their vibrant color for longer, leading to extended use of garments.

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

Teijinconex[®] dope-dyed fiber specifications



Teijinconex[®] raw white fiber for multiple applications

Teijinconex[®] raw white fiber is a staple meta-aramid fiber that has not been treated for color addition. The material's high-performance mechanical properties can be used in a wide range of applications, from protective clothing to automotive hoses, industrial felt, copy cleaners, speaker dampers and filtration systems.



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 apparel
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 / 1.7	38	Industrial felt with fine structure
Teijinconex® HG B	2.2	51	Industrial felt with fine structure
Teijinconex® B	1.7	51	Laundry felt, industrial felt
Teijinconex® B	5.6 / 14.4	76	Laundry felt, industrial felt

Teijinconex® raw white fiber specifications



Teijinconex® tow for strength

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

Type	Linear density (dtex)	Typical application
Teijinconex® HTOL B2.2 x CT	2.2	Sewing thread for protective apparel
Teijinconex® NO B2.2 x T	2.2	Sewing thread for protective apparel
Teijinconex® OL B2.2 x T	2.2	Sewing thread for protective apparel

Teijinconex® tow specifications



Teijinconex[®] KB (stretch-broken yarn) for durability

Teijinconex[®] KB is a stretch-broken yarn that offers outstanding strength and durability. 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	Mechanical rubber goods (automotive hoses)

Teijinconex[®] KB (stretch-broken yarn) specifications



Teijinconex[®] short-cut fiber for heat-resistant reinforcement

Teijinconex[®] short-cut fiber is composed of finely chopped strands of between 1–6 mm, typically used by manufacturers to reinforce engineering plastics and rubber compounds. Due to its excellent heat resistance, Teijinconex[®] shortcut 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. Also, its mechanical properties are comparable with existing general-purpose synthetic fibers, such as polyester and natural organic fibers. It's easy to process, offers a high degree of flexibility, and feels softer than other para-aramids.

Flame resistant

Teijinconex® is inherently flame and heat resistant up to 400 °C – a property that doesn't diminish with repeated laundering. It doesn't burn or melt either, so protective clothing made with Teijinconex® won't stick to skin.

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

Flame-resistant properties of Teijinconex®



Long-term heat resistance

Teijinconex® offers excellent long-term heat resistance, providing a longer lifetime for automotive hoses, industrial felt, filtration bags, and other products that operate in extreme heat conditions.

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

Heat-resistant properties of Teijinconex®

Thermal protection

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

	Teijinconex® (meta-aramid)	Polyester	Cotton	Polyamideimide	Modacrylic	Twaron®
	Various types					Type 1072
Tenacity	cN/dtex	4.9	3.8	4 – 4.4	2.5	18
Elongation at break	%	35.0	8	18-19	25	3.6
Density	g/cm ³	1.38	1.52	1.3		1.44
Moisture	%	0.45	7	~4	0.8	4-8
Decomposition temperature	°C	>400	145	>400		500
Melting temperature	°C	-	-	>400		-

Teijinconex® compared to other fibers

PLIFF: Teijin Aramid's burn evaluation system

At our 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 – our research teams in protective technologies are continuously optimizing the quality of our thermal protection materials. As part of our 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 effectiveness of different protective garments in minimizing the severity of body burns in temperatures of up to 1,200 °C (2,192 °F).

The test results clearly show that Teijinconex®-based protective clothing helps limit burns by providing high-performance thermal protection.

Comparison showing the protection provided by Teijinconex® vs cotton/polyester



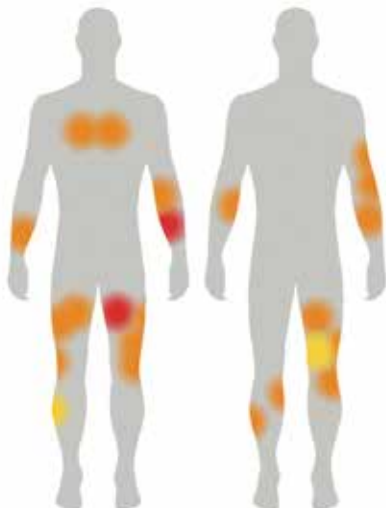
Teijinconex®

Skin is protected by Teijinconex® protective clothing.



Cotton/polyester

Skin is seriously burned by flame exposure. Fire spreads and clothing carbonizes.



After 3 seconds of flame exposure

1st Degree

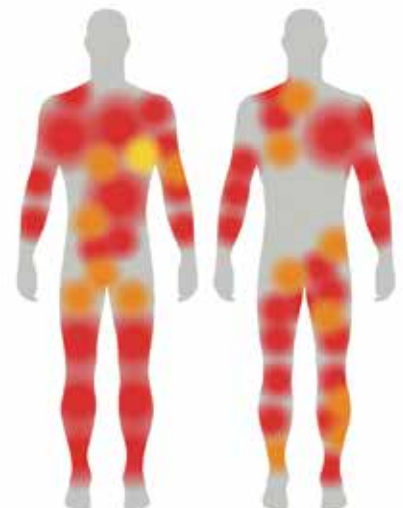
Similar pain level to sunburn

2nd Degree

Severe burn causing blistering

3rd Degree

Skin tissues are completely destroyed



Building a sustainable future

Teijin Aramid's sustainability goals are straightforward and good for everyone – people, planet, customers and suppliers. We're hands-on in protecting the environment, cutting waste, using less energy, and investing in clean technology. We work with our partners to make sustainability a team effort, understanding that sustainability benefits the environment and also has positive impacts on business profitability.

Teijin Aramid is committed to a sustainable future and net zero by 2050. Our range of activities and initiatives underscore our commitment to a circular economy for aramid. They are part of taking responsibility for our material flows by collaborating with our partners to recycle aramids and repurpose end-of-life products.

“Our responsibility extends beyond just supplying aramid; we strive to ensure that protective garments safeguard not only the wearer but also the environment.”

Monica Lopez Lorenzo, Senior Vice President Marketing & Sales,
Life Protection

Recycling – Teijinconex® circularity roadmap

Teijin Aramid is actively collecting end-of-life products containing meta-aramids from the protective apparel value chain. In order to make this happen, we work with global circular partners. After sorting, cleaning, and cutting, the aramids are recycled through three innovative routes.

Route 1 Mechanical recycling

We focus on recovering meta-aramid materials from production waste and end-of-life products. The recycled meta-aramids are reused in staple fiber blends with virgin Teijinconex®.

Route 2 Physical recycling

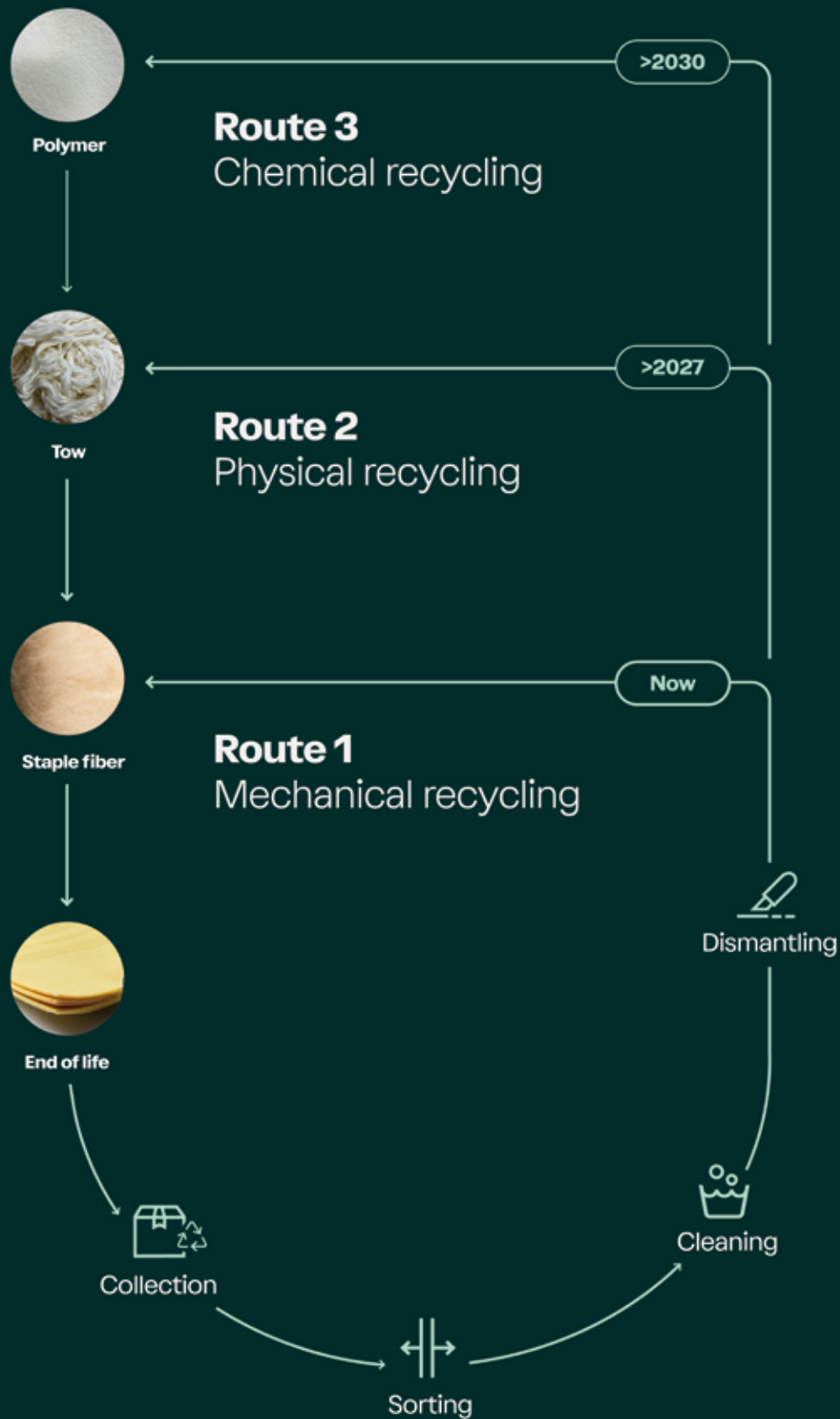
We dissolve the collected end-of-life aramid (Teijinconex®) with our virgin polymer. This is then spun into fibers that contain a significant amount of recycled content while retaining the same properties as 100% virgin fiber.

Route 3 Chemical recycling

Chemical recycling, also known as depolymerization, involves breaking down the aramid polymer molecules into small chemical building blocks. At our polymerization factory, we reintroduce these recovered monomers to produce new Teijinconex®. Another option is to use bio-based raw materials, or recycled plastic produced by our suppliers, as building blocks.

The ultimate goal is to replace all fossil-based resources with renewable ones.

Circularity roadmap





Building trust through expertise

Over the years, we have invested in facilities and talent that have made us the industry authority on the application of aramid materials. We believe that sustainable value creation and cost awareness are critical success factors for both ourselves and our customers. This means making products that match customers' needs as efficiently as possible while ensuring that they meet the required performance level.

Creating partnerships

Teijin Aramid is constantly improving products and working towards innovative solutions with our partners at our R&D locations. Our wide knowledge in testing, blending, and fabric development means we have unique, hands-on experience in complex projects that deliver real value to end users. Partnerships are handled with professional discretion.



Make informed choices with the Customer Benefit Model

Teijin Aramid has focused on an eco-efficiency methodology, which has been translated into a concrete model: the Customer Benefit Model (CBM). Together with the customer 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. Our official certification with TÜV Rheinland LGA Products GmbH gives us a model that is internationally recognized and which, in collaboration with customers, Teijin Aramid can apply to all relevant aramid applications.

The CBM empowers the customer to make an informed decision: It's a tool that provides data and transparency regarding costs and environmental burden.

Quality, Health, Safety and Environment (QHSE)

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 with the following certificates being awarded: ISO certificates 9001, 14001 and 45001 and the OEKO-TEX® Standard 100.

In addition,

- **The Teijinconex® Iwakuni production plant in Japan** is certified for ISO 9001:2015
 - **The Teijinconex® Iwakuni production site** is certified for ISO 14001:2015 and ISO 45001: 2018
 - **The Teijinconex® Ayutthaya production plant** is certified for ISO 9001:2015, ISO 14001:2015 and ISO 45001:2018
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Get in touch

At Teijin Aramid, we carry half a century of expertise applying aramids to enhance projects. Our skilled R&D team, local technicians, and global market managers are equipped with deep and diverse skill sets ready to tackle your challenges.

Whether it's improving protective garments or advancing industrial and automotive applications, we are here to help. Your ambition, our technology.

Contact us today at information@teijinaramid.com



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