Twaron drives
Automotive hoses and belts
Twaron® Technora® Teijinconex®

The power of Aramid
Manufacturers in the automotive industry are constantly looking for ways to maintain their competitiveness by getting innovative products to market fast. Safety issues, performance excellence and the demand for sustainability put the automotive industry under pressure to develop high-quality products.

Nowadays, automotive hoses have to perform well despite increasingly challenging conditions. Hose systems under the hood, for instance, must be able to cope with ever tougher operating conditions. Consequently hose-reinforcing yarns must have both superior strength and chemical, thermal and dimensional stability.
The para-aramids Twaron and Technora and meta-aramid TeijinConex each have their own unique combination of properties. So, whether a hose has to transport high temperature gases or fluids – or support a high-pressure transmission system – one of these aramids is pretty sure to provide the right reinforcement. And, to help hose engineers make the right choice, we not only offer expert advice, but also provide access to our laboratories.

You can rely on our full support to help your company develop a hose that precisely meets your needs. You can also take advantage of our close ties with braiding and knitting machine manufacturers.

Twaron, Technora and Teijinconex yarns have outstanding reinforcement properties and offer exceptional resistance to thermal, dynamic and chemical damage. Hoses reinforced with these yarns are strong, longer-lasting, and can be used under the toughest conditions.
AUTOMOTIVE HOSES

- Turbo Charger hoses
- Coolant hoses
- Air-conditioning hoses
- Brake hoses
- Fuel hoses
Car producers currently design cars with ever increasing:

- comfort
- safety
- reliability

Additionally, a number of governmental regulations have set a trend towards the use of high-performance materials. In the automotive hose segment this has ultimately resulted in a rapid growth of aramid as a reinforcing material.

**Twaron, technora and teijinconex are used in Automotive Hoses for the:**

- High temperature resistance
- Chemical resistance
- Excellent pulse & vibration behavior
- Longevity
MARKETS AUTOMOTIVE HOSES

Overall benefits Aramid hoses
• Temperature resistance
• Chemical resistance
• Excellent pulse & vibration behavior
• Longevity

Maximum use temperature
• Twaron 190°C
• Technora 210°C
• Teijinconex 250°C
Coolant hose
Any hose which transports engine coolant fluid (antifreeze).
Coolant hoses are subdivided into:

- **Radiator hoses**: Keeps engine cool
- **Heater hoses**: Connected to passenger compartment, heating up inside of the car, small diameter
Air-conditioning hose
Today’s sophisticated air-conditioning systems require hoses exhibiting high dimensional stability over a wide temperature range and high pressure. Twaron and Technora are excellent reinforcement yarns in providing optimum comfort and reliability.
How Turbochargers Increase Engine’s Power:
In essence turbochargers are just compressors. They suck in and compress air before it goes into the engine. As more air enters the engine, sensors compensate by adding more fuel to balance the air-fuel ratio. With more air-fuel inside the chamber of the engine, more power is generated when the air-fuel combust. The power increase a turbocharger gives to an engine is comparable to replacing your engine with a bigger one.
Due to an ongoing trend in the automotive sector for lower fuel consumption at high power levels, engines equipped with turbo chargers are gaining in popularity. The turbo charger hoses require high dynamic performance and high temperature and pressure resistance.

**Hose requirements low temperature side**
- 150-160°C constantly
- 170-180°C peak
- Pressure → Twaron / Technora / Teijinconex

**Hose requirements high temperature side**
210°C constantly
- 230°C peak
- Pressure → Teijinconex
**Fuel hoses**

Fuel systems in fuel-injected car engines operate at continuous high pressures with temperatures ±150 °C.

**The fuel hose requires:**
- temperature resistance
- chemical resistance criteria

**Brake hoses**

The development of electronic brake systems triggers the need for fast-responding reliable hydraulic back-up brake systems.

**The brake hose requires:**
- high strength
- low elongation
- chemical stability
## MARKETS AUTOMOTIVE HOSES

<table>
<thead>
<tr>
<th>AREA</th>
<th>Twaron®</th>
<th>Technora®</th>
<th>Teijinconex®</th>
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<tbody>
<tr>
<td><strong>AUTOMOTIVE</strong></td>
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<tr>
<td>Coolant hose: heater</td>
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<tr>
<td>Coolant hose: radiator</td>
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<tr>
<td>Air-conditioning hose</td>
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<td>Turbo charger</td>
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<td>Fuel</td>
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<td>Brake</td>
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MECHANICAL RUBBER GOODS BELTS

POWER TRANSMISSION BELTS

are designed and rated for use in power transmission applications – engine belts, belting for power takeoffs, industrial machinery, etc.
General requirements:

• High dimensional stability
• Low belt creep
• High compression/tension fatigue resistance
• High temperature resistance (low and high temperatures)
• Longer belt life
• High power transmission (transmission belt)
• Effective noise reduction (automotive belt)
• Compactness (depend on the application)
• Reliability/maintenance free
Various basic designs can be distinguished such as:
- Flat belt,
- V-ripped belts
- Synchronous belts
- multi-V-belts

Depending on power range, application area and specifications the belts choices for matrix material and reinforcement is made.

<table>
<thead>
<tr>
<th>RUBBER</th>
<th>TPE</th>
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<tbody>
<tr>
<td>WRAPPED</td>
<td>OPEN-EDGE</td>
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<tr>
<td>Greige cords</td>
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<tr>
<td>Dipped cords</td>
<td>V</td>
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<tr>
<td>Stiff dipped cords</td>
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</table>
Typical belt characteristics can also be influenced by the use of short fiber compound reinforcement.

Twaron and Technora chopped and dipped chopped fiber can improve rubber compound characteristics such as:

• Abrasion resistance
• Increase of low strain modulus
• Puncture and tear resistance
• Dynamic fatigue properties
• Energy loss
• Green strength
• Hardness
For more information, Please email us at info@teijinaramid.com or visit www.teijinaramid.com

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