Fiberglass Piping
Corrosion Resistant Systems for Oil & Gas Applications

<table>
<thead>
<tr>
<th>Products</th>
<th>Connection</th>
<th>Size Range</th>
<th>Pressure*</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>STAR Tubing</td>
<td>1½&quot;-9⅝&quot; (40-250 mm)</td>
<td>3,500 psi</td>
<td>Up to 212°F (100°C)</td>
<td></td>
</tr>
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<td>STAR Casing</td>
<td>1½&quot;-9⅝&quot; (40-250 mm)</td>
<td>3,250 psi</td>
<td>Up to 212°F (100°C)</td>
<td></td>
</tr>
<tr>
<td>STAR Shallow Well Tubing</td>
<td>1½&quot;-2⅞&quot; (40-75 mm)</td>
<td>1,500 psi</td>
<td>Up to 150°F (65.6°C)</td>
<td></td>
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<tr>
<td>Fiberspar Downhole Tubing</td>
<td>1½&quot;-2&quot; (40-50 mm)</td>
<td>3,500 psi</td>
<td>Up to 180°F (82°C)</td>
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<tr>
<td>STAR High Pressure Line Pipe</td>
<td>Advanced Composite Thread (ACT)</td>
<td>1½&quot;-8&quot; (40-200 mm)</td>
<td>500-3,500 psi</td>
<td>Up to 212°F (100°C)</td>
</tr>
<tr>
<td>Precision Ground Thread (PGT)</td>
<td>API 5B 8rd</td>
<td>2&quot;-8&quot; (50-200 mm)</td>
<td>500-3,000 psi</td>
<td>Up to 212°F (100°C)</td>
</tr>
<tr>
<td>STAR Super Seal High Pressure</td>
<td>Mechanical O-Ring (SS) (2 threads per inch)</td>
<td>8&quot;-12&quot; (200-300 mm)</td>
<td>500-1,250 psi</td>
<td>Up to 200°F (93.3°C)</td>
</tr>
<tr>
<td>Mechanical O-Ring (SS HP) (2 threads per inch)</td>
<td>6&quot;-12&quot; (150-300 mm)</td>
<td>1,000-3,000 psi</td>
<td>Up to 212°F (100°C)</td>
<td></td>
</tr>
<tr>
<td>Modified ACME O-Ring (CEN) (4 threads per inch)</td>
<td>2&quot;-3&quot; (50-80 mm)</td>
<td>500 psi</td>
<td>Up to 212°F (100°C)</td>
<td></td>
</tr>
<tr>
<td>Round Form O-Ring (SP) (4 threads per inch)</td>
<td>2&quot;-4&quot; (50-100 mm)</td>
<td>750-2,500 psi</td>
<td>Up to 212°F (100°C)</td>
<td></td>
</tr>
<tr>
<td>Buttress O-Ring (SPH) (4 threads per inch)</td>
<td>4&quot;-6&quot; (150-300 mm)</td>
<td>500-2,250 psi</td>
<td>Up to 212°F (100°C)</td>
<td></td>
</tr>
<tr>
<td>Red Thread HP Threaded and Bonded (T.B.) Bell &amp; Spigot (Matched Taper)</td>
<td>2&quot;-42&quot; (60-1,050 mm)</td>
<td>232-435 psi</td>
<td>Up to 210°F (99°C)</td>
<td></td>
</tr>
<tr>
<td>Bondstrand Bell &amp; Spigot (Matched Taper) Coil Lock and Key Lock</td>
<td>2&quot;-40&quot; (50-1,000 mm)</td>
<td>150-3,000 psi</td>
<td>Up to 210°F (99°C)</td>
<td></td>
</tr>
<tr>
<td>Fiberspar Spoolable LinePipe LPS</td>
<td>2&quot;-6&quot; (50-165 mm)</td>
<td>750-3,500 psi</td>
<td>Up to 203°F (95°C)</td>
<td></td>
</tr>
</tbody>
</table>

* Contact your sales representative if higher pressure are needed.

Quality

Our commitment to quality extends throughout the company and supplier network. All products are closely monitored during production and thoroughly tested. Quality standards are strictly enforced and reinforced with production employee incentives and quality audits. Third party inspections are a normal occurrence. The API 11E Quality Rating is a requirement for API 15AR and API 15LR. The quality and performance requirements of API assure the customer that, not only do we service a quality system, but that our products are also of high quality and approved for performance standards. Our adherence to this internationally recognized quality system is another indication of our commitment to our global role as a manufacturer of the highest quality products.

Service

Field support during the installation of the products is an integral part to ensure the reliability and long-term, worry free performance of your piping system. We offer complete training and inspection service for all products throughout the world. The availability of trained personnel at the job site leads to a more successful installation.

Awarded the FIRST API Q1, API 15AR approval for the manufacture of high pressure Fiberglass pipe.
Disposal or Injection Tubing

Our products are designed with Service Factors for Water, Oil and Chemical Waste Disposal Open Hole Casing, Zone or to High Pressure CO₂ and Salt Light Chemicals:

- Oil
- Natural Gas Production
- Observation Well Casing
- Geothermal
- Production Tubing (ESP, Gas
- Eliminates corrosion, tubing joints, and sucker rods
- Slotted Production Liners
- Tank Battery Piping
- Casing Liners
- Transfer Lines or Disposal
- Crude Oil, Salt Water, H₂S

Significant increase in production

- High strength couplings for easy installation of pumps and fittings to bring over 60 years of experience in the oil and gas sector with paraffin build-up.
- Smoother interior pipe surface increases efficiency and resists scale/ Improved Flow Capacity.
- Light and easy to handle. Less personnel and equipment needed during installation.
- Reduced Line Pipe Installation Cost
- Resists corrosion caused by CO₂, H₂S and saltwater. Requires no Corrosion Control

Benefits
- Corrosion Control
- Natural gas corrosion caused by CO₂ and/or sulfur. Requires no proprietary coating.
- Reduced Line Pipe Installation Cost
- Light and easy to handle. Less personnel and equipment needed during installation.
- Improved Fiber Capability
- Improve interior pipe surface increases efficiency and resists scale/paraffin build-up.

Connections

Advanced Composite Thread (ACTTM)

When used with STARWell ® and other composite product systems, STARWell ® connections offer additional installation benefits over competitive products. The composite thread used with STARWell ® connections provide the required tensile strength and make-up required for installation under a variety of conditions. The thread provides a high degree of thread strength through the effective combination of composite reinforcement and composite sealant.

STARWell ® Super Hard (SSHP), or STARWell ®, universal, multi-threaded composite connections. STARWell ® connections are manufactured for normal and high strength applications as described above. The use of STARWell ® connections (SSHP) is recommended to the customer. Often a series of conditions will be recommended to the customer. In some cases, such as when a steel product corrodes easily, the recommended product may give years of trouble-free service.

Spoolable Pipe

FiberGlass™ composite is a spoolable product (SP) that consists of an inner thermoplastic pressure barrier layer that is reinforced by high strength glass fibers embedded in an epoxy matrix. SP is intended for corrosion gathering and injection applications including general gathering and injection applications. It is specifically intended for use in producing wells where steel products corrode easily. Pressure in spoolable line pipe is maintained by a thermoplastic pressure barrier (TBP) and a thermoplastic corrosion resistant (TCR) composite. The corrosion-resistant composite layer incorporates high temperature polymers, which, when combined with the TBP, gives the composite its unique properties.

Applications

- Flow Line
- Interline Pipe
- Transfer Lines and Loop
- Tank Battery Piping
- Gas Water Liners
- Natural Gas Production
- High Pressure CO₂ and Salt Water Injection
- Crushed Oil and Water H₂S
- Safety
- Salt Water
- Sulfur
- Joints

Improved Downhole Make & Break Performance ACT Tubing

The ACT connection provides necessary thread performance, thread tolerance, less breakout torque, less thread failure, higher thread clarity, and easier walk and balanced burst performance.

Applications

- Disposal or Injection Tubing
- Production Tubing (ESP, Lift or Fuel Pump)
- Chemical Water Disposal
- Geothermal
- Subsea Manifolds
- Observed Well Casing
- Open Hole Casing, Zone or Surface

Fiberglass

In 2011, we introduced a spoolable FRP system for downstream applications up to 1,000 psi (6.9 MPa). This system is aimed at oilfield operations, particularly the rapid deployment of steel products. The act has the potential to eliminate the use of workover and drilling rigs, reduce the time required to deploy and replace pumps, and change the performance profile required from electrical submersible pumps when significantly lowering installation time and costs. The system utilizes an FRP, which incorporates embedded power conductors into the body of the pipe, eliminating the need for remotely controlled cable, a major cause of failure and downtime. Simple Design

- Tubing design from 1-½” to 2” (38 mm to 50 mm) in diameter
- Pressure up to 1,000 psi (6.9 MPa)
- Horizontal well-drilling with sequential falls technology
- Applicable for easy installation of pumps and fittings to traditional tubing gauges
- Eliminates corrosion, tubing joints, and outer seals
- Safety in remote and low-cost environments due to less equipment and fewer people on location
- Significant increase in production
- Reduced installation and operating costs
- Easy deployment from standard stock and easy location deployment centers.