**FALCON**
**EXTREMETUBE™**
*www.westernfalcon.com*
*www.polycore.ca*

# Engineering Thermoplastic Liner For Extreme Environments

Falcon Extremetube™ is a new liner made from PolyEtherEther Ketone (PEEK) Polymer. This unique thermoplastic is the strongest high tensile (14,500 psi) and high temperature (500° F / 260° C) liner material available with nearly 30 years of application experience in demanding oil and gas environments. Extremetube™ is an excellent alternative to corrosion resistant alloy (CRA) tubulars when performance, cost, and delivery time are important. Extremetube™ is a unique new solution now available for the most severe downhole corrosion and wear problems. This polymer offers the greatest resistance to acid gas permeation of all Western Falcon liners.

## Primary Applications

- High Temperature Wells
- Steam Flood
- Beam Pumped Wells
- PC Pumped Wells
- Submersible Pumped Wells
- Plunger Lift Wells
- Gas Lift Wells
- Acid Gas Injection
- Water Injection
- Disposal
- Flow Lines
- Solution Mining

*4th*
**FALCON**
**EXTREMETUBE™**
*Generation*

***Solving Tubular Problems Under The Most Extreme Operating Conditions.***

## Benefits

- Mitigates rod on tubing wear in wells with high side loads
- Corrosion control
- Decrease pressure drop in high velocity flow
- Reduce well servicing frequency and cost
- Reduce tubing and rod replacement
- Reduce corrosion inhibitor requirements
- Reduce friction and peak polish rod load
- Eliminate rod guides
- No stabbing guides or special connection inserts required
- No field service technician required

## Specifications

- Maximum Operating Temperature 500°F (260°C)
- Coated couplings to protect J-area against corrosion
- Minimum API Torque recommended for tubing connection make-up
- No special position make-up required
- Can be used with some proprietary premium threaded connections
- Extremetube™ is tan in color

| Tubing Size | Drift | Liner weight |
|---|---|---|
| 2 3/8" / 60.3 mm | 1.60" / 40.64 mm | .42 #/ft / .62 kg/m |
| 2 7/8" / 73.0 mm | 2.00" / 50.80 mm | .60 #/ft / .89 kg/m |
| 3 ½" / 88.9 mm | 2.50" / 63.50 mm | .85 #/ft / 1.26 kg/m |

**Western Falcon LLC:** 5810 Wilson Road, Suite 250, Humble, TX 77396, Tel: 832-391-9461 *www.westernfalcon.com*
**Polycore Tubular Liners:** Suite 403, 736-8th Ave SW, Calgary, Alberta, T2P 1H4, Tel: 403-444-5554 *www.polycore.ca*

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## Considerations Before Using Plastic Liners or Coatings

Western Falcon liners have been successfully deployed in tens of thousands of wells; yet, they are not appropriate for all environments and applications. Western Falcon regularly refuses to deploy its products into environments that can damage, attack or deform the liner. Please contact your Western Falcon or Polycore Tubular Liner representative to discuss your specific application in more detail if you have any questions or concerns about environmental or chemical compatibility of the thermoplastic materials in your well. If mishandled or misapplied, all liners and coatings can be compromised or mechanically damaged. When properly applied Western Falcon liners have shown to be resistant to typical rod wear and/or rod slaps common in most rod pumped applications.

Environments in the oil and gas industry are very complex and dynamic. It is not uncommon to experience wide variations in pressure, temperature, phase changes, and multiphase flow regimes in the same well. Because of the complexity of oilfield environments, the codependence of well conditions and their effect on the thermoplastics used as liner materials, it is desirable to evaluate each operational environment individually and holistically before deploying lined tubulars into a well. When possible, please provide your technical representative with a complete and accurate description of your expected well environment and operational practices before using Western Falcon lined tubing. A change in one parameter (pressure or acid gas concentration for example) might decrease the recommended allowable maximum rating of another parameter (temperature for example) or even prohibit the use of a product in a well. Please consider any unusual well operational treatments or services that might damage or compromise the thermoplastic liner and the following points:

1. All thermoplastics are permeable to gases, particularly small molecules like acid gases. The permeability of the liner is dependent on other factors in the environment. This limits the application of liners in wells such as high pressure gas wells and environments that contain too much CO2 and/or H2S.

2. The physical and chemical properties of thermoplastics change as a function of the temperature and/or pressure. Please discuss your specific application in detail with a technical representative from Western Falcon if you are using the liner in an extremely high (near the recommended operational limits) or low temperature/pressure environment.

3. Like other materials used in the oil patch, liners are susceptible to mechanical damage if mishandled. Please refer to the Western Falcon installation and operational procedures webpage for more information on avoiding premature damage to liner materials.

4. Special procedures designed to minimize damage to thermoplastic liners have been developed for common well operations such as fishing of parted rods, downhole cutting of lined tubing, remediation of surface deposits, special completion designs for different types of artificial lift, etc… Please discuss detailed options with your Western Falcon technical representative before performing such downhole operations.

5. Western Falcon offers several different liner products. Each product has a unique composition with a unique set of limitations and advantages. By design, Western Falcon liners are different colors for easy field identification. Please verify with your Western Falcon representative that the color/designation of the liner you are installing is correct for your specific application.

**For the most up to date information, recommended running procedures, recommended minimum API torque values, dimensions, and care and handling instructions please visit**
*www.westernfalcon.com* **or** *www.polycore.ca*