

Arlon® 3000 XT

Expanded High-Temperature Performance



Arlon® 3000 XT back up rings and single-pin electrical connector

Advanced Material for HPHT Environments

As oilfield drilling moves deeper, extrusion of polymer components has become a critical challenge due to the high temperatures and pressures found at these depths. Commonly referred to as high-pressure, high-temperature (HPHT) environments, they are hotter than 350°F (177°C) with pressures above 15 ksi.

Arlon® 3000 XT is an engineering thermoplastic developed to withstand these extreme conditions. With improved creep and extrusion resistance at temperatures above 350°F (177°C), it enhances performance over existing PAEK polymers.

In DMA (Dynamic Mechanical Analysis), Arlon® 3000 XT had a Tg 35°F (20°C) higher than PEEK, and provided superior mechanical property retention from 350°F (177°C) to 600° F (316°C). In extrusion testing at 35 ksi and 550°F (288°C), it outperformed both virgin and filled grades of PEEK and PEKEKK. In addition, Arlon® 3000 XT exhibits chemical resistance comparable to PEEK.

Arlon® 3000 XT delivers enhanced mechanical performance in HPHT conditions. Through increased reliability and extended service life, it expands design headroom overall. The result is safer, more efficient operations in extreme drilling environments.

Features and Benefits

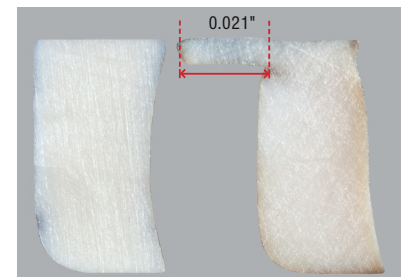
- Enhanced mechanical property retention at high temperatures improves performance over current PEEK- and PEKEKK based solutions
- Increased reliability of critical components over 350°F (177°C)
- Compatible with common oilfield chemistries; chemical resistance comparable to PEEK

Applications

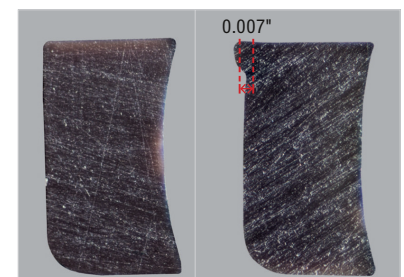
- Back-up rings
- Vee-rings
- Electrical connectors
- Seal assemblies

Testing

Extrusion Test (on the right): back-up ring cross-sections tested at 450°F (232°C) 40 ksi for 48 hours.



PEEK before test (left), after test (right).



Arlon® 3000 XT before test (left), and after test (right).

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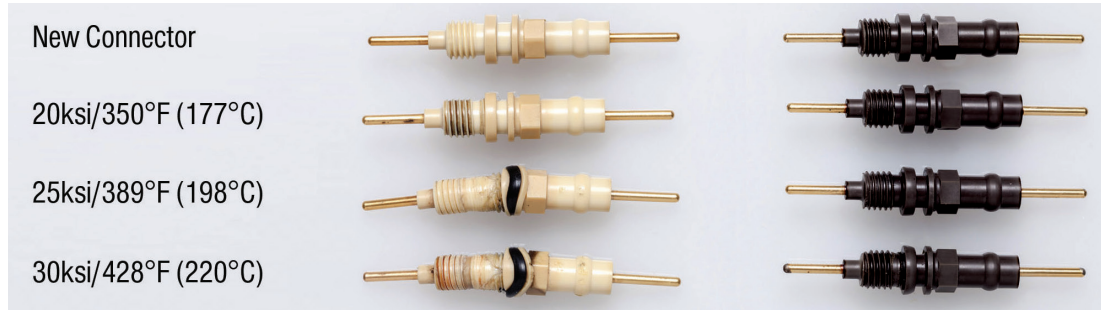
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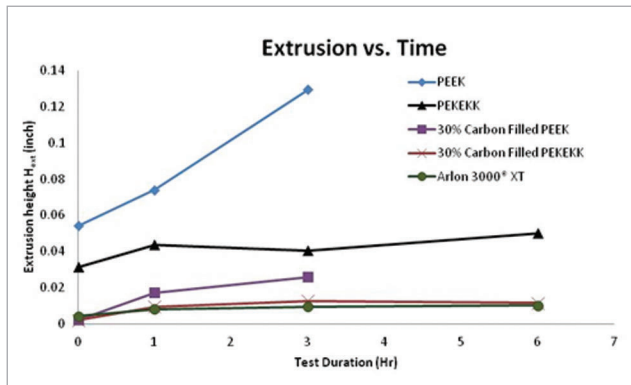
Testing (Continued)

Connector Test

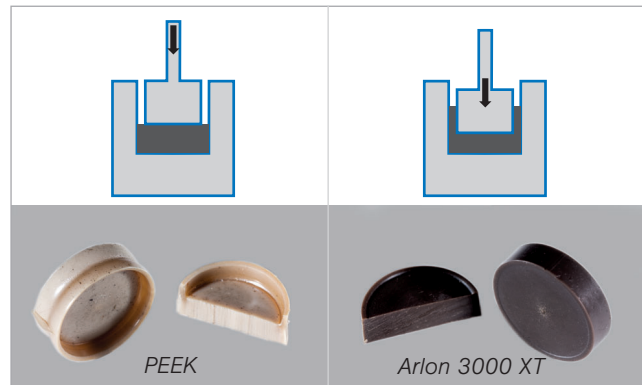


PEK connector rated to 20 ksi/400°F (1,379 bar/204°C) (left), Arlon® 3000 XT connector (right)

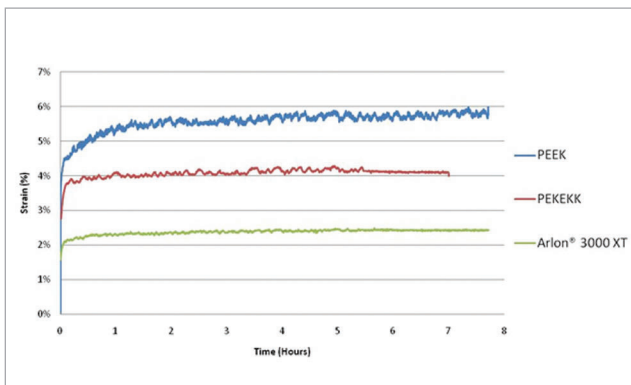
Extrusion Test: 550°F (288°C), 35 ksi, extrusion gap 0.020". Lower scores indicate higher performance.



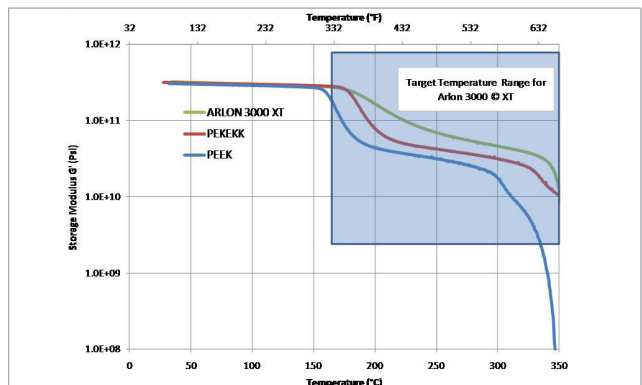
Test Fixture and Results: Arlon® 3000 XT showed 10 times greater extrusion resistance.



Creep Test: 500°F (260°C), stress level 14.5 ksi, performed in accordance with ASTM 2990. Lower scores indicate high performance.



Dynamic Mechanical Analysis: Arlon 3000® XT provided improved mechanical properties in the range of 350°F (177°C) to 600°F (316°C).



Note: Arlon 3000® XT is patent pending. Arlon® 3000 XT by Greene Tweed based on VESTAKEEP®, an Evonik product

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