THERMOPLASTIC COMPONENTS

Arlon 3000XT®

Expanded High-Temperature Performance

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

Features and Benefits

- Enhanced mechanical property retention at high temps improves performance over current PEEK- & 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
- V-rings
- Electrical connectors
- Seal assemblies

Testing

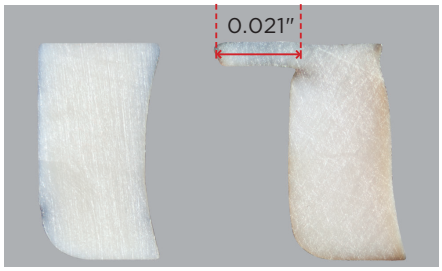
Extrusion Test (on the right): back-up ring cross-sections tested at 450°F (232°C) 40 ksi for 48 hours.

Advanced Material for HPHT Environments

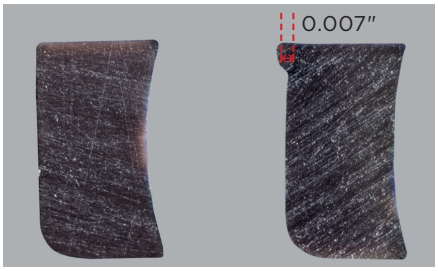
As oilfield drilling moves deeper, extrusion of polymer components has become a critical challenge due to the high temperatures and pressures found at these depths. Commonly referred to as high-pressure, hightemperature (HPHT) environments, they are hotter than 350°F (177°C) with pressures above 15 ksi.

Arlon 3000XT® 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 3000XT® 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 3000XT® exhibits chemical resistance comparable to PEEK.



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



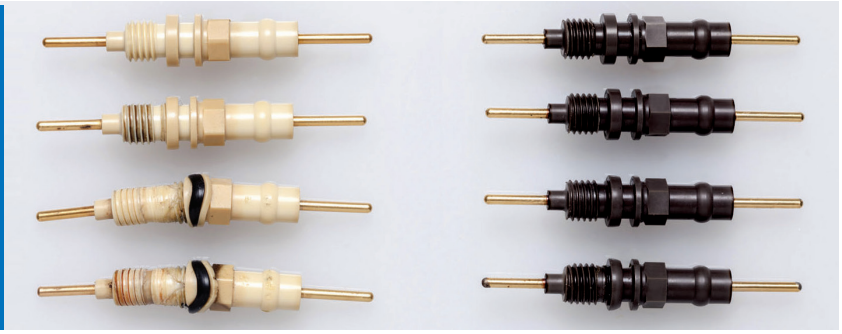
Arlon 3000XT® before test (left), and after test (right).

Arlon 3000XT® 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.

Testing Continued

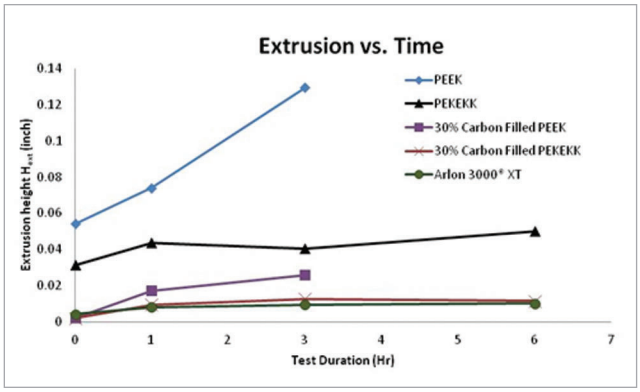
Connector Test

New Connector
20ksi/350°F (177°C)
25ksi/389°F (198°C)
30ksi/428°F (220°C)

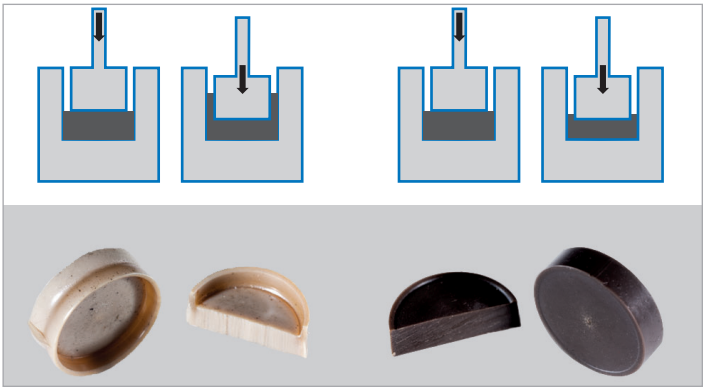


PEK connector rated to 20 ksi/400°F (1,379 bar/204°C) (left), Arlon® 3000XT connector (right).

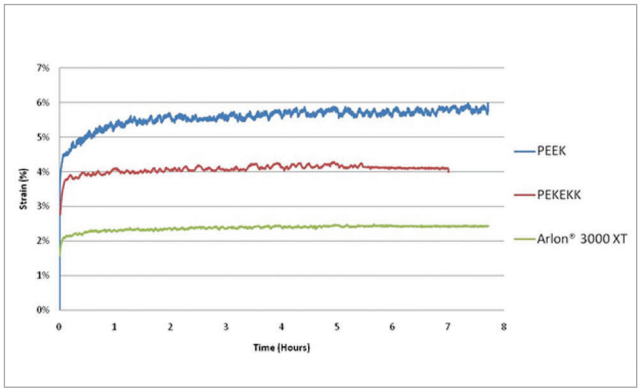
Extrusion Test: 550°F (288°C), 35 ksi, extrusion gap 0.020". Lower scores indicate higher performance.



Test Fixture and Results: Arlon 3000XT® 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 3000XT® provided improved mechanical properties in the range of 350°F (177°C) to 600°F (316°C).