QUADRANT

TECHTRON® AND RYTON*

Stiffness & Strength at Temperature Extremes

Product Profile:

- Excellent chemical resistance
- Essentially zero moisture absorption
- Machines to tight tolerances
- Excellent alternative to PEEK at lower temperatures

PPS (polyphenylene sulfide) products offer the broadest resistance to chemicals of any advanced engineering plastic. They have no known solvents below 392°F (200°C) and offer inertness to steam, strong bases, fuels and acids. Minimal moisture absorption (see Figure 21) and a very low coefficient of linear thermal expansion, combined with Quadrant's proprietary stress relieving processes, make these PPS products ideally suited for precise tolerance machined components. In addition, PPS products exhibit excellent electrical characteristics and are inherently flame retardant.

Techtron® PPS

Unlike reinforced PPS products, Techtron® PPS is easily machined to close tolerances. It is ideal for structural applications in corrosive environments or as a PEEK replacement at lower temperatures. Techtron® PPS is off white in color.

40% Glass-Reinforced Ryton* PPS

This product is the most recognized PPS. It is the compression molded analogue to Ryton R4 resin. It offers better dimensional stability and thermal performance than Techtron® PPS and maintains its strength to above 425°F (220° C).

Bearing-Grade Ryton* PPS

Bearing-grade Ryton is internally lubricated and carbon fiber reinforced compression molded PPS offering a low

CASE STUDY

A manufacturer of in-line flow meters has consolidated four standard rotor materials (two metal and two plastic) to one made of Bearing-grade Ryton. Ryton provides the machinability and long term dimensional stability needed for the close tolerances required.

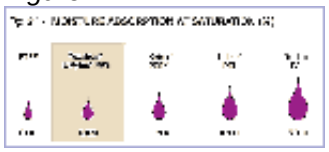
Rotors made of Bearing-grade Ryton enable the manufacturer to offer one standard product to service nearly every chemical stream over a temperature range of 32F (OC) to 300F (150C). (Prior materials: Stainless Steel, 1018 Steel, Kynar* PVDF and Ultem* PEI)

coefficient of thermal expansion and uncompromised chemical resistance. It is well suited for and wear applications or when an electrically conductive material is required.

Techtron® HPV
Techtron® HPV exhibits excellent wear resistance and a low coefficient of friction. It overcomes the disadvantages of virgin PPS caused by a high coefficient of friction, and of glass fibre reinforced PPS which can cause premature wear of the counterface in moving-part applications.

- Excellent wear and frictional behavior
- Excellent chemical and hydrolysis resistance
- Very good dimensional stability
- Good electrical insulating and dielectric properties
- Inherent low flammability
- Excellent resistance against high energy radiation

Figure 21



Click to Enlarge

Proven Applications:

Lantern Rings
Rings made of Bearing-grade Ryton eliminate galling and corrosion problems in centrifugal mining pumps, and allow closer running clearances -- reducing recirculation and increasing efficiency. (Prior material: Bronze)

Pump Housings
Precision machined, 40% Glass-reinforced Ryton components allow high efficiency in a broad range of chemical pump environments. (Prior material: Stainless Steel)

Chip Nests
Socket assemblies extensively machined from Techtron PPS plate are used during high power / high speed testing of semiconductor packages. (Prior material: Vespel* PI)

Retaining Rings
Retaining rings used to retain wafers in chemical-mechanical polishing equipment are fabricated from Techtron® PPS.

Engineering Notes
All Quadrant-EPP's PPS products offer dimensional stability and strength at moderate temperatures. They are rated for continuous service to 425°F (220°C), but strength and stiffness vary based on temperature and grade. Unreinforced Techtron® PPS is

generally not recommended for wear applications. Products like Torlon* PAI or Ketron® PEEK are better selections for high temperature wear applications. When designing with Ryton grades, it is important to note its relatively low elongation and impact strength.

Back to Top