

Fillers

And Radio-opaque Tubing

Overview-

There are many times when the application requires performance characteristics that are not native to the polymer itself. Availability of fillers provide further performance alterations. For instance, in medical applications, visualization of the device while in the body is critical. Plastics are radiolucent, so the addition of radio-opaque (RO) fillers aids visualization for minimally invasive procedures. This RO nature of the filled plastic allows physicians to precisely place surgically implantable devices. Zeus provides RO tubing with barium sulfate and bismuth trioxide.

Should you need a filler in one area of the tubing only and not throughout, RO striping can be added down the length of the product. We can also provide tubing made with RO titanium dioxide-filled Pebax®, selected nylons, PTFE, and FEP. Finally, tungsten-filled RO tubing can be manufactured upon request.

We also offer glass fillers to increase tubing abrasion resistance and bondability for resins such as PTFE. Bronze can be added to increase resistance to creep while improving machinability of the finished tubing product. Lastly, carbon aids in static dissipation and increases wear resistance. At Zeus, customization is what we do. Contact a Sales rep to see how our RO tubing or other fillers can advance your next project.



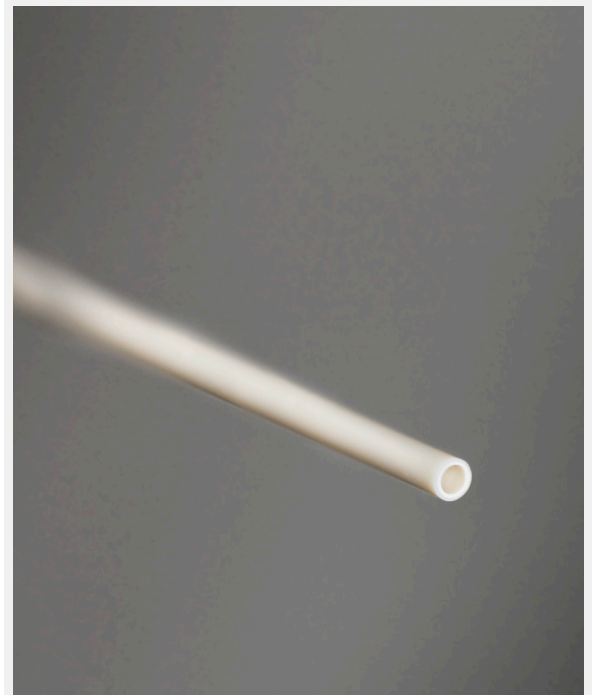
BIOCOMPATIBLE



CHEMICAL RESISTANCE



ABRASION RESISTANCE



Radio-opaque PEEK tubing combines the biocompatibility with visibility that physicians need to precisely place implantable devices.

APPLICATIONS

- Catheter componentry
- Implantable devices
- Furcation tubing
- Electrical insulation

CAPABILITIES AND SIZING

- Fillers available:
 - Barium sulfate
 - Bismuth subcarbonate, oxychloride, and trioxide
 - Titanium dioxide
 - Tungsten
 - Bronze
 - Glass
 - Carbon
- Co-extrusions
- Striping

KEY PROPERTIES

- Visible under x-ray / fluoroscopy
- Biocompatible
- Sterilizable
- Chemical resistance
- Abrasion resistance
- Static dissipation



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The information presented is believed to be accurate and is not intended to constitute a specification. Property characteristics are dramatically impacted by geometry and processing method, thus properties of extruded parts may vary. These tables are meant to serve as a general guideline only. Users should evaluate the material to determine suitability for their own particular application.

PEEK/Radio-opaque PEEK Comparison Chart

	PEEK	RO PEEK
Physical		
Density (g/cc) (ASTM D792)	1.3	1.63
Water Absorption (%) (ASTM ISO 62)	0.07 - 0.45	0.02
Mechanical		
Hardness, Shore D (ASTM D2240)	> 85	88
Tensile Strength, Ultimate (MPa) (ISO 527)	98 - 100	69
Elongation at Break (%) (ISO 527)	40 - 45	70-120
Modulus of Elasticity (MPa) (ASTM D527)	3700 - 4000	1300
Flexural Modulus (MPa) (ISO 178)	3800 - 4200	5200
Electrical		
Volume Resistivity (Ω -cm) (ASTM D257)	1 x 10 ¹⁶	5.0 x 10 ¹⁶
Dielectric Constant (1 MHz) (ASTM DIN 53483)	3.1	3.69
Dielectric Strength (V/mil) (ASTM EIC 60243-1)	584.2	300
Thermal		
Melt Temperature (°C) (ASTM ISO 12086)	343	341
Decomposition Temperature (°C) (AIR)	541 - 542.6	475
Specific Heat 25°C (J/gK)	1.14	0.92
Specific Heat 100°C (J/gK)	1.45	1.14
Specific Heat 200°C (J/gK)	1.91	1.40
C.T.E. Linear (ASTM D4702)	45	23

