



UNITREX[®] Polyetheretherketone (PEEK)

Unitrex PEEK is a semi-crystalline high temperature thermoplastic that offers design engineers a truly unique combination of exceptional performance characteristics. When compared with other engineering polymers, this material ranks as the best or nearly the best in every performance category. **Unitrex PEEK** has a continuous use temperature of 500°F and has a UL 94 flammability rating of V-0, with very low levels of smoke generation and toxic gas emission. Additionally, this material exhibits excellent electrical properties, which remain stable over a wide range of both temperatures and frequencies.

Unitrex PEEK is chemically resistant to a wide range of organic and inorganic liquids and is insoluble in all common solvents. In addition, it is unaffected by steam and hot water and has a very low moisture absorption rate. This material offers superior dimensional stability and machines easily. While unfilled **Unitrex PEEK** offers good wear resistance, **Unitrex L** has been reinforced with graphite and PTFE to provide an ideal combination of low friction and enhanced wear. For applications that require improved strength and stiffness, a 30% glass fiber filled grade is available (**Unitrex Rg-30**). Unfilled **Unitrex PEEK** stock shapes are light beige in color and are available from Nytef Plastics in a full range of heavy gauge rod, plate and tubular bar sizes.

PRODUCT ATTRIBUTES

- 500°F continuous use temperature
- Excellent strength, rigidity and toughness, even at elevated temperatures
- Chemically resistant to all common solvents
- Low moisture absorption
- Superior electrical properties
- Exceptional dimensional stability
- Rated UL V-0 with low smoke and toxic gas emissions
- Easily machined and fabricated
- FDA compliant
- USP Class VI grades are available

UNITREX Rg

- 30% Glass fiber filled grade for improved strength and stiffness

UNITREX L

- Bearing and wear grade offers lower coefficient of friction and improved wear resistance

INDUSTRIES

- Medical and pharmaceutical
- Aircraft and aerospace
- Fluid handling
- Electrical and electronics manufacturing
- Automotive and transportation
- Petroleum industry

APPLICATIONS

- Medical instruments
- Analytical instrumentation
- Semiconductor wafer handling components
- Compressor components and seals
- Pump wear rings
- Bearings and bushings

Nytef Plastics, Ltd. is dedicated to supplying our customers with the highest quality thermoplastic stock shapes for machining. We manufacture and stock a full line of thermoplastic materials in a wide variety of rod, plate and tubular bar sizes. In addition, we offer over 30 years of experience in the custom extrusion of application-specific and proprietary resins to meet even the most demanding performance requirements. Nytef Plastics offers full technical support for all products and is certified to ISO 9002 standards for the manufacture of extruded plastics stock shapes.

UNITREX® PEEK

Property	Test Method	Units	UNITREX	UNITREX Rg-30	UNITREX L
			Unfilled PEEK	30% Glass Fiber Filled	Bearing & Wear Grade
Mechanical					
Specific Gravity	ASTM-D792		1.32	1.51	1.44
Tensile Strength	ASTM-D638	psi	14,000	22,600	20,500
Tensile Elongation	ASTM-D638	%	60	2.7	2.5
Tensile Modulus of Elasticity	ASTM-D638	psi	520,000	1,410,000	1,200,000
Flexural Strength	ASTM-D790	psi	25,000	36,300	30,500
Flexural Modulus of Elasticity	ASTM-D790	psi	600,000	1,450,000	1,175,000
Compressive Strength	ASTM-D695	psi	17,100	31,200	21,800
Izod Notched Impact	ASTM-D256	ft.-lb./in.	1.2	1.8	1.2
Rockwell Hardness	ASTM-D785	M or R scale	M99(R126)	M103(R124)	
Thermal					
Coef. of Linear Thermal Expansion	ASTM-D696	in./in./°F	2.6 x 10 ⁻⁵	1.2 x 10 ⁻⁵	1.2 x 10 ⁻⁵
Max. Continuous Use Temp.	Nytec std.	°F	500	500	500
Heat Deflection Temp. @ 264 psi	ASTM-D648	°F	320	600	>560
Melting Point	ASTM-D3418	°F	644	644	644
Electrical					
Dielectric Strength-Short Term	ASTM-D149	volts/mil	480	175	
Dielectric Constant @ 60 Hz	ASTM-D150		3.5	3.7	
Dielectric Constant @ 10 ⁶ Hz	ASTM-D150		3.2	3.7	
Dissipation Factor @ 60 Hz	ASTM-D150		0.003		
Volume Resistivity	ASTM-D257	ohm-cm	>10 ¹⁶	>10 ¹⁶	1.2 x 10 ¹⁰
Miscellaneous					
Water Absorption/24 hrs.	ASTM-D570	% weight	0.2	0.11	0.06
Water Absorption @ Saturation	ASTM-D570	% weight	0.5	0.35	0.35
Dynamic Coefficient of Friction	Nytec Std.		0.58		0.17
Flammability	UL-94		V-0 (0.057")	V-0 (0.057")	V-0 (0.057")
Agency Approvals					
FDA/USDA			Yes	No	No
USP Class VI			Available	Available	Available

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