



UNITEM[®] Polyetherimide (ULTEM[®])

UNITEM Polyetherimide (PEI) is an amorphous thermoplastic that is manufactured from SABIC Innovative Plastics' ULTEM resin. UNITEM PEI is extremely rigid, dimensionally stable, and able to withstand continuous operating temperatures of 340°F. Because it offers superior resistance to autoclave sanitizing and is FDA/USDA compliant, UNITEM PEI is routinely specified for reusable machined components used in the medical and pharmaceutical industries. This material also offers electronic and semiconductor designers unmatched dielectric properties that are maintained over a wide frequency range. Unfilled UNITEM PEI is dark amber in color and semi-transparent. For applications that require improved stiffness, glass fiber filled grades with filler levels of 10%-40% are available. Nytef Plastics' UNITEM PEI stock shapes are UL V-0 rated and available in a full range of heavy gauge rod, plate and tubular bar sizes.

PRODUCT ATTRIBUTES

- 340°F continuous use temperature
- Semi-transparent with light amber color
- Excellent strength and rigidity, even at elevated temperatures
- Low moisture absorption
- Superior electrical properties
- Rated UL V-0
- Easily machined and fabricated
- FDA, USDA compliant
- Glass fiber filled grades for improved strength and stiffness

INDUSTRIES

- Medical and pharmaceutical
- Aircraft and aerospace
- Fluid handling
- Electrical and electronics manufacturing
- Microwave communications

APPLICATIONS

- Sight glasses
- Manifolds
- Electrical insulators
- Electrical component housings
- Aircraft instrumentation



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 35 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.



UNITEM® POLYETHERIMIDE (ULTEM®)

| Property | Test Method | Units | UNITEM PEI | UNITEM Rg-30 |
|--|-------------|--------------|--------------------------------|---------------------------------------|
| | | | Unfilled Polyetherimide | 30% Glass Fiber Reinforced PEI |
| Mechanical | | | | |
| Specific Gravity | ASTM-D792 | --- | 1.27 | 1.51 |
| Tensile Strength | ASTM-D638 | psi | 15,200 | 17,000 |
| Tensile Elongation | ASTM-D638 | % | 60-80 | 13 |
| Tensile Modulus of Elasticity | ASTM-D638 | psi | 500,000 | 800,000 |
| Flexural Strength | ASTM-D790 | psi | 22,000 | 27,000 |
| Flexural Modulus of Elasticity | ASTM-D790 | psi | 480,000 | 850,000 |
| Compressive Strength | ASTM-D695 | psi | 22,000 | 30,700 |
| Izod Notched Impact | ASTM-D256 | ft.-lb./in. | 1.0 | 1.6 |
| Rockwell Hardness | ASTM-D785 | M or R scale | M109(R123) | M114(R127) |
| Thermal | | | | |
| Coef. of Linear Thermal Expansion | ASTM-D696 | in./in./°F | 3.1 x 10 ⁻⁵ | 1.1 x 10 ⁻⁵ |
| Max. Continuous Use Temp. | Nytec std. | °F | 340 | 340 |
| Heat Deflection Temp. @ 264 psi | ASTM-D648 | °F | 392 | 410 |
| Vicat Softening Temperature | ASTM-D3418 | °F | 426 | 442 |
| Electrical | | | | |
| Dielectric Strength-Short Term | ASTM-D149 | volts/mil | 830 | 770 |
| Dielectric Constant @ 60 Hz | ASTM-D150 | | 3.2 | 3.7 |
| Dielectric Constant @ 10 ⁶ Hz | ASTM-D150 | | 3.15 | 3.7 |
| Dissipation Factor @ 60 Hz | ASTM-D150 | | 0.001 | 0.0015 |
| Volume Resistivity | ASTM-D257 | ohm-cm | >10 ¹⁷ | >10 ¹⁶ |
| Miscellaneous | | | | |
| Water Absorption/24 hrs. | ASTM-D570 | % weight | .25 | .16 |
| Water Absorption @ Saturation | ASTM-D570 | % weight | 1.25 | .90 |
| Flammability | UL 94 | | V-0 (0.125") | V-0 (0.125") |
| Agency Compliance | | | | |
| FDA | | | Yes | No |
| USDA | | | Yes | No |

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