

Technical Data Sheet

TDI Ether-Based Polyurethane (TDI Ether PU)

Chemical Name(s): Methylene Diphenyl Diisocyanate Ether-Based Polyurethane
Common Abbreviation(s): TDI Ether PU
Available Profiles: Sheet, Rod, Tube

TDI Ether-Based Polyurethane is an elastomeric material with excellent flexibility, good resistance to hydrolysis, and superior low-temperature performance. Its resistance to moisture, chemicals, and microbial attack makes it ideal for use in applications where long-term exposure to water or humid environments is expected. TDI Ether-based PU is widely used in dynamic applications requiring high resilience and flexibility.

Benefits:

- Superior resistance to hydrolysis and microbial growth
- Excellent flexibility and resilience, particularly in wet environments
- Good dynamic performance, suitable for applications involving flexing or repeated impact
- Moderate wear and abrasion resistance compared to ester-based polyurethanes

Common Applications:

- Marine seals, gaskets, and fendering systems
- Wet environment hoses and flexible tubing
- Shock absorbers and cushioning materials
- Conveyor belts and rollers for food processing equipment
- Dynamic components in water-rich environments

TYPICAL PROPERTIES of TDI ETHER-BASED POLYURETHANE (TDI ETHER PU)

	Property	Test Method	Value
Physical Properties	Density (g/cm ³)	ATSM D792	1.13
	Water Absorption (%)	ASTM D570	0.1
Mechanical Properties	Tensile Strength at 23°C (MPa)	ASTM D638	35
	Tensile Modulus (MPa)	ASTM D638	100-300
	Tensile Elongation at Break (%)	ASTM D638	450-500
	Flexural Strength (MPa)	ASTM D790	30
	Flexural Modulus (MPa)	ASTM D790	300
	Compressive Strength (MPa)	ASTM D695	70
	Hardness (Shore A, Shore D)	ASTM D785	A85 - D45
	Impact Strength (kJ/m ²)	ASTM D256	12
Thermal Properties	Coefficient of Linear Thermal Expansion (mm/mm/°C)	ASTM D696	2.0 x 10 ⁻⁴
	Heat Deflection Temperature at 0.45 MPa (°C)	ASTM D648	60
	Approx. Melting Temperature (°C)	ASTM D3418	170-190
	Max Operating Temperature (°C)	-	85
Electrical Properties	Dielectric Strength (kV/mm)	ASTM D149	18
	Dielectric Constant at 1 MHz	ASTM D150	6.5
	Dissipation Factor at 1 kHz	ASTM D150	0.03
	Surface Resistivity (ohm/sq)	ASTM D257	>10 ¹²
	Arc Resistance (sec)	ASTM D495	110-130
Flammability	Flammability Rating	UL94	HB
Standards Compliance	ASTM D638, D790, D695, D257 compliant		
Environmental Considerations	Recyclability: TDI Ester-Based Polyurethane is challenging to recycle but is highly durable, extending service life and reducing replacement frequency. Environmental Impact: Due to its susceptibility to hydrolysis, it is better suited for dry or oil-rich environments rather than applications involving water or high humidity.		



