

## Technical Data Sheet

### TDI Ester-Based Polyurethane (TDI Ester PU)

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

MDI Ester-Based Polyurethane is a high-performance elastomer known for its superior mechanical strength, wear resistance, and load-bearing capacity. It is widely used in industrial applications where high abrasion resistance and chemical resistance to oils and solvents are required. However, its susceptibility to hydrolysis in wet environments makes it more suited for dry or oil-laden conditions.

#### Benefits:

- Superior wear and abrasion resistance
- High load-bearing capacity and mechanical strength
- Excellent resistance to oils, fuels, and solvents
- High tear and impact strength
- Ideal for dynamic applications under high loads

#### Common Applications:

- Industrial wheels, rollers, and conveyor belts
- Bushings, seals, and gaskets
- High-wear pads and impact buffers
- Mining and material handling equipment
- Heavy-duty industrial components

#### TYPICAL PROPERTIES of TDI ESTER-BASED POLYURETHANE (TDI ESTER PU)

	Property	Test Method	Value
Physical Properties	Density (g/cm <sup>3</sup> )	ATSM D792	1.20
	Water Absorption (%)	ASTM D570	0.4
Mechanical Properties	Tensile Strength at 23°C (MPa)	ASTM D638	45-50
	Tensile Modulus (MPa)	ASTM D638	100-350
	Tensile Elongation at Break (%)	ASTM D638	400-450
	Flexural Strength (MPa)	ASTM D790	35
	Flexural Modulus (MPa)	ASTM D790	400
	Compressive Strength (MPa)	ASTM D695	80
	Hardness (Shore A, Shore D)	ASTM D785	A90 - D55
Thermal Properties	Impact Strength (kJ/m <sup>2</sup> )	ASTM D256	14
	Coefficient of Linear Thermal Expansion (mm/mm/°C)	ASTM D696	1.8 x 10 <sup>-4</sup>
	Heat Deflection Temperature at 0.45 MPa (°C)	ASTM D648	75
	Approx. Melting Temperature (°C)	ASTM D3418	180-220
Electrical Properties	Max Operating Temperature (°C)	-	80
	Dielectric Strength (kV/mm)	ASTM D149	20
	Dielectric Constant at 1 MHz	ASTM D150	6.0
	Dissipation Factor at 1 kHz	ASTM D150	0.02
	Surface Resistivity (ohm/sq)	ASTM D257	>10 <sup>12</sup>
Flammability	Arc Resistance (sec)	ASTM D495	110-140
Standards Compliance	Flammability Rating	UL94	HB
Environmental Considerations	ASTM D638, D790, D695, D257 compliant		
	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.		

