## Polytetrafluoroethylene

(PTFE Premium-Medical Grade)

## **SPECIFICATIONS**

Specific Gravity	Property	Spec	Value
Water Absorption  ASTM D570  D.01%  Flammability  UL 94  V-0  Tensile Strength  ASTM D4894  Elongation  ASTM D4894  Elongation  ASTM D4894  Elongation  ASTM D2240  Elongation  ASTM D2240  Elongation  ASTM D2240  Elongation  ASTM D785  Elongation  ASTM D785  Elongation  ASTM D785  Elongation  ASTM D695  Elongation  ASTM D696  Elongation  ASTM D696  Elongation  ASTM D696  Elongation  Elongation  Elongation  Elongation  ASTM D696  Elongation  Elongation	Color		White
Flammability  UL 94  V-0  Tensile Strength  ASTM D4894  Elongation  ASTM D2240  Elongation  ASTM D785  Elongation  ASTM D895  Elongation  ASTM D695  Elongation  ASTM D696  Elongation  ASTM D894  D.08-0.10  Coefficient of dynamic friction  ASTM D1894  D.08-0.10  Elongation  ASTM D1894  D.08-0.10  Elongation  ASTM D1894  D.08-0.08  ASTM D1894  D.08-0.08  Elongation  ASTM D1894  D.08-0.10  Coefficient of dynamic friction  ASTM D1894  Coefficient of linear thermal expansion from 25 to 100°C  Elongation  ASTM D696  Elongation  ASTM D696  Elongation  ASTM D696  Elongation  Elongation  ASTM D696  Elongation  Elongation  ASTM D696  Elongation  Elongation  ASTM D696  Elongation  Elon	Specific Gravity	ASTM D792	2.130-2.190 g/cm <sup>3</sup>
Tensile Strength  ASTM D4894  Elongation  ASTM D4894  Elongation  ASTM D2400  Est Shore D  Ball Hardness  ASTM D785  E23 MPa  Compression strength @1% Deformation  Deformation under load (140 kg/cm² for 24 hrs. @23°C)  ASTM D695  ASTM D691  ASTM D621  Coefficient of static friction  ASTM D894  Coefficient of dynamic friction  ASTM D1894  Coefficient of dynamic friction  Wear factor K  ASTM D3702  Coefficient of linear thermal expansion from 25 to 100°C (10⁻⁵/°C)  Dielectric strength  ASTM D149  E25 MPa  E280%  E30%  E30 KV/mm  Volume resistivity (Ohm cm)  ASTM D159  E30 kV/mm  Volume resistivity (Ohm cm)	Water Absorption	ASTM D570	0.01%
Elongation  ASTM D4894  ≥280%  Hardness  ASTM D2240  ≥54 Shore D  Ball Hardness  ASTM D785  ≥23 MPa  Compression strength @1% Deformation  Deformation under load (140 Kg/cm² for 24 hrs. @23°C)  Permanent deformation (after 24 hrs. Relaxation @23°C)  Coefficient of static friction  ASTM D621  Coefficient of dynamic friction  ASTM D1894  Coefficient of dynamic friction  ASTM D1894  Coefficient of dynamic friction  Wear factor K  ASTM D3702  20000-25000  cm³ min 10-8 Kg m h  Thermal conductivity W/ m K  ASTM C177  Coefficient of linear thermal expansion from 25 to 100°C (10⁻⁵/°C)  Dielectric strength  ASTM D149  ≥30 kV/mm  Volume resistivity (Ohm cm)  ASTM D257  10¹8	Flammability	UL 94	V-0
Hardness  ASTM D2240  Ball Hardness  ASTM D785  ≥23 MPa  Compression strength @1% Deformation  Deformation under load (140 Kg/cm² for 24 hrs. @23°C)  Permanent deformation (after 24 hrs. Relaxation @23°C)  Coefficient of static friction  Coefficient of dynamic friction  Wear factor K  ASTM D3702  ASTM D3702  20000-25000  cm³ min 10-8 Kg m h  Thermal conductivity W/ m K  ASTM D1894  ASTM D696  12-15  Dielectric strength  ASTM D149  ≥30 kV/mm  Volume resistivity (Ohm cm)  ASTM D257  10¹8	Tensile Strength	ASTM D4894	≥25 MPa
Ball Hardness ASTM D785 ≥23 MPa  Compression strength @1% Deformation Under load (140 Kg/cm² for 24 hrs. @23°C) ASTM D621 10-13%  Permanent deformation (after 24 hrs. Relaxation @23°C) ASTM D621 6-7.5%  Coefficient of static friction ASTM D1894 0.08-0.10  Coefficient of dynamic friction ASTM D1894 0.06-0.08  Wear factor K ASTM D3702 2.900  Wear coefficient Thermal conductivity W/ m K ASTM C177 0.34  Coefficient of linear thermal expansion from 25 to 100°C (10°5/°C) Dielectric strength ASTM D149 ≥30 kV/mm  Volume resistivity (0hm cm) ASTM D257 10°B	Elongation	ASTM D4894	≥280%
Compression strength @1% Deformation       ASTM D695       ≥4 MPa         Deformation under load (140 Kg/cm² for 24 hrs. @23°C)       ASTM D621       10-13%         Permanent deformation (after 24 hrs. Relaxation @23°C)       ASTM D621       6-7.5%         Coefficient of static friction       ASTM D1894       0.08-0.10         Coefficient of dynamic friction       ASTM D1894       0.06-0.08         Wear factor K       ASTM D3702       2.900         Wear coefficient       20000-25000 cm³ min 10-8 Kg m h         Thermal conductivity W/ m K       ASTM C177       0.34         Coefficient of linear thermal expansion from 25 to 100°C (10⁻⁵/°C)       ASTM D696       12-15         Dielectric strength       ASTM D149       ≥30 kV/mm         Volume resistivity (Ohm cm)       ASTM D257       10⁻¹8	Hardness	ASTM D2240	≥54 Shore D
Deformation ASTM D695 ≥4 MPa  Deformation under load (140 Kg/cm² for 24 hrs. @23°C) ASTM D621 10-13%  Permanent deformation (after 24 hrs. Relaxation @23°C) ASTM D621 6-7.5%  Coefficient of static friction ASTM D1894 0.08-0.10  Coefficient of dynamic friction ASTM D1894 0.06-0.08  Wear factor K ASTM D3702 2.900  Wear coefficient 2.900 cm³ min 10-8 Kg m h  Thermal conductivity W/ m K ASTM C177 0.34  Coefficient of linear thermal expansion from 25 to 100°C (10⁻⁵/°C) ASTM D696 12-15  Dielectric strength ASTM D149 ≥30 kV/mm  Volume resistivity (Ohm cm) ASTM D257 10⁻¹⁵	Ball Hardness	ASTM D785	≥23 MPa
(140 Kg/cm² for 24 hrs. @23°C)  Permanent deformation (after 24 hrs. Relaxation @23°C)  Coefficient of static friction  Coefficient of dynamic friction  Wear factor K  ASTM D1894  O.08-0.10  Coefficient of dynamic friction  ASTM D1894  O.06-0.08  Wear factor K  ASTM D3702  2.900  Wear coefficient  Thermal conductivity W/ m K  ASTM C177  O.34  Coefficient of linear thermal expansion from 25 to 100°C (10⁻⁵/°C)  Dielectric strength  ASTM D149  ≥30 kV/mm  Volume resistivity (Ohm cm)  ASTM D257  10⁻¹8		ASTM D695	≥4 MPa
(after 24 hrs. Relaxation @23°C)  Coefficient of static friction  Coefficient of dynamic friction  ASTM D1894  O.06-0.08  Wear factor K  ASTM D3702  2.900  Wear coefficient  Thermal conductivity W/ m K  Coefficient of linear thermal expansion from 25 to 100°C (10⁻⁵/°C)  Dielectric strength  ASTM D149  ≥30 kV/mm  Volume resistivity (Ohm cm)  ASTM D257  10⁻¹8		ASTM D621	10-13%
Coefficient of dynamic friction  Wear factor K  ASTM D3702  2.900  Wear coefficient  Thermal conductivity W/ m K  Coefficient of linear thermal expansion from 25 to 100°C (10⁻⁵/°C)  Dielectric strength  ASTM D149  ≥30 kV/mm  Volume resistivity (Ohm cm)  ASTM D257  10⁻¹8		ASTM D621	6-7.5%
Wear factor K       ASTM D3702       2.900         Wear coefficient       20000-25000 cm³ min 10-8 Kg m h         Thermal conductivity W/ m K       ASTM C177       0.34         Coefficient of linear thermal expansion from 25 to 100°C (10⁻⁵/°C)       ASTM D696       12-15         Dielectric strength       ASTM D149       ≥30 kV/mm         Volume resistivity (Ohm cm)       ASTM D257       10⁻¹8	Coefficient of static friction	ASTM D1894	0.08-0.10
Wear coefficient  Thermal conductivity W/ m K  Coefficient of linear thermal expansion from 25 to 100°C (10⁻⁵/°C)  Dielectric strength  ASTM D149  ASTM D257  ASTM D257  ASTM D257  20000-25000 cm³ min 10-8 Kg m h  0.34  ASTM D696  12-15  ≥30 kV/mm	Coefficient of dynamic friction	ASTM D1894	0.06-0.08
Wear coefficient       cm³ min 10-8 Kg m h         Thermal conductivity W/ m K       ASTM C177       0.34         Coefficient of linear thermal expansion from 25 to 100°C (10⁻⁵/°C)       ASTM D696       12-15         Dielectric strength       ASTM D149       ≥30 kV/mm         Volume resistivity (Ohm cm)       ASTM D257       10⁻¹²²	Wear factor K	ASTM D3702	2.900
Coefficient of linear thermal expansion from 25 to 100°C (10 <sup>-5</sup> /°C)  Dielectric strength  ASTM D149  ≥30 kV/mm  Volume resistivity (Ohm cm)  ASTM D257  10 <sup>18</sup>	Wear coefficient		
expansion from 25 to 100°C (10⁻⁵/°C) 12-15  Dielectric strength ASTM D149 ≥30 kV/mm  Volume resistivity (Ohm cm) ASTM D257 10⁻¹8	Thermal conductivity W/ m K	ASTM C177	0.34
Volume resistivity (Ohm cm) ASTM D257 10 <sup>18</sup>	expansion from 25 to 100°C	ASTM D696	12-15
· · · · · · · · · · · · · · · · · · ·	Dielectric strength	ASTM D149	≥30 kV/mm
Surface resistivity (Ohm) ASTM D257 10 <sup>17</sup>	Volume resistivity (0hm cm)	ASTM D257	10 <sup>18</sup>
	Surface resistivity (Ohm)	ASTM D257	10 <sup>17</sup>

$$\left\{ CF_2 - CF_2 \right\}_n$$

## **DESCRIPTION**

MT401 is a PTFE material with hardness ≥54D. specially compounded medical grade. Polytetrafluoroethylene (PTFE) has exceedingly strong carbon-fluoride bonds (C-F). PTFE has a simple, linear, flexible and regular molecular structure, which makes it highly crystalline. Commercial PTFE is a high molecular weight polymer. Fluorine atoms form a tight sheath of protection providing PTFE with extreme molecular and physical properties. The sheath prevents PTFE from external influences upon the carbon-carbon backbone. It also results in weak interactions/bindings between polymer chains. These molecular structure properties make PTFE extremely resistant to chemicals or solvents even at very high temperatures and high pressures. PTFE also has very low friction and good anti-stick characteristics. PTFE is tough and flexible even at very low temperatures. However the same molecular structure properties result in mediocre mechanical properties with low stiffness and strength among thermoplastics. PTFE articles cannot be formed with conventional processes for thermoplastics because it does not flow above its crystalline melting point. Parts can be formed by a sintering process under high temperatures.