Tullomer™ Technical Data Sheet

Inherent Properties

- **Fully crystalline** and **highly rigid**, outperforming most engineering polymers **without post-processing**, ideal for structural applications.
- Exceptional mechanical strength **(>200 MPa)** and **low density**, suitable for lightweight, load-bearing components.
- Excellent **thermal stability from subzero to 180°C**, enabling use in high-temperature environments.
- **Resistant to harsh chemicals and UV exposure**, perfect for outdoor and chemical processing parts.
- Superior dimensional stability with **low creep** and **abrasion resistance**, beneficial for precision components.
- Outstanding **thermal and electrical insulation** with high dielectric strength, suited for electronics and electrical housings.
- **Low dielectric constant** ensures **radio frequency transparency**, ideal for antenna components and sensors.
- **Minimal thermal expansion**, maintaining dimensional accuracy in aerospace, under-the-hood automotive parts and electronics.
- **Strong oxygen and moisture barrier**, essential for packaging, seals, and protective coatings.
- **Self-extinguishing**, **non-flammable**, with **minimal outgassing**, ideal for safety-critical and railway applications.
- **High biocompatibility** and **low cytotoxicity**, suitable for medical implants and devices.
- **PFAS-free**, **100% recyclable**, and produced through energy-efficient processes, aligning with sustainable product design.




Material Properties	Test (ASTM)	Tullomer™	Units
Tensile Stress at Break	D3039	250	MPa
Tensile Modulus	D3039	25	GPa
Tensile Elongation at Break	D3039	5	%
Flexural Strength	D790	225	MPa
Flexural Modulus	D790	20	GPa
Surface Resistance	-	Insulator	Ω
Density	-	1.4	g/cm^3
Dielectric Constant	-	3	-
Lost Tangent	-	.002	-

Thermal Properties	Value	Units	Comment
Melting Point	280	°C	DSC
Glass Transition (T_g)	n/a*	°C	DSC
Flammability (UL-94)	V0	---	Expected Value

The test specimens studied are entirely composed of Tullomer™ filament and are printed using commercially available hardware and software. Values shown are minimum values measured.

Test components are designed to maximize performance under specific test conditions and may not reflect performance in real-world conditions. Printed with 1 shell 100% aligned rectilinear infill in the long direction for the bars.

Test Sample Dimensions:

- Tensile: 175mm (L) x 12.7mm (W) x 1.5mm (H)
- Flexural: 3-pt. Bending, 100mm (L) x 12.7mm (W) x 3.2mm (H)

*Tullomer™ does not undergo a glass transition but may soften above 180°C.

Chemical Resistance	
Resistance to acids (ie. Nitric acid, phosphoric acid, acetic acid, chromic acid, monochloroacetic acid, formic acid, hydrochloric acid, sulfuric acid)	Excellent
Resistance to alkali (sodium hydroxide, calcium hydroxide, sodium hypochlorite)	Excellent
Resistance to most chemicals (Acetone, toluene, dimethyl formamide, methanol, ethanol, ethyl acetate, ethylene glycol, Brake fluids- Castrol TLX 988C, Fuels-gasoline, methylene chloride, nitrobenzene, engine oil, silicone oil, hydraulic oil, refrigerant)	Excellent
Resistance to water (ie. Chlorine water, Salt water)	Excellent

Tullomer™ Printing Parameters

Z-Polymers

Printer Settings	Minimum	Ideal for Low-Cost Printers	Ideal for High Temp Printers
Nozzle (ºC)	290	300	350
Bed (ºC)	120	≥120	120-200
Chamber (ºC)	40	≥60	≥120
Infill / Inner Wall Speed (mm/s)	160	160	160
Outer Wall Speed (mm/s)	80	80	80
Cooling	Not Recommended	Not Recommended	Only on short layers

- Print at layer heights anywhere between 12.5% and 50% of the nozzle diameter.
- 100% infill with aligned rectilinear pattern is recommended.
- Print sequence: per object, not per layer.
- **Magigoo PC adhesive is highly recommended** with any build plate.
- First layer inspection (on applicable machines) is not recommended.
- Brims can be used if bed adhesion is insufficient.
- For supported surfaces, use interface layers with ≤ 0.1mm gap from the part.
- Printing at higher speeds contributes to higher XY strength at the cost of surface finish and interlayer adhesion.
- Material is highly shear thinning; this may lead to rippling effects on the surface at high extrusion temperatures due to low viscosity.
- Tullomer™ is extremely inert and and hardly sticks to itself or other materials. **This can lead to significantly lower interlayer adhesion and accordingly, lower Z-strength in comparison to XY strength.**

Interested in learning more?

Go to Z-Polymers.com and reach out to us with a short description on your application and needs.

Disclaimer:

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