

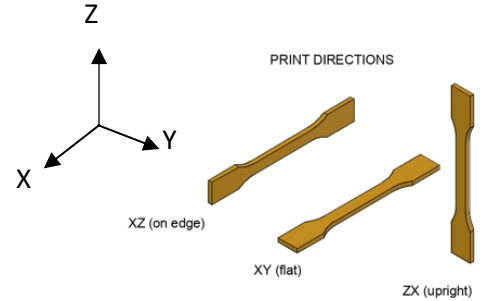
# Technical Data Sheet (TDS)

sales@zymergen.com  
www.zymergen.com



## General Information

Thermoplastic Polyimide for fused fabrication filament printing



## Product Highlights

- Highest Z-strength
- Inherent flame retardant
- Easy to print Polyimide

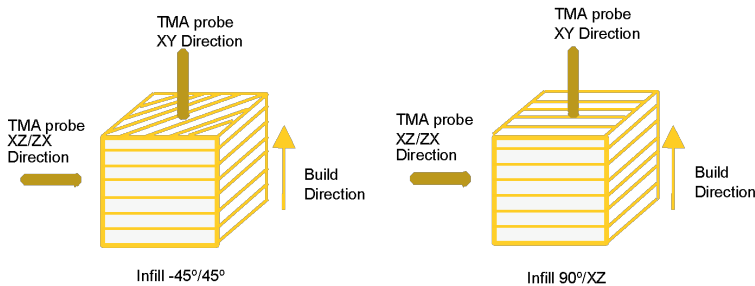
Property	Method	Units	Value		
			XY* (flat)	XZ (on edge)	ZX (upright)
* Print orientation -45°/45°					
<b>Mechanical</b>					
Tensile Strength *	ISO 527 Type 1BA	MPa	83	89	68
Tensile Modulus*	ISO 527 Type 1BA	GPa	2.73	2.89	2.56
Strain at Break *	ISO 527 Type 1BA	%	4.8	4.8	3.5
Tensile Strength **	ASTM D638 type V	MPa	N/A	101	59
Tensile Modulus**	ASTM D638 type V	GPa	N/A	2.82	2.57
Strain at Break **	ASTM D638 type V	%	N/A	4.5	2.7
Tensile Strength ***	ASTM 1708	MPa	N/A	N/A	96
Tensile Modulus***	ASTM 1708	GPa	N/A	N/A	2.41
Strain at Break ***	ASTM 1708	%	N/A	N/A	4.7
Flexural Modulus	ASTM D 790	GPa	TBD	TBD	TBD
Flexural strength @ break	ASTM D 790	MPa	TBD	TBD	TBD
Flexural elongation @ break	ASTM D 790	%	TBD	TBD	TBD
Impact Strength Izod (notched) **	ISO180	KJ/m <sup>2</sup>	5.3	5.3	4.3
Impact Strength Izod (unnotched) **	ISO180	KJ/m <sup>2</sup>	29	28	26
<b>Thermal</b>					
Flammability 0,8mm	UL 94	-	TBD	TBD	TBD
Flammability 1,6mm	UL 94	-	TBD	TBD	TBD
Temp. of deflection under load (1.80 MPa) *	ISO 75-1/-2	°C	167		
Temp. of deflection under load (0.45 MPa) *	ISO 75-1/-2	°C	175		

# Technical Data Sheet (TDS)

Property	Method	Units	Value	
<b>Thermal</b>				
* Print orientation -45°/45°			XY* Flat	XZ (on edge) and ZX (upright)
CTE (-45/45 infill) -50 °C to 60 °C	ASTM 831	ppm/°C	43.05	46.64
	ASTM 831	ppm/°F	23.92	25.91
CTE (-45/45 infill) 60°C to 120 °C	ASTM 831	ppm/°C	53.95	58.52
	ASTM 831	ppm/°F	29.97	32.51
CTE (-45/45 infill) 120 °C to 190 °C	ASTM 831	ppm/°C	62.51	67.74
	ASTM 831	ppm/°F	34.73	37.63
CTE (90° XZ infill) -50 °C to 60 °C	ASTM 831	ppm/°C	50.15	44.68
	ASTM 831	ppm/°F	27.86	24.82
CTE (90° XZ infill) 60°C to 120 °C	ASTM 831	ppm/°C	61.07	58.30
	ASTM 831	ppm/°F	33.92	32.38
CTE (90° XZ infill) 120 °C to 190 °C	ASTM 831	ppm/°C	68.64	65.23
	ASTM 831	ppm/°F	38.13	36.23
Tg	DMA	°C	195	
Td at 1% loss	DMA	°C	343	
Td	DMA	°C	460	

- \* Printed flat op bed representing XY/XZ/ZX (Intamsys funmat HT)
- \*\* XZ/ZX Bars out of water jetted 3D printed plates (Minifactory Ultra)
- \*\*\* Single wall data on Z-strength (Minifactory Ultra)
  - Tnozzle 405°C, Tbuildplate 160°C, Tchamber 160°C
  - Layer thickness 0,2mm (30 mm/s), Beadwidth 0,5mm

### CTE method ASTM 831



## Technical Data Sheet (TDS)

Property	Method	Units	Value
<b>Physical</b>			
Filament diameter (+/- 0,05mm)	-	mm	1.75
Density	ASTM B923-10	g/cm3	1.51
<b>Electrical</b>			
Dielectric constant (1GHz)	ASTM D150	-	2.87
Dielectric constant (10GHz)	ASTM D150	-	2.85
Dielectric loss (1GHz)	ASTM D150	-	0.0094
Dielectric loss (10GHz)	ASTM D150	-	0.0083
Breakdown voltage	ASTM D149	MV/m	172

<b>Recommended Processing conditions</b>	
Nozzle temperature	390°C-410°C
Bed temperature	120°C-160°C
Chamber temperature	80°C-160°C
Bed material	Glass, Carbon plate
Adhesion promoter	Magigoo HT, Nano polymer adhesive, GeckoTec EZ-Hot
Nozzle diameter	≥ 0.4 mm, Ruby or Hardened preferred
Print speed	15-150 mm/s
Drying instructions filament	>4 hours at 120 °C

All information supplied by or on behalf of Zymergen in relation to its products, whether in the nature of data, recommendation or otherwise, is supposed by research and, in good faith, believed reliable, but Zymergen assumes no liability and make no warranties of any kind, express or implied, including but not limited to, those of title, merchantability, fitness for a particular purpose or non-infringement or any warranty arising from a course of dealing, usage or trade practice whatsoever in respect of application, processing or use made of aforementioned information or product. The user assumes all responsibility for the use of all information provided and shall verify quality and other properties or any consequences from the use of all such information. Typical values are indicative only and are not to be construed as being binding specifications. Copyright © Zymergen 2022. All rights reserved.