

**Electrafil® PESU 1810 3DP**

 Techmer Polymer Modifiers - *Polyethersulfone*
**General Information**
**Product Description**

Electrafil® PESU 1810 3DP is a specially formulated and compounded thermoplastic material designed for AM of tooling for use in composites fabrication by autoclave curing. This product offers superior processability (surface finish and start/stop quality) compared to any other high temperature thermoplastic compounds for pellet fed LFAM machines. It will withstand repeated autoclave cycles at temperatures in excess of 350oF.

**General**

Material Status	• Commercial: Active
Availability	• North America
Filler / Reinforcement	• Carbon Fiber, 26% Filler by Weight
Uses	• Additive Manufacturing (3D Printing)
Processing Method	• 3D Printing

**Properties <sup>1</sup>**

Physical	Nominal Value	Unit	Test Method
Density / Specific Gravity			ASTM D792
-- 2	1.32		
-- 3	1.32		
-- 4	1.46		
Mechanical	Nominal Value	Unit	Test Method
Tensile Modulus			ASTM D638
-- 2	1.50E+6	psi	
-- 3	540000	psi	
-- 4	2.50E+6	psi	
Tensile Strength			ASTM D638
Yield <sup>2</sup>	14300	psi	
Yield <sup>3</sup>	5600	psi	
Yield <sup>4</sup>	23000	psi	
Tensile Elongation <sup>4</sup> (Break)	2.0	%	ASTM D638
Flexural Modulus			ASTM D790
-- 2	1.40E+6	psi	
-- 3	400000	psi	
-- 4	2.30E+6	psi	
Flexural Strength			ASTM D790
-- 2	19400	psi	
-- 3	7400	psi	
-- 4	36000	psi	
Compressive Modulus <sup>4</sup>	800000	psi	ASTM D695
Compressive Strength <sup>4</sup>	26500	psi	ASTM D695
Poisson's Ratio <sup>2</sup>	0.40		
Impact	Nominal Value	Unit	Test Method
Notched Izod Impact <sup>4</sup>	1.2	ft-lb/in	ASTM D256
Thermal	Nominal Value	Unit	Test Method
Deflection Temperature Under Load <sup>4</sup> (66 psi, Unannealed)	435	°F	ASTM D648
Deflection Temperature Under Load <sup>4</sup> (264 psi, Unannealed)	432	°F	ASTM D648



Glass Transition Temperature	428 °F	ASTM D7028
CLTE - Flow		ASTM D696
-- <sup>2</sup>	7.2E-6 in/in/°F	
-- <sup>3</sup>	4.9E-5 in/in/°F	
Specific Heat <sup>4</sup>	0.344 Btu/lb/°F	
Thermal Conductivity		ASTM D1461
-- <sup>3</sup>	2.1 Btu·in/hr/ft <sup>2</sup> /°F	
-- <sup>2</sup>	10 Btu·in/hr/ft <sup>2</sup> /°F	
<b>Electrical</b>	<b>Nominal Value Unit</b>	<b>Test Method</b>
Surface Resistivity <sup>4</sup>	1.0E+2 to 1.0E+6 ohms	ASTM D257

### Processing Information

<b>Injection</b>	<b>Nominal Value Unit</b>
Drying Temperature	280 °F
Drying Time	3.0 to 6.0 hr
<b>Extrusion</b>	<b>Nominal Value Unit</b>
Cylinder Zone 1 Temp.	550 to 580 °F
Cylinder Zone 2 Temp.	600 to 650 °F
Cylinder Zone 3 Temp.	660 to 700 °F
Cylinder Zone 4 Temp.	660 to 700 °F
Melt Temperature	650 to 700 °F
Die Temperature	660 to 700 °F

#### Extrusion Notes

If material is to remain in dryer for more than 6 hours in dried state, reduce dryer temperature to 150°F to prevent degradation of material.

#### Notes

<sup>1</sup> Typical properties: these are not to be construed as specifications.

<sup>2</sup> Additive Manufactured - X Orientation

<sup>3</sup> Additive Manufactured - Z Orientation

<sup>4</sup> Injection Molded

