

## Tepla® T5000 LF

### Material Description:

Tepla® T5000 LF is a general purpose extrusion grade of polyphenylsulfone (PPSU), offering exceptional hydrolytic stability and better toughness than most commercially available high-temperature polymers. This resin has a high heat deflection temperature, excellent thermal stability, outstanding resistance to environmental stress cracking, good electrical properties and inherent flame retardant properties. Transparent and opaque colors are available.

### General

Material Status	• Commercial: Active
Availability	<ul style="list-style-type: none"> <li>• Asia Pacific</li> <li>• Europe</li> <li>• Middle East</li> <li>• North America</li> <li>• Latin America</li> <li>• Africa</li> </ul>
Features	<ul style="list-style-type: none"> <li>• Acid Resistant</li> <li>• Base Resistant</li> <li>• Chemical Resistant</li> <li>• E-beam Sterilizable</li> <li>• Ethylene Oxide Sterilizable</li> <li>• Good Dimensional Stability</li> <li>• Good Sterilizability</li> <li>• Heat Sterilizable</li> <li>• High ESCR (Stress Crack Resist.)</li> <li>• Radiation (Gamma) Resistant</li> <li>• Radiotranslucent</li> <li>• Steam Sterilizable</li> <li>• Autoclave Sterilizable</li> <li>• Biocompatible</li> <li>• Ultra High Toughness</li> <li>• Flame Retardant</li> <li>• General Purpose</li> <li>• Good Electrical Properties</li> <li>• Good Thermal Stability</li> <li>• High Heat Resistance</li> <li>• Hydrolytically Stable</li> <li>• Radiation Sterilizable</li> <li>• Steam Resistant</li> </ul>
Uses	<ul style="list-style-type: none"> <li>• Aerospace Applications</li> <li>• Dental Applications</li> <li>• Hospital Goods</li> <li>• Medical/Healthcare Applications</li> <li>• Surgical Instruments</li> <li>• Aircraft Applications</li> <li>• Food Service Applications</li> <li>• Medical Devices</li> <li>• Membranes</li> </ul>
Appearance	<ul style="list-style-type: none"> <li>• Clear/Transparent</li> <li>• Colors Available</li> <li>• Black</li> </ul>
Forms	• Pellets
RoHS Compliance	• RoHS Compliant
Processing Method	<ul style="list-style-type: none"> <li>• Blow Molding</li> <li>• Film Extrusion</li> <li>• Machining</li> <li>• Sheet Extrusion</li> <li>• Extrusion</li> <li>• Injection Molding</li> <li>• Profile Extrusion</li> <li>• Thermoforming</li> </ul>

Physical Properties	Typical Value	Unit	Test Method
Density/Specific Gravity	1.29	g/cm <sup>3</sup>	ASTM D792
Melt Mass-Flow Rate (MFR) (365 °C / 5.0 kg)	12 to 17	g/10 min	ASTM D1238
Molding Shrinkage - Flow (3.18 mm)	0.7	%	ASTM D955
Water Absorption 24 hr	0.37	%	ASTM D570
Equilibrium	1.1	%	

Mechanical Properties	Typical Value	Unit	Test Method
Tensile Modulus (3.18 mm)	2500	MPa	ASTM D638
Tensile Strength (3.18 mm)	75	MPa	ASTM D638
Tensile Elongation Yield, 3.18 mm	7	%	ASTM D638
Break, 3.18 mm	60 to 118	%	

Flexural Modulus (3.18 mm)	2570	MPa	ASTM D790
Flexural Strength 5.0% Strain, 3.18 mm	95	MPa	ASTM D790
<b>Impact Properties</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test Method</b>
Notched Izod Impact (3.18 mm)	690	J/m	ASTM D256
Tensile Impact Strength (3.18 mm)	400	KJ/m <sup>2</sup>	ASTM D1822
<b>Flammability</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test Method</b>
Flame Rating <sup>1</sup> (0.76mm)	V-0		UL 94
<b>Electrical Properties</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test Method</b>
Volume Resistivity	9E+15	Ohms·cm	ASTM D257
Dielectric Strength			ASTM D149
0.0254 mm	> 200	kV/mm	
3.18 mm	15	kV/mm	
Dielectric Constant(3.18 mm, 60 Hz)	3.44		ASTM D150
<b>Thermal Properties</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test Method</b>
Deflection Temperature Under Load 1.8 MPa, Unannealed, 3.18mm	207	°C	ASTM D648
Glass Transition Temperature	220	°C	ASTM E1356
CLTE - Flow (3.18 mm)	5.60E-05	cm/cm/°C	ASTM D696
<b>Optical</b>	<b>Typical Value</b>	<b>Unit</b>	<b>Test Method</b>
Refractive Index	1.672		ASTM D542
<b>Additional Information</b>	<b>Typical Value</b>	<b>Unit</b>	
Steam Sterilization - w/ Morpholine <sup>2</sup>	> 1000	Cycles	
<b>Injection</b>	<b>Typical Value</b>	<b>Unit</b>	
Drying Temperature	149	°C	
Drying Time	2.5	hr	
Processing (Melt) Temp	360 to 391	°C	
Mold Temperature	138 to 163	°C	
Screw Compression Ratio	2.2 : 1.0		
<b>Extrusion</b>	<b>Typical Value</b>	<b>Unit</b>	
Drying Temperature	171	°C	
Drying Time	4	hr	
Cylinder Zone 1 Temp.	338 to 388	°C	
Cylinder Zone 2 Temp.	338 to 388	°C	
Cylinder Zone 3 Temp.	338 to 388	°C	
Cylinder Zone 4 Temp.	338 to 388	°C	
Cylinder Zone 5 Temp.	338 to 388	°C	
Adapter Temperature	327 to 371	°C	
Melt Temperature	343 to 399	°C	
Die Temperature	327 to 371	°C	

NOTES:

<sup>1</sup>These flammability ratings are not intended to reflect hazards presented by these or any other materials under actual fire conditions.

<sup>2</sup>Cycles passed without cracking, crazing, or rupture.

Steam Autoclave Conditions:

- Temperature: 270°F (132°C)
- Time: 30 minutes/cycle
- Steam Pressure: 27 psig (0.19 MPa)
- Stress Level: 1000 psi (7.0 MPa) in flexure
- Additive: Morpholine at 50 ppm

#### CAUTION/警告!

Before using, read the Molding Guide, Material Safety Data Sheets, and Bulletins available from NFD Advanced Composites Sales offices and Distributors supplied to your company. Caution! During drying, purging and molding, small amounts of hazardous gases and/or particulate matter may be released. These may irritate eyes, nose and throat. Use adequate local exhaust ventilation during thermal processing. To prevent resin decomposition, do not contaminate the resin or exceed the recommended melt temperature or hold-up time. Avoid inhalation or skin and eyes contact. Sweep up and dispose of spilled resin to eliminate slipping hazard. 在使用之前, 请阅读NFD公司销售办事处和经销商提供给贵公司的材料成型指南、材料安全数据表和公告。警告! 在干燥、吹扫和成型过程中, 少量有害气体或颗粒物可能会在被释放, 这些可能会刺激眼睛, 鼻子和喉咙。热处理过程中请注意做好排气通风工作。为防止树脂分解, 请勿污染树脂或超过我们为您推荐熔融温度或时间。请避免吸入或与皮肤、眼睛等接触。清扫和处理溢出的树脂, 以消除滑到的危险。

#### LEGAL NOTICES/法律声明

The figures indicated here are approximate values. They may be affected by different factors, and the user is not released therefore from the obligation of performing checks and trials of his own. The values indicated here have been compiled on the basis of current tests and findings. Any legally binding guarantee of certain properties, or any suitability for a specific application can not be inferred from the present data. For detailed production regulatory information, contact customer service.

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