

# Tepla® T7100 CF GR

## Material Description:

Tepla® T7100 CF GR is a wear resistant grade of Tepla® polyaryletherketone (PAEK) designed to provide low wear rates and high pressure-velocity (PV) tolerance in lubricated wear environments. Tepla® T7100 CF GR offers more attractive economics than PEEK while retaining most of PEEK's key attributes. In addition to the outstanding wear resistance, the resin also offers the outstanding combination of chemical resistance, mechanical strength and stiffness at elevated temperatures, as well as long-term and high temperature thermal-oxidative stability. Tepla® T7100 CF GR is formulated with a binary anti-friction/anti-wear additive system comprised of carbon fiber and graphite. By virtue of its additive system, this resin also offers, exceptionally high stiffness and very low moisture absorption. Potential applications for Tepla® T7100 CF GR include bushings, bearings, wear strips, wear rings, rollers, and other parts used in sliding friction components.

General	
Material Status	<ul style="list-style-type: none"> <li>Commercial: Active</li> </ul>
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>
Additive	<ul style="list-style-type: none"> <li>Carbon Fiber + Graphite Lubricant</li> </ul>
Features	<ul style="list-style-type: none"> <li>Chemical Resistant</li> <li>Good Dimensional Stability</li> <li>Wear Resistant</li> <li>Flame Retardant</li> <li>High Heat Resistance</li> </ul>
Uses	<ul style="list-style-type: none"> <li>Automotive Applications</li> <li>Bushings</li> <li>Wear Strip</li> <li>Thrust Washer</li> <li>Bearings</li> <li>Rollers</li> <li>Seals</li> </ul>
Appearance	<ul style="list-style-type: none"> <li>Black</li> </ul>
Forms	<ul style="list-style-type: none"> <li>Pellets</li> </ul>
RoHS Compliance	<ul style="list-style-type: none"> <li>RoHS Compliant</li> </ul>
Processing Method	<ul style="list-style-type: none"> <li>Injection Molding</li> <li>Profile Extrusion</li> <li>Machining</li> </ul>
Multi-Point Data	<ul style="list-style-type: none"> <li>Isothermal Stress vs. Strain (ISO 11403-1)</li> <li>Viscosity vs. Shear Rate (ISO 11403-2)</li> </ul>

Physical Properties	Typical Value	Unit	Test Method
Density/Specific Gravity	1.53	g/cm <sup>3</sup>	ASTM D792
Water Absorption (24 hr)	0.01	%	ASTM D570
Melt Mass-Flow Rate (MFR) (400°C/2.16 kg)	1	g/10min	ASTM D1238
Molding Shrinkage <sup>1</sup> Flow (3.18mm)	0.0 to 0.2	%	ASTM D955
Across Flow (3.18mm)	1.2 to 1.4	%	

Hardness	Typical Value	Unit	Test Method
Rockwell Hardness (M-Scale)	88		ASTM D785

Mechanical Properties	Typical Value	Unit	Test Method
Tensile Modulus			
5 mm/min	34000	MPa	ASTM D638
	32700	MPa	ISO 527-2/1A/1
Tensile Stress			
Yield	180	MPa	ISO 527-2/1A/5
5 mm/min	174	MPa	ASTM D638
Tensile Elongation			
Break, 5 mm/min	1	%	ASTM D638

Break	1	%	ISO 527-2/1A/5
Flexural Modulus	29500	MPa	ASTM D790
	30800	MPa	ISO 178
Flexural Strength	258	MPa	ASTM D790
	266	MPa	ISO 178
Compressive Strength	121	MPa	ASTM D695
Shear Strength	71	MPa	ASTM D732
Coefficient of Friction			ASTM D3702
-- <sup>2</sup>	0.34		
-- <sup>3</sup>	0.12		
-- <sup>4</sup>	0.05		

Impact Properties	Typical Value	Unit	Test Method
Notched Izod Impact	58	J/m	ASTM D256
	7	kJ/m <sup>2</sup>	ISO 180
Unnotched Izod Impact	340	J/m	ASTM D4812
	26	kJ/m <sup>2</sup>	ISO 180

Thermal Properties	Typical Value	Unit	Test Method
Deflection Temperature Under Load <sup>5</sup> 1.8 MPa, Annealed, 3.2mm	278	°C	ASTM D648
Glass Transition Temperature	152	°C	ASTM D3418
CLTE - Flow (-50 to 50°C)	7.00E-06	cm/cm/°C	ASTM E831
Specific Heat			DSC
50°C	1170	J/kg/°C	
200°C	1610	J/kg/°C	
Peak Melting Temperature	343	°C	ASTM D3418
Thermal Conductivity	0.7	W/m/K	ASTM E1530

Processing Information	Typical Value	Unit
Injection Rate	Fast	
Screw Compression Ratio	2.0:1.0 to 3.0:1.0	
Mold Temperature	149 to 177	°C
Drying Temperature	149	°C
Drying Time	4	hr
Front Temperature	371	°C
Middle Temperature	366	°C
Rear Temperature	354	°C
Nozzle Temperature	374	°C
Processing (Melt) Temp	366 to 388	°C
Back Pressure	Minimum	

Fill Analysis	Typical Value	Unit	Test Method
Melt Viscosity (400°C, 1000 sec <sup>-1</sup> )	600	Pa·s	ASTM D3835

Notes:

<sup>1</sup> 5" x 0.5" x 0.125" bars

<sup>2</sup> Dry conditions: 800 fpm and 31.25 psi (4.06 m/s and 215 kPa). Not recommended at 50 fpm and 500 psi (0.25 m/s and 3447 kPa).

<sup>3</sup> Lubricated conditions: 75 fpm and 1000 psi (0.38 m/s and 6895 kPa)

<sup>4</sup> Lubricated conditions: 800 fpm and 750 psi (6.06 m/s and 5171 kPa)

<sup>5</sup> 2 hours at 200°C

### 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

### 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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