

# HIGH TEMPERATURE MATERIALS



*P<sup>2</sup>SI*

 **TENCATE**  
materials that make a difference

# TenCate High Temperature Materials



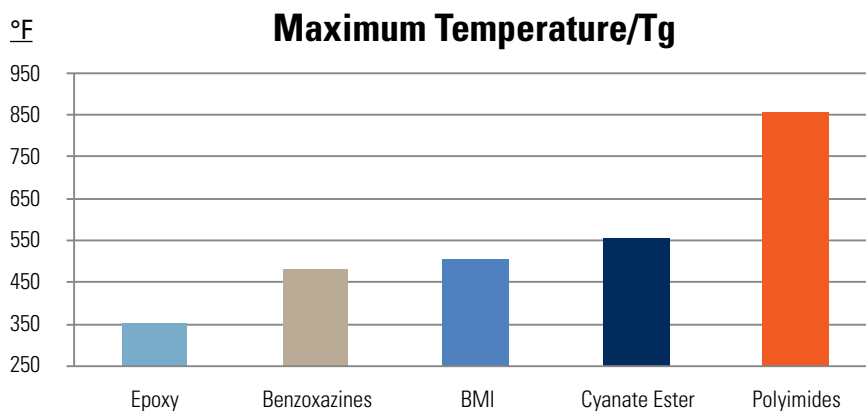
**TenCate Advanced Composites** and **Performance Polymer Solutions Inc.** have joined forces to supply leading-edge high temperature composites solutions. P<sup>2</sup>SI<sup>®</sup>, now part of PROOF Research™, is the world's leading developer of high temperature resins. Under exclusive license, TenCate is the supplier of prepreps made with P<sup>2</sup>SI<sup>®</sup> resins.

TenCate provides very high temperature composites for demanding applications ranging from:

- **Jet engines, ducts and hot sections**
- **Leading edges on hypersonic vehicles**
- **Heat shields and heat protection systems**
- **Rocket engine nozzles, thrusters and powerplants**
- **High temperature titanium replacement in aircraft and launch vehicles**
- **Military specific applications**
- **High temperature composite tooling**

Very high temperature composites are generally defined as polymers that operate in the 450°- 800+°F (232-427°C) service temperature environment. This temperature range is above typical epoxy service temperatures and more associated with the service temperatures of metals. This resin category includes bismaleimides (BMI's), cyanate esters, benzoxazines and polyimides. These very high temperature polymers are:

- **Thermally stable**
- **Chemically resistant and**
- **Display excellent mechanical properties**



As advanced composites continue to replace metals in more demanding high temperature applications, today's designers look to this class of resin systems to achieve design flexibility, expand possibilities and realize significant weight savings. In addition to prepregs, TenCate has a complete portfolio of high temperature adhesives, resins, syntactics and molding compounds.



## Product Line

Product Name	Resin Type	Tg	Cure Time/Temperature	Description
<b>Prepregs</b>				
<b>RS-8HT</b>	<b>BMI</b>	590°F/310°C	120 minutes at 400°F/204°C Post cure of 360 minutes at 482°F/250°C	<ul style="list-style-type: none"> <li>• RS-8HT provides excellent elevated temperature properties with moderate toughness and good moisture resistance</li> <li>• Also available as an RTM resin</li> </ul>
<b>TC420</b>	<b>Cyanate Ester</b>	350°F/177°C or 610°F/321°C with post cure	3 hours at 350°F/177°C Optional post cure at 500°F/260°C	<ul style="list-style-type: none"> <li>• Very high temperature service</li> <li>• Good resistance to microcracking</li> <li>• Out-of-autoclave processible</li> </ul>
<b>P<sup>2</sup>SI® 635LM</b>	<b>Polyimide</b>	635°F/335°C	120 minutes at 650°F/343°C	<ul style="list-style-type: none"> <li>• Low viscosity, non MDA</li> <li>• Performance similar to PMR-15</li> </ul>
<b>P<sup>2</sup>SI® AFRPE®-4</b>	<b>Polyimide</b>	700°F/371°C	Call for information	<ul style="list-style-type: none"> <li>• High temperature polyimide</li> </ul>
<b>P<sup>2</sup>SI® NRPE</b>	<b>Polyimide</b>	690°F/366°C	120 minutes at 700°F/371°C	<ul style="list-style-type: none"> <li>• Improved AFRPE-4 with better processing (lower pressure)</li> <li>• Improved hot/wet performance</li> </ul>
<b>P<sup>2</sup>SI® 900HT</b>	<b>Polyimide</b>	870°F/466°C	120 minutes at 700°F/371°C	<ul style="list-style-type: none"> <li>• Highest service temperature</li> <li>• 1500°F/816°C short term performance</li> </ul>
<b>P<sup>2</sup>SI® Custom</b>	<b>Various</b>	500-850°F/260-456°C	Call for information	<ul style="list-style-type: none"> <li>• Custom polymers for specific applications</li> <li>• Call for more details</li> </ul>

P<sup>2</sup>SI is a trademark of P<sup>2</sup>SI® and PROOF Research™. TenCate Advanced Composites is the exclusive supplier and distributor of P<sup>2</sup>SI high temperature prepregs.



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For more information about High Temperature Materials,  
please visit us online and download our latest datasheets:  
**[WWW.TENCATE.COM/HighTemp](http://WWW.TENCATE.COM/HighTemp)**

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All data given is based on representative samples of the materials in question. Since the method and circumstances under which these materials are processed and tested are key to their performance, and TenCate Advanced Composites has no assurance of how its customers will use the material, the corporation cannot guarantee these properties. Photos courtesy of respective companies.