

## DESCRIPTION

TenCate's TC890 high temperature polyimide prepreg system utilizes PROOF Research's Advanced Composites Division (P<sup>2</sup>SI) 900HT resin system. 900HT is a high-temperature, polyimide-based thermoset prepreg with service temperature capability up to 538°C (1000°F). TC890 is an excellent non-MDA replacement for high temperature PMR-15 applications. The 900HT resin system is an easily processable, thermally stable polymer exhibiting the highest glass transition temperature of commercially available structural matrices. This system displays exceptional toughness, superb dielectric properties, low toxicity, and maintains mechanical integrity even after exposures in excess of 1300°F (704°C).

## FEATURES

- › **Jet engine components**
- › **Heat shields**
- › **High temperature leading edges/radomes**

## PRODUCT TYPE

High Temperature Polyimide

## TYPICAL APPLICATIONS

- › Excellent toughness
- › Excellent dielectric properties
- › Non-MDA based resin system
- › High glass transition temperatures, 93°C (200°F) over PMR-15, and 66°C (150°F) over AFRPE-4

## SHELF LIFE

<b>Tack Life:</b>	Up to 14 days at ambient
<b>Out Life:</b>	Up to 30 days at ambient
<b>Frozen Storage Life:</b>	12 months at -18°C (<0°F)

Tack life is the time during which the prepreg retains enough tack, drape, and handling for component lay-up.

Out life is the maximum time allowed at ambient temperature before cure. \*Ambient is 18–22°C (65–72°F).

*\*Out life tested by SBS on a 15 x 15 cm (6 x 6") laminate, cured in an autoclave. Users may need to separately evaluate out life limits on thicker, larger, and more complex parts.*

## NEAT RESIN PROPERTIES

Density	1.33 g/cc
Dry T <sub>g</sub> (DMA)	454°C (850°F)



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### MECHANICAL PROPERTIES

Properties	Condition	Method	Results	
Tensile Strength	RTD	ASTM D3039	765 MPa	111 ksi
Tensile Modulus	RTD	ASTM D3039	70.3 GPa	10.2 Msi
Tensile Strength	ETD	ASTM D3039	815 MPa	118 ksi
Tensile Modulus	ETD	ASTM D3039	84.1 GPa	12.2 Msi
Compression Strength	RTD	ASTM D6641M	644 MPa	93 ksi
Compression Modulus	RTD	ASTM D6641M	68.3 GPa	9.9 Msi
Compression Strength	ETD	ASTM D6641M	456 MPa	66 ksi
Compression Modulus	ETD	ASTM D6641M	63.1 GPa	9.2 Msi
In Plane Shear Strength	RTD	ASTM 3518	72.3 MPa	10.5 ksi
In Plane Shear Strength	ETD*	ASTM 3518	78.1 MPa	11.3 ksi
4 Pt Flexural Strength	RTD	ASTM D7264M	673 MPa	98 ksi
4 Pt Flexural Modulus	RTD	ASTM D7264M	133.1 GPa	19.3 Msi
4 Pt Flexural Strength	ETD	ASTM D7264M	573 MPa	83 ksi
4 Pt Flexural Modulus	ETD	ASTM D7264M	69.8 GPa	10.1 Msi
Bearing Response Strength	ETD	ASTM D5961	501.6 MPa	73 ksi
SBS	RTD	ASTM D2344	56 MPa	8.1 ksi
SBS	ETD	ASTM D2344	48 MPa	6.9 ksi

Laminate data for TenCate TC890 using P2Si 900HT resin. Fabric is desized T650-35 8HS 370 faw, 37% RC.  
Notes: ETD is 288°C (550°F) unless noted.

\*ETD for In Plane Shear strength was 316°C (600°F).

### ONE-STEP BAGGING:

1. Decomp Composites D5160 brown high temperature tacky tape edge dam lined with 0.5 inch wide Kapton tape
2. Nonporous Teflon, same size as prepreg lay-up, taped to tool
3. Prepreg lay-up
4. Two layers of porous Teflon same size as prepreg lay-up
5. Perforated Kapton film pricked 3.8 cm (1.5 in) on centers sealed to the tacky tape edge dam
6. Two layers of 7781 fiberglass
7. Two layers of boat cloth
8. Kapton bagging film sealed to Airtech A-800-3G sealant tape and D5160 brown high temperature sealant tape on tool surface

Bagging Sequence 900HT One Step

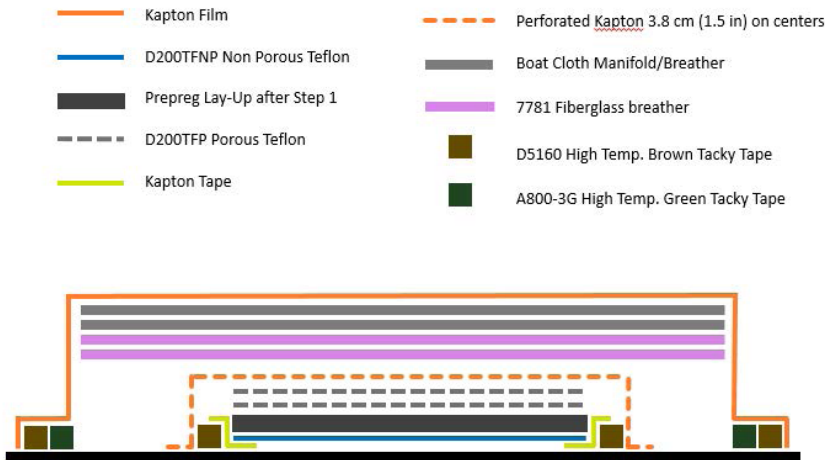


Figure 1. TenCate TC890 One-Step Bagging

## CURE SCHEDULE

Call for details. This product requires a multi-hour cure at temperatures at or above 371°C (700°F)

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