

PRODUCT DATA SHEET



TENCATE ADVANCED COMPOSITES

BTCy-2 Resin System

PRODUCT TYPE

350°F (177°C) Cure Cyanate Ester

TYPICAL APPLICATIONS

- Aircraft
- Spacecraft
- Ultra Low Loss Radomes and Antennae
- Radar Transparent Structures
- Low Outgassing Applications
- Low Loss Castings for Horns and Lenses
- High Performance Electronic Substrates

SERVICE TEMPERATURE

300°F (149°C) (Continuous)
360°F (182°C) (Short Term)

SHELF LIFE

Tack Life

14 days tack life at 77°F (25°C)

Out Life

14 days out life 77°F (25°C)

Frozen Storage Life

6 months storage life at <0°F (-18°C)

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

Out life is the maximum time allowed at room temperature before cure.

PRODUCT DESCRIPTION

BTCy-2 is TenCate's lowest dielectric cyanate ester prepreg resin system. This resin system is valued in high energy microwave applications as a result of its low loss tangent.

PRODUCT BENEFITS/FEATURES

- Low microcracking and outgassing
- TenCate's lowest dielectric resin
- Ideal for high energy radome structure

TYPICAL NEAT RESIN PROPERTIES

Polymer Tg 375°F (191°C)
Moisture Absorption 0.6% at 212°F (100°C) saturation*
Dielectric Constant 2.60 (1 MHz), 2.70 (10 GHz)
Loss Tangent 0.0004 (1 MHz), 0.001 (10 GHz)
G_C Value 1.4 in-lb/in²

* Moisture Absorption: 0.2%-0.3% (Quartz at 60% Vf) at saturation in boiling water

ELECTRICAL PROPERTIES OF COMPOSITE LAMINATES

BTCy-2 / 4581 Quartz	C / X Band 8 - 18 GHz	Ku / K Band 18 - 26.5 GHz	Ka Band 26.5 - 40 GHz	Q & U Band 40 - 60 GHz
Dielectric Constant	3.17	3.13	3.14	3.12
Loss Tangent	<0.010*	<0.010*	<0.010*	<0.010*

* The loss tangent under focused beam testing is only accurate to 0.010. This material is less than 0.010. This material represents one of TenCate's best for high energy radome applications.

BTCy-2 / 7781 Fg	1 MHz
Dielectric Constant	4.40
Loss Tangent	0.002

LAMINATE DATA - 7781 Fg REINFORCEMENT, 300 gsm FAW.

Properties	Condition	Method	Results	
Tensile Strength 0°	RTD	ASTM D3039	71 (ksi)	490 MPa
Tensile Modulus 0°	RTD	ASTM D3039	3.2 Msi	22 GPa
Compressive Strength 0°	RTD	ASTM D695	68 ksi	469 MPa
Compressive Modulus 0°	RTD	ASTM D695	3.2 Msi	22 GPa
Flexural Strength 0°	RTD	ASTM D7264	88 ksi	607 MPa
Flexural Modulus 0°	RTD	ASTM D7264	3 Msi	21 GPa
Short Beam Shear Strength	RTD	ASTM D2344	9 ksi	62 MPa

LAMINATE DATA - 4581 AQIII WOVEN FABRIC REINFORCEMENT, 300 gsm FAW.

Properties	Condition	Method	Results	
Tensile Strength 0°	RTD	ASTM D3039	109 ksi	749 MPa
Tensile Modulus 0°	RTD	ASTM D3039	3.7 Msi	25.5 GPa
Compressive Strength 0°	RTD	ASTM D695	108 ksi	747 MPa
Compressive Modulus 0°	RTD	ASTM D695	4.1 Msi	28.3 GPa
Flexural Strength 0°	RTD	ASTM D7264	121 ksi	834 MP
Flexural Modulus 0°	RTD	ASTM D7264	3.1 Msi	21.4 GPa
Short Beam Shear Strength	RTD	ASTM D2344	10.1 ksi	69.4 MPa

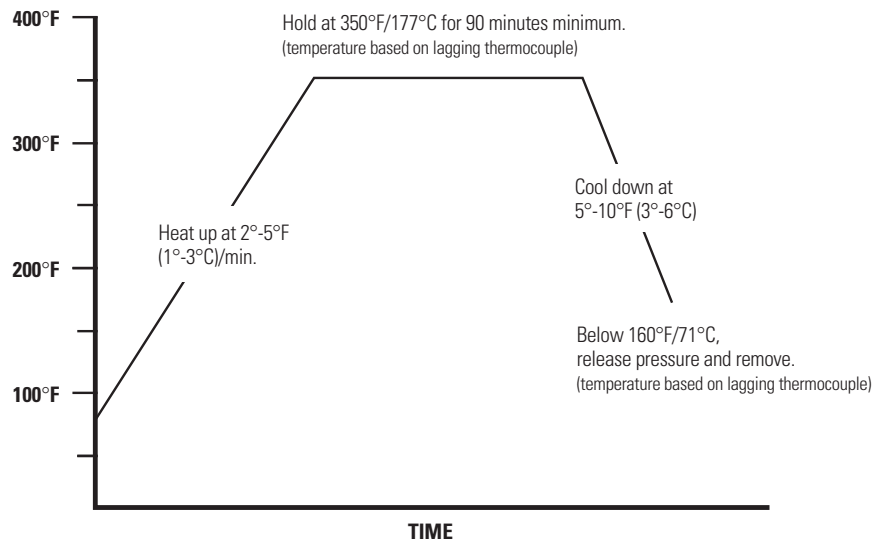
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TENCATE ADVANCED COMPOSITES

BTCy-2 Resin System

Cure Cycle



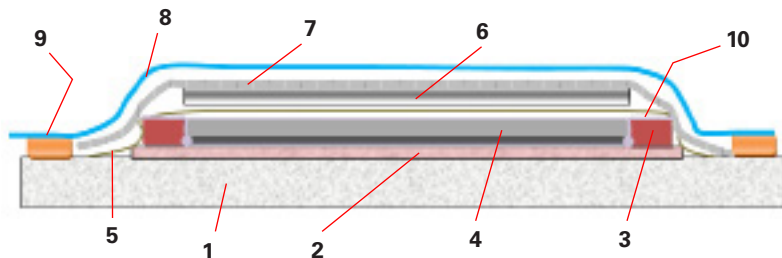
- Apply 25 inches Hg vacuum minimum.
- Apply 40-50 psig pressure to autoclave.

Post cure: Heat at 3°-5°F (1.5°-3°C)/min. to 420°F/215°C for two hours minimum, cool at 5°-10°F (3°-6°C) to 180°F/82°C and remove.

COMPOSITE LAMINATE STACKING SEQUENCE

LIST OF MATERIALS

1. Tool – aluminum, steel, Invar, composite (tool plates must be release coated or film covered)
2. Release coat or film – Frekote 700NC or 770NC, FEP, TEDLAR
3. Silicone Edge Dams – Thicker than laminate
4. Laminate
5. Release coat or film – Frekote 700NC or 770NC, FEP, TEDLAR
6. Caul plate – aluminum, steel, Invar, silicone rubber sheet (metal caul plates must be release coated or wrapped)
7. 2.2 osy polyester breather – 1 or more
8. Vacuum bag
9. Vacuum sealant
10. Glass yarn string - (alternatively or additionally breather may wrap over top of dam to contact edge)



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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.

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