

## TenCate Cetex® TC1000 Design

### PRODUCT TYPE

Polyetherimide Thermoplastic Resin System

### SERVICE TEMPERATURE

149°C (300°F) Continuous

### TYPICAL APPLICATIONS

- Aircraft Interiors
- Secondary Aircraft Structures

### PRODUCT DESCRIPTION

TenCate Cetex® TC1000 Design is an engineered thermoplastic composite, utilizing polyetherimide resin for outstanding toughness and excellent fire performance.

TenCate Cetex® is typically supplied in 3.66m x 1.22m (12ft x 4ft) pre-consolidated laminates (RTL) of varying ply thicknesses, specifically adhering to customer designated fiber selection, orientation and ply count.

The use of TenCate Cetex® as a reinforced thermoplastic laminate (RTL) composite significantly reduces the production cycle-time by eliminating the handling and assembly of traditional wet-lay materials, along with the potential for error. In addition, the thermoplastic forming time is calculated in minutes and seconds, not hours. Heating, forming and cooling can take less than 5 minutes for complex 3D geometry, and sandwich panels can now be realized in 15 minutes without the inconvenience of core read-through. Further optimization can be gained in secondary processing, due to the thermoplastic resin. These operations can include welding, folding, painting and printing.

### TENCATE CETEX TC1000 DESIGN PRODUCT BENEFITS/FEATURES

- Excellent FST performance (OSU <15/15)
- No freezer storage required
- Rapid processing with cycle times <3 min
- Very low moisture absorption
- Good solvent resistance
- Ideal for customer qualified design programs
- Range of textures available from gloss, matt, brushed and anti-slip
- Broader colour palette to include light grey, dark grey and blue tone suitable for interiors. Additional colours available upon request.

# PRODUCT DATASHEET



TENCATE ADVANCED COMPOSITES

## TenCate Cetex® TC1000 Design

### NEAT RESIN PROPERTIES - TENCATE CETEX TC1000 DESIGN

Property	Test Methods	
Specific gravity	ISO 1183	1.27 g/cm <sup>3</sup>
Glass transition temperature	-	217°C (423°F)
Dielectric constant	ISO D150	3.15 at 1 MHz
Loss tangent	-	0.0013 at 1 MHz
Moisture absorption	ISO 62	1.25%
Flammability	UL94	V-0
Tensile strength	UL94 ISO R527	105 MPa (15.2 ksi)
Tensile modulus	ISO R527	3,276 MPa (0.475 Msi)
Elongation at yield	ISO R527	7%
Poisson's ratio	-	0.36
Compression strength	ASTM D695	152 MPa (22.0 ksi)
Compression modulus	ASTM D695	3,310 MPa (0.48 Msi)
Izod notched	ASTM D256	1,335 J/m (25.0 ft-lb/in)
CTE	-	5.58/°C <sup>-1</sup> (3.1/°F <sup>-1</sup> )
Thermal conductivity	-	0.22 W/m-°K

### PHYSICAL/THERMAL PROPERTIES OF PREPREG - TENCATE CETEX TC1000 DESIGN - 7581 PEI

Property	Value
Mass of fabric	296g/m <sup>2</sup> (8.85oz/yd <sup>2</sup> )
Mass of fabric + resin	450g/m <sup>2</sup> (13.27oz/yd <sup>2</sup> )
Resin content by volume	50%
Resin content by weight	33%
Moisture pick up	0.35%
Ply thickness	0.24mm (0.0094in)
Specific gravity	1.91g/cm <sup>3</sup> (119.1lb/ft <sup>3</sup> )
T <sub>g</sub> (DSC) (amorphous)	217°C (423°F)
T <sub>m</sub>	310°C (590°F)

# PRODUCT DATASHEET



TENCATE ADVANCED COMPOSITES

## TenCate Cetex® TC1000 Design

### MECHANICAL DATA - TENCATE CETEX TC1000 DESIGN - 7581 PEI

Property	Condition	Methods	Results	
Tensile Strength 0°	RTD	ISA 527 (type 3) EN 2747 (III)	515 MPa	75 ksi
Tensile Modulus 0°	RTD	ISA 527 (type 3) EN 2747 (III)	25 GPa	3.6 Msi
Compression Strength 0°	RTD	ASTM D 6641 EN 2850	612 MPa	89 ksi
Compression Modulus 0°	RTD	ASTM D 6641 EN 2850	29 GPa	4.2 Msi
Flexural Strength 0°	RTD	ISO 178	781 MPa	113 ksi
Flexural Modulus 0°	RTD	ISO 178	24.5 GPa	3.6 Msi

### FLAMMABILITY PROPERTIES - TENCATE CETEX TC1000 PREMIUM - 7581 Fg

Test	Spec	Criteria	1 Ply of 7581 PEI Resin	2 Plies of 7581 PEI Resin
Flammability	60 second vertical burn FAR 25.853 (a)	152 mm	PASS	PASS
Smoke Emission	ABD0031 (F)	150/200	PASS	PASS
Toxicity	ABD0031 (F)	Ds Max 4 min (Flaming/Non-Flaming) = 150	PASS	PASS
Heat Release	FAR 25.853 (d)	2 min Total HR (kWmin/m <sup>2</sup> ) = 65	5.6	2.7
		Peak HR (kW/m <sup>2</sup> ) = 65	13.6	12.3

7581 = Glass fabric 296gsm FAW, 8 Harness Satin weave  
PEI = Polyetherimide resin

Revised 04/2013

*Cetex® is a registered trademark of Royal TenCate. 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 USA, Inc. has no assurance of how its customers will use the material, the corporation cannot guarantee these properties.*

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## TENCATE ADVANCED COMPOSITES

18410 Butterfield Blvd.  
Morgan Hill, CA 95037 USA  
Tel: +1 408 776 0700  
Fax: +1 408 776 0107

Campbellweg 30  
7443 PV Nijverdal NL  
Tel: +31 548 633 700

2450 Cordelia Road  
Fairfield, CA 94534 USA  
Tel: +1 707 359 3400  
Fax: +1 707 359 3495

[www.tencate.com](http://www.tencate.com)

[www.tencateadvancedcomposites.com](http://www.tencateadvancedcomposites.com)  
[www.tencateindustrialcomposites.com](http://www.tencateindustrialcomposites.com)  
E-mail: [tcac-us@tencate.com](mailto:tcac-us@tencate.com) (USA)  
E-mail: [info\\_tcac@tencate.com](mailto:info_tcac@tencate.com) (Europe)

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