

## PRODUCT DATA SHEET

### DESCRIPTION

Toray Cetex® TC1000 Design is a cost-effective, high-end thermoplastic composite, utilizing the amorphous PEI polymer for outstanding toughness and an inherently outstanding fire, smoke, and toxicity performance (< 15/15 OSU).

Mainly used in customer-qualified aircraft interior applications, Toray Cetex® TC1000 Design is a versatile material that guarantees efficient part production (< 3 minutes per cycle) at consistent quality. When used as a facesheet for sandwich panels, it results in a superior bond and an excellent surface quality without postprocessing. Toray Cetex® TC1000 Design performs exceptionally well in surface processes like bonding and coating.

Toray Cetex® Design is also an ideal choice for other applications with demanding fire performance requirements such as rail interiors. The material performs excellent in the most stringent categories of the European EN45545-2 standard.

Toray Cetex® TC1000 Design is available as a fabric prepreg, but is typically supplied in pre-consolidated reinforced thermoplastic laminates (RTLs) of varying thicknesses and lay-ups. Laminates and prepregs are available in gray, black, cream white, and natural (amber) resin colors. Additional colors are available upon request.

### FEATURES

- ▶ **Ideal for customer-qualified design programs**
- ▶ **Excellent FST performance (OSU < 15/15)**
- ▶ **Rapid processing with cycle times < 3 minutes**
- ▶ **Very low moisture absorption**
- ▶ **Range of surface textures available from gloss, matt, and anti-slip**
- ▶ **Broader color palette to include gray, black, cream white, and amber. Additional colors available upon request**
- ▶ **Good chemical resistance**
- ▶ **Indefinite shelf life at ambient temperature storage**

### PRODUCT TYPE

PEI (PolyEtherImide) Thermoplastic Resin System

### TYPICAL APPLICATIONS

- ▶ Aircraft interiors: seat shells, ducting channels, galleys, trolleys
- ▶ Rail interiors
- ▶ Facesheets for structural sandwich panels
- ▶ Multiple material assemblies

### TYPICAL NEAT RESIN PROPERTIES

Density (specific gravity)	1.91 g/cm <sup>3</sup> (119 lb/ft <sup>3</sup> )
T <sub>g</sub> (glass transition)	217°C (423°F)
T <sub>m</sub> (melt)	N/A (amorphous)
T <sub>p</sub> (processing)	320–350°C (610–660°F)

### SHELF LIFE

<b>Out Life:</b>	Indefinite at ambient temperature storage
<b>Frozen Storage Life:</b>	Not applicable—product does not require freezing



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**Cetex®**

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### PHYSICAL PROPERTIES

Property	8 Harness Satin (EC9 Glass Woven Prepreg)	5 Harness Satin (FT300B Carbon Woven Prepreg)
Fiber areal weight (FAW)	300 g/m <sup>2</sup> (8.85 oz/yd <sup>2</sup> )	280 g/m <sup>2</sup> (8.26 oz/yd <sup>2</sup> )
Weight per ply (PAW)	450 g/m <sup>2</sup> (13.27 oz/yd <sup>2</sup> )	484 g/m <sup>2</sup> (14.27 oz/yd <sup>2</sup> )
Resin content by weight (RC)	33%	42%
Consolidated ply thickness (CPT)	0.24 mm (0.0094")	0.32 mm (0.0127")
Density	1.91 g/cm <sup>3</sup> (118.9 lb/ft <sup>3</sup> )	1.51 g/cm <sup>3</sup> (93.95 lb/ft <sup>3</sup> )

For the availability of other reinforcements, please contact Toray Advanced Composites

### MECHANICAL PROPERTIES

EC9 Glass 300gsm FAW 8HS Woven Fabric Reinforced Laminate 33% RC				
Property	Condition	Test Method	Result	
Tensile Strength 0°	RTD	EN2747-3	516 MPa	75 ksi
Tensile Modulus 0°	RTD	EN2747-3	25.0 GPa	3.6 Msi
Tensile Strength 90°	RTD	EN2747-3	442 MPa	64 ksi
Tensile Modulus 90°	RTD	EN2747-3	24.2 GPa	3.5 Msi
Compression Strength 0°	RTD	ASTM D 6641	613 MPa	89 ksi
Compression Modulus 0°	RTD	ASTM D 6641	29.2 GPa	4.2 Msi
Compression Strength 90°	RTD	ASTM D 6641	490 MPa	71 ksi
Compression Modulus 90°	RTD	ASTM D 6641	27.6 GPa	4.0 Msi
Flexural Strength 0°	RTD	ISO 178	781 MPa	113 ksi
Flexural Modulus 0°	RTD	ISO 178	24.5 GPa	3.6 Msi
Flexural Strength 90°	RTD	ISO 178	617 MPa	89 ksi
Flexural Modulus 90°	RTD	ISO 178	22.2 GPa	3.2 Msi

Data generated from a limited dataset  
Fabric style 7581  
50% fiber by volume (Vf)

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### MECHANICAL PROPERTIES

Standard Modulus FT300B 3K Carbon 280gsm FAW 5HS Woven Fabric Reinforced Laminate 42% RC				
Property	Condition	Test Method	Result	
Flexural Strength 0°	RTD	ISO 178	880 MPa	128 ksi
Flexural Modulus 0°	RTD	ISO 178	49.7 GPa	7.2 Msi
Flexural Strength 90°	RTD	ISO 178	873 MPa	127 ksi
Flexural Modulus 90°	RTD	ISO 178	49.5 GPa	7.2 Msi

Data generated from a limited dataset  
50% fiber by volume (Vf)

### FLAMMABILITY PROPERTIES

Test	Specification	Criteria	1 Ply of 7581 PEI Resin	2 Plies of 7581 PEI Resin	5 Plies of 7581 PEI Resin
Flammability	60-second vertical burn FAR 25.853 (a)	152 mm	PASS	PASS	PASS
Smoke Emission	ABD0031 (F)	150/200	PASS	PASS	PASS
Toxicity	ABD0031 (F)	Ds Max 4 min (Flaming/Non-Flaming) = 150	PASS	PASS	PASS
Heat Release	FAR 25.853 (d)	2-min Total HR (kW min/m <sup>2</sup> ) = 65	5.6	2.7	4
		Peak HR (kW/m <sup>2</sup> ) = 65	13.6	12.3	20

### HANDLING SAFETY

Health and safety information on handling and processing Toray composite materials is described in the Safety Data Sheet available from Toray Advanced Composites. To obtain this or any other information about Toray Cetex<sup>®</sup> PEI thermoplastic composite materials, contact Toray Advanced Composites.