

TenCate Cetex® TC912

PRODUCT TYPE

Nylon 6 (PA6) thermoplastic resin system

SERVICE TEMPERATURE

100°C (212°F)

TYPICAL APPLICATIONS

- Impact beams
- Automotive seats and pedals
- Under body panels
- Reinforcements for parts

SHELF LIFE

Indefinite at 25°C (77°F)

PRODUCT DESCRIPTION

TenCate Cetex® TC912 is an engineered thermoplastic composite, utilizing PA6 resin for its high strength and excellent solvent resistance.

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 fibre selection, orientation and ply count. Laminates available as standard are high strength carbon or E-glass as a 50/50 directional fabric reinforcement and high strength carbon as a 80/20 directional fabric reinforcement.

TenCate Cetex® TC912 is specifically developed for high volume processes. Cetex® TC912 is especially suitable as a preform insert for compression and overmoulding to increase part performance. Further optimization can be gained in secondary processing, due to the thermoplastic resin. These operations can include welding, forming, folding, adhesive bonding and painting.

TENCATE CETEX® TC912 PRODUCT BENEFITS/FEATURES

- Up to 10% improvement of mechanical properties in comparison to alternative materials available in the market
- Excellent temperature resistance and strength makes it ideal for housing and under the hood applications
- Good resistance to solvents
- Industrial volumes can be produced
- Easy overmoulding, as a primary part or insert
- Weldable with different welding technologies
- No freezer storage required
- Fabric architecture and fibre orientation can be tailored to customer specific applications

PRODUCT DATA SHEET



TENCATE ADVANCED COMPOSITES

TenCate Cetex® TC912

PHYSICAL PROPERTIES TENCATE CETEX TC912 C-PA6 50/50

Property	Value
Mass of fabric	415 g/m ² (12.24 oz/yd ²)
Mass of fabric + resin	715 g/m ²
Resin content by volume	50%
Resin content by weight	42%
Moisture pick up by weight	1.5-1.8%
Ply thickness	0.47 mm (0.019 in)
Specific gravity (density)	1.52 g/cm ³
Tg (DSC)	60°C (140°F)
Tm	220°C (428°F)

MECHANICAL PROPERTIES TENCATE CETEX TC912 C-PA6 50/50

Property	Condition	Methods	Results	
			0° direction	90° direction
Tensile Strength	RTD	ISO 527-4	915 MPa (133 ksi)	850 MPa (123 ksi)
Tensile Modulus	RTD	ISO 527-4	55 GPa (8.0 Msi)	53 GPa (7.7 Msi)
Compression Strength	RTD	EN 2850	450 MPa (65 ksi)	450 MPa (65 ksi)
Compression Modulus	RTD	EN 2850	50 GPa (7.3 Msi)	50 GPa (7.3 Msi)
Flexural Strength	RTD	ISO 14125	625 MPa (91 ksi)	625 MPa (91 ksi)
Flexural Modulus	RTD	ISO 178	47 GPa (6.8 Msi)	47 GPa (6.8 Msi)
IPS Strength	RTD	ISO 14129	85 MPa (12 ksi)	
IPS Modulus	RTD	EN 2850	2.5 GPa (0.4 Msi)	

C = High strength carbon fabric 420gsm FAW, using T700SC-12K fibre

PA6 = Nylon 6 resin

50/50 = Balanced 2x2 twill weave reinforcement

Room Temperature Dried (RTD): tested at room temperature and dried for 168 hours at 85°C (185°F)

PROCESSING

Typical processing temperatures are between 240-290°C (464-554°F). Pre drying of the laminates for 5 hours at 80°C (176°F) is recommended.

PRODUCT DATASHEET



TENCATE ADVANCED COMPOSITES

TenCate Cetex® TC912

PHYSICAL PROPERTIES TENCATE CETEX TC912 C-PA6 80/20

Property	Value
Mass of fabric	440 g/m ² (12.98 oz/yd ²)
Mass of fabric + resin	725 g/m ²
Resin content by volume	50%
Resin content by weight	40%
Moisture pick up by weight	1.5-1.8%
Ply thickness	0.49 mm (0.019 in)
Specific gravity (density)	1.48 g/cm ³
Tg (DSC)	60°C (140°F)
Tm	220°C (428°F)

MECHANICAL PROPERTIES TENCATE CETEX TC912 C-PA6 80/20

Property	Condition	Methods	Results	
			0° direction	90° direction
Tensile Strength	RTD	ISO 527-4	1340 MPa (194 ksi)	320 MPa (46 ksi)
Tensile Modulus	RTD	ISO 527-4	80 GPa (11.6 Msi)	25 GPa (3.6 Msi)
Compression Strength	RTD	EN 2850	510 MPa (73 ksi)	205 MPa (30 ksi)
Compression Modulus	RTD	EN 2850	80 GPa (11.6 Msi)	25 GPa (3.6 Msi)
Flexural Strength	RTD	ISO 14125	950 MPa (138 ksi)	220 (MPa) (32 ksi)
Flexural Modulus	RTD	ISO 178	75 GPa (10.9 Msi)	17 GPa (2.5 Msi)
IPS Strength	RTD	ISO 14129	75 MPa (11 ksi)	
IPS Modulus	RTD	EN 2850	3 GPa (0.4 Msi)	

C = High strength carbon fabric 440gsm FAW, using T700SC-12K fibre,

PA6 = Nylon 6 resin

80/20 = Quasi-unidirectional plain weave reinforcement

Room Temperature Dried (RTD): tested at room temperature and dried for 168 hours at 85°C (185°F)

PROCESSING

Typical processing temperatures are between 240-290°C (464-554°F). Pre drying of the laminates for 5 hours at 80°C (176°F) is recommended.

PRODUCT DATASHEET



TENCATE ADVANCED COMPOSITES

TenCate Cetex® TC912

PHYSICAL PROPERTIES TENCATE CETEX TC912 G-PA6 50/50

Property	Value
Mass of fabric	600 g/m ² (17.70oz/yd ²)
Mass of fabric + resin	910 g/m ²
Resin content by volume	46%
Resin content by weight	34%
Moisture pick up by weight	1.6%
Ply thickness	0.5 mm (0.020 in)
Specific gravity (density)	1.82 g/cm ³
Tg (DSC)	60°C (140°F)
Tm	220°C (428°F)

MECHANICAL PROPERTIES TENCATE CETEX TC912 G-PA6 50/50

Property	Condition	Methods	Results	
			0° direction	90° direction
Tensile Strength	RTD	ISO 527-4	470 MPa (68 ksi)	470 MPa (68 ksi)
Tensile Modulus	RTD	ISO 527-4	21 GPa (3.0 Msi)	21 GPa (3.0 Msi)
Compression Strength	RTD	EN 2850	470 MPa (68 ksi)	470 MPa (68 ksi)
Compression Modulus	RTD	EN 2850	25 GPa (3.6 Msi)	25 GPa (3.6 Msi)
Flexural Strength	RTD	ISO 14125	700 MPa (102 ksi)	700 (MPa) (102 ksi)
Flexural Modulus	RTD	ISO 178	21 GPa (3.0 Msi)	21 GPa (3.0 Msi)
IPS Strength	RTD	ISO 14129	90 MPa (13 ksi)	
IPS Modulus	RTD	EN 2850	2.7 GPa (0.4 Msi)	

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G = E-glass fabric 600gsm FAW, using 1200 tex roving

PA6 = Nylon 6 resin

50/50 = Balanced 2x2 twill weave reinforcement

Room Temperature Dried (RTD): tested at room temperature and dried for 168 hours at 85°C (185°F)

PROCESSING

Typical processing temperatures are between 240-290°C (464-554°F). Pre drying of the laminates for 5 hours at 80°C (176°F) is recommended.

TENCATE ADVANCED COMPOSITES

G. van der Muelenweg 2
7443 RE Nijverdal NL
Tel: +31 548 633 933
Fax: +31 548 633 299

Amber Drive, Langley Mill
Nottingham, NG16 4BE UK
Tel: +44 (0) 1773 530899
Fax: +44 (0) 1773 768687

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

www.tencate.com/automotive

www.tencateperformancecomposites.com
www.tencateadvancedcomposites.com
E-mail: advancedcomposites.europe@tencate.com (Europe)
E-mail: info@tcac-usa.com (USA)

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