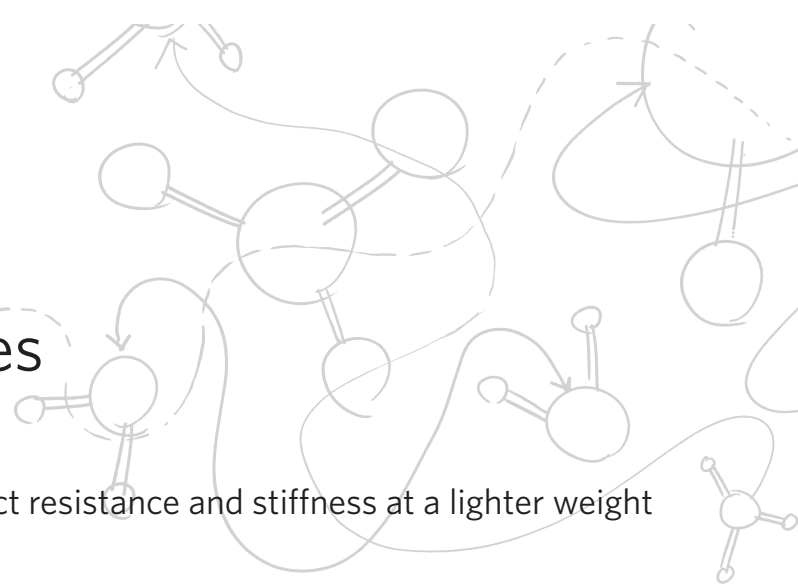


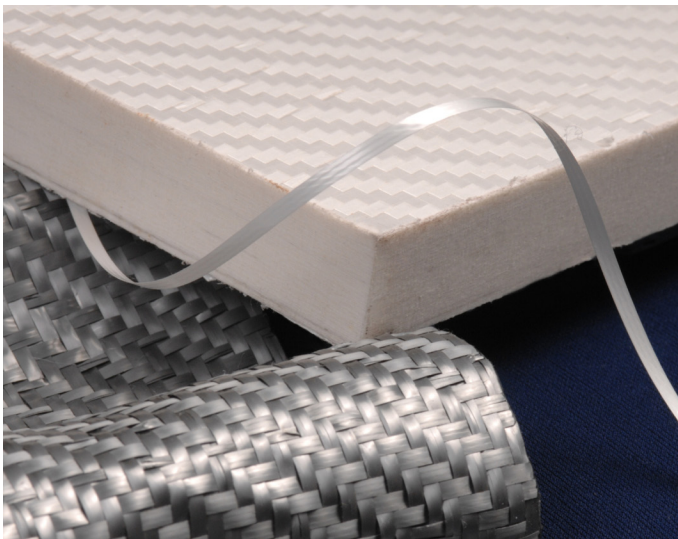
Milliken® Tegris®

Thermoplastic Composites



Tegris® thermoplastic composites provide impact resistance and stiffness at a lighter weight than traditional thermoplastics and composites.

Tegris fabrics are woven from specially engineered tape yarns, which are manufactured with three polymer layers in an ABA construction. The outer, or 'A' layers melt at a lower temperature than the core 'B' layer. To consolidate, multiple layers of fabric are stacked together and heat and pressure is applied to form a rigid, impact resistant part.



Performance Characteristics

Impact Resistance - Tegris composites offer superior impact resistance over typical thermoplastic composites, maintaining this performance advantage even at -40°C.

Stiffness - Tegris composites are suitable for applications that need high stiffness.

Weight Reduction - The consolidated construction based on low density thermoplastics allows for significant weight reduction compared to higher-density, glass-filled composites.

Recyclable - The 100% PP composition is fully recyclable with polypropylene recycle streams.

General Product Information

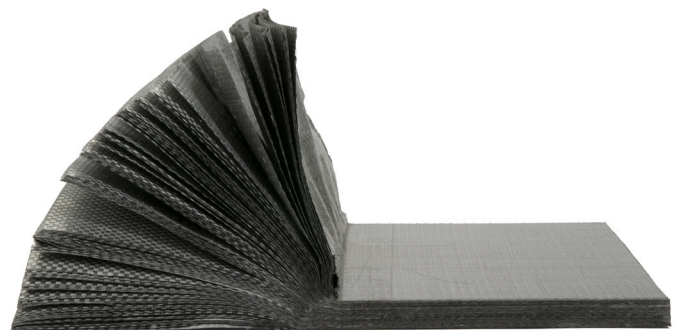
Available in silver, white, or black/graphite

Plain, twill, or herringbone weaves, with custom options available

Standard sheet sizes 48" (122 cm) wide by up to 120" long (305cm)

Additional Benefits:

- Easy to machine and handle; won't irritate the skin
- Minimal tool or machine wear
- Processes at relatively low temperatures and pressures
- Bonds easily to other materials using Milliken's bond layer
- Paint by treating the surface with commercially available primers



Milliken™

Typical Tegriss® Material Properties

Tape	TEST	AVERAGE	ASTM METHOD
	Tensile Modulus	14.0 GPa	ISO 527
	Shrinkage (130°C)	< 5.5 %	D4974
	Sealing Temperature	120°C	Milliken Method
	Denier	1020	D1577

Fabric	TEST	WARP	FILL	ASTM METHOD
	Tensile			D5035, 1" Strip
	Peak Load, N	720	660	
	Peak Load, lbf	160	150	
	Elongation at Break (%)	7.8	7.1	
	Yarns/inch	11	11	D3775
	Thickness, mm	0.40		D1777
	Areal Density, gsm	98		D3776
	Areal Density, osy	3.0		
	Standard Roll Width, cm	127		
	Standard Roll Width, inches	50		

Consolidated Sheet

	TEST	AVERAGE	ASTM METHOD
Properties vary with pressing conditions	Bulk Density, g/cm ³	0.78	D792
	Thickness, mm/layer	0.125	
	inch/layer	0.005	
	Tensile		D638
	Strength, MPa	200	
	kpsi	30	
	Modulus, GPa	5-6	
	kpsi	720-870	
	Elongation at Break, %	6	
	Flexural Modulus, GPa	5-6	D790
	kpsi	720-870	
	Heat Deflection Temp, °C, 1820 kPa	95	D648
	455 kPa	130	
	CTE (-60 to +40°C), 10 ⁶ /°C	6	D696
	10 ⁶ /°F	3	
	Gardner Dart Impact, -40°C, J	24.7	D5420
	ft-lb	33.6	
	Gardner Dart Impact, 20°C, J	24.5	D5420
	ft-lb	33.3	
	Notched Izod Impact, kJ/m	4.8	
	ft-lbf/i	90	

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