



» TECHNICAL BULLETIN

Complēt™ REC

Long Fiber Reinforced Composites Incorporating Recycled Resin

The Complēt™ REC portfolio consists of long fiber reinforced composites incorporating post-consumer recycled (PCR) nylon 6 resin, post-industrial recycled (PIR) nylon 66 resin, and PIR thermoplastic polyurethane (TPU) resin.

The PCR content is derived from end-of-life fishing nets that could otherwise contribute to ocean plastic. This diversion of waste offers a positive environmental impact.

These resin sources provide sustainable options for applications that require excellent structural and toughness capabilities while offering comparable performance to standard long fiber materials.

With a high strength-to-weight ratio, Complēt REC long fiber composites can be deployed as an alternative to metals to obtain valuable weight reductions. Additionally, longer filaments of fiber

provide more stiffness and strength to support weight loads and exceptional impact and fatigue resistance to endure rigorous usage environments.

These injection-molding composites are ideal for markets and applications directed toward eco-conscious consumers. Possible uses include lightweight adventure gear for outdoor recreation, sustainable office furniture for LEED-certified buildings, or next-generation vehicles that go further using less energy resources.

Complēt REC formulations are available with varying levels of recycled content for customization to your performance and sustainability requirements. They process easily across all standard fiber loading ranges of long glass, long carbon, or hybrid combinations of fiber.

Sustainability Spotlight



Recycle
Solutions



Lightweighting



PERFORMANCE COMPARISON

Long fiber composites can be custom formulated with varying levels of recycled resin as well as varying levels of fiber reinforcement to balance your performance and sustainability goals.

COMPLÈT REC PCR NYLON 6 COMPARISON

Complèt REC PCR PA6 materials are available in black.

	Complèt LGF50-PA6	Complèt REC LGF50-PA6	Complèt REC LGF50-PA6
Post-Consumer Recycled Resin	0%	50%	100%
Long Glass Fiber	50%	50%	50%
Tensile Strength	35,000 psi 241 MPa	34,000 psi 234 MPa	31,500 psi 217 MPa
Tensile Modulus	2,300 ksi 15,862 MPa	2,250 ksi 15,517 MPa	2,200 ksi 15,172 MPa
Flexural Strength	52,000 psi 359 MPa	51,500 psi 355 MPa	51,500 psi 355 MPa
Flexural Modulus	2,200 ksi 15,172 MPa	2,150 ksi 14,828 MPa	2,100 ksi 14,483 MPa
Izod Notched Impact	5.5 ft-lb/in 294 J/m	4.5 ft-lb/in 240 J/m	4.0 ft-lb/in 214 J/m
Izod Un-Notched Impact	25.0 ft-lb/in 1,335 J/m	23.0 ft-lb/in 1,228 J/m	20.5 ft-lb/in 1,095 J/m

COMPLÈT REC PIR NYLON 66 COMPARISON

Complèt REC PIR PA66 materials are available in black or natural.

	Complèt LGF50-PA66	Complèt REC LGF50-PA66	Complèt REC LGF50-PA66
Post-Industrial Recycled Resin	0%	50%	100%
Long Glass Fiber	50%	50%	50%
Tensile Strength	36,000 psi 248 MPa	34,500 psi 238 MPa	34,000 psi 234 MPa
Tensile Modulus	2,500 ksi 17,241 MPa	2,400 ksi 16,552 MPa	2,300 ksi 15,862 MPa
Flexural Strength	54,000 psi 372 MPa	52,000 psi 359 MPa	51,000 psi 352 MPa
Flexural Modulus	2,500 ksi 17,240 MPa	2,400 ksi 16,552 MPa	2,300 ksi 15,862 MPa
Izod Notched Impact	5.5 ft-lb/in 294 J/m	4.0 ft-lb/in 214 J/m	3.5 ft-lb/in 187 J/m
Izod Un-Notched Impact	22.5 ft-lb/in 1,202 J/m	19.5 ft-lb/in 1,041 J/m	19.0 ft-lb/in 1,015 J/m

COMPLÈT REC PIR TPU COMPARISON

Complèt REC PIR TPU materials are available in black or natural.

	Complèt LGF40-TPU	Complèt REC LGF40-TPU	Complèt REC LGF40-TPU	Complèt REC LGF40-TPU
Post-Industrial Recycled Resin	0%	25%	50%	75%
Long Glass Fiber	40%	40%	40%	40%
Tensile Strength	29,500 psi 203 MPa	28,000 psi 193 MPa	25,000 psi 172 MPa	21,500 psi 148 MPa
Tensile Modulus	1,700 ksi 11,724 MPa	1,650 ksi 11,379 MPa	1,600 ksi 11,034 MPa	1,550 ksi 10,690 MPa
Flexural Strength	45,500 psi 314 MPa	43,000 psi 297 MPa	37,000 psi 255 MPa	32,500 psi 224 MPa
Flexural Modulus	1,700 ksi 11,724 MPa	1,650 ksi 11,379 MPa	1,600 ksi 11,034 MPa	1,550 ksi 10,690 MPa
Izod Notched Impact	8.0 ft-lb/in 427 J/m	7.5 ft-lb/in 401 J/m	6.5 ft-lb/in 347 J/m	5.5 ft-lb/in 294 J/m
Izod Un-Notched Impact	27.0 ft-lb/in 1,442 J/m	26.0 ft-lb/in 1,388 J/m	22.5 ft-lb/in 1,202 J/m	17.5 ft-lb/in 935 J/m





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