



GLASS FIBER REINFORCED PLA BIOPLASTIC

- ▶ Sustainable bio-based plastic suitable for durable and semi-durable applications
- ▶ Overcome the strength, stiffness, and heat distortion limitations of neat PLA
- ▶ Proprietary nucleation and glass fiber reinforcement produce compounds with properties comparable to traditional engineering plastics

ADDITIONAL BENEFITS

- Meet consumer demand for environmentally-friendly goods
- Resin manufacture has lower carbon footprint than petroleum based plastics
- Customize glass loadings and nucleation packages to meet application requirements
- Standard and quick-cycle grades easily process with standard molding equipment
- Full colorability for appealing and branded products
- Bio-content for LEED, EPEAT, and BioPreferred certifications

Imagine using polylactic acid (PLA) compounds, that utilize resin derived from renewable and sustainable agricultural resources, to produce highly engineered parts for demanding applications that rival the performance of traditional engineering plastics. At RTP Company, we not only imagined it, we've made them a reality.

Now, the increasing demand from consumers for "green" products can be met with plastic compounds that do not compromise performance or come with a deterring price tag.

RTP Company's first-in-the-industry glass fiber reinforced PLA compounds overcome the shortcomings of unmodified PLA by increasing its strength and stiffness with 10-40% loadings of glass fiber.

Proprietary nucleation packages are available in standard and fast-cycle versions allowing cost to be kept under control. These packages speed crystallization improving heat distortion performance to the level necessary for demanding applications.



Glass fiber reinforced PLA compounds from RTP Company have the mechanical properties necessary to be used under many conditions as drop-in alternatives* to reinforced polypropylene, polyesters, and nylons. They can be easily processed in existing tools and equipment; their colorability and resin-rich surface finish allows them to be used for many types of branded durable and semi-durable goods.

Most importantly, the resin component of RTP Company's glass fiber reinforced PLA compounds are entirely bio-derived and come with a reduced carbon footprint that allows applications to meet the criteria of many eco-labeling initiatives.

Glass fiber reinforced PLA compounds...another innovation from RTP Company: your global compounder of custom engineered thermoplastics.



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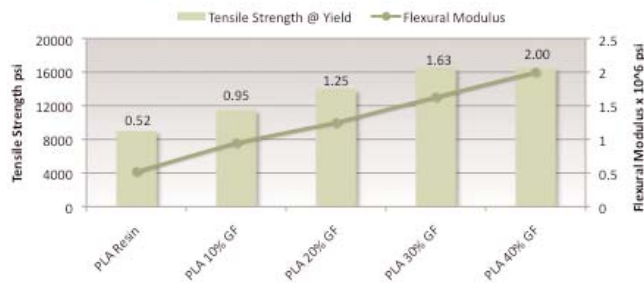




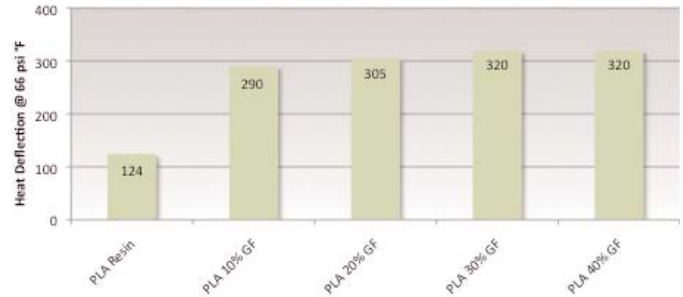
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Reinforced PLA has Equivalent Performance to Traditional Plastics

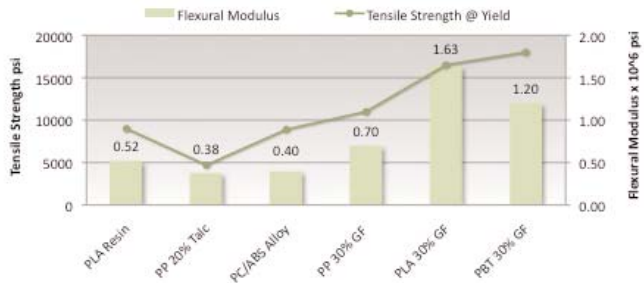
Reinforcement Maximizes Performance



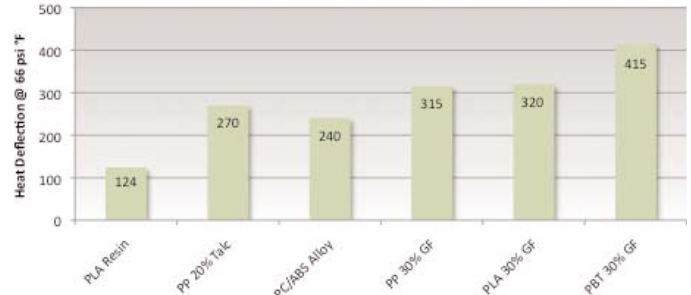
Reinforcement Maximizes HDT



Performance Comparable to Other Compounds



HDT Comparable to Other Compounds



* Hydrolysis degradation can occur with polyester resins such as PLA when used above their glass transition (Tg) temperature for an extended period of time. The Tg of PLA is 130°F/55°C.

Comparison of 30% Glass Fiber Reinforced Compounds

	Unmodified PLA	30% GF PP	30% GF PLA *	30% GF PBT
Tensile Strength	9,000 psi 62 MPa	11,000 psi 76 MPa	16,500 psi 114 MPa	18,000 psi 124 MPa
Flexural Strength	15,700 psi 108 MPa	16,200 psi 112 MPa	21,000 psi 145 MPa	27,500 psi 190 MPa
Flexural Modulus	555,000 psi 3,828 MPa	700,000 psi 4,826 MPa	1,630,000 psi 11,239 MPa	1,200,000 psi 8,274 MPa
Impact Resistance, Izod Notched 1/8 in (3.2 mm)	0.3 ft-lbs/in 16 J/m	2.0 ft-lbs/in 107 J/m	1.0 ft-lbs/in 53 J/m	1.8 ft-lbs/in 96 J/m
Heat Deflection Temperature @ 66 psi (455 kPa)	124°F 51°C	315°F 157°C	320°F 160°C	415°F 213°C

RTP Company: Your Global Compounder Of Custom Engineered Thermoplastics

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