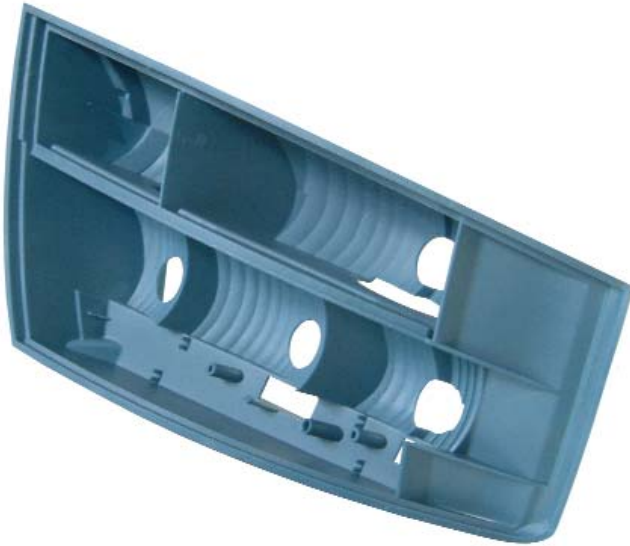


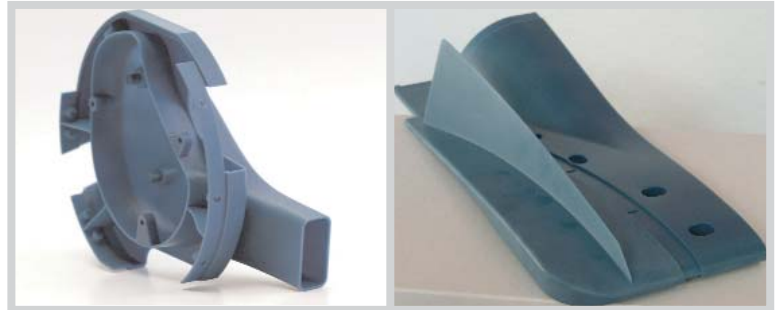


Accura® Bluestone nano-composite

Nano-composite plastic for use with all solid-state SLA® systems



A breakthrough engineering nano-composite material that opens new application opportunities for SLA system owners



Aerodynamic and functional parts produced with Bluestone SL material.
Image (right) courtesy of Renault F1 Team.

APPLICATIONS

- Wind-tunnel testing for the motorsports and aerospace industries
- Production of CMM/inspection and assembly jigs and fixtures
- Lighting design and other applications where heat-generation from electrical components may be a factor
- Covers and enclosures of electrical and mechanical components
- Water-handling products, such as pump and impeller design or other components
- Automotive "under-the-hood" applications
- Housings and enclosures that require high stiffness and rigidity, such as those for business machines
- Electronic applications, such as insulating components, connectors, adaptor fittings, bases, sockets, and areas where ceramics might be used

BENEFITS

An engineered, non-settling nano-composite formulation.

- No additional expensive mixing equipment required
- Minimal stirring required
- Processes like traditional SL resins
- Produces a part with consistent mechanical properties throughout

Parts have exceptional stiffness and thermal resistance.

- Significantly broadens the range of applications for SL parts
- Improves and enhances applications like scaled wind-tunnel models
- Can be used in aggressive thermal environments — up to 250°C (480°F)

Low shrinkage and good humidity resistance.

- Excellent part accuracy
- Good long-term dimensional stability increases part life

Excellent surface finish and sidewall quality.

- Only minimal post-processing is required for superb quality parts

Build styles fully tested and developed by 3D Systems.

- Highly reliable and consistent builds for high productivity

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For use with all solid-stated-equipped SLA systems, including the Viper SLA system, SLA 3500, SLA 5000 and SLA 7000 systems.

Expert Testimonial

"Bluestone resin is an excellent fit for applications requiring added stiffness and thermal resistance. This material is perfect for applications in aerodynamics, lighting applications (such as reflectors), and masters for vacuum casting and thermoforming. As a service provider we need to have flexibility in our material offerings, and Bluestone resin allows us to fulfill many customers' needs for a variety of applications. Now we can offer our customers a unique material with improved part quality and functionality."

-- Rainer Neumann, General Manager, 4D Concepts GmbH.

Bluestone material is highly suited to prototype electrical enclosures where elevated temperatures might be involved, such as this automotive component.

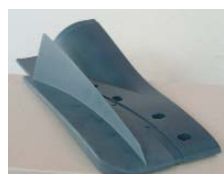


Ideal for functional components that might be used in aggressive environments.

Image courtesy of Renault F1 Team.



Bluestone nano-composite material is ideal for wind-tunnel testing - where stiff components are required.



TECHNICAL DATA

Liquid Material

MEASUREMENT	CONDITION	VALUE:
Appearance		Opaque blue
Liquid Density	@ 25 °C (77 °F)	1.78 g/cm ³
Solid Density	@ 25 °C (77 °F)	1.78 g/cm ³
Viscosity	@ 30 °C (86 °F)	1200 - 1800 cps
Penetration Depth (Dp) *		4.1 mils
Critical Exposure (Ec) *		6.9 mJ/cm ²
Tested Build Styles		EXACT™

Post-cured Material

MEASUREMENT	CONDITION	VALUE:
Tensile Strength	ASTM D 638	66 - 68 MPa (9.6 - 9.8 KSI)
Tensile Modulus	ASTM D 638	7,600 - 11,700 MPa (1,100 - 1,700 KSI)
Elongation at Break (%)	ASTM D 638	1.4 - 2.4 %
Flexural Strength	ASTM D 790	124 - 154 MPa (18 - 22.3 KSI)
Flexural Modulus	ASTM D 790	8,300 - 9,800 MPa (1,200 - 1,417 KSI)
Impact Strength (Notched Izod)	ASTM D 256	13 - 17 J/m (0.24 - 0.32 ft-lbs/in)
Heat Deflection Temperature	ASTM D 648	
	@ 66 PSI	65 - 66 °C (149 - 151 °F)
	@ 264 PSI	65 °C (149 °F)
	@ 66 PSI with 120 °C Thermal Postcure	267 - 284 °C (513 - 543 °F)
Hardness, Shore D		92
Co-efficient of Thermal Expansion	ASTM E 831-93	
	TMA (T<Tg, 0 - 20°C)	33 - 44 (x 10 ⁻⁶ m/m °C)
	TMA (T>Tg, 90 - 150°C)	81 - 98 (x 10 ⁻⁶ m/m °C)
Glass Transition (Tg)	DMA, E"	71 - 83 °C (160 - 181 °F)

* Dp/Ec values are the same on all systems.



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