

PLEXUS

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Structural Adhesive Solutions for Wind Turbine Construction & Repair



TW

Optimizing Wind Turbine Construction and Repair

Introduction

Plexus methacrylate adhesives are designed to produce durable, high-strength bonds to thermoset resin systems and gelcoats, engineered thermoplastics, and metals. They enhance the way wind turbine blades, nacelle assemblies, lightning suppression systems, and other wind power generation equipment are designed, built and repaired.

Plexus adhesives simplify assembly processes and reduce production time, resulting in lower costs and higher throughput in the plant or in the field.

Simplifying and Speeding Wind Blade and Nacelle Repairs

Plexus adhesives require little or no surface preparation, use lightweight manual and battery-powered dispensers for single-step mixing/dispensing. They offer easy cleanup, rapid curing over a wide temperature range and superior strength & resistance.

All these benefits make Plexus two-part adhesives the ideal method for repairing and retrofitting wind blades, either in manufacturing or up-tower.

Little or No Surface Preparation

Plexus adhesives typically require little or no sanding, grinding, or other surface preparation. Depending on the Plexus adhesive used, metals may require priming.

Mixed as Dispensed

Plexus adhesives are mixed using manual, pneumatic, or battery-powered dispensers for up-tower, field, or production repair/assembly. Plexus adhesives can also be applied from bulk containers using larger pneumatic dispensers.

Rapid Curing Over a Broad Temperature Range

Plexus adhesives can be applied, and cure quickly over a wide range of temperatures. Fixture time can also be reduced through the application of gentle heat. Cure is unaffected by humidity.

Chemically Fuse Composites

Plexus adhesives chemically fuse FRP and composites, forming high-strength bonds. Unlike epoxies or urethanes, they are very forgiving of off-ratio mixing.

Superior Bond Strength and Resistance

Plexus adhesives offer superior strength, durability, flexibility, and impact resistance.

Based on ITW-patented technology, they cure to a tough polymer system with excellent cyclic fatigue resistance under high stress loads. They also offer excellent long-term environmental resistance (moisture and UV) as well as excellent resistance to chemicals.

Reduce Assembly Costs and Downtime

Plexus adhesives simplify and shorten assembly and reduce production costs. They minimize or eliminate surface preparation and snap cure at room temperature, allowing blade/rotor manufacturers to increase throughput. They also allow faster repairs and reduce downtime.





Applications:

- **Blade Bonding**
blade edges, spars, shear webs, roots, and smaller components
- **Nacelle Bonding**
screens, gear boxes, vents, roof clips
- **Drill & Fill Repairs**
of internal debonding, delamination, or adhesive voids
- **Field Repairs**
of trailing edge splits, lightning strike damage or shipping damage
- **Vortex Generator Retrofits**
during manufacturing or in the field

Adhesive	Description	Color	Mix ratio (by volume)	Working time (min)	Fixture time (min)	Shear Strength (psi/MPa)
MA300	Low-viscosity, fast-curing injectable adhesive for small repairs and retrofits.	Cream, Black	1:1	3 - 6	12 - 15	3,000 - 3800 20.7 - 26.2
MA310	Low-viscosity, fast-curing injectable adhesive for small repairs and retrofits.	Cream	1:1	15 - 18	45 - 55	3,000 - 3,500 20.7 - 24.1
MA320	High-elongation, lower modulus material especially for cold-weather applications.	White, Cream, Black	10:1	8 - 12	25 - 30	1,700 - 2,200 11.7 - 15.2
MA530	For medium-sized repairs, allows faster return to service. Low-viscosity version available for injection repairs.	Gray, White	1:1	30 - 40	90 - 160	1,700 - 2,500 11.7 - 17.2
MA560-1	For large repair applications requiring long open/working times. Low-viscosity version available for injection repairs.	Gray, White	1:1	55 - 70	220 - 240	1,700 - 2,500 11.7 - 17.2
MA8110	Next generation product with excellent fatigue & environmental resistance. Multi-material bonding, high strength, primerless to metals and paintable.	Gray	1:1	8 - 12	35 - 50	3,100 - 3,600 21.4 - 24.8
MA8120	Next generation product with excellent fatigue & environmental resistance. Multi-material bonding, high strength, primerless to metals and paintable.	Gray	1:1	18 - 22	75 - 90	2,500 - 3,000 17.2 - 20.6

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