

Adhesive Selector Guide



Introduction

Plexus provides a range of advanced structural and semi-structural adhesives that improve manufacturing and assembly techniques and processes. We believe our continued success is due to the importance we place on building strong and lasting relationships with our customers and recognizing the need to understand the many aspects of their bonding requirements. The end result is a philosophy to develop innovative products and solutions to meet our customers' needs.

Our wide range of advanced adhesive products are suitable for bonding a vast majority of composites, thermoplastics, metals and dissimilar substrates that result in durable bonds capable of withstanding the harshest climatic conditions with minimal or no surface preparation.

Our commitment to quality is delivered in every adhesive system we produce; providing our customers with confidence in reliability and consistency of our products.

Comprehensive Test programs developed to help in the understanding of how our products will behave on your substrates.

Invaluable technical and sales support with guidance in product selection, application & dispense methods and equipment support.

Access to the global distribution network via ITW and our strategic partners. Our customers have the ability to obtain quality Plexus products and services around the world. The Plexus team understands the challenges presented by the modern production environment and are always available to demonstrate the wide range of bonding products for your applications.

TRANSPORTATION

Rail, bus, coach and truck companies use our adhesive systems in various ways. Manufacturers choose Plexus adhesives to bond floating floors and modular washrooms in railway carriages, composite body panels on buses and coaches as well as doors, headlamp surrounds and front grills for trucks. Plexus products are popular because of their reliability and ease of use.

- Rapid cure at room temperature reduces production time
- Resistant to oil and diesel
- Bonding of dissimilar substrates
- Excellent fatigue resistance
- Outperforms laminated joints
- Increased design freedom



WIND ENERGY

Plexus structural adhesives have increased the efficiency of production techniques and design capabilities the wind turbine manufacturers use to build modern wind energy systems. Commonly used in the manufacture of wind blades, turbine housing assemblies and lightning suppression systems, our structural adhesives produce high strength bonds to virtually all polyester resins and gelcoats, as well as most engineered thermoplastics and metals.

- Chemically fuse composites
- Superior bond strength and fatigue resistance
- Decrease assembly costs
- High strength and durability



MARINE

Plexus structural adhesive systems are ideal for the marine industry because they need little to no surface preparation; therefore reducing dust emissions and increasing production speed. They can be used for a variety of applications including composite stringers, liners and deck to hull bonding. From ski boats to mega yachts, more than 75% of the boat builders count on Plexus 1:1 and 10:1 marine formulations for their bonding needs.

- Reduces cracking and crazing of gelcoats
- Gap filling up to 2"
- Faster and easier assembly including ability to hand mix



GENERAL INDUSTRIAL

Plexus adhesive systems are the "go to" solution for modern manufacturing requirements because they not only produce more durable and long lasting assemblies, but often promote environmentally friendly processes and parts that are aesthetically pleasing to both the manufacturer and the end-user. From batteries to pipes to indoor and outdoor signs, customers choose Plexus adhesives because of the consistency, reliability and support they receive in every product.

- Reduced VOC emissions
- Excellent heat & fatigue resistance
- Resistance to common chemicals
- Ease of use



ENGINEERED CONSTRUCTION

Plexus personnel works with production and design engineers to offer adhesive solutions to meet their specific production requirements. With a proven track record of bonding composites, thermoplastics and metals such as safety doors, FRP architectural facades, FRP bridges, FRP tanks and acrylic signs, Plexus adhesive systems offer solutions to meet the most demanding environments.

- Room temperature curing
- Superior performance bonding dissimilar substrates
- Work and fixture times to suit all your process requirements
- Excellent chemical resistance



METALS, PLASTICS AND COMPOSITES 10:1

Product	Description	Mixed Color	Mix ratio (by volume)	Viscosity (cP)	Working time (mins)	Fixture time (mins)	Tensile strength (psi)	Tensile elongation (%)	Shear strength (psi)																								
										Metals									Plastics						Composites			Other					
											Aluminum	Cast iron	Electrogalvanized	Painted/coated metals	Plated metals	Sheet metal	Stainless steel	Cold rolled steel	ABS	Acrylics (PMMA)	Polyamides (nylons)	Polyesters (PBT, PET)	Polycarbonate	Vinyls (PVC)	Polyurethanes	DCPD	Fiberglass	Gelcoats	SMC	Phenolics	Laminates	RTM	Rubber
MA320	Excellent low temperature, toughness properties	Black, Cream, White	10:1	A: 135,000 - 175,000 B: 30,000 - 70,000	8 - 12	25 - 30	1,700 - 2,200	60 - 100	1,500 - 2,000	✓				✓	✓		✓	✓				✓	✓	✓	✓	✓		✓	✓				
MA205HV	All purpose, fast cure, toughened	Blue	10:1	A: 100,000 - 130,000 B: 15,000 - 50,000	3 - 5	7 - 9	2,000 - 2,500	20 - 50	1,800 - 2,500	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓			
AO/MA420	All purpose, high toughness	Black, Blue, Cream	10:1	A: 100,000 - 125,000 B: 35,000 - 80,000	4 - 6	18 - 22	2,700 - 3,000	30 - 50	3,000 - 3,800	✓	✓			✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓			
MA422	All purpose, medium open time	Blue	10:1	A: 100,000 - 130,000 B: 35,000 - 70,000	17 - 24	35 - 40	2,700 - 3,000	75 - 100	1,600 - 2,300	✓				✓			✓	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓			
MA425	All purpose, long open time	Blue	10:1	A: 100,000 - 125,000 B: 35,000 - 70,000	30 - 35	80 - 90	2,000 - 2,600	110 - 150	1,700 - 2,600	✓				✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓				
MA550	Excellent marine adhesive, white, UV stable	White	10:1	A: 130,000 - 160,000 B: 30,000 - 70,000	40 - 50	70 - 75	1,800 - 2,400	40 - 80	1,200 - 1,800	✓				✓	✓		✓	✓	✓		✓	✓	✓	✓	✓	✓		✓	✓				
MA830	All purpose, high strength/high toughness, no primer metal bonding	Gray	10:1	A: 80,000 - 120,000 B: 35,000 - 80,000	4 - 6	15 - 25	3,200 - 3,800	30 - 60	2,000 - 2,800	✓	✓			✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓		✓	✓			
MA832	All purpose, high strength/high toughness, no primer metal bonding	Gray	10:1	A: 80,000 - 130,000 B: 35,000 - 80,000	12 - 16	55 - 60	2,700 - 3,000	30 - 60	2,000 - 2,800	✓	✓			✓	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓		✓	✓			
MA920	Low odor, all purpose, high toughness	Blue	10:1	A: 80,000 - 120,000 B: 35,000 - 80,000	4 - 6	15 - 18	1,700 - 2,200	80 - 100	1,500 - 2,200	✓				✓	✓		✓	✓	✓		✓	✓	✓		✓	✓	✓		✓				
MA925	Low odor, all purpose, long open time	Blue	10:1	A: 100,000 - 125,000 B: 35,000 - 70,000	30 - 35	80 - 90	1,750 - 2,000	100 - 120	1,400 - 1,700	✓				✓			✓	✓	✓		✓		✓	✓	✓		✓	✓	✓				
MA1020	Low shrinkage, low odor, all purpose	Blue	10:1	A: 100,000 - 130,000 B: 35,000 - 80,000	4 - 6	15 - 20	1,750 - 2,000	90 - 110	1,250 - 1,600	✓				✓	✓		✓	✓	✓		✓		✓	✓	✓		✓	✓	✓				
MA1025	Low shrinkage, low odor, bond lines up to 1" thick	Blue	10:1	A: 180,000 - 220,000 B: 35,000 - 70,000	20 - 25	40 - 45	1,400 - 1,800	90 - 110	1,200 - 2,000	✓				✓	✓		✓	✓	✓		✓		✓	✓	✓		✓	✓	✓				
MA2015 White	Non sag, short work time, high gap fill, up to 1.5"	White	10:1	A: 180,000 - 220,000 B: 35,000 - 70,000	12 - 18	40 - 50	2,700 - 3,200	>30	1,600 - 2,100					✓			✓	✓		✓	✓	✓		✓	✓	✓		✓	✓				
MA2030	Non sag, medium work time, high gap fill, up to 1.5"	Blue	10:1	A: 180,000 - 220,000 B: 35,000 - 70,000	25 - 35	70 - 90	3,000 - 3,400	90 - 125	1,600 - 2,100					✓			✓	✓		✓	✓	✓		✓	✓	✓		✓	✓				
MA2030 White	Non sag, medium work time, high gap fill, up to 1.5"	White	10:1	A: 180,000 - 220,000 B: 35,000 - 70,000	26 - 34	70 - 90	2,700 - 3,200	>30	1,600 - 2,100					✓			✓	✓		✓	✓	✓		✓	✓	✓		✓	✓				
MA2045	Non sag, medium work time, high gap fill, up to 1.5"	Blue	10:1	A: 180,000 - 220,000 B: 35,000 - 70,000	40 - 45	100 - 130	2,200 - 2,900	90 - 125	1,600 - 2,200					✓			✓	✓		✓	✓	✓		✓	✓	✓		✓	✓				
MA2045 White	Non sag, medium work time, high gap fill, up to 1.5"	White	10:1	A: 180,000 - 220,000 B: 35,000 - 70,000	40 - 50	90 - 120	2,200 - 2,900	>30	1,600 - 2,200					✓			✓	✓		✓	✓	✓		✓	✓	✓		✓	✓				
MA2090	Non sag, long work time, high gap fill, up to 1.5"	Blue	10:1	A: 180,000 - 220,000 B: 35,000 - 70,000	80 - 100	190 - 230	2,200 - 2,900	90 - 120	1,600 - 2,200					✓			✓	✓		✓	✓	✓		✓	✓	✓		✓	✓				
MA3940	Use with craze sensitive plastics	Cream	10:1	A:135,000 - 175,000 B: 30,000 - 70,000	12 - 15	25 - 30	2,000 - 2,500	125 - 175	1,200 - 2,000					✓			✓	✓		✓	✓		✓	✓									
MA3940LH	All purpose fast setting adhesive	Blue	10:1	A: 120,000 - 160,000 B: 30,000 - 70,000	4 - 5	8 - 10	1,160 - 1,740	75 - 100	1,200 - 1,600					✓			✓	✓		✓	✓	✓		✓	✓	✓							

Above values are subject to change. Please see the product TDS for most up to date product information and the SDS for all health and safety information at www.itwpp.com

GREENGUARD Children & Schools Certified. NOTE: The above list represents a portion of the Plexus adhesives product line. Others are available that may suit your needs. Please consult a Plexus Sales Representative or Plexus Technical Service for further assistance at 1-800-851-6692.

METALS, PLASTICS AND COMPOSITES 1:1

Product	Description	Mixed Color	Mix ratio (by volume)	Viscosity (cP)	Working time (mins)	Fixture time (mins)	Tensile strength (psi)	Tensile elongation (%)	Shear strength (psi)	Metals																Plastics										Composites						Other
										Aluminum	Cast iron	Electrogalvanized	Painted/coated metals	Plated metals	Sheet metal	Stainless steel	Cold rolled steel	ABS	Acrylics (PMMA)	Polyamides (nylons)	Polyesters (PBT, PET)	Polycarbonate	Vinyls (PVC)	Polyurethanes	DCPD	Fibreglass	Gelcoats	SMC	Phenolics	Laminates	RTM	Rubber										
MA300	All purpose, High Strength	Black, Cream	1:1	A: 40,000 - 70,000 B: 40,000 - 70,000	3 - 6	12 - 15	3,000 - 4,000	5 - 15	3,000 - 3,800	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓										
MA310	High strength use with "difficult to bond" plastics	Cream	1:1	A: 40,000 - 70,000 B: 40,000 - 70,000	15 - 18	45 - 55	3,500 - 4,500	5 - 15	3,000 - 3,500	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
MA330	Pigmented MA310, use with "difficult to bond" plastics	Gray	1:1	A: 40,000 - 70,000 B: 40,000 - 70,000	15 - 18	30 - 45	3,500 - 4,500	5 - 15	3,000 - 3,500	✓	✓		✓	✓	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
MA530	All purpose, high strength, high toughness, medium open time	Gray	1:1	A: 130,000 - 180,000 B: 160,000 - 215,000	30 - 40	90 - 160	2,500 - 3,500	90 - 160	1,700 - 2,500	✓			✓	✓		✓	✓	✓	✓		✓	✓			✓	✓			✓	✓												
MA560-1	All purpose, high strength/high toughness, long open time	Gray	1:1	A: 145,000 - 185,000 B: 170,000 - 205,000	55 - 70	220 - 240	2,500 - 3,100	>130	1,700 - 2,500	✓			✓	✓		✓	✓	✓	✓		✓	✓			✓	✓			✓	✓												
MA590	All purpose, high strength/high toughness, long open time	Gray	1:1	A: 140,000 - 230,000 B: 165,000 - 230,000	90 - 105	250 - 380	2,000 - 2,500	>130	1,500 - 2,500	✓			✓	✓		✓	✓	✓	✓		✓	✓			✓	✓			✓	✓												
MA8110	Next generation multi-material bonder	Gray	1:1	A: 40,000 - 80,000 B: 40,000 - 80,000	8 - 12	35 - 50	3,100 - 3,600	40 - 70	Plastics: 1,800 - 2,400 Metals: 2,400 - 3,000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									
MA8120	Next generation multi-material bonder	Gray	1:1	A: 40,000 - 80,000 B: 80,000 - 120,000	18 - 22	75 - 90	2,500 - 3,000	50 - 80	Plastics: 1,800 - 2,400 Metals: 2,400 - 3,000	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓									

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SELECTOR GUIDE RECOMMENDATIONS

APPLICATION DETAILS

Plexus two-component systems should be applied at temperatures between 65°F and 80°F. Temperatures below 65°F will slow the cure speed; above 80°F will increase the cure speed. The viscosities of Parts A and B of these adhesives are affected by temperature. For consistent dispensing in meter-mix equipment, adhesive and activator temperatures should be held reasonably constant throughout the year.

To ensure maximum bond strength, use sufficient material to completely fill the joint and mate the parts together within the specified working time. After joining, the parts must remain undisturbed until the fixture time has elapsed.

CLEAN-UP

Clean-up is best accomplished before the adhesive cures. For cured adhesive, carefully scrape away the adhesive and clean appropriately. Spills should be cleaned up with an absorbent material and handled as flammable material. See Plexus MSDS and follow federal, state and local disposal regulations.

ADHESIVES EQUIPMENT

Plexus adhesive may be applied with manual or pneumatic hand-held dispensers, or other approved recommended bulk dispensing equipment. Automated application may be accomplished with a variety of meter-mix equipment that delivers both components through a static mixer. Plexus Engineering should be consulted on all wetted components of dispensing equipment. Use chemically resistant materials for gaskets, seals and O-rings. Dispensing hoses should be PTFE lined. Run equipment with adhesive and activator for approximately 30 seconds every 2 weeks if equipment is not in use. Refer to equipment manuals for preventive maintenance, cleaning and extended shutdowns. For further information concerning dispensing equipment, contact Plexus.

HANDLING PRECAUTIONS

Plexus two-component adhesives cure rapidly and generate intense heat during curing. Do not dispense waste material into plastic cups because heat may melt the container. Do not hold metal containers of Plexus adhesive during curing. Heat generated during cure may cause burns. Refer to the individual product Technical Data Sheets for specific handling recommendations.

SHELF LIFE

The shelf life of Plexus adhesives and activators ranges from 7 to 19 months, depending on the product. Always consult the individual product Technical Data Sheets for specific shelf life information. Shelf life is based on continuous storage between 55°F and 75°F. Long-term exposure above 75°F will reduce the shelf life of these materials. Prolonged exposure of activators, including cartridges that contain activators, above 100°F quickly diminishes the product's reactivity and should be avoided. Shelf life can generally be extended by refrigeration (45°F to 55°F). These products should not be frozen and returned to room temperature prior to use.

SAFETY PRECAUTIONS

Consult Material Safety Data Sheets for exact safety and handling instructions for specific products. Many of Plexus' adhesives are flammable. Keep away from heat, sparks and open flames. Keep containers closed after use. Avoid skin and eye contact. Wear safety glasses and chemically resistant protective gloves during use. Wash with soap and water after skin contact and treat with a skin care cream. For eye contact flush with water and seek immediate medical attention. Seek immediate medical attention if swallowed. Keep out of reach of children. For industrial use only.

ADDITIONAL INFORMATION

- Working Time** – is the duration between when parts A and B of the adhesive system are combined and the time when the adhesive mix is no longer usable. Times presented were tested at 75°F (24°C).
- Fixture Time/Handle Time** – is the time when parts A and B of the adhesive system are combined and the time the adhesive has developed sufficient strength to be handled without deformation of the bond. Fixture time will be dependent on bond line thickness, joint design and ambient temperature.
- Tensile Test** – is of a cured casting of the adhesive system tested to ASTM D638.
- Shear Strength** – is derived from the maximum strength of lap shear coupons on grit blasted steel tested to ASTM D1002.

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