



Designed for O&P and composite professionals, this guide highlights Fabtech Systems' +PLUSeries™ 25, 60, and Composite Adhesives—fast-curing urethanes that outperform brittle acrylics. Learn how to prep, apply, and troubleshoot for stronger, more reliable bonds—without the toxicity of acrylics.

SUBSTRATE COMPATIBILITY

I. Materials bondable with PLUSeries™ structural adhesive lines:

- Fiberglass Reinforced Plastic (FRP)
- Gel Coat
- Sheet Molding Compound (SMC)
- Coated Metals
- High Pressure Laminates (HPL)
- Carbon/Fiberglass
- Resins: Epoxy, Vinyl Ester and Acrylic
- Reinforced Plastic Laminates
- Many Thermoplastics
- Wood
- Foam
- Glass

Issues in Bonding Materials in Section I:

FRP: Bondable with PLUSeries® adhesive lines. However, in most cases, scuffing is recommended. Many FRP formulations are surface prep free with heat fixturing.

Gel Coat: Bondable with most PLUSeries® adhesive products after removing the gloss. This may be performed by scuffing or solvent wiping to dull the surface. Usually preparation free with Pliocryl adhesive products.

SMC: SMC formulations differ in bondability. Some applications require primer, others will be primerless builds. As with FRP, if the build is room temperature, surface preparation need is more likely; surface preparation is less likely needed in heated fixture applications.

Coated Metals: The statement should be properly coated metals. PLUSeries® will adhere to most primers, powder coats, electrocoated metals, and some conventional coatings. Beware of high gloss coatings. These are suspect since many contain flow additives, possibly silicones, to achieve the high gloss. Low grade primers, such as lacquers do not help. Even if the adhesive sticks to the primer, the primer may be removed from the metal, defeating the purpose of a structural adhesive. Specify an OEM grade primer.

Wood: Wood generally causes few problems. It is porous and the adhesive can grab it. The only caution is that some woods are very high in acid. This may kill the cure of polyurethane, which utilizes amine cure (a base).

Foam: Nothing to worry about. It is usually porous and is relatively weak. Strength of less than 25 psi is all that must be achieved to make foam structural.

Glass: Our products bond glass well, but do not specify them for automotive windshields. Specialty products exist for this purpose which address safety standards. Use a glass primer for rigid glass applications.

High Pressure Laminates: With moderate pressure, bonding is successful without any surface preparation.

Thermoplastics: There are so many types of engineered plastics. We bond too many of these, but others are impossible. A table follows detailing our current database.

II. Materials not bondable with PLUSeries™ structural adhesives:

- Polypropylene
- Polyethylene
- Bare Metals
- Rubber
- Polyvinyl Chloride (PVC)
- Polyphenylene Sulfide (PPS - Ryton, Supel, Fortron)
- PTFE (Teflon, Fluon)
- Polyoxymethylene (Celcon)
- Modified PE (Azdel)



THERMOPLASTIC BOND STRENGTH TESTING

TABLE 1
Thermoplastics Tested Which Are Generally Bondable with PLUSeries™ Products:

Composition Family:	Product(s) Tested:	Lap Shear PSI w/no prep:
Polycarbonate (PC)	Lexan LS-2 & LS-3	700 - 900
	Makrolon 3103	800 - 950
Polyphenylene Oxide (PPO)	Noryl EM7304	350-400
Acrylonitrile Butadiene Styrene (ABS)	Cyclocac 5600 & KJB	480-550 ⚠ Breaks
Polyethylene Terephthalate (PET)	Bexloy 572 & 550 & 978	350-500 ⚠ Breaks
	Rynite 530	500-600 ⚠ Breaks
Nylons (6, 6/6, 6/6/6)	DuPont Nylon 66	300-350 ⚠ Breaks
	Minlon 12T (mineral fill)	300-400
	Xytel 70G33 (glass fill)	300-400
	Durathan BKV-130	500-700
	Celanese 66	300-350 ⚠ Breaks
	Celanese 1003-2	300-400 ⚠ Breaks
	Celanese 1503-2	650-800
	Verton EMBK9 (glass filled)	800-1000
Polybutylene Terephthalate (PBT)	Celenex 2000 & 3300	400-625
Blends:		
PC/PBT	Xenoy 6240 & 1102	500-600
PPO/Nylon	GTX-910	450-600
PC/ABS	Cycloy 2800 & 1104	650-800

Table 1: Shows the categories of bondable thermoplastics, and the exact grade/product which we screened.

If the word **⚠ Breaks** appears after the PSI results, the substrate failed, or broke at a point other than the bond area.

Otherwise, the failure mode was adhesive failure.



SURFACE PREPARATION

TABLE 2
Surface Preparation Enhancements




Thermoplastic Family:	Approved Surface Preparations:
Polycarbonates	Alcohol, Abrasion, Flame
Polyphenylene Oxides	Detergent Wash
Acrylonitrile Butadiene Styrene	Abrasion
Polyethylene Terephthalate	Aromatic or CI Solvent
Nylons	Ketone Wipe or Detergent Wash
Polybutylene Terephthalate	Aromatic or CI Solvent

Table 2: Gives a list of surface preparation recommendations for the various types of thermoplastics, which will in most cases create a stronger bond than the PSI values listed on the chart. Chart values were collected without surface preparation.

ADHESIVE TIMING GUIDE

Timing matters when using +PLUSeries™ adhesives. This section outlines the work time, sand time, and full cure time for each product to help you plan efficient, high-quality fabrication with minimal guesswork.

Temperature & Moisture Considerations: +PLUSeries™ adhesives are not affected by temperature or moisture during curing, making them incredibly reliable in real-world shop environments. Whether you're working in a humid summer or a cold winter setting, you'll get consistent performance without needing special climate controls. Just mix, apply, and trust the bond.

Table 3	Timing Metric	 +PLUSeries™ 25	 +PLUSeries™ 60	 +PLUSeries™ Composite
	Work Time	25 seconds	60 seconds	60 seconds
	Sand Time	1.5-3 minutes	5 minutes	5 minutes
	Full Cure Time*	10-15 minutes	10-15 minutes	10-15 minutes

***SPECIAL INSTRUCTIONS FOR WEIGHT-BEARING APPLICATIONS WITH O&P PATIENTS**



- Minimum cure time: 15 minutes before use in weight-bearing applications.
- Reinforcement needed: Always apply fiberglass cast wrap or similar structural support for added durability.

