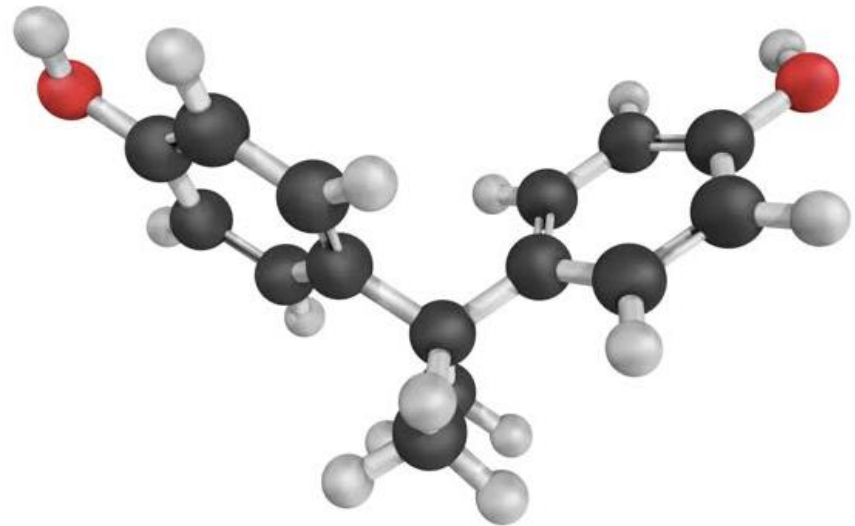


ADVANCED POLYMER FORMULA
RESTECH
BY FABTECH SYSTEMS



RESTECH+Advanced Polymer Epoxy Resin TDS Information

Product Description

RESTECH+ is a two-part low viscosity epoxy-amine resin designed for wet laminating carbon, glass, aramid, and other polymer fiber reinforcements. This resin systems provides easy mixing due to similar Part A and B viscosity. The mixed resin has a fast thin film gel time allowing faster lamination cycling and more rapid production. Composite parts made with this resin have excellent mechanical properties.

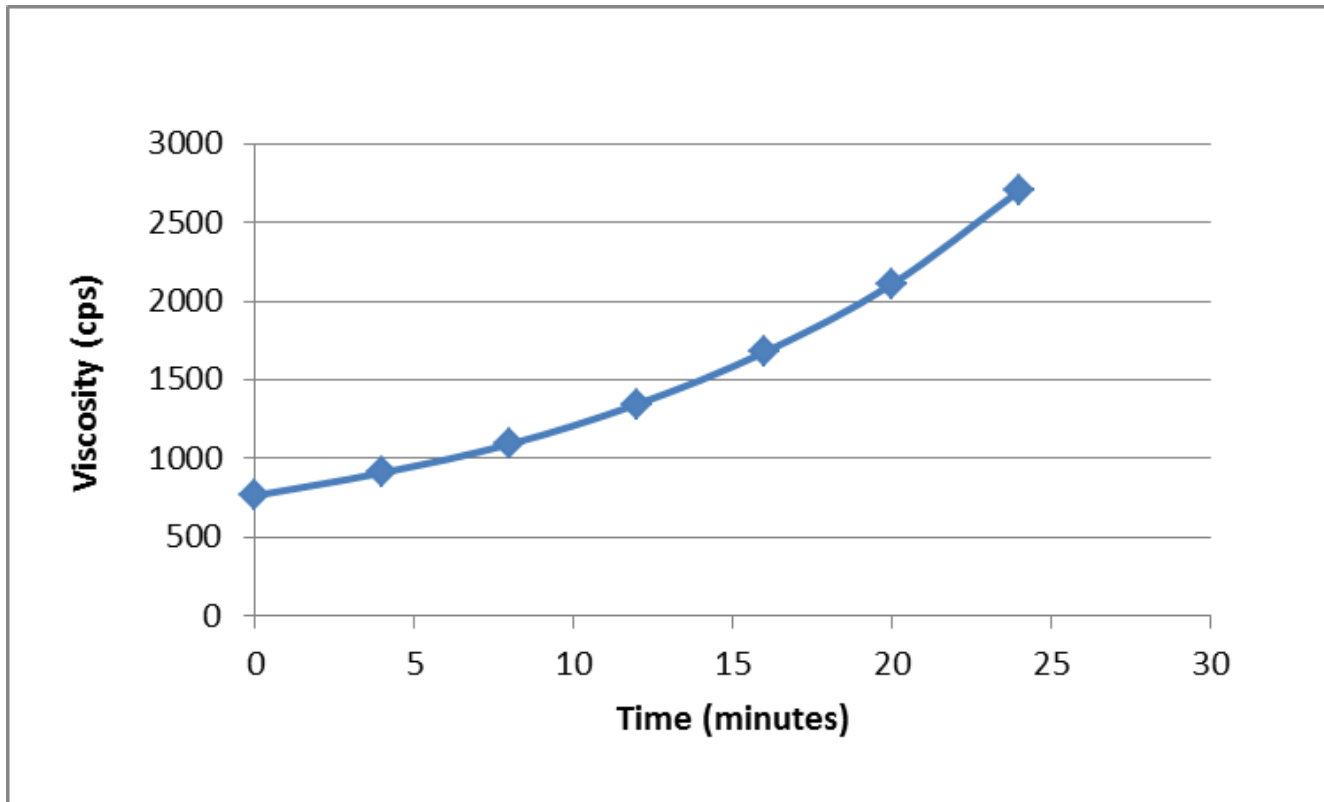
Processing

Mix Ratio (by Weight): 100A : 45B Resin : Hardener

Mixing Instructions: Weigh each component accurately into clean containers and mix thoroughly being careful to scrape the sides of the container to ensure uniform mixing.

Pot-life: Working time is usually 15 to 20 minutes for the mixed resin but depends on the mass and temperature of the mixed resin. It is recommended that all mixed resin is applied within 15 minutes.

Viscosity changes over time:



Viscosity example:

RESTECH+



Item	Approximate Viscosity in Centipoise (cps)
Water at 70	1 to 5 cps
Blood	10 to 20 cps
Antifreeze	20 cps
Corn Oil or Motor Oil SAE 10	50 to 100 cps
Maple Syrup or Motor Oil SAE 30	150 to 200 cps
Castor Oil or Motor Oil SAE 40	250 to 500 cps
Glycerin or Moto Oil SAE 60	1,000 to 2,000 cps
Honey or Corn Syrup	2,000 to 3,000 cps
Blackstrap Molasses	5,000 to 10,000 cps
Chocolate Syrup	10,000 to 25,000 cps
Ketchup or Mustard	50,000 to 70,000 cps
Tomato Paste or Peanut Butter	500,000 cps
Shortening or Lard	1,000,000 to 2,000,000 cps
Caulking Compound	5,000,000 to 10,000,000 cps
Window Putty	100,000,000 cps

Neat Resin Physical Properties*

Color (Part A) Resin	Clear "water white"
Color (Part B) Hardener	Light yellow
Viscosity Resin-Part A (77 °F)	800 cps
Viscosity Hardener-Part B (77 °F)	700 cps
Viscosity Mixed Resin (77 °F)	765 cps

Neat Resin Mechanical Properties (Cured 12 hours at 25 ° C, and 2 hrs at 71 °C)*

Flexural Modulus, ksi	
Room Temperature/Ambient	458 ksi
Flexural Strength, ksi	
Room Temperature/Ambient	17.2 ksi
Flexural Strain, ksi	
Room Temperature/Ambient	6.0%
Glass Transition Temperature	
Room Temperature/Ambient (DMA – E' onset)	55 °C

*Typical resin mechanical data - properties will depend on cure schedule, mass of cured sample, and test method

RESTECH+

Advanced Polymer Epoxy Resin

General Information

Specifically formulated with an Advanced Polymer Formula designed to take the repetitive abuse demanded from laminated carbon orthotics and prosthetics, our new RESTECH+ Advanced Laminating Epoxy is the strongest and easiest resin system we have ever produced!

Great for laminated Prosthetic & Orthotic devices and compliant with all common materials used in O&P. Designed to deliver the highest flexural strength combined with superior toughness, this resin can take the abuse!



RESTECH+ Epoxy Resin

Features:

- Fastest Curing Time
- Easy 2:1 mixing by volume
- Superior Toughened Resin Matrix
- Crystal Clear
- High Luster Finish
- Thin High Flow Viscosity
- Vacuum Socket Approved & Tested
- Unperceivable shrinkage
- 3 year shelf life
- DOT Non-hazardous ground shipping

RESTECH+ Epoxy Resin

Specifications:

- Designed to work with thin cross sections
- Gel time of 15-20 minutes
- Cut out 45 minutes on foam models and 2hrs on plaster models
- Ultimate hardness time of 2-4 hours in oven at 160°F or, 8-12 hours at 77°F
- All times can be accelerated with heat, without weakening the resins ultimate strength

Available in easy to use kits and bulk gallon individual containers

3000ml Easy Kit



1 Gallon containers



Laminating With RESTECH+ Epoxy Resin

- **Mixing Ratio:** 2:1 (By Volume,) 100:45 (By Weight)
- **Mix Time:** 1 Minute until fully mixed. Scrape side of cup well
- **Working Time:** **HEAT DEPENDANT.** Gel time working range of 10-20 minutes
- **Cure Ranges:** Ultimate hardness time of 2-4 hours in oven at 160°F or, 8-12 hours at 77°F
- **Faster Cure Times:** See “Curing Times”.
- See our website for a comprehensive resin mixing chart: www.fabtechsystems.com

Laminating With RESTECH+ Epoxy Resin

- Seal the cast to prevent any possible moisture reactions with either the resin or materials using either a latex isolation balloon (preferred method) or seal with an appropriate sealer.
- Apply the PVA bag using common methods and dry the PVA bag to eliminate moisture in your lamination. Apply lay-up per your standards.
- Measure the resin in a volumetric measuring cup (2.R:1.H) or use a digital scale to weigh out the desired amount. (100.R:45.H)
- Note: The proper mixing ratio is essential. Adding more hardener will **NOT** speed up the cure time and In most cases will slow the cure or prevent cure from ever happening.

Laminating with RESTECH+ Epoxy Resin

Work Time & Curing Times

15 to 20 minutes of working time is a good average work time over a plaster model.

10 to 15 minutes of working time over a CAD foam or warm plaster model.

30 - 60 minutes to take off vacuum after gelling up

Curing takes many different forms with Epoxy.

Epoxy Resins use heat to cure. Heat is our ally in laminating with Epoxy Resins, and cold temperature is the enemy.

Curing Times

To create faster gel and curing times. Below are common ways for us to speed up the Epoxy cure time.

1. **Pre-heat the epoxy resin.**

Store the resin in a pre-warmed area or when mixing the epoxy in the mixing cup, use a heat gun to pre-heat the mixture.

2. **Post heat with heat gun.**

Once the lamination has been worked over and you are satisfied, use a heat gun and warm the whole lamination for about 5 to 10 minutes. Do this twice after it has cooled the first time.

3. **Post Cure with “Rapid Cure Heat Bag Tool”.**

Item # RHB-1 \$20.00. This tool in essence acts as a mobile oven to post cure the lamination. Run the Heat Bag over the model for 15mn to 1/2hr (checking the job often for air) let the job cool and you are ready to cut out.

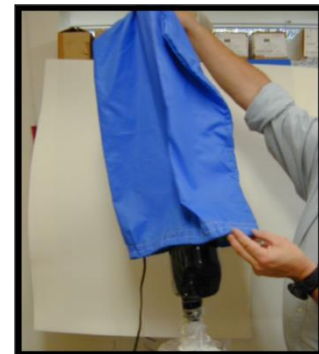
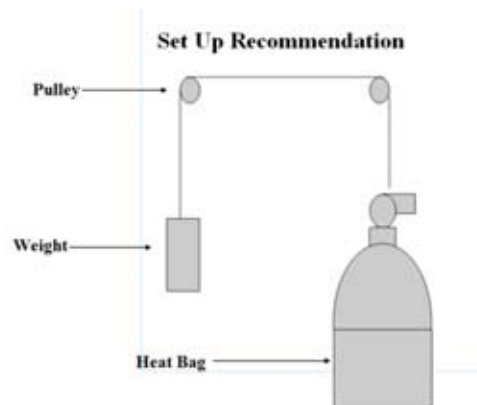
4. **Oven Post Cure.**

Post cure the lamination in an oven at 125F for 10 to 20mn. Let cool and cut out.

Rapid Cure Heat Bag

The Rapid Cure Heat Bag requires the lamination to be in a vertical position with a holding string mounted above the lamination. Use any standard hair dryer up to 1875 watts. Always supervise the Heat Bag when in use. Never leave unattended.

- Laminate as usual. Once the lamination has gelled and is not flowing you can use the Heat Bag.
- Pull the Heat Bag over the laminated model and close the distal end of the bag leaving a small opening so air can pass through. We recommend using a laser heat tool to read the temperature of the bag. Adjusting the distal opening will allow you to control the heating temp. Keep the temp adjusted to a range about 125 to 150 degrees F. Leave on for 15mn to ½ hr and then let the job cool.





IMPORTANT



The **Rapid Cure Heat Bag** is intended to create an environment to heat the model to approximately 150F. This is the ideal elevated temperature any hotter may cause the following concerns.

- Soft foam padding (distal end pads, spot pads, liners) may shrink or be crushed with the heat and vacuum if left on for too long.
- Some two part A/B rigid foams may off gas and create air in the laminate after the gelling process
- Flexible plastic interface materials (Proflex, Flexelene, Thermolyn) can soften and/or adhere to underlying materials

FAQ

•**Q. Why does my socket has soft spots?**

•**A.** When mixing RESTECH+ Epoxy, make sure measurement is exact. Too much A or B will deliver undesirable results.

•**Q. Why is the vacuum pulling resin thin on the proximal end?**

•**A.** RESTECH+ Epoxy has a low viscosity for easy wet out. Turn you vacuum down to 10 or 13 inches of mercury.

•**Q. Will RESTECH+ cure if I don't use heat?**

•**A.** Yes, RESTECH+ will cure without heat. Cure times could be anywhere from 2 to 8 hours depending on room temperature.

•**Q. Why does my lamination have air bubbles in it?**

•**A.** Check the amount of resin left on top of the lamination. Make sure the vacuum isn't pulling all the resin down allowing air to come in. Turn heat on low.

•**Q. My lamination has white areas that look strange?**

•**A.** You exposed the resin to moisture during the curing phase. Make sure you seal the cast.



Safety Precautions



Q. I got RESTECH+ epoxy on my hands, what do I clean it off with?

A. Use ONLY soap and warm water! Acetone and other solvents will exasperate any sensitivity issues.
Even though RESTECH+ is a relatively safe resin product, it is still corrosive to the skin and continued exposure will cause sensitivity. “Just like Latex sensitivity.”

Q. How will I know what a sensitivity to RESTECH+ epoxy is?

A. There can be many symptoms. Rashes, burning eyes, allergy like itching, or breathing issues, if you have any symptoms like this you may have developed a sensitivity to epoxy. Stop using the product.

Q. How do I avoid getting a sensitivity?

A. Always wear gloves and avoid skin contact with uncured resin or hardener.

Contact

Phone: **1-800-322-8324**

Email: **info@fabtechsystems.com**

Website: **www.fabtechsystems.com**



fabtech systems

Make More Possible