



# EPOXY RESIN SYSTEMS

*"Dedicated to QUALITY, SERVICE, SAFETY, and INNOVATION"*

## TC-1614 A/B EPOXY PENETRATING SEALING AND COATING RESIN SYSTEM

TC-1614 A/B is an unfilled, low viscosity epoxy resin system. It is designed to seal porous to semi-porous substrates developing remarkable strength. TC-1614 A/B also has exceptional adhesive characteristics and is capable of high temperatures.

- Easy to use and apply
- Penetrates and seals porous surfaces with excellent adhesion
- Works great for sealing 3D Printed parts
- Withstands temperatures up to 350°F (177°C)
- Can be pigmented for color enhancement
- Recommended by several 3D Printer Manufacturers

PHYSICAL PROPERTIES	TEST METHOD	TEST RESULTS
Hardness, Shore D	ASTM D2240	85 ± 2
Density (g/cc)	ASTM D792	1.14
Cubic Inches per Pound	N/A	25.1
Color/Appearance	Visual	Yellow Opaque
Tensile Strength (psi)	ASTM D638	9,500
Tensile Modulus (psi)	ASTM D638	320,000
Elongation (%)	ASTM D638	5
Flexural Strength (psi)	ASTM D790	12,600
Flexural Modulus (psi)	ASTM D790	380,000
Shrinkage (in/in) linear	12"x 1/2" x 1/2"	0.008
Izod Impact, notched (ft-lb/in)	ASTM D256	0.44

Reported physical properties based on elevated temperature cured test specimens.

HANDLING PROPERTIES	Part A	Part B
Mix Ratio by weight	100	20
Mix Ratio by volume	100	23
Specific Gravity @ 77°F (25°C)	1.13	0.98
Color	Colorless	Amber
Viscosity (cps) @ 77°F (25°C) Brookfield	550	250
Mixed Viscosity (cps) @ 77°F (25°C) Brookfield	600	
Work Time, 100g mass @ 77°F (25°C)	2 hours	
Tack Free	10 – 12 hours @ 77°F (25°C) 5 hours @ 120°F (48.9°C)	

Properties above are typical and not for specifications.

\*Application Procedures – see page 3

## **POST CURING:**

All physical property results are based upon post-curing this system. The following procedure provides the best results:

- 150°F (66°C) for 1.5 to 2 hours
- 250°F (121°C) for 2 hours
- 300°F (149°C) for 1 hour
- 350°F (177°C) for 1 hour

Allow to cool in the oven. This procedure provides further stabilization and eliminates possible thermal shocks for cavity tools that are temporarily clamped together for curing purposes.

## **STORAGE:**

Store at ambient temperatures, 65-80°F (18-27°C). Unopened containers will have a shelf life of 12 months from date of shipment when properly stored at recommended temperatures. Purge opened containers with dry nitrogen before re-sealing.

<b>PACKAGING</b>	<b>Part A</b>	<b>Part B</b>	<b>Cubic Inches per Kit</b>
Quart Kits	2 lbs.	7 oz.	61
Gallon Kits	9 lbs.	1.8 lbs.	271
5-Gallon Kits	40 lbs.	8 lbs.	1,205

## **SAFETY PRECAUTIONS:**

Use in a well-ventilated area. Avoid contact with skin using protective gloves and protective clothing. Repeated or prolonged contact on the skin may cause an allergic reaction. Eye protection is extremely important. Always use approved safety glasses or goggles when handling this product.

## **IF CONTACT OCCURS:**

- Skin:** Immediately wash with soap and water. Remove contaminated clothing and launder before reuse. It is *not* recommended to remove resin from skin with solvents. Solvents only increase contact and dry skin. Seek qualified medical attention if allergic reactions occur.
- Eyes:** Immediately flush with water for at least 15 minutes. Call a physician.
- Ingestion:** If swallowed, call a physician immediately. Remove stomach contents by gastric suction or induce vomiting only as directed by medical personnel. Never give anything by mouth to an unconscious person.

**Refer to the Material Safety Data Sheet before using this product.**



TC-1614 Part A SDS



TC-1614 Part B SDS

## Product Application Procedure for 3D Printed Parts

**Material:** TC-1614 Epoxy

**Purpose of Procedure:** To impregnate rigid, porous 3D Printed Parts with epoxy. Infusing epoxy into the surface is a beneficial procedure to increase strength, improve handling qualities and in some parts, improve aesthetics. Some systems will absorb more material than others.

### **Procedure:**

- Pre-warm A&B material in separate containers to 90°-100°F maximum (32°-37°C max) in a temperature controlled industrial oven. This will help to lower the viscosity and increase the absorption rate of epoxy into the part (never use a household oven that may be in contact with food).
- You can also pre-warm the 3D printed part to aid in epoxy infiltration. 100°-120°F (37°-49°C) is a good range but refer to your 3D printed material recommendations for heat resistance in an effort to avoid distortion.
- Place a small 3D Printed Part into a self-sealing (zipper lock) plastic bag and fill with an appropriate amount of epoxy. A bag that is too large will require more volumetric amounts of epoxy. Squeeze out as much of the extra air in the bag to assure part is fully submerged and coated with epoxy then seal bag.
- Allow the part to soak in the epoxy for roughly 20-25 minutes. A recommended optional procedure would be to place bag with soaking 3D Printed part into 100°-120°F (37°-49°C) oven in a leak-proof, metal container, and allow to soak for 15-20 minutes. Check part at 5 minute intervals to monitor viscosity levels and for any exothermic reaction. Larger batches of mixed epoxy will have a shorter reaction time.
- Once part has soaked for allotted time, pull part out of bag and drain excess epoxy off of part.
- For larger parts, mix enough A&B together so you have sufficient material to brush an even coat over the part. Continue brushing drips and runs to keep part coated for 20-30 minutes. Then drain off excess epoxy and wipe down surface with clean, dry paper towels. Avoid using any solvents since it will affect the curing properties.

**\*Note that mixing a large mass of epoxy can produce an increase in chemical reaction shortening work time and increasing exotherm (heat) as it sits. Do not leave a large, concentrated mass of epoxy in a container unattended. After soaking the part, it may be best to split up a large batch (over 200-300g) by draining the bag into 2-3 separate small containers and allow to harden.**

- Hang part with wire over a cup or bucket to allow continued drainage of excess epoxy. Wipe off any areas of pooled epoxy with a gloved finger or brush. Monitor any sags or drips for the next hour or until epoxy has gelled.
- You can expedite curing of the epoxy in an oven at 100°-120°F (37°-49°C) and promote better physical properties of the finished material. You can also allow the epoxy to cure at room temperature but an elevated post cure will achieve the best results.