

## ADHESIVES

GC Electronics offers three basic types of adhesives:

- 1. EPOXY CEMENTS:** Among the strongest and most universal of all bonding materials. They consist of two parts which must be mixed before applications. Epoxies dry without heat or pressure at room temperature through catalytic action.
- 2. CYANOACRYLATE ADHESIVES:** Do not require the use of an added catalyst, nor heat or pressure. Dries within seconds through the process of polymerization.
- 3. SOLVENT-RELEASE ADHESIVES:** Resins or polymers in solution. This general category also includes welding type adhesives which create a bond of exceptional strength.

## EPOXY CEMENTS

Two-component, solventless cements which form an exceptionally strong bond (up to 4,000 psi) and they do not shrink on curing. May be used to cement porous and non-porous substances including all metals, glass, ceramics, most plastics, cardboard, wood, rubber, and fiber. They resist moisture, most solvents, acid, and alkalis. The consistency of epoxy is that of semi-fluid or putty. They have a tendency to "fill-in" and will produce strong bonds even if the parts to be cemented do not match perfectly. Epoxy cures at room temperature, but elevated temperatures (up to 80°C) may be employed to speed up the curing time. All GC epoxy cements are easy to prepare as they require a 50/50 composition to be mixed. This can be judged when squeezing out the tube, for the exact ratio is not critical. The working life, often called "pott life" of the mixture, is the time span from mixing the two parts until the chemical reaction starts to harden the compound. A product with short working, and correspondingly short curing time, is indicated where a single repair is to be made and the mixture can be applied immediately after preparation. For production purposes, a type with long pott life should be selected.



### Quik Stik

5 Minutes Set

Clear, fast curing epoxy adhesive. In view of its short pott life, use is recommended when a single repair must be made and the mixed adhesives can be used within one or two minutes. Cemented items can be safely handled within eight to twelve minutes, with full hardness obtained after several hours. This cement is relatively thin in consistency and should be used to cement closely matching surfaces. The glue line is usually invisible.

**Part No. 10-114** Pkg. of two 1/2 fl. oz. Tubes

**Part No. 19-822** Double Syringe .0105 oz.



### 2 Part Epoxy Super Glue

5-6 Hour Set

Versatile epoxy cement particularly suitable for cementing non-porous materials. Cures at room temperature. Bond strength of over 3000 psi. Will not shrink through curing. Resistant to water, solvents, heat, cold and fungus. Excellent dielectric properties. Mix in equal parts from two tubes.

**Part No. 10-100** Pkg. of two 3/4 oz. Tubes



### 2 Part Epoxy Glue

5 Hours Set

Provides an exceptionally hard and strong bond. Good dielectric properties. Gray-white in color with fillers added to increase viscosity and make it thixotropic (non-running). May be used to fill gaps or to replace broken sections. Bonds may be over-filled and filed or sanded after curing.

**Part No. 10-347**  
Pkg. of two 2 fl. oz. Tubes  
N.S.N. 8040-00-281-2308



### Epoxy Putty

GC Epoxy Putty is a two part epoxy in a single tube. Amount needed is cut off and kneaded together. Two minute work life. Dielectric strength: 400 volts/mil. Sets hard in 20 minutes, may be drilled and tapped. Max. useful temp. 300° F.

Applications: Plumbing repairs, works under water. Electrical, use in place of tape.

**Part No. 19-348** 4 oz. Tube



### Conductive Epoxy

Electrically conductive silver filled two part for attaching electrical components. Mix ratio 1/1. Pot life 40 min. Cure 24 hours. Vol. res. .005 ohm-cm max.

**Part No. 19-2092** .2116 oz. Kit



### GC Potting Epoxy

Black opaque epoxy used for potting and encapsulating electronic circuits. Use to environmentally protect or conceal circuits. This product is excellent when used with Chassis Boxes. Working Time (Pott Life), 1 Hour, Mix ratio: 1 to 1, Temperature Range: -40° to 300° F.

Electrical Properties:  
Volume Resistivity:  $8.3 \times 10^{14}$  Ohm-cm  
Dielectric Constant: 3.5 (25°C, 100 Hz)  
Dielectric Strength: 410 v/mil

**Part No. 19-823** 8 oz. Kit (2-4 oz. Bottles)

**Part No. 19-824** 18 oz. Kit (2-9 oz. Bottles)

**Part No. 19-824-2G** 2 gal. Kit (two 1 gal. containers)

**MATERIAL SAFETY DATA SHEET**

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Product Type: Adhesive  
 Product Name: **GC Potting Epoxy, Part A Resin**  
 Part Number(s): **19-823A**  
**19-824A**  
**19-824-2AG**

**Section 1 – Identification of Product**

Common Name: GC Potting Epoxy (Part A) Resin  
 Chemical Composition: Mixture  
 Chemical Family: Epoxy Resin  
 Product Type: Adhesive

**HMIS RATINGS**

Health	2	Least	0
Flammability	1	Slight	1
Reactivity	0	Moderate	2
Personal Protection	B	High	3
		Extreme	4
		Gloves, Safety Glasses	B

**Section 2 – Hazardous Ingredients**

Name	CAS #	OSHA PEL	ACGIH TLV
Bisphenol-A Type Epoxy Resin	25068-38-6	NE	NE
Carbon Black	1333-86-4	3.5mg/m3	3.5mg/m3

\* Exact identity withheld as a trade secret.

**Section 3 – Physical Data**

Flash Point (PMCC): > 200°F  
 Boiling Point: > 400°F  
 Vapor Density: > Air  
 Evaporation Rate: Nil  
 % Volatile by Vol.: 0  
 Specific Gravity: 1.15  
 Solubility in Water: Negligible  
 Vapor Pressure: < 1 mm Hg  
 Appearance and Odor: Black Liquid, mild epoxy odor

<b>Section 4 – Fire and Explosion Hazard Data</b>
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Extinguishing Media:	Water fog, carbon dioxide, foam or dry chemical.
Special Fire Fighting Procedures:	Full protective equipment including self-contained breathing apparatus should be used. Water spray may be used to cool fire exposed container to prevent pressure build-up and possible auto-ignition or rupture.
Unusual Fire & Explosion Hazards:	Keep containers tightly closed. Water may be used to cool unruptured containers.

<b>Section 5 – Health Hazard Data</b>
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Primary Routes of Exposure:	<u>4</u> Dermal/Eye <u>4</u> Inhalation      ___ Ingestion
Medical Conditions Prone to Aggravation by Exposure:	Pre-existing disorders of the skin and/or eyes.
Eye Contact:	Contains ingredients which are irritating to the eyes. Symptoms may include blurred vision, burning sensation and tearing.
Skin Contact:	Contains materials which cause moderate skin irritation. This product may cause skin sensitization or allergic reactions which may be severe with certain people. Symptoms include rash, itching, hives and swelling of extremities. Prolonged or repeated exposure may cause a defatting or drying action to skin.
Inhalation:	Unlikely at room temperature due to low volatility, however heating can generate vapors that may cause respiratory irritation.
Ingestion:	Product is harmful if swallowed.
Chronic Health Effects:	The Bisphenol-A epoxy (DGEBA) resin this product contains has been shown to be mutagenic in some microbial tests, but failed to show mutagenicity in others, the significance of this is unknown. Chromosomal aberrations were observed in cultured rat liver cells. Two year bioassays on mice exposed by the dermal route to DGEBA resin gave only very limited evidence of weak carcinogenicity. Based on this and other evidence the International Agency for Research on Cancer (IARC) concluded in 1988 that DGEBA epoxy resins are not classifiable as carcinogens.
Emergency First Aid Procedures	
Inhalation:	Move person to fresh air. Restore breathing. Treat symptomatically. Consult a physician.
Eyes:	Flush eyes with water for at least 15 minutes. Take to a physician for medical treatment.
Skin:	Wash affected areas with soap and water. Remove contaminated clothing. Consult a physician if irritation persists.
Ingestion:	Drink plenty of water to dilute. Do not induce vomiting. Give medical attention immediately. Never give anything by mouth to an unconscious person.

<b>Section 6 - Reactivity Data</b>
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Stability:	<u>4</u> Stable      ___ Unstable
Hazardous Polymerization:	Will not occur.
Conditions to Avoid:	High temperatures, high humidity.
Materials to Avoid:	Strong oxidizing agents; strong acids or bases.

**MATERIAL SAFETY DATA SHEET**

Complies with OSHA Hazard Communication Standard 29 CFR 1910.1200

Product Type: Adhesive  
 Product Name: **GC Potting Epoxy, Part B Hardener**  
 Part Number(s): **19-823 B**  
**19-824 B**  
**19-824-2BG**

**Emergency Contact: Chemtrec**  
**Phone: (800) 424-9300**

**Section 1 – Identification of Product**

Common Name: GC Potting Epoxy (Part B) Hardener  
 Chemical Composition: Mixture  
 Chemical Family: Polyamine Blend  
 Product Type: Adhesive

**HMIS RATINGS**

Health	2	Least	0
Flammability	1	Slight	1
Reactivity	0	Moderate	2
Personal Protection	B	High	3
		Extreme	4
		Gloves, Safety Glasses	B

**Section 2 – Hazardous Ingredients**

Name	CAS #	OSHA PEL	ACGIH TLV
Polyamide Resin*	68082-29-1	NA	NA
Triethylenetetramine	112-24-3	NE	NE
Modified Aliphatic Amine*	TS		
Benzyl Alcohol	100-51-6	NE	NE
Nonyl Phenol	84852-15-3	NE	NE
Isophorone Diamine	2855-13-2	NE	NE

\* Exact identity withheld as a trade secret.

**Section 3 – Physical Data**

Flash Point (PMCC): > 200°F  
 Boiling Point: > 200°F  
 Vapor Density: > Air  
 Evaporation Rate: Nil  
 % Volatile by Vol.: 0  
 Specific Gravity: 1.0

Solubility in Water: Partial  
Vapor Pressure: < 1 mm Hg  
Appearance and Odor: Liquid, mild amine odor

**Section 4 – Fire and Explosion Hazard Data**

Extinguishing Media: Water fog, carbon dioxide, foam or dry chemical.  
Special Fire Fighting Procedures: Full protective equipment including self-contained breathing apparatus should be used. Water spray may be used to cool fire exposed container to prevent pressure build-up and possible auto-ignition or rupture.  
Unusual Fire & Explosion Hazards: Keep containers tightly closed. Water may be used to cool unruptured containers.

**Section 5 – Health Hazard Data**

Effects of Overexposure  
Acute: Skin, primarily redness and irritation.  
Chronic: May cause skin sensitization.  
Acute: Inhalation: symptoms may include burning sensation, coughing and shortness of breath.

Medical Conditions Prone to Aggravation by Exposure: Chronic diseases of the skin.  
Primary Routes of Exposure: 4 Dermal/Eye    \_\_\_ Inhalation    \_\_\_ Ingestion

Emergency First Aid Procedures  
Inhalation: Move person to fresh air. Restore breathing. Treat symptomatically. Consult a physician.  
Eyes: Flush eyes with water for at least 15 minutes. Take to a physician for medical treatment.  
Skin: Wash affected areas with soap and water. Remove contaminated clothing. Consult a physician if irritation persists.  
Ingestion: Drink one or two glasses of milk or water. Do not induce vomiting. Give medical attention immediately. Never give anything by mouth to an unconscious person.

**Section 6 - Reactivity Data**

Stability: 4 Stable    \_\_\_ Unstable  
Hazardous Polymerization: Will not occur.  
Conditions to Avoid: High temperatures, high humidity.  
Materials to Avoid: Strong oxidizing agents, acids, epoxy resins in uncontrolled conditions.