

## 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 (Pot 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)

# CHEMICALS

## EPOXY CEMENTS (Cont.)

### GC Electronic Grade Self Leveling Potting Silicone Sealant



Electronic Grade Self Leveling Silicone is a one-component, RTV (room temperature vulcanizing) product that uses new cross-linking mechanism as a cure method. No acetic or other corrosive by-products are generated during the curing process. It can be used in corrosion sensitive electrical or electronic equipment with no adverse effect and cures at room temperature.

|                                        |                                                          |
|----------------------------------------|----------------------------------------------------------|
| <b>Temperature Range (after cure):</b> | -57°C to +204°C<br>(-70°F to +400°F)                     |
| <b>Dielectric Strength:</b>            | 452 V/mil (173 KV/cm)                                    |
| <b>Thermal Expansion Coefficient:</b>  | 9 x 10 <sup>-4</sup> 1/K<br>0°C to 100°C (32°F to 212°F) |
| <b>Volume Resistivity:</b>             | >2.19 x 10 <sup>15</sup> Ohm/cm                          |

**Part No. 19-160** 10.2 fl. oz. Caulk Tube, Clear

### Thermally Conductive Potting Epoxy and Adhesive



Part A



Part B

This potting Epoxy and adhesive is a highly filled medium viscosity black casting resin formulated for application requiring a high degree of thermal conductivity. Mix ratio 1:1. It contains abrasive aluminum oxide filler which can introduce wear considerations. Cure is normally achieved at room temperature, although an elevated cure schedule can be used to reach final properties quickly.

|                                       |                                       |
|---------------------------------------|---------------------------------------|
| <b>Temperature Range:</b>             | -40°C to 150°C<br>(40°F to 300°F)     |
| <b>Dielectric Strength:</b>           | 430 V/mil                             |
| <b>Thermal Conductivity:</b>          | 7.34 (Btu * in/ft <sup>2</sup> hr °F) |
| <b>Thermal Expansion Coefficient:</b> | 44 (x 10 <sup>-6</sup> °C)            |
| <b>Volume Resistivity:</b>            | 2.14 x 10 <sup>12</sup> Ohm/cm        |

**Part No. 19-161** two - 4 oz. Containers

## CYANOACRYLATE ADHESIVES & DEBONDERS

"Instant bonding" cyanoacrylate adhesives cure in seconds, do not depend on evaporation of solvents and require no clamping. They are colorless and moisture resistant. They are ideal for bonding metals, plastics, rubber, glass and ceramics to each other or to dissimilar materials. Bonding strength up to several thousand psi is possible making them among the strongest adhesives available. These adhesives are economical, as only a drop is required. The best type should be determined by experimentation. Use them to repair broken plastic cabinets and other plastic items, attaching nameplates and rubber feet to panels and chassis, cementing broken ceramic glass and rubber items, repairing jewelry, etc. Porous surfaces may be bonded with Gelweld No. 19-0117. The average setting time is between 10 and 100 seconds, after which the cemented articles can be handled. These adhesives may even be used to bond surfaces which are normally difficult to cement, such as teflon, polyethylene, vinyl, silicone rubber and glass.

### GR-R-RIP



World famous Ethyl Cyanoacrylate rapid bonding adhesive in gravity fed bottle. Bond strength not affected by temperatures from -60°C to 85°C (-76°F to 185°F).

**Part No. 19-115** 0.106 fl. oz. Bottle

### GC Super Adhesive

Ethyl Cyanoacrylate Adhesive



Forms strong, lasting bonds in seconds between either similar or dissimilar materials metal, porcelain, plastic, glass, most rubbers, hardwoods, and other non-porous materials with smooth, close-fitting surfaces. The bond resists softening at temperatures up to 320°F (160°C). Your most versatile adhesive for bonding, attaching, fixturing. Cures to a strength of 5000 psi; because it is solvent-free, there is no shrinking during curing and no solvent fumes. Fills gaps to .003".

Meets Mil. Spec. MIL-A-46050C Type I Class 2.

**Part No. 10-128** 1 fl. oz. Bottle

### GC Super Glue Regular Formula

Ethyl Cyanoacrylate Adhesive



Medium viscosity formula for efficient wicking action, faster curing time. Excellent for bonding any combination of plastic, rubber or metal parts. This grade is ideal for small or fine work on non-porous, smooth surfaces. It fills gaps of .003-.005". Highly resistant to acid, alkali, alkali water, solvents and fungus. Non-toxic.

Meets Mil. spec. MIL-A-46050B Type 1 Class 2.

**Part No. 10-120** 0.075 fl. oz. Tube

### GELWELD

GEL Cyanoacrylate Adhesive



Ethyl Cyanoacrylate super strength adhesive in a "gel" form - will not drip or run. Fills gaps well.

**Part No. 19-117** 0.101 fl.oz. Tube

## SOLVENT RELEASE ADHESIVES

Most lacquer, rubber or plastic base adhesives are the solvent-release type. They are universal and easy to apply with no special preparation required. However, they are limited in their application as they are not suitable for cementing non-porous surfaces such as metals, glass, glazed ceramics and others, due to the inability of the solvent to evaporate quickly, except around the edges. They do work very well if one or both of the bonding surfaces consists of material which has some porosity.



### General Purpose Plastic Cement II

A solvent-release adhesive with a special Nitrocellulose Lacquer Base. The bond is hard, but not brittle. Adheres especially well to plastics, paper, leather, ceramics and metal. Quick-drying and waterproof. Widely used by repairmen, model builders, hobbyists and do-it-yourselfers. Ozone friendly.

**Part No. 19-327** 2 fl. oz. Bottle with Brush  
Replaces Part No. 10-324



### Rubber-to-Metal Cement II

A heavy-bodied, rubber-based cement with outstanding bonding qualities to many materials such as natural and synthetic rubber, metal, wood and plastics. Dries quickly and produces a lasting, flexible bond which often exceeds the strength of the material itself. Used to cement any rubber or flexible plastic part to cabinets, chassis or panels; also for gaskets, weather strips, etc. Ozone friendly.

**Part No. 10-354** 2 fl. oz. Bottle with Brush  
Replaces Part No. 10-352



### GC Bond

Thermoplastic adhesive based on synthetic components with unusually strong bonding characteristics to most materials. Produces a waterproof, resilient and long-lasting flexible bond. Light tan in color. GC Bond's uses range from cementing paper and cardboard to cementing electronic components to circuit boards and chassis. Sticks well to all metals and glass. Dries in 15 to 30 minutes.

**Part No. 10-4302-A** 2 fl. oz. Bottle with Brush  
**Part No. 10-4308-A** 8 fl. oz. Bottle with Brush



### Acrylic Cement

Consists of solvent for acrylics (plexiglass, lucite and others), slightly thickened with dissolved acrylic resin. It actually "welds" items made of plexiglass. The joint is usually invisible and stronger than the material itself. Cements many items used in electronics for decorative or functional purposes as well as acrylic signs, art objects and decorative pieces.

**Part No. 10-4002** 2 fl. oz. Bottle with Brush  
**Part No. 10-4008** 8 fl. oz. Bottle with Brush  
N.S.N. 8040-00-209-1346  
N.S.N. 8040-00-259-6181  
N.S.N. 8040-00-503-0315



### Service Cement

A quick-drying and waterproof clear adhesive which forms a strong, hard but vibration resistant bond with minimal shrinkage. A true universal adhesive for shop, industry, home and hobby use. Ideal for speaker repairs. May also be used for gluing porous or semi-porous materials to each other or to metals, plastics, etc. Not suitable for metal-to-metal, glass-to-metal or other non-porous to non-porous surfaces, for which Perma-Bond, GR-R-RIP or epoxy cements are more suitable.

**Part No. 10-302** 2 fl. oz. Bottle with Brush  
**Part No. 10-310** 1 gal. Plastic Jug  
**Part No. 10-310-4G** 4 gal pack



### Vinylite Cement

Vinyl resin-base cement that is waterproof, almost invisible and has excellent resistance to moisture, most acids and alkalis. Used to cement items made of rigid or flexible vinyl, wood, cardboard, paper, metal, plastics, and glass. Very flexible. Lends itself particularly well to items where a rigid bond is not desirable.

**Part No. 10-5802**  
2 fl. oz. Bottle with Brush  
N.S.N. 8030-00-264-3838



### Silicone Rubber Adhesive/Sealant



One-component elastomer cures to a tough, rubbery solid when exposed to moisture in the air. Designed to fulfill industrial and electronic service sealing and bonding requirements, this sealant has excellent adhesive strength, high elongation and outstanding insulation and heat resistance qualities. Develops primerless adhesion to a variety of materials, including metal, glass, most wood, silicone resin, vulcanized silicone rubber, ceramic, natural and synthetic fibers; most plastics and painted surfaces. Resists weathering, vibration and exposure to oil, moisture, ozone, and temperatures from sub-zero to 400°F. Cures to a tack-free surface in 10 minutes. Full cure, 24 hours. Ideal for many sealing, bonding and insulating applications, including general electrical insulation, potting exposed electronic components, bonding gaskets for heating and refrigeration units, formed-in-place gaskets for gear boxes, compressors, pumps and outdoor motor covers, pressure sealing of aircraft cabins and cockpits, caulking sheet metal stacks, ductwork and equipment housings, and as an anti-abrasion coating.

As Cured—Electrical

ASTM D 257 Volume Resistivity, ohm-cm –  $6 \times 10^{14}$

ASTM D 149 Dielectric Strength, volts/mil – 635

ASTM D 150 Dielectric Constant, at 60 Hz – 2.8 at 100 Hz – 2.8 at 100 kHz – 2.8

ASTM D 150 Dissipation Factor, at 60 Hz – 0.0015 at 100 Hz – 0.0015 at 100 kHz – 0.0015

Silicone Rubber Sealant meets the following requirements:

FDA: FDA regulation No. 21 CFR 175.105 when fully cured and washed.

UL: Recognized for service to 302°F (150°C) where elongation is not necessary.

Meets Mil. Spec. Mil-A-46106A Type 1,

Meets Fed. Spec. TT-S-001543A, Class B, TT-S-0230C, Type 2, Class B

**Part No. 10-150** 3 fl. oz. Tube w/Dispensing Nozzle, Clear



Part No. 19-155



Part No. 19-158



Part No. 19-159

### Electronic Grade Silicone Sealant/Adhesive



One part non-corrosive, neutral cure electronic grade silicone sealant. Will remain flexible from -70° F to +400° F. (-57° C to +204° C) An excellent adhesive for many electrical and electronic applications where corrosion to metals is a problem. Good dielectric properties, high surface resistivity and resists electrical tracking. Meets the requirements of Mil-A-46146A-Type 1; meets the requirements of FDA status, FDA regulation #177.2600

**Part No. 19-155** 3 fl. oz. Color: Clear

**Part No. 19-158** 10.2 fl. oz. Caulk Tube, Color: White

**Part No. 19-159** 2.8 fl. oz. Cartridge Color: White



### Silicone Caulk Tube

GC Industrial RTV Silicone is a one-part high modulus Sealant/Adhesive and Gasketing material. Remains flexible from -80°F to +400°F (-62°C to +204°C). Will not crack, crumble or dry out. Unaffected by ultra-violet, weather, most chemicals and solvents. Adheres to metal, wood, glass, fiberglass, ceramics, fabrics and many plastics. Meets the following specifications: Agriculture Canada; USDA; FDA regulation No. 21 CFR 175.105; Mil Spec Mil-A-46106A-Type1 and US Fed. Specs. TT-S-001543A Class B and TT-S-0230C Type 2, Class B.

**Part No. EL-615** 10.2 fl. oz. Caulk Tube, Clear

### Silicone Quick Reference Guide

| Description          | 10-150 | 19-155 | 19-157 | 19-158 | 19-159 | EL-615 |
|----------------------|--------|--------|--------|--------|--------|--------|
| Non Corrosive        | -      | X      | -      | X      | X      | -      |
| High Temperature     | -      | -      | X      | -      | -      | -      |
| Extreme High Temp    | -      | -      | X      | -      | -      | -      |
| Low Temperature      | X      | X      | X      | X      | X      | X      |
| Extreme low temp     | X      | X      | X      | X      | X      | X      |
| Thermal Conductivity | -      | -      | -      | -      | -      | -      |
| High Strength        | X      | -      | X      | -      | -      | X      |
| Super High Strength  | -      | X      | -      | X      | X      | -      |
| High Voltage         | -      | X      | -      | X      | X      | -      |
| Paste                | X      | X      | X      | X      | X      | X      |
| Flowable             | -      | -      | -      | -      | -      | -      |
| One Part             | X      | X      | X      | X      | X      | X      |
| Primerless           | X      | X      | X      | X      | X      | X      |
| Translucent          | X      | X      | -      | -      | -      | X      |
| Red                  | -      | -      | X      | -      | -      | -      |
| White                | -      | -      | -      | X      | X      | -      |
| Adhesive             | X      | X      | X      | X      | X      | X      |
| Sealant              | X      | X      | X      | X      | X      | X      |
| Potting              | -      | -      | -      | -      | -      | -      |
| Encapsulating        | -      | -      | -      | -      | -      | -      |
| Elect. Insulation    | X      | X      | X      | X      | X      | X      |
| Form In Place Gasket | X      | X      | X      | X      | X      | X      |
| Food Grade           | X      | X      | X      | X      | X      | X      |
| Marine               | X      | -      | -      | -      | -      | X      |
| Mil Spec             | X      | X      | X      | X      | X      | X      |