

## USEFUL CHEMICAL SPECIFICATION MATRIX

### Adhesives Specifications

MEK = Methyl Ethyl Ketone

Part No.	MSDS #	Description	Pkg. Contents	Base	Color	HMIS Flammability Rating	Temp °F	Curing/ Drying Time	Suggested Solvent	Shelf Life Months*	Dot Shipping
10-114 19-822	110	Quik Stik	(2)-1/2 fl. oz. 0.0105 oz. 30 cc.	Bisphenol-A (Resin) Mod. Epoxy	Clear	1	-40 to 194°F	20-30 mins	Acetone/ MEK	12	UN3082 Hazard Class 9
10-100	106	Epoxy Super Glue	Pkg. (2), 3/4 fl.oz	Bisphenol-A (Resin) Polyamide Blend (Hardener)	Clear/Amber	1	-40 to 302°F	Hard 24 hrs	MEK, Acetone or Chlorinated Solvent	12	UN3082 Hazard Class 9
10-347	133	Epoxy Glue	Pkg. (2), 2 fl. oz	Bisphenol-A (Resin) Polyamide Blend (Hardener)	Gray	1	-40 to 300°F	Hard 24 hrs	MEK, Acetone or Organic Solvent	36	UN3082 Hazard Class 9
<del>19-2092</del>	<del>117</del>	<del>Conductive Epoxy</del>	<del>6 gram kit 0.2116 oz</del>	<del>Silver Epoxy filled</del>	<del>Silver</del>	<del>1</del>	<del>N/A</del>	<del>24-72 Hrs @ 77 F 1 Hr. @ 140 F</del>	<del>N/A</del>	<del>12</del>	<del>UN3082 Hazard Class 9</del>
19-348	124	Epoxy Putty	4 oz. 113.4 gm Tube	Epoxy Resin	Gray	1	300°F	20 min.	None	36	Not Regulated
<del>19-115</del>	<del>216</del>	<del>CR R RIP</del>	<del>.101 fl. oz</del>	<del>Ethyl Cyanoacrylate</del>	<del>Clear</del>	<del>2</del>	<del>-76 to 185°F</del>	<del>15 to 60 secs.</del>	<del>Acetone</del>	<del>12</del>	<del>Not Regulated</del>
10-120	51	GC Super Glue	.075 fl. oz	Ethyl Cyanoacrylate	Clear	2	-65 to 180°F	15 to 60 secs.	10-312 or lacquer thinner	12	Not Regulated
10-4302-B	322	GC Bond	2 fl. oz	Synthetic Thermoplastic Resin	Tan	3	N/A	20 to 30 mins.	MEK	12	ORM-D
10-302 10-310	146	Service Cement	2 fl. oz 1 gal.	Nitrocellulose Lacquer	Clear/ Lt. Straw	3	N/A	20 to 30 mins.	10-312 or Lacquer Thinner	36	ORM-D
10-354	287	Rubber-to-Metal Cement II	2 fl. oz	Phenolic Resin	Black	3	N/A	N/A	Acetone	36	ORM-D
10-4002	122	Acrylic Cement	2 fl. oz	Acrylic Resin	Clear	3	N/A	8 to 10 mins.	MEK	36	ORM-D
<del>10-5002</del>	<del>119</del>	<del>Vinyl Cement</del>	<del>2 fl. oz</del>	<del>Vinyl Resin</del>	<del>Clear</del>	<del>3</del>	<del>N/A</del>	<del>25 mins</del>	<del>Acetone</del>	<del>36</del>	<del>ORM-D</del>

### Lubricants Specifications

Part No.	MSDS #	Description	Contents	Base	Color	HMIS Flammability Rating	Specific Gravity	Viscosity	Useful Temp. Range	Shelf Life Months*	DOT Shipping
19-2302	147	White Lithium Grease	1-3/4 fl. oz.	Lithium Soap Grease	Off-White	1	0.924	6.6 CST at 100°C	-35°C to +77°C (-30°F to +170°F)	36	ORM-D
10-1206	213	Luberex	2 fl. oz.	Calcium Sterate Grease	Brown	1	0.910	290-325 at 100°F	-35°C to +77°C (-30°F to +170°F)	36	Not Regulated
<del>10-2610</del>	<del>219</del>	<del>Tunerlub</del>	<del>1 3/4 fl. oz.</del>	<del>Petrolatum</del>	<del>Milky White</del>	<del>1</del>	<del>0.860</del>	<del>5x3 CP at 210°F</del>	<del>35°C to +77°C (-30°F to +170°F)</del>	<del>36</del>	<del>Not Regulated</del>
<del>10-1223</del>	<del>221</del>	<del>Phonolube</del>	<del>2 fl. oz.</del>	<del>Mineral Oil</del>	<del>Semi-Transparent Tan</del>	<del>1</del>	<del>0.900</del>	<del>750 SUS at 38°C</del>	<del>35°C to +77°C (-30°F to +170°F)</del>	<del>24</del>	<del>Not Regulated</del>
<del>19-826</del>	<del>280</del>	<del>Conductive Grease Compound</del>	<del>1 oz.</del>	<del>Lithium Soap Grease w/ Zinc &amp; Graphite Filler</del>	<del>Gray/Black</del>	<del>1</del>	<del>1.100</del>	<del>100 SUS at 100°F</del>	<del>23°C to +163°C (-10°F to +325°F)</del>	<del>36**</del>	<del>ORM-D</del>
<del>19-821</del>	<del>216</del>	<del>Graphite Lubricant</del>	<del>1 1/8 oz.</del>	<del>Powdered Graphite</del>	<del>Dark Gray</del>	<del>0</del>	<del>2.250</del>		<del>Up to 400°F</del>	<del>42</del>	<del>Not Regulated</del>
<del>10-985</del>	<del>288</del>	<del>Reach-All Pen Oil</del>	<del>1/2 fl. oz.</del>	<del>Hydrocarbons</del>	<del>Lt. Brown</del>	<del>1</del>	<del>0.930</del>	<del>115 SUS @ 100 F</del>	<del>-25 to +150 F</del>	<del>36</del>	<del>Not Regulated</del>
19-601	302	Sili-Spray	4 oz. aerosol	Hydrocarbon Polysiloxane	Clear Amber	3	0.750		-40°C to +85°C (-40°F to +185°F)	24	ORM-D
<del>19-810</del>	<del>100</del>	<del>Dry TFE</del>	<del>4 oz. aerosol</del>	<del>Hexane</del>	<del>White Opaque</del>	<del>4</del>	<del>0.740</del>			<del>60</del>	<del>ORM-D</del>

\*Note: Shelf Life is determined by the Date Of Manufacture (DOM) located on the product. If a product has a shelf life of 12 months, a closed container is good for one year past the DOM.

\*\*No shelf life if stored above 32°F.

For the latest information—[www.gcelectronics.com](http://www.gcelectronics.com)

All quantities are single; BU's are packages of 10 Unless otherwise noted.

## CHEMICAL SPECIFICATION MATRIX (Cont.)

### Potting Compound Specifications

<sup>^</sup> 0 to 120°F Application T

Part No.	MSDS No.	Description	Contents	Base	Color	HMIS Flammability Rating	Temperature Dielectric Strength	Curing/ Drying Time	Suggested Solvent	Shelf Life Months*	DOT Shipping
19-823 19-824 19-824-2G	120	GC Potting Epoxy	8 oz kit 500 gram kit 2 gal kit	Bisphenol-A (Resin) Polyimide Blend (Hardener)	Black	1	-40 to 300°F 410V/mil	24 Hrs @77 F 1 Hr @ 150 F 10 min @225 F	None	12	Not Regulated
19-160	276	GC Electronic Grade Potting Silicone	10.2 Caulk Tube	Organopolysiloxane	Clear	1 Open Cup 2 Closed Cup	452V/mil <sup>^</sup>	24 hrs @77°F Skin Over 40 min.	Xylol, Toluol, Mineral Spirits	12	Not Regulated
<del>19-161</del>	<del>277</del>	<del>Thermally Conductive Potting Epoxy</del>	<del>8 oz kit</del>	<del>Bisphenol-A Type Resin</del>	<del>Black</del>	<del>1</del>	<del>-40 to 300°F 400V/mil</del>	<del>24 to 72 hrs @77°F 3 Hr @ 149°F, 30 min @ 212°F</del>	<del>None</del>	<del>12</del>	<del>Corrosive</del>

### Solder Flux Specifications

Part No.	MSDS No.	Description	Contents	Base	Color	HMIS Flammability Rating	Suggested Solvent	Shelf Life Months*	DOT Shipping
10-4202 10-4216	112	Liquid Solder Flux	2 fl. oz bottle 16 fl. oz can	Rosin & Alcohol	Clear to Lt. Straw	3	Alcohol Dried Warm Water @ 125-150°F	36	ORM-D
10-200	142	Solder Flux	2 fl. oz bottle	Monoethanolamine Drethandamine	Clear to Lt. Yellow	0	None	42	ORM-D
10-1207	123	Soldering Paste	2 fl. oz bottle	Petrolatum	Amber	0	None	36	Not Regulated
10-202	113	Water Soluble	2 fl. oz bottle	Rosin	Milky White	1	None	42	ORM-D

### Flux Removers Specifications

Part No.	MSDS No.	Description	Contents	Base	Color	HMIS Flammability Rating	Specific Gravity	Shelf Life Months*	DOT Shipping
<del>19-229-A</del> 22-271-B	325	Flux Remover and Cleaner II	16 fl oz can 16 oz aerosol	Trichloroethylene & Isopropanol	Clear	1	1.1	48	ORM-D
19-7522-B	323	Static-Free High Strength Flux Remover	18 oz aerosol	Trichloroethylene & Isopropanol	Clear	1	1.34	42	ORM-D

### Solvents Specifications

Part No.	MSDS No.	Description	Contents	Base	Color	HMIS Flammability Rating	Used For	Shelf Life Months*	DOT Shipping
10-4102	211	Q Dope Thinner	2 fl. oz.	Toluene	Clear	3	Polystyrene	42	ORM-D
10-312 10-320 10-321	102	Radio-TV Cement	2 fl. oz. 16 fl. oz. 1 gal.	Acetone Acetate	Clear	4	Lacquer Type Cements	42	ORM-D Flammable Liquid
<del>10-6702</del>	<del>226</del>	<del>Paint Thinner</del>	<del>2 fl. oz.</del>	<del>Mineral Spirits and Toluene</del>	<del>Clear</del>	<del>3</del>	<del>Paint and Varnish Base</del>	<del>42</del>	<del>ORM-D</del>
22-209	214	Print Kote Solvent	2 fl. oz.	Toluene	Clear	3	Silicone	42	ORM-D

### Specialty Products Specifications

Part No.	MSDS No.	Description	Contents	Base	Color	HMIS Flammability Rating	Temperature Dielectric Strength	Shelf Life Months*	DOT Shipping
10-8880 10-8882	207	High Voltage Putty	1 1/4 oz 8 oz	Silicone Rubber Compounds	Clear	0	-65 to 250°F 550V/mil	36	Not Regulated
10-8602	118	Belt and Drive Non-Slip	2 fl. oz. bottle	Alcohol	Clear to Lt. Brown	3	None	36	ORM-D
10-8101 10-8102 10-568	206	Silicone Compound	1 fl. oz. 1 gal 1/3 oz.	Silicone Grease	Clear Gel	0	-40 to 400°F 0.1" Gap, 600V/mil 615V/mil @ 10 mil	60	Not Regulated

\* Note: Shelf Life is determined by the Date Of Manufacture (DOM) located on the product. If a product has a shelf life of 12 months, a closed container is good for one year past the DOM.

## 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



### 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. by volume

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)

## 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, best with moisture, dry air slows the cure rate.

Temperature Range (after cure): -57°C to +204 °C (-70°F to +400°F)  
Dielectric Strength: 452 V/mil (173 KV/cm)  
Thermal Expansion:  $9 \times 10^{-4}$  1/K  
Coefficient: 0°C to 100°C (32°F to 212°F)  
Volume Resistivity:  $>2.19 \times 10^{15}$  Ohm/cm

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

FDA Regulation number is 177.2600

meets the requirements of MIL-46106 Type II

Not recommend using this silicone in gaps or voids greater than 1/2". Anything greater than that will take much longer to cure.

## 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.

### 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

## 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.



### 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-B** 2 fl. oz. Bottle with Brush



### 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



### 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

**DIRECTIONS:** Surface must be clean. Remove old adhesive if any, by scraping. For strongest bonds, apply thin coat to both surfaces. Let dry until tacky, then press together. Allow several hours overnight to set.

Replaces Part No. 10-352



### 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





### 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

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. Syringe Color: ~~White~~ Clear

### Silicone Quick Reference Guide

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

## CHEMICAL SPECIFICATION MATRIX (Cont.)

Chem

### Silicone Sealants Specifications

Part No.	MSDS	Specific Description	Contents	Base	Color	HMIS Flammability Rating	Specific Gravity	Consistency	Tensile Strength	Dielectric Strength	Temperature	Shelf Life Months*	Dot Shipping
10-150	149	Silicone Rubber Adhesive/Sealant	3 fl.oz	Vulcanized Silicone	Clear	1	1.03	Non-Slump Paste	220 psi	500 v/mil	-80°F to 400°F	18	Not Regulated
19-155	201	Electronic Grade Silicone Sealant/Adhesive	3 fl.oz	Vulcanized Silicone	Clear	0	1.04	Non-Slump Paste	225-275 psi	18 KV/mm	-70°F to 400°F	12	Not Regulated
19-158	275	Electronic Grade Silicone Sealant/Adhesive	10.2 fl oz	Vulcanized Silicone	White	0	1.04	Non-Slump Paste	225-275 psi	18 KV/mm	-70°F to 400°F	12	Not Regulated
19-159			2.8 fl oz								-70°F to 400°F		
<del>EL-645</del>	<del>202</del>	<del>Silicone Caulk Tube</del>	<del>10.2 fl oz</del>	<del>Vulcanized Silicone</del>	<del>Clear</del>	<del>1</del>	<del>1.03</del>	<del>Non-Slump Paste</del>	<del>220 psi</del>	<del>25 KV/mm</del>	<del>-70°F to 400°F</del>	<del>18</del>	<del>Not Regulated</del>

### Printed Circuit Products Specifications

Part No.	MSDS	Description	Contents	Base	Color	HMIS Flammability Rating	Specific Gravity	Shelf Life Months*	DOT Shipping
<del>22-225-A</del>	<del>320</del>	<del>Positive Type Developer Concentrate</del>	<del>2 fl. Oz</del>	<del>Sodium Hydroxide</del>	<del>Milky White</del>	<del>0</del>	<del>1.00</del>	<del>42</del>	<del>UN 1824</del>
<del>22-226</del>	<del>208</del>	<del>Developer Concentrate</del>	<del>6 fl. Oz</del>	<del>Hydroxide</del>					<del>ORM-D</del>
22-237 22-238 22-239	306	PC Board Etching Solution	6 fl.oz 32 fl oz 1 gal.	Ferric Chloride & Water §	Dark Brown	0	1.42	42	UN 2582 ORM-D
22-240	104	Stripping Solution	2 fl. Oz	MEK & Xylene	Clear	3	0.84	42	UN 1993 ORM-D

§ pH Level = 1.57

### Coating Specifications

Part No.	MSDS	Description	Contents	Base	Color	HMIS Flammability Rating	Specific Gravity	Drying Time	Dielectric Strength	Useful Temp. Range	Suggested Solvent	Shelf Life Months*	DOT Shipping
<del>22-023</del> <del>22-024</del>	<del>278</del>	<del>Silver Print II</del>	<del>1/2 troy oz.</del> <del>1 troy oz.</del>	<del>Acrylic</del>	<del>Silver</del>	<del>3</del>	<del>1.76</del>	<del>Dry 20-30 min.</del> <del>Force Dry 30 min @ 80°C</del>	<del>N/A</del>	<del>N/A</del>	<del>Butyl Acetate</del>	<del>12</del>	<del>UN 1307</del> <del>ORM-D</del>
10-9002 10-9008-A	307	Red Insulation Varnish	2 fl. oz. 8 fl. oz.	Alkyd-Resin Based Enamel	Red	3	1.100	8-24 hours Air Dry @ 77°F	40 - 55 sec. #3 EZ Zahn Cup @ 77°F 3,000 v/Mil	Up to 93°C (200°F)	Use Xylene or 22-209	12	UN 1263 ORM-D
22-203	138	Print Kote Conformal Coating	2 fl. oz.	High Polymer Silicone Resin	Clear	3	0.880	Air Dry 15-30 mins.	850 cp @ 25°C 1,400 v/Mil	-65°C to 200°C (-85°F to 392°F)	Use 22-209	18	UN 1993 ORM-D
10-1762 <del>10-1766</del>	135	Insulating Coating	2 fl. oz. <del>16 fl. oz.</del>	Synthetic Resin in Solvent	Black	3	0.930	4 hrs.	7,000 - 22,000 cps 1,400 v/Mil	-30°F to +200°F	Use Toluene or 22-209	12	UN 1139 ORM-D
10-8665	159	Acrylic	11 oz. aerosol	Polymeric	Clear	4	0.740	10 mins	250 CP @ 25°C	Up to 190°C	Use Toluene	30	ORM-D
10-4702	209	Corona Dope	2 fl. oz.	Cellulose	Black	3	0.900	30-60 mins.	220 CP @ 25°C 3,800 v/Mil	Up to 340°F	10-312 or Lacquer Thinner	36	UN 1263 ORM-D
10-5002	137	Red-X Corona Dope	2 fl. oz.	Thixotropic Polyester Enamel	Red	3	1.120	2 hrs.	200-400 CP @ 25°C 2,000 v/Mil	Up to 105°C (220° F)	Xylene	36	UN 1263 ORM-D
10-3702 10-3704 10-3709	101	Q Dope	2 fl. oz. 4 fl. oz. 1 gal.	Styrene	Milky White	3	0.878 ± 0.040	80% Strength: 72 Hr.	720 cps	N/A	Use 10-4102	36	ORM-D UN 1133

\*Note: Shelf Life is determined by the Date Of Manufacture (DOM) located on the product. If a product has a shelf life of 12 months, a closed container is good for one year past the DOM.

For the latest information—[www.gcelectronics.com](http://www.gcelectronics.com)

All quantities are single; BU's are packages of 10 Unless otherwise noted.