

Single- and two-component epoxy and silicone adhesives, with room temperature, elevated temperature or moisture cure mechanisms.

Epoxies for Microelectronics

Chomerics' growing family of conductive epoxies now includes one-part, silver-filled pastes formulated for today's optoelectronic and microelectronic assembly applications.

CHO-BOND 700 Series Adhesives for Microelectronics Packaging

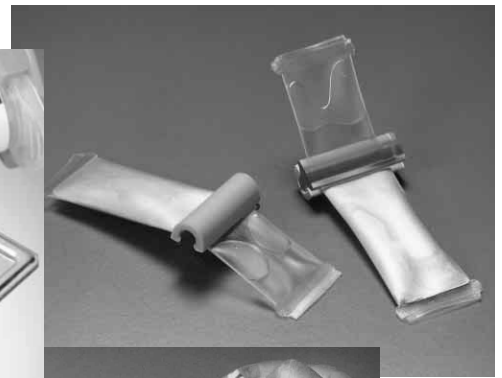
These pure silver-filled epoxy pastes are designed to meet the demanding requirements of semiconductor and microelectronics packaging. They are one-component systems with a unique combination of excellent die shear strength, low coefficients of thermal expansion, ionic purity, and high thermal and electrical conductivities. Each offers an extended working life with viscosity and thixotropy suitable for both time/pressure and positive displacement dispensing methods. Both are supplied frozen in bulk or standard syringe sizes.

- **CHO-BOND SV712** die attach adhesive has been optimized for high-speed, automated dispensing. It exhibits no resin bleedout on a variety of substrates and metallizations. Request Technical Bulletin.
- **CHO-BOND SV713** is especially well suited for temperature-sensitive, high performance applications. Request Technical Bulletin.

Versatile Conductive Epoxies

Our two-part silver, silver-plated-copper, and silver-plated-glass filled adhesives meet the most exacting electrical bonding requirements without the high temperatures, fluxes and expensive preparatory techniques usually needed to obtain effective lead-tin solder joints. They cure at room temperature or elevated temperatures into rigid structural bonds.

Excellent adhesion is achieved to copper, bronze, cold-rolled steel, aluminum, magnesium, Kovar, nickel, ceramic, phenolic and plastic substrates. Typical uses include bonding EMI shielded vents, windows or mesh gaskets to shield permanent seams.



CHO-BOND 500 Series Adhesive/Sealant Compounds

These pure silver-filled materials are used where tight tolerances require thin bond lines. Various cure cycles are available, and the materials are formulated for easy application by caulking gun, spatula, needle spotting, or silk screening. Their use for bonding mesh gaskets, printed circuit board repair, chip bonding, rear window defogger repair, and as low-temperature-activated flexible solders demonstrates their versatility. Request Technical Bulletin **10**.

- **CHO-BOND 584-29** adhesive combines room temperature cure with low viscosity, and can be used in place of soldering or welding. It is available in easy-to-use, two-chambered CHO-PAK dispensers in 1.0, 2.5 and 10 gram sizes (see photo above). These systems eliminate waste, mistakes, and time lost weighing components. Bulk kits are also available.

- **CHO-BOND 584-208** adhesive offers exceptional ease of application for circuit board repair. It is a two-component system with a 1:1 mix ratio, and cures in 24 hours at room

temperature. With a 0.75 hour elevated cure temperature of 212°F (100°C), the material offers volume resistivity of 0.005 ohm-cm.

- **CHO-BOND 592** adhesive bonds dissimilar materials effectively. It combines long pot-life and excellent adhesion with low viscosity, a low coefficient of thermal expansion, very low thermal impedance and good thermal shock resistance. The material excels as a sealant for microwave modules and components and is useful for circuit board repair and grounding applications.

CHO-BOND 300 Series Adhesive/Sealant Compounds

These feature large (>50 micron) silver-plated-copper particles that make them well suited for bonding poorly tolerated surfaces. Bond lines should not be thinner than 10 mils. The gritty filler bites through thin, non-conductive surfaces such as oxide layers and MIL-C-5541 Class 3 irridite. Applications include bonding and shielding of cast aluminum housings, conduit bulkhead

continued

Table 1

| SPECIFICATIONS AND PRODUCT CHARACTERISTICS (Contact Chomerics for complete specifications and test procedures) | | | | | | | |
|---|---|--|-----------------------------|----------------------------|----------------------------|-----------------------------|-----------------------------|
| CHO-BOND Adhesive | SV712 | SV713 | 584-29 | 584-208 | 592 | 360-20 | 360-208 |
| Binder | epoxy | epoxy | epoxy | epoxy | epoxy | epoxy | epoxy |
| Filler | Ag | Ag | Ag | Ag | Ag | Ag/Cu | Ag, Ag/Cu |
| Mix Ratio (by wgt.) | 1-part | 1-part | 100:6.3 | 1:1 | 100:50 | 1:1 | 100:33 |
| Consistency | thixotropic paste | thixotropic paste | thin paste | medium paste | nearly liquid | medium paste | thick paste |
| Specific Gravity | 3.3 ±0.30 | 2.5 ±0.30 | 2.5 ±0.20 | 2.7 ±0.30 | 2.6 ±0.25 | 5.0 ±0.30 | 4.0 ±0.40 |
| Minimum Lap Shear Strength, psi (MPa) | 1100 (7.59) | 1000 (6.90) | 1200 (8.28) | 700 (4.83) | 1500 (10.35) | 1600 (11.04) | 1400 (9.66) |
| Minimum Die Shear* Strength, psi (MPa) | 4800 (33.12) | 4500 (31.05) | — | — | — | — | — |
| Maximum DC Volume Resistivity, ohm-cm | 0.0004 | 0.0007 | 0.002 | 0.005 | 0.05 | 0.005 | 0.01 |
| Use Temperature | -49 to 302°F (-45 to 150°C) | -49 to 302°F (-45 to 150°C) | -67 to 257°F (-55 to 125°C) | -80 to 210°F (-62 to 99°C) | -80 to 210°F (-62 to 99°C) | -80 to 212°F (-62 to 100°C) | -80 to 212°F (-62 to 100°C) |
| Elevated Temperature Cure Cycle | 1hr. @257°F(125°C) or 30 min. @ 302°F (150°C) | 1hr. @257°F(125°C) 30 min. @ 302°F (150°C) | 15 min. @ 235°F (113°C) | 45 min. @ 212°F (100°C) | 30 min. @ 212°F (100°C) | 2.0 hrs. @ 150°F (66°C) | 45 min. @ 212°F (100°C) |
| Room Temperature Cure | NA | NA | 24 hrs. | 24 hrs. | 1 wk. | 24 hrs. | 24 hrs. |
| Working Life | 4 wks. | 3 wks. | 0.5 hr. | 1.0 hr. | 4.0 hrs. | 1.0 hr. | 1.0 hr. |
| Shelf Life, mos. | 12** | 12** | 9 | 9 | 9 | 9 | 9 |
| Coverage, in. ² /lb. (cm ² /g) | NA | NA | 11,000 (156.1) | 10,000 (141.9) | 12,000 (170.3) | 500 (7.1) | 700 (9.9) |
| Recommended Thickness, in. (mm) | 0.001 typ. (0.025) | 0.001 typ. (0.025) | 0.001 min. (0.025) | 0.001 min. (0.025) | 0.001 min. (0.025) | 0.010 min. (0.25) | 0.010 min. (0.25) |
| VOC, g/liter | 0 | 0 | 0 | 0 | 47 (A & B) | 0 | 0 |

* Alumina die on gold ** at -40°F (-40°C) NA Not Applicable

passthroughs, filters, and fabricated metal cabinets. Note that these compounds should be used only when the seam will not be broken. Request Technical Bulletin 47.

- **CHO-BOND 360-20** is a low-cost, easy-to-mix adhesive/sealant with high lap shear bond strength. It fills large gaps and offers good thermal shock resistance.
- **CHO-BOND 360-208** adhesive/sealant uses a filler blend of pure silver and silver-plated-copper particles to produce superior shielding performance without requiring contact pressure, making it an ideal fillet seal. Its low flow properties make it the material of choice for vertical and overhead fillets.

Flexible Silicone Adhesives

With a choice of silver-plated-copper, silver-plated-aluminum or silver-plated-glass filler particles, these conductive silicones cure into gasket-like seals. When used to bond conductive silicone gaskets in place, they must be

used in thin (8-10 mil) bond lines. Metallic surfaces may require priming with the recommended CHO-BOND primer to improve adhesion.

- **CHO-BOND 1029** is a two-component adhesive cured under pressure (6 psi/0.04 MPa, min.). Bond line thickness should not exceed 8 mils. Conductivity decreases sharply at >20 mil thickness. The material possesses superior lap shear (450 psi/3.10 MPa, min.). Ideal for quick bonding of conductive elastomers, the material's cure can be accelerated to 30 minutes at 250°F (121°C). Request Technical Bulletin 32.
- **CHO-BOND 1030** is a one-component RTV silicone that cures by exposure to moderate humidity. It has twice the peel strength of other RTVs and a lap shear of 200 psi (1.38 MPa). For maximum conductivity, bond line thickness should not exceed 10 mils. Width should not exceed 0.5 in (1.27 cm) for proper curing. The material cures under nominal pressure of 1-2 psi (0.01 MPa) at temperatures not exceeding 150°F (66°C). Request Technical Bulletin 36.

• **CHO-BOND 1035** is a one-component RTV silicone adhesive/sealant that can provide both environmental sealing and EMI shielding. It is well suited for bonding commercial-grade conductive elastomer gaskets and enclosure flanges, and serves as a conductive caulking material in enclosure seams. Its silver-plated-glass filler gives the material a volume resistivity of 0.05 ohm-cm. It is non-corrosive and forms a skin within minutes. Curing occurs without pressure in the presence of moisture. Packaging choices include 2.5 oz (71 g) metal tubes and 10 oz (0.3 kg) tubes for pneumatic dispensers. Request Technical Bulletin 23.

• **CHO-BOND 1075** is used both for bonding EMI gaskets and for providing EMI shielding and environmental protection as a caulk. It is specifically recommended for bonding CHO-SEAL 1285 conductive elastomer gaskets (silver-plated-aluminum filled silicone).

Request Technical Bulletin 35.

Table 1 continued

| SPECIFICATIONS AND PRODUCT CHARACTERISTICS (Contact Chomerics for complete specifications and test procedures) | | | | | | |
|---|-----------------------------|-----------------------------|-----------------------------|-----------------------------|------------------------------|------------------------------|
| CHO-BOND Adhesive | 1029 | 1030 | 1035** | 1075**** | 1085 | 1086 |
| Binder | silicone | silicone | silicone | silicone | primer for 1029 | primer for 1030, 1035, 1075 |
| Filler | Ag/Cu | Ag/Cu | Ag/glass | Ag/Al | | |
| Mix Ratio (by wgt.) | 1.0:2.5 | 1-part | 1-part | 1-part | 1-part | 1-part |
| Consistency | thick paste | gritty paste | thin paste | medium paste | thin fluid | thin fluid |
| Specific Gravity | 3.0 ±0.35 | 3.75 ±0.25 | 1.9 ±0.10 | 2.0 ±0.25 | 0.87 ±0.15 | 0.78 ±0.10 |
| Minimum Lap Shear Strength, psi (MPa) | 450 (3.11) | 200 (1.38) | 100 (0.69) | 100 (0.69) | NA | NA |
| Maximum DC Volume Resistivity, ohm-cm | 0.06* | 0.05 | 0.05 | 0.01 | NA | NA |
| Use Temperature | -67 to 257°F (-55 to 125°C) | -67 to 392°F (-55 to 200°C) | -67 to 392°F (-55 to 200°C) | -67 to 392°F (-55 to 200°C) | -112 to 392°F (-80 to 200°C) | -112 to 392°F (-80 to 200°C) |
| Elevated Temperature Cure Cycle | 0.5 hr. @ 250°F (121°C) | NA | NA | NA | NA | NA |
| Room Temperature Cure | 1 wk.*** | 1 wk.*** | 1 wk.*** | 1 wk.*** | 0.5 hr. | 0.5 hr. |
| Working Life | 2.0 hrs. | 0.5 hr. | 0.5 hr. | 0.25 hr. | NA | NA |
| Shelf Life, mos. | 6 | 6 | 6 | 6 | 6 | 6 |
| Coverage, in. ² /lb. (cm ² /g) | 1,800 (25.5) | 1,300 (18.5) | 1,500 (21.3) | 1,200 (17.0) | NA | NA |
| Recommended Thickness, in. (mm) | 0.008 max. (0.20) | 0.010 max. (0.25) | 0.007 min. (0.18) | 0.010 min. (0.25) | 0.005 min. (0.13) | 0.0002 max. (0.005) |
| VOC, g/liter | 0 | 0 | 151 | 0 | 719 | 740 |

*Value represents DC resistance in ohms through a 0.4 sq.in. by 0.008 in. (2.58 cm² by 0.02 cm) thick sample.

*** Cure is sufficient for handling in 24 hours. Full specification properties are developed after 1 week (168 hours).

**** Values reflect typical properties.

NA Not Applicable

Table 2 Ordering Information

| PRODUCT | ORDERING PART NUMBER | UNIT/SIZE | PRODUCT | ORDERING PART NUMBER | UNIT/SIZE |
|------------------|----------------------|------------------------------|------------------|----------------------|----------------------------|
| CHO-BOND SV712 | 50-00-SV712-0000 | 250 gram kit kit (0.55 lb.)* | CHO-BOND 360-20 | 50-01-0360-0020 | 1 pound kit (0.5 kg) |
| CHO-BOND SV712 | 50-01-SV712-0000 | 1 pound kit (0.5 kg)* | CHO-BOND 360-208 | 50-01-0360-0208 | 1 pound kit (0.5 kg) |
| CHO-BOND SV712 | 50-04-SV712-0000 | 1 cc syringe* | CHO-BOND 360-208 | 50-00-0360-0208 | 3 ounce kit (85 g) |
| CHO-BOND SV712 | 50-17-SV712-0000 | 5 cc syringe* | CHO-BOND 1029 | 50-01-1029-0000 | 1 pound kit (0.5 kg) |
| CHO-BOND SV712 | 50-38-SV712-0000 | 10 cc syringe* | CHO-BOND 1029 | 50-00-1029-0000 | 3 ounce kit (85 g) |
| CHO-BOND SV713 | 50-00-SV713-0000 | 250 gram kit kit (0.55 lb.)* | CHO-BOND 1030 | 50-01-1030-0000 | 1 pound cartridge (0.5 kg) |
| CHO-BOND SV713 | 50-01-SV713-0000 | 1 pound kit (0.5 kg)* | CHO-BOND 1030 | 50-02-1030-0000 | 4 ounce tube (113 g) |
| CHO-BOND 584-29 | 50-10-0584-0029 | 1 gram CHO-PAK (0.04 oz.) | CHO-BOND 1035 | 51-01-1035-0000 | 10 ounce kit (0.3 kg) |
| CHO-BOND 584-29 | 50-02-0584-0029 | 2.5 gram CHO-PAK (0.1 oz.) | CHO-BOND 1035 | 51-00-1035-0000 | 2.5 ounce kit (71 g) |
| CHO-BOND 584-29 | 50-03-0584-0029 | 10 gram CHO-PAK (0.4 oz.) | CHO-BOND 1075 | 50-01-1075-0000 | 10 ounce kit (0.3 kg) |
| CHO-BOND 584-29 | 50-01-0584-0029 | 1 pound kit (0.5 kg) | CHO-BOND 1075 | 50-02-1075-0000 | 2.5 ounce kit (71 g) |
| CHO-BOND 584-29 | 50-00-0584-0029 | 3 ounce kit (85 g) | | | |
| CHO-BOND 584-208 | 50-01-0584-0208 | 1 pound kit (0.5 kg) | | | |
| CHO-BOND 584-208 | 50-00-0584-0208 | 3 ounce kit (85 g) | | | |
| CHO-BOND 592 | 50-01-0592-0000 | 1 pound kit (0.5 kg) | Primers | | |
| CHO-BOND 592 | 50-00-0592-0000 | 3 ounce kit (85 g) | CHO-BOND 1085 | 50-01-1085-0000 | 1 pint (0.47 liter) |
| | | | CHO-BOND 1086 | 50-01-1086-0000 | 1 pint (0.47 liter) |

* Premixed and frozen

Note: Custom packaging can be accommodated. Please inquire.

Every shipment of Chomerics' conductive compounds is accompanied by a *Certificate of Conformance* to Chomerics specifications. Additional test reports can be obtained for a service charge. Quality control procedures conform to MIL-I-45208.