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## 111-21

### ANISOTROPIC CONDUCTIVE THERMOPLASTIC ADHESIVE

**DESCRIPTION:** 111-21 is a screen-printable Anisotropically conductive, hot melt adhesive. This product features excellent adhesion to Kapton, Mylar, glass and a variety of other substrates. Unlike conventional conductive materials, this product is very resistant to flexing and creasing. The product can be rebonded many times by simply adding heat and pressure. Applications for 111-21 include, but are not limited to, conductive splicing of ribbon cables and PTF circuits, as well as the electrical attachment of surface mounted devices. This product is useful in application where short circuits between closely spaced contacts are a concern. 111-21 is a slower drying, screen printable version of 111-05.

#### TYPICAL CURED PROPERTIES:

Volume Resistivity ( $\Omega$ -cm) (X, Y Axis)	$1 \times 10^{12}$
(Z Axis)	0.0001
Consistency	Smooth paste
Crease Resistance	Excellent
Hydrolytic Stability	Excellent
Useful Temperature Range ( $^{\circ}$ C)	-55 to 120
Thermal Stability ( $^{\circ}$ C)	Good to 200
Peel Strength (lbs./inch)	9 - 11

**HANDLING & CURING:** 111-21 is ready to use as supplied. Further thinning may be accomplished by adding small amounts of CMI Thinner #102-03, or 113-12. Apply a thin film of adhesive to one or both surfaces to be bonded. Dry at room temperature for approximately 30 to 40 minutes. Drying can also be accomplished in 1-3 minutes at 120 $^{\circ}$ C. At this point, the surfaces should be pressed firmly together. Best properties, for most applications, result when cured under pressure for 2 to 5 seconds at 140 $^{\circ}$ C, with the appropriate heat laminating equipment. Good properties are obtained on a variety of substrates by curing at temperatures ranging from 120 $^{\circ}$ C to 180 $^{\circ}$ C. Alternately, the assembled part can be cured at room temperature, allowing 1 week to develop full strength. End user is advised to experimentally determine temperature and time best suited for individual applications. (See back of sheet for step-by-step directions.)

**STORAGE:** Shelf life: 2 months at 25 $^{\circ}$ C; or 6 months at 5 $^{\circ}$ C; or 9 months at -10 $^{\circ}$ C.

**SAFETY & HANDLING:** Use with adequate ventilation. Keep away from sparks and open flames. Avoid prolonged contact with skin and breathing of vapors. Wash with soap and water to remove from skin.



## **PROCEDURE FOR APPLYING 111-21**

1. As with all adhesive bonds, surface preparation is a vital part of the process. Carefully clean both surfaces to be bonded with MEK if possible. If MEK is not compatible with the surfaces to be bonded, another suitable solvent may be substituted.
2. Allow cleaned surfaces to dry for approximately 2-3 minutes.
3. Apply CMI#111-21 to one or both surfaces to be bonded by screen-printing, syringe dispensing, brushing, or spraying. The thickness range for good bonding is typically 0.6 mils to 1.3 mils for most surfaces, but is influenced by the geometry of the surfaces. The end user is encouraged to experimentally determine the best thickness for each individual application.
4. Allow CMI#111-21 to dry at room temperature until it is tack-free to the touch. The room-temperature drying time will vary depending on the thickness of the adhesive, but usually is approximately 30-40 minutes. 111-21 can also be dried in 1-3 minutes at 120°C.
5. Place the two surfaces together and cure in a heat-sealing press for 2-5 seconds @ 140°C, using enough pressure (100 psi.) to hold the surfaces tightly together. Lower temperatures may be used but the lamination times will be longer and additional pressure will be required.
6. Allow to cool to room temperature under the same pressure.
7. Remove pressure. Part is ready for use.