

MEMS Package Lid Cover Adhesive

Epoxy commonly known as bonding material for electronic component packaging. Recently, the Micro-Electro-Mechanical Systems, or MEMS have become predominant advance package architecture in the new semiconductor component for IoT application. The fabrication of MEMS component evolved from the process technology for another semiconductor package. For Instance, cavity or lid cover design widely been used instead of traditional over molding compound to protect the chips. The lid cover design induced less stress to the chips as well as provided better integration for the MEMS Chips to the ambient. The application requires extremely strong adhesive material to allow the MEMS Chip design to be more compact and powerful. Penchem's Lid Cover Adhesive has the advantages for easy process as well as reliable performance.

Penchem has introduced a series of High Thixotropic Index Adhesive for lid cover assembly application. The material Thixotropic property has been adjusted to ease the dispensing process for high speed automated machine, it also has sufficient staging time for batch processing setup. In addition, it provides excellent bonding strength to most of the packaging material surface. It bonds strongly to most materials (metals, plastics, glass, ceramics, FR4, BT etc.) and it has good performance in JEDEC Moisture Sensitivity Level Test. The Glass Transition Temperature of the adhesive also been improved to enable high operating temperature.

Now a days, the advance electronic component has used LCP Lid Cover due to its capability in high temperature condition and low Coefficient of Thermal Expansion, CTE properties. Therefore, a specific epoxy with enhanced adhesion to LCP has been formulated. The recent IoT development has driven the MEMS component into many applications such as automotive, medical and food processing appliances. The used of miniature transparent lid covers or lenses are common in sensor and emitter packages, the UV curable clear adhesive is used for this application.

Special Features

- ⊕ Optimum for automated dispensing process.
- ⊕ High adhesion strength
- ⊕ Good crack resistance from thermal and mechanical stresses
- ⊕ Hermetic Seal

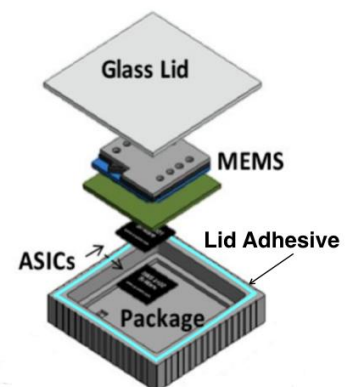
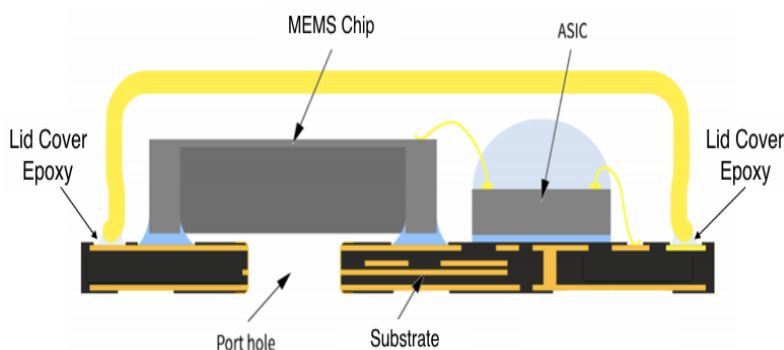


Figure 1: MEMS Packages

Product Selector Guide

Lid Cover Adhesive Product Comparison

Parameter	GL614-4	GL108-5	GL107	GL107-2	TH737-1	UV773-6	UV777-1	UV768-6	UV768-9
Special Features	High Thixotropic, Long Pot Life	Enhanced Adhesion to LCP	BPA Free, Food Grade	BPA Free, Food Grade, High Tg	Low CTE Thermally conductive High Tg	UV + Heat Coating Adhesion to FR4, Ceramic	UV + Heat Curable Adhesion to Nylon, Ceramic, Alumina	UV Curable Adhesion to PC and Glass	UV Curable adhesion to glass, and FR4
Mixing Ratio, by Weight	One Part	One Part	One Part	One Part	One Part	One Part	One Part	One Part	One Part
Chemical Type	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy	Epoxy	Urethane Acrylate	Urethane Acrylate
Color and Appearance	Off White Paste	Off White Paste	White Paste	White Paste	White Yellowish Paste	Clear Liquid	Amber Paste	Clear Paste	Clear Paste
Shelf Life, -20°C, month	6	6	6	6	6	6	6	6	6
Pot life, days	7	2	3	3	1	7	3	7	7
Viscosity, cP	42,000	16,300	37,530	56,268	36,400	378	68,000	2,100	2,109
Thixotropic Index	2.4	2.1	2.2	1.8	2.7	1.0	1.2	1.15	1.1
Hardness	Shore D 83	Shore D 85	Shore D 88	Shore D 82	Shore D 94	Shore D 80	Shore D 77	Shore D 56	Shore D 70
Die Shear Strength, kgf/cm²	227 (Ceramic to S/S)	220 (Ceramic to S/S)	277 (Ceramic to S/S)	300 (Ceramic to S/S)	133 (Alum)	150 (Glass to Metal)	177 (Glass to Metal)	43 (Glass to Metal)	93 (Glass to PCB)
Glass Transition Temperature	121	105	122	143	132	168	53	54	108
CTE 1, ppm/°C	59	77	45	59	23	59	54	56	77
CTE 2, ppm/°C	151	118	187	179	96	180	193	205	179
1Curing Condition	150°C, 15min	80°C, 60min + 150°C, 60min	150°C, 20min	150°C, 60min	90°C, 15sec	300mW, 90sec, 100°C, 1hr	2W/cm ² , 15sec	2W/cm ² , 15sec	2W/cm ² , 15sec

Note: 1. Cure time will be varying at different cure temperature and epoxy volume.



Penchem Technologies Sdn Bhd

1015, Jalan Perindustrian Bukit Minyak 7, Kawasan Perindustrian Bukit Minyak, 14100 Penang, Malaysia.

T: +604-501 5976, 77, 78

E: enquiry@penchem.com

W: www.penchem.com

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