



## A NEW PARADIGM FOR ADVANCED Si NODE FLIP CHIP PROTECTION

LOCTITE® *ECCOBOND*  
UF 9000AG

*LOCTITE ECCOBOND* UF 9000AG is a liquid epoxy capillary underfill (CUF) designed for use with advanced silicon (Si) node flip chip applications. With high filler loading (>70%) and 30% faster flow as compared to other CUFs, *LOCTITE ECCOBOND* UF 9000AG safeguards solder joints against mechanical stress and damage while prioritizing manufacturing efficiency. Proven in volume production with advanced Si node flip chips, *LOCTITE ECCOBOND* UF 9000AG's ultra-low CTE, high T<sub>g</sub>, low warpage and MSL3 credentials ensure excellent device protection to enable good electrical reliability performance, while fast flow and excellent workability align with high UPH operations.



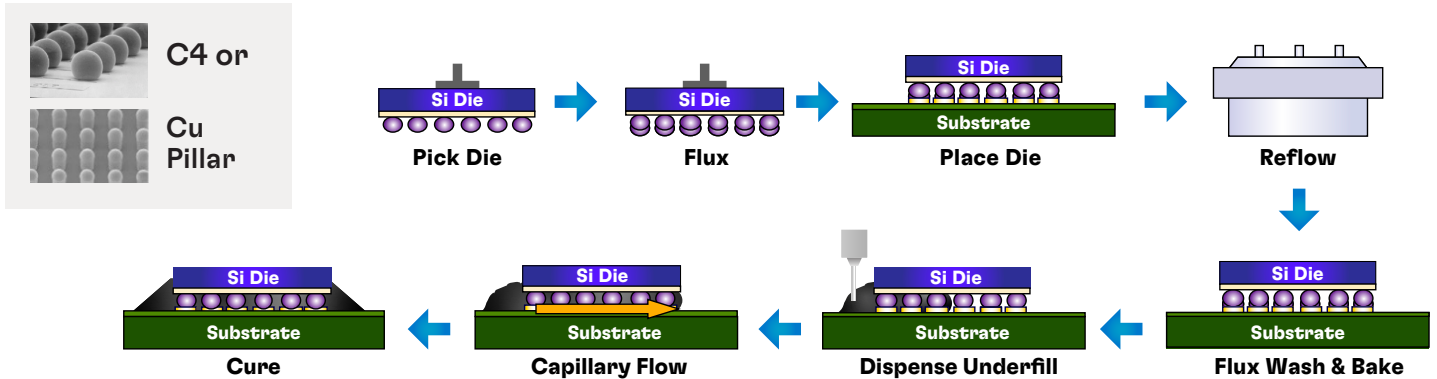
### KEY FEATURES AND BENEFITS:

- Optimal protection for advanced Si node flip chips
- Balanced formulation delivers high filler loading and volume production capability
- Fast flow: 30% faster versus previous-generation and competitive materials (70 sec. flow on 10mm x 10mm die, 45 µm gap test vehicle)
- Excellent workability: Long stage life at 100°C
- Good, tight fillet formation: Low resin bleed out
- High reliability: High T<sub>g</sub> and ultra-low CTE (<20 ppm)

Henkel



## CUF PROCESS



## PRODUCT PROPERTIES

Product	LOCTITE ECCOBOND UF 9000AG	LOCTITE ECCOBOND UF 8000AA	LOCTITE ECCOBOND UF 8830S
Feature	Advanced Si node	FCCSP & PoP	FCCSP / autograde
Filler Loading	72%	50%	60%
Filler Size (Max) $\mu\text{m}$	5	3	3
Viscosity mPa·s (cP) 5 rpm	11,930	4,700	22,120
TI	0.60	0.90	0.85
$T_g$	TMA	135°C	104.4°C
	DMA	160°C	120.4°C
CTE ( $<T_g / >T_g$ ) ppm/°C	19 / 62	30.6 / 120.1	25 / 100
Storage Modulus at 25°C/250°C MPa	14,241 / 377	7,110 / 175	11,081 / 328
Toughness K1c MPa√m	3.0	0.6	2.0
Cure Condition	165°C / 2 hr.	150°C / 2 hr.	150°C / 2 hr.



## Designing a new device with next-generation chips?

Get in touch with our technology specialists to learn about our portfolio of advanced protection materials.

[henkel-adhesives.com/electronics](https://henkel-adhesives.com/electronics)



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Scan the QR code above to access the Technical Data Sheet.

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