

Low Temperature Cure LTC 9300-E19

Photosensitive Polyimide Precursor

- NMP / NEP and halogen free formulation
- LTC 9300-E19 series are suitable for low temperature cure between 200 and 250°C.
- Standard cure conditions between 350°C and 420°C can also be applied.
- LTC 9300-E19 series are specially designed to provide the following characteristics:
 - Advanced resolution
 - Wide lithographic process latitude
 - Easy process set-up
 - Self priming – no external adhesion promotor
 - Excellent adhesion (incl. copper)
 - Excellent chemical compatibility and mechanical property retention after reliability testing

- Large cured film thickness ranges.

Type	Viscosity*	Cured Film Thickness
LTC 9305-E19	1200 cSt	2 – 5 µm
LTC 9310-E19	3300 cSt	4 – 15 µm
LTC 9320-E19	6100 cSt	8 – 25 µm

(* 1 cSt = 1 mm²/s)

- Ideal for standardization purposes and minimizing the number of polyimide materials in production.

Compatible Ancillary Products:

Developer/Rinse Combinations: HTR-D2 / RER 600

Back Side Rinse: HTR-D2

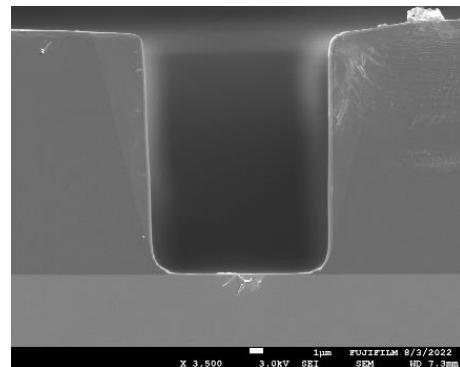
Edge Bead Remover: HTR-D2

Stripper Product: MS 3001 (NMP free)

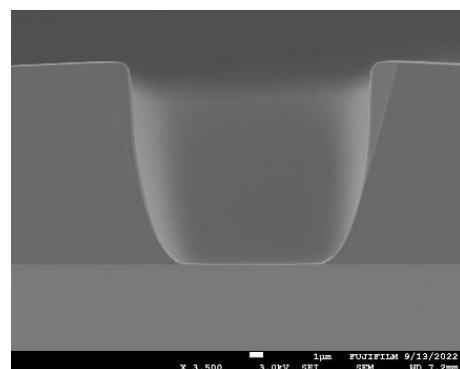
Typical cured Film Properties of LTC 9300-E19

Material property	Unit	Cured @ 200°C	Cured @ 230°C	Cured @ 350°C
Modulus	GPa	2.6	2.5	2.3
Elongation at break	%	74	> 85	> 85
Tensile strength	MPa	178	182	192
Tg	°C	229	234	237
CTE	ppm	54	53	48
Weight loss Temp (2%)	°C	303	309	406
Weight loss Temp (5%)	°C	332	338	435

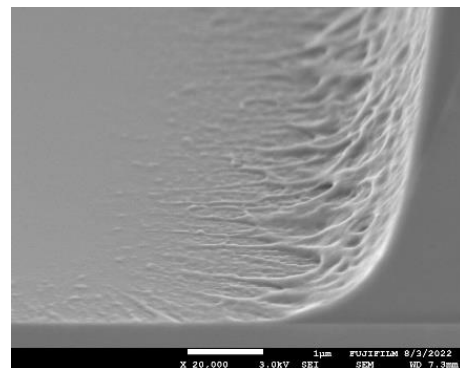
After development



After cure



Limited footing



Process Window

Substrate:	All types Silicon, SiO _x N _y , epoxy, Al, Cu, Ag, Au,...
PI Thickness:	2 to 35+ μm
Soft Bake:	Depending film thickness range 100-110°C / 4-6 min
Exposure Tool:	Mask aligner Stepper BB or I-line
Exp.Range:	150-600 mJ/cm ²
Focus Range:	3-8 μm into PI film

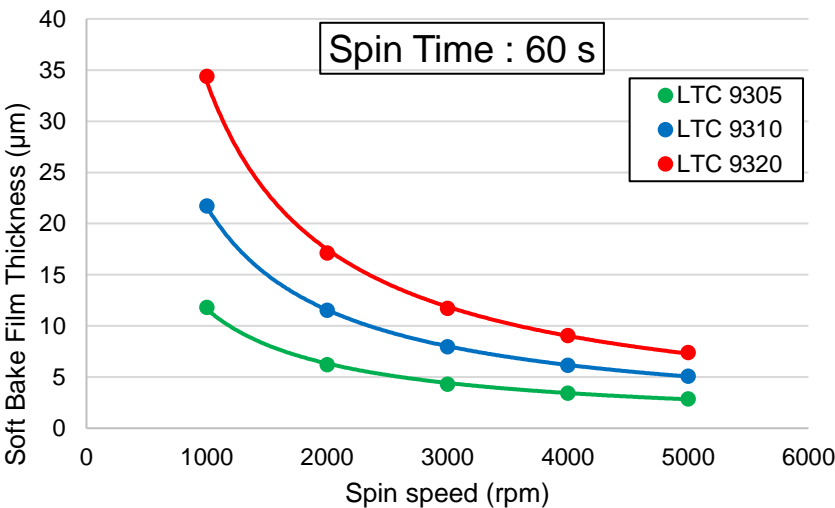
Post Exposure Delay: 30 min @ RT
or
Post Exposure Bake: 60 sec @ 50°C

Dev. process:	Atomized spray, continuous spray or multiple puddle development
Developer/Rinse:	HTR-D2/RER 600

- Final cure conditions:**
- 1. Low temperature cure:**
Cure temp: 200 to 240°C for 180 min
 - 2. Medium temperature cure:**
Cure temp: 250 to 300°C for 90 min
 - 3. Standard temperature cure:**
Cure temp: 350 to 420°C for 60 min

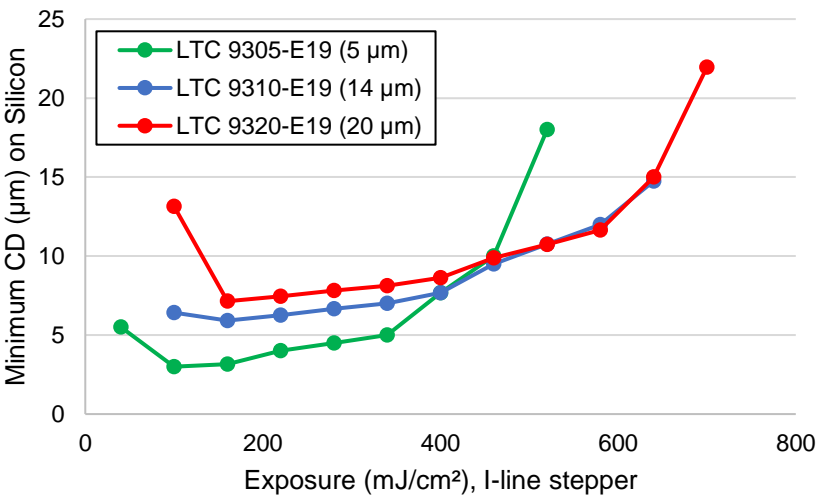
Descum:
Short O₂-plasma

Soft Bake Film Thickness vs. Spin Speed



Recommended spin time is 30-60 seconds. Film thickness can be varied by changing the spin-time and spin-speed.

Minimum Dimension vs. Exposure Dose



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