

## UV/Visible/LED Curable Multi-Substrate Air-Tight Gasket Sealant

### PRODUCT DESCRIPTION

Incure Uni-Seal™ 1393 UV/Visible/LED curable adhesive is an acid-free, low viscosity sealant. Also used as a temporary mask in selective conformal coating, it protects components on PCBAs prior to conformal coating process. Soft yet tough, it cures tack-free and provides air-tight adhesion to substrates with the benefit of ease-of-peel during rework. Incure 1393 exhibits enhanced excellent moisture and temperature resistance. Widely used in electronics and automotive industry for its chemical resistance.

### UNCURED PROPERTIES

Chemical Type	Urethane Acrylate, 100% Solids, No Solvents			
Appearance	Single Component Slight Yellow Tint			
Density, g/ml	1.06	Refractive Index	1.50	@20°C
Flash Point, °C	> 93	Toxicity	Low (Refer to MSDS)	
Viscosity, cP (rpm)	20	500 - 1,000	Spindle	2
Other viscosities are available upon request. If the viscosity range requested is not our standard offering, this product may be produced with a small lab fee.				ASTM D2556
Email us at: support@uv-incure.com or your nearest local distributor for more information.				

<sup>1</sup> Viscosity (cP) taken at 25°C - Call to enquiry for other viscosities.

### CURED PROPERTIES

Shore Hardness, Durometer	A15 to A25	ASTM 2240
Linear Shrinkage / Expansion (-ve)	2.60%	ASTM 570
Water Absorption at 24hrs	1.00%	<sup>2</sup> ISTM D2566
Tensile (PSI) <small>* PC-PC / SS-SS / S-S / AL-AL * PC Substrate Failure</small>	PC-PC / PC-SS	1,900 / 1,100
	PC-S / PC-AL	900 / 1,100
ASTM 638		
Surface After Full Cure	Tack-Free	<sup>2</sup> ISTM D189
Elongation at Break	425%	ASTM 638
Thermal Range (Brittleness / Degrades) °C	-55 to 150	<sup>2</sup> ISTM D366
Young's Modulus of Elasticity, MPa (PSI)	20 (3,000)	<sup>3</sup> ASTM 638
Average Linear CTE, ppm/°C	124	<sup>2</sup> ISTM D696

<sup>2</sup> ISTM - refers to Incure Standard Test Method.

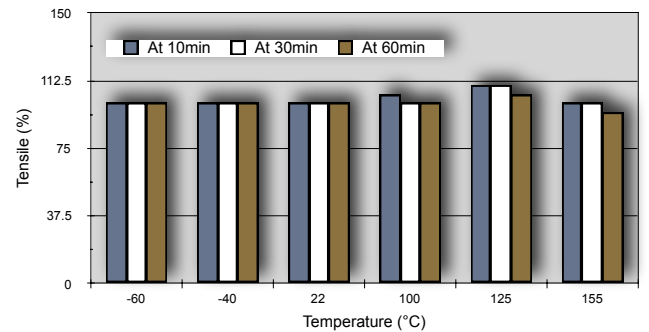
<sup>3</sup> ASTM 638 Young's Modulus test speed @5mm/min for rigid and semi-rigid materials, @50mm/min for non-rigid materials, unless otherwise specified.

### RECOMMENDED UV CURE SCHEDULE (FULL CURE)

Full Cure Exposure Time		UVA	UVB	UVC	UVV	
Fixture Time between glass slides	mW/cm <sup>2</sup>	150	43	5	140	
Exposure Time (s)	5.0	mJ/cm <sup>2</sup>	750	215	25	700
F200P™ @3.75" Dist	4.0	mW/cm <sup>2</sup>	150	43	5	140
Belt Speed (ft/min)	0.0	mJ/cm <sup>2</sup>	600	172	20	560
F500™ @3.0" Dist	1.0	mW/cm <sup>2</sup>	500	160	15	480
Belt Speed (ft/min)	0.0	mJ/cm <sup>2</sup>	500	160	15	480
S20™ Spot (4-Pole LG) 0.4" Dist	mW/cm <sup>2</sup>	3,000	530	50	3,400	
Exposure Time (s)	2.0	mJ/cm <sup>2</sup>	6,000	1,060	100	6,800
L9000™ LED Spot @ 0.67" Dist	mW/cm <sup>2</sup>	2,800	42	12	102	
Exposure Time (s)	6.0	mJ/cm <sup>2</sup>	16,800	252	72	612

Cure times on 8mm ø adhesive sample. Belt speeds using C9000-F200Px1AB (Flood) and C9000-F500x1AC (Focused Beam) conveyors for area curing. Please consult IncureLab™ for any other requirements.

### TENSILE STRENGTH VS TEMPERATURE



### UV INTENSITY REFERENCE TABLE

Incure UV Curing Lamp Model	<sup>4</sup> Curing Distance vs UV Intensity					
	0.5" (12.6)	1" (25.4)	1.5" (38)	2" (50.8)	2.5" (63.5)	3" (76.2)
Spot Curing (ø mm)	0.5" (12.6)	1" (25.4)	1.5" (38)	2" (50.8)	2.5" (63.5)	3" (76.2)
S20™ ARC (mW/cm <sup>2</sup> ) / (ø mm)	1,400 (3)	1,500 (4)	650 (6)	360 (8)	240 (10)	175 (12)
L9000™ LED (mW/cm <sup>2</sup> ) / (ø mm)	7,500 (9)	5,000 (10)	2,300 (17)	1,200 (20)	700 (25)	450 (30)
Flood/Focus Beam - Area Curing						
UV Intensity (mW/cm <sup>2</sup> )						
F200™ ARC Flood (6" x 8")	325	280	245	215	190	165
F400™ ARC Flood (4" x 4")	860	570	440	345	270	215
F500™ ARC Focused (3" x 5")	1,040	685	530	415	325	260
L1044-365™ LED Flood (4" x 4")	2,675	2,380	1,900	1,625	1,430	1,280
L1044-405™ LED Flood (4" x 4")	2,950	2,625	2,150	1,900	1,650	1,450

<sup>4</sup> Curing Distance is defined by the tip of light-guide or base of lamp housing to the bond area. All values are nominal with ±10% variation, with LED Flood Static Uniformity at ±78% and Dynamic Uniformity at ±90%. Recommended curing parameters in grey.

### SECONDARY HEAT CURE (Not Applicable)

Continuous Oven Bake	Duration
95°C (203°F)	120 mins
110°C (230°F)	60 mins
125°C (257°F)	30 mins

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### UV CURING SCHEDULE FOR THIS PRODUCT

Wavelength λ	UVA (320 - 400nm)	UVB (290-320nm)	UVC (290-220nm)	VUV (400-700nm)	Note: This product has been thoroughly tested to cure with F200P™ UV Flood Lamp. Intensity wavelengths (shaded) are crucial for curing this product. All measurements are made with EIT UV PowerPuck II. If you are unable to fully cure this product for some reasons, pls email us for assistance with your curing information.
Minimum Intensity	150 mW/cm <sup>2</sup>	43 mW/cm <sup>2</sup>	5 mW/cm <sup>2</sup>	140 mW/cm <sup>2</sup>	
Total Energy Required	600 mJ/cm <sup>2</sup>	172 mJ/cm <sup>2</sup>	20 mJ/cm <sup>2</sup>	560 mJ/cm <sup>2</sup>	

### SHELF-LIFE, STORAGE, USE AND HANDLING OF THIS PRODUCT

Shelf-Life of this unopened product is a minimum of ONE (1) year from date of manufacture. Avoid direct exposure of bottle to visible light at all times. Containers should remain covered when not in use. Product should be stored in a dark cool place of 2°C to 20°C. Transfer of product into other packages void all warranties. Users should ensure all bonding surfaces are free of grease, mold release, or any contaminants, as bonding performance will be compromised. All tests for cured bonds should be carried out at ambient temperature. For safe handling of this product, please read Material Safety Data-sheet (MSDS) prior to use. Organic solvents, such as IPA, may be used to wipe away uncured material from surfaces.

### EtO and GAMMA STERILIZATION (Not Applicable for this Product)

All Incure medical products are formulated to subject to standard sterilization methods, such as EtO and Gamma Radiation of 25 to 50 kGrays (cumulative). Enhanced moisture and thermal resistance of this product show excellent adhesion and bonding strength after one cycle of steam auto-clave test. Depending on bond design and structure of the application, users should test specific assemblies after subjecting them to sterilisation. Consult Incure Support Team for assistance, if your devices are subjected to more than one sterilization cycles.

### NOTE

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