

## Cyro-Weld™ 5459 UV/Visible/LED Curable Multi-Substrate Precision Medical Bonder

### PRODUCT DESCRIPTION

Incure Cyro-Weld™ 5459 UV/Visible/LED curable adhesive is an acid-free, multi-substrate, medium viscosity bonder (gap size of 0.25 - 0.75mm). High in clarity, it is an excellent choice for needle bonding of up to 6,900 PSI on rigid or flexible PVC to PC and 5,000 PSI on other dissimilar substrates such as metals, glass and FR4 materials on a single application. Incure 5459 exhibits enhanced excellent moisture and temperature resistance and is extremely tough material with high elongation of 260%. Meet ISO 10993-5. Ideal for bonding of devices subjected to thermal cycling, ETO or gamma sterilization.

### UNCURED PROPERTIES

Chemical Type	Urethane Acrylate, 100% Solids, No Solvents			
Appearance	Single Component, Clear			
Density, g/ml	1.08	Refractive Index	1.51	@20°C
Flash Point, °C	> 93	Toxicity	Low (Refer to MSDS)	
Viscosity, cP (rpm)	0.5	> 1,000,000	Spindle	7
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	D63 to D73	ASTM 2240
Linear Shrinkage	0.10%	ASTM 570
Water Absorption at 24hrs	0.70%	<sup>2</sup> ISTM D2566
Tensile (PSI) <small>* PC-PC / SS-SS / S-S / AL-AL * PC Substrate Failure</small>	PC-PC / PC-SS	6,900 <sup>A</sup> / 3,700
	PC-S / PC-AL	4,900 <sup>A</sup> / 5,000 <sup>A</sup>
Surface After Full Cure	Grippy	<sup>2</sup> ISTM D189
Elongation at Break	260%	ASTM 638
Thermal Range (Brittleness / Degrades) °C	-55 to 150	<sup>2</sup> ISTM D366
Young's Modulus of Elasticity, MPa (PSI)	19 (2800)	<sup>3</sup> ASTM 638
Average Linear CTE, ppm/°C	15	<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 Surface Cure		UVA	UVB	UVC	UVV	
Fixture Time between glass slides	mJ/cm <sup>2</sup>	300	86	10	280	
Exposure Time (s)	2.0	mWcm <sup>2</sup>	150	43	5	140
S20™ Spot (4-Pole LG) 0.4" Dist	mJ/cm <sup>2</sup>	150	43	5	140	
Exposure Time (s)	1.0	mWcm <sup>2</sup>	150	43	5	140
L9000™ LED Spot @ 0.67" Dist	mJ/cm <sup>2</sup>	150	43	5	140	
Exposure Time (s)	1.0	mWcm <sup>2</sup>	150	43	5	140
F200P™ Flood @ 3.75" Dist	mJ/cm <sup>2</sup>	1,200	344	40	1,120	
Exposure Time (s)	8.0	mWcm <sup>2</sup>	150	43	5	140
F500™ Focused @ 3.0" Dist	mJ/cm <sup>2</sup>	450	129	15	420	
Exposure Time (s)	3.0	mWcm <sup>2</sup>	150	43	5	140

Above table is for reference only. Fixture Time using F200P @100% intensity, 3.75" distance. Moderate intensity conveyor systems C9000-F100x1AC/200x1AB/400x1AC/500x1AC with lamp height set at 2.5". U8000-F300x1D conveyor lamp height set at 2.1" focal point. Please consult IncureLab™ for belt speed recommendations.

### UV INTENSITY REFERENCE TABLE

Incure UV Curing Lamp Model	Curing Distance in inches (mm)					
	0.5" (12.6)	1" (25.4)	1.5" (38)	2" (50.8)	2.5" (63.5)	3" (76.2)
ARC / LED Spot	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> ) / Spot (ø mm)	1,400 (3)	1,500 (4)	650 (6)	360 (8)	240 (10)	175 (12)
L9000 LED (mW/cm <sup>2</sup> ) / Spot (ø mm)	7,500 (9)	5,000 (10)	2,300 (17)	1,200 (20)	700 (25)	450 (30)
ARC / LED Flood/Focus Beam	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
L1000-365 LED Flood (4" x 4")	2,675	2,380	1,900	1,625	1,430	1,280
L1000-405 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 distances in grey.

### CURING SCHEDULE FOR THIS PRODUCT (Not Applicable for this Product)

If you are unable to fully cure this product for some reasons, pls email us for assistance with your curing information. Below are the curing parameters:

UVA (320-400nm) = 450 mW/cm <sup>2</sup>	UVB (290-320nm) = 129 mW/cm <sup>2</sup>	UVC (290-220nm) = 15 mW/cm <sup>2</sup>	VUV (400-700nm) = 420 mW/cm <sup>2</sup>
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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.

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

Shelf-Life of this unopened product is 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 10°C to 28°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.

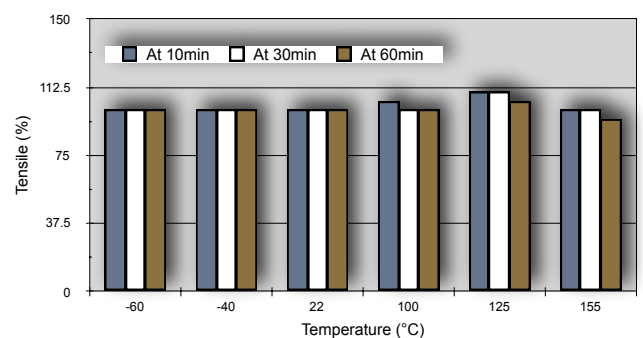
### EtO and GAMMA STERILIZATION

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 the test requirements. Please consult Incure Support Team for assistance, if your devices are subjected to more than one sterilization cycles.

### NOTE

The data contained in this document are furnished for information only. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein. INCURE will not be liable for any indirect, special, incidental or consequential loss or damage arising from this INCURE product, regardless of the legal theory asserted. INCURE recommends that each user adequately test its proposed use and application before repetitive use, using this data as a guide.

### TENSILE STRENGTH VS TEMPERATURE



### 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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