Technical Data Sheet

Cyro-Weld™ 5454

incure™
ADHESIVES, EPOXIES AND COATINGS

UV/Visible/LED Curable Multi-Substrate (TPE) Medical Bonder

PRODUCT DESCRIPTION

Incure Cyro-Weld™ 5454 UV/Visible light curing is a medium viscosity, high-strength medical newtonian grade adhesive used for bonding of many different plastics, such as poly-carbonate and thermoplastic elastomers. Cures completely in seconds, it is an ideal bonding solution requiring high peel and bond strength, especially for difficult-to-bond substrates with low surface energies. It is formulated to withstand EtO with enhanced resistance to moisture and heat. Incure 5454 is a 100% solids urethane acrylate, contains no volatiles and acid-free, formulated to meet ISO 10993-5.

UNCURED PROPERTIES

Chemical Type	Urethane Acrylate, 100% Solids, No Solvents			
Appearance	Single Component, Slight Yellowish Tint, Clear			
Density, g/ml	1.04	Refractive Index	1.48	@20°C
Flash Point, °C	> 93	Toxicity	Low (Refer to MSDS)	
Viscosity, cP (rpm)	20	1,000 - 2,000	Spindle	3
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. Email us at: support@uv-incure.com or your nearest local distributor for more information.				ASTM D2556

[1] Viscosity (cP) taken at 25°C - Call to enquiry for other viscosities.

CURED PROPERTIES

Shore Hardness, Durometer		D25 to D35	ASTM 2240
Linear Shrinkage / Expansion (-ve)		3.52%	ASTM 570
Water Absorption at 24hrs		2.17%	[2] ISTM D2566
Tensile (PSI) * PC-PC / SS-SS / S-S / AL-AL ^ PC Substrate Failure	PC-PC / PC-SS	6,500^ / 1,600	ASTM 638
	PC-S / PC-AL	2,200 / 1,900	
Surface After Full Cure		PSA Feel	[2] ISTM D189
Elongation at Break		230%	ASTM 638
Thermal Range (Brittleness / Degrades) °C		-55 to 150	[2] ISTM D366
Young's Modulus of Elasticity, MPa (PSI)		10 (1,500)	[3] ASTM 638
Average Linear CTE, ppm/°C		103	[2] ISTM D696

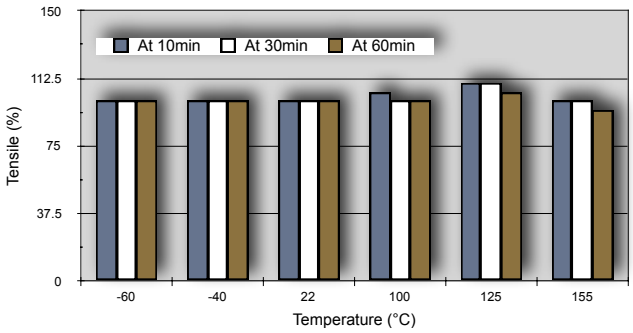
[2] ISTM - refers to Incure Standard Test Method.
[3] ASTM 638 Young's Modulus test speed @5mm/min for rigid and semi-rigid materials, @50mm/min for non-rigid materials, unless otherwise specified.

RECOMMENDED UV CURE SCHEDULE (FULL CURE)

Full Cure Exposure Time			UVA	UVB	UVC	UVV
Fixture Time between glass slides		mW/cm²	150	43	5	140
Exposure Time (s)	1.0	mJ/cm²	150	43	5	140
F200P™ @3.75" Dist	8.0	mW/cm²	150	43	5	140
Belt Speed (ft/min)	1.5	mJ/cm²	1,200	344	40	1,120
F500™ @3.0" Dist	3.0	mW/cm²	500	160	15	480
Belt Speed (ft/min)	1.5	mJ/cm²	1,500	480	45	1,440
S20™ Spot (4-Pole LG) 0.4" Dist		mW/cm²	3,000	530	50	3,400
Exposure Time (s)	4.0	mJ/cm²	12,000	2,120	200	13,600
L9000™ LED Spot @ 0.67" Dist		mW/cm²	2,800	42	12	102
Exposure Time (s)	6.0	mJ/cm²	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	[4] Curing Distance vs UV Intensity					
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/cm²) / (ø mm)	1,400 (3)	1,500 (4)	650 (6)	360 (8)	240 (10)	175 (12)
L9000™ LED (mW/cm²) / (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/cm²)					
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

[4] 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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RoHS COMPLIANT | Pb LEAD FREE | HF HALOGEN FREE

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) = 1,500 mW/cm²	UVB (290–320nm) = 480 mW/cm²	UVC (290-220nm) = 45 mW/cm²	VUV (400-700nm) = 1,440 mW/cm²

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 a minimum of ONE (1) year from date of manufacture. Avoid direct exposure of bottle to visible light at all times. Containers should remained 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

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