Technical Data Sheet

Cyro-Weld™ 5422VT

6 Apr 2016 Revision: 04

Cyro-Weld™ 5422VT UV/Visible/LED Curable Multi-Substrate Precision Medical Bonder

PRODUCT DESCRIPTION

Incure Cyro-Weld™ 5422VT UV/Visible/LED curable adhesive is a superior medical-grade, multi-substrate, medium-high viscosity bonder. Cures in seconds, it provides extremely high bonding strength of up to 7,100 PSI on dissimilar substrates such as metals, glass, ceramics and plastic materials on a single application. Very low in linear shrinkage with vibration isolation capability, Incure 5422VT exhibits enhanced excellent moisture and is extremely tough material with high elongation of up to 350%. 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 Translucent			
Density, g/ml	1.07	Refractive Index	1.51	@20°C
Flash Point, °C	> 93	Toxicity	Low (Refer to MSDS)	
Viscosity, cP (rpm)	20	7,000 - 15,000	Spindle	6
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		D63 to D73	ASTM 2240
Linear Shrinkage		0.02%	ASTM 570
Water Absorption at 24hrs		0.70%	[2] ISTM D2566
Tensile (PSI) * PC-PC / SS-SS / S-S / AL-AL ^ PC Substrate Failure	PC-PC / PC-SS	7,100^ / 4,900^	ASTM 638
	PC-S / PC-AL	5,600^ / 4,800^	
Surface After Full Cure		Grippy	[2] ISTM D189
Elongation at Break		320%	ASTM 638
Thermal Range (Brittleness / Degrades) °C		-55 to 150	[2] ISTM D366
Young's Modulus of Elasticity, MPa (PSI)		20 (3000)	[3] ASTM 638
Average Linear CTE, ppm/°C		34	[2] ISTM D696

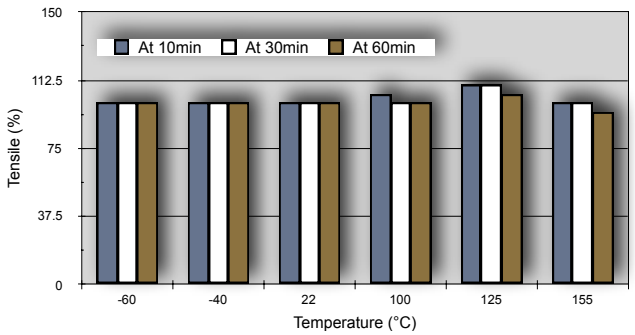
[2] ISTM - refers to Incure Standard Test Method.
[3] ASTM 638 Young's Modulus test speed @5mm/min for rigid and semi-rigid materials, @50mm/min for non-rigid materials, unless otherwise specified.

RECOMMENDED UV CURE SCHEDULE (FULL CURE)

Full Surface Cure			UVA	UVB	UVC	UVV
Fixture Time between glass slides		mJ/cm²	300	86	10	280
Exposure Time (s)	2.0	mWcm²	150	43	5	140
S20™ Spot (4-Pole LG) 0.4" Dist		mJ/cm²	150	43	5	140
Exposure Time (s)	1.0	mWcm²	150	43	5	140
L9000™ LED Spot @ 0.67" Dist		mJ/cm²	150	43	5	140
Exposure Time (s)	1.0	mWcm²	150	43	5	140
F200P™ Flood @ 3.75" Dist		mJ/cm²	1,200	344	40	1,120
Exposure Time (s)	8.0	mWcm²	150	43	5	140
F500™ Focused @ 3.0" Dist		mJ/cm²	450	129	15	420
Exposure Time (s)	3.0	mWcm²	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.

TENSILE STRENGTH VS TEMPERATURE



UV INTENSITY REFERENCE TABLE

Incure UV Curing Lamp Model	[4] Curing Distance in inches (mm)					
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/cm²) / Spot (ø mm)	1,400 (3)	1,500 (4)	650 (6)	360 (8)	240 (10)	175 (12)
L9000 LED (mW/cm²) / 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/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
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

[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 distances 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

Incure, Inc.
1 Hartford Square, Box 16 West,
Suite C-3, New Britain,
CT 06052, USA
Tel: (860) 748 2979
support@uv-incure.com

Incure Adhesives Manufacturing Pte Ltd
33 Ubi Avenue 3 #04-23,
Vertex Tower B,
Singapore 408868
Tel: (65) 6509 3670
www.uv-incure.com

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) = 450 mW/cm²	UVB (290−320nm) = 129 mW/cm²	UVC (290-220nm) = 15 mW/cm²	VUV (400-700nm) = 420 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 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 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