

# Technical Datasheet OPTOCAST 3553 & 3553-HM and Viscosity Variations

**OPTOCAST 3553** and **3553-HM** are cationic cure epoxy resins designed specifically for joining optoelectronic parts. **Key Features include:**

- \*Low Shrinkage
- \*Low CTE
- \*High Tg
- \*Good thermal cycle performance
- \*Fast fixture time
- \*Visually clear or translucent

<b>Uncured Properties</b>	<b>3553</b>	<b>3553-HM</b>
Color:	Clear	Clear
Viscosity:	400-800 cps	400-800 cps
Specific Gravity:	1.12	1.12
Shelf Life	1 year @ 20-25°C	6 months @ less than 0°C
Pot Life*:	1 year @ 20-25°C	5 days @ 20-25°C

\*Pot Life times are mass dependent. EMIUV makes no guarantee of accuracy. Your results may vary.  
\*\*This datasheet provides "typical" values for this material; it is not the official manufacturing specification.

<b>Cured Properties</b>	
Color:	Clear/Translucent
Hardness:	86 Rex D
Tg:	135-145°C
CTE:	55 ppm/°C
Refractive Index: @589 nm	1.512
Lap Shear Glass to Glass:	2500psi
Maximum Operating Temperature:	165°C
Tensile Strength:	7500 psi
Elongation:	2.5%
Young's Modulus:	490,000 psi
Linear Shrinkage:	0.3 %
Thermal Conductivity:	0.2 W/mK

Standard Filtration is 150 um to remove gross particulate. Specific filtration to 5 um available upon request.

<b>Cure Profile</b>
<b>OPTOCAST 3553</b> is cured by a combination of UV and heat. Optimal light wavelengths are 320-380 nm. 365 nm LED ONLY will cure these materials, longer exposure times may be necessary.
*A heat cure after UV is REQUIRED for full crosslink. UV exposure only results in 70-80% crosslink. UV exposure + 60 minutes at 110C (plus part heat up time) typically results in 100% crosslink.
*The Light Guide should be within 1cm of adhesive. Or use the recommended focal length for the LED lens used.
*Always wear proper eye protection when working with UV light.
*Contact EMIUV for more detailed curing information.
<b>OPTOCAST 3553-HM</b> can be cured with UV, UV and heat or heat alone. Follow UV instructions above. Minimum heat only cure temperature is 110°C (from liquid). Maximum heat only cure temperature is 150°C.

### Recommended Cure starting points

<b>Broad Spectrum Lamp:</b>	@ 1500 mW/cm2:	5-10 second cycles
<b>365 nm LED:</b>	@ 1000mW/cm2:	10-30 seconds
<b>Heat only Cure from Liquid: -HM Versions ONLY</b>	Heat cure from Liquid	
	Minimum Temperature 110°C:	45-60 minutes
	120°C:	20-30 minutes
	130°C:	10-15 minutes
<b>Post UV Heat: All Versions</b>	Minimum temperature, 95°C	4-6 hours
	110°C	45-60 minutes
	120°C:	20-30 minutes
	130°C:	10-15 minutes

<b>Other Viscosities Available</b>	
3553-5K & -HM	4,000-6,000 cps
3553-10K & HM	8,000-12,000 cps
3553-25K & -HM	23,000-28,000 cps
3553-40K & -HM	40,000-55,000 cps
3553-70K & -HM	62,000-72,000 cps
3553-250K & -HM	225,000-275,000 cps

<b>OPTOCAST 3553</b> can be shipped and stored at ambient temperatures.	<b>All OPTOCAST -HM Products</b> are shipped and stored frozen to prolong shelf life.	<b>All non -HM viscosity variations</b> can be shipped at ambient temperatures and must be refrigerated upon receipt.
*Shelf life and pot life at 25°C is 1 year.	*Shelf life at 0°C is 6 months.	*Shelf Life is 12 months at 5°C or less.
*Material may be stored frozen.	*Pot life at 25°C is 5 days or 40 hours total time in use.	*Pot Life @ 20-25°C is 60 days.
*Thaw syringes (with back-cap on) for 30 minutes before use.		
*Do not thaw and refreeze syringe more than 5 times.		
*Always replace back cap when refreezing.		

### **Shipping and Unpacking Procedure**

OPTOCAST 3553-HM products are packed and shipped in dry ice at -75°C to protect it and maintain a frozen state during shipment. The engineered system of an insulated container, packing material, and dry ice has been designed to protect the material for up to 6 days in transit (international) and up to 48 hours in transit (domestic).

- ◆ It is critical that the shipping container is not opened in transit and is expedited to its final destination.
- ◆ DO NOT ALLOW THE SHIPMENT TO BE LEFT ON LOADING DOCKS, IN CUSTOMS WAREHOUSES, OR ON FREIGHT TRUCKS FOR EXTENDED TIME PERIODS.
- ◆ Maintaining temperature at 0°C or less upon receipt is critical to maintain the functionality and performance of the material.
- ◆ Failure to maintain these temperatures will void any warranties and will adversely affect the materials performance.
- ◆ Upon receipt, the syringes should be transferred from the shipping container to a freezer at 0°C or less.
- ◆ Care must be taken during this step as a sudden increase in temperature can cause irreversible air voids due to the thermal expansion of the syringe barrels.

### **Storage and Thawing**

Prior to application, the material must be allowed to thaw naturally to room temperature (ideally 20-25°C) by placing the syringes in a vertical position with dispense tip facing downward. This is a critical step for obtaining optimum dispensing performance.

Thaw times at 20-25°C for all frozen product:

3cc	15-20 min	10cc	20-30 min
5cc	20-30 min	30cc	30-40 min

- ◆ Under no circumstance should artificial heat sources be used to increase thaw speed.
- ◆ Do not place the syringes in, or near, any heat source including ovens, hot plates, hot air guns, etc. to speed thawing.
- ◆ Do not attempt to dispense the material before it reaches ambient temperature.
- ◆ Wipe all excess moisture or condensation from the syringes prior to use.
- ◆ A small amount of air in the tip area is normal. Carefully remove the tip cap and manually extrude a small amount of material. This will displace any air that may be in the tip area.
- ◆ A small amount of air may accumulate at the rear of the syringe near the piston. This is also normal and this air can easily be removed by manually placing a light amount of pressure on the piston near the location of the visible air with the tip cap in place. This will force the air to by-pass the piston and exit the rear of the syringe. Mount the syringe onto the dispense equipment and purge material through the system until an unbroken flow of material is extruded.

**Cautions:** THIS DOCUMENT IS NOT TO BE USED AS A MATERIAL SPECIFICATION. IT PROVIDES AN INDICATION OF TYPICAL PROPERTIES OF THIS RESIN SYSTEM. The Certificate of Compliance contains the actual batch data and manufacturing specification. Good housekeeping rules are always important. Provide ample ventilation in all areas of handling, and use. Avoid prolonged breathing of possible fumes. Minimize skin contact. Use of goggles, rubber gloves, and protective creams is recommended. Always wash exposed areas immediately using warm water and soap followed by rinsing with clear water. If material comes in contact with eyes, flush with clear water for fifteen minutes and consult a physician immediately.

All data in this bulletin are based on our own research and the research of others. They are believed to be accurate. However, no guarantee of accuracy is made. Product description is sold without warranty except conformity to specification and on condition that the purchasers shall determine suitability for their particular purpose.

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