

EMCAST 4201 is a one-component, heat cure only, thermally conductive epoxy. It features non-electrical thermal conductivity with moderate viscosity for easy dispensing. This high modulus, high strength material adheres well to metals and ceramics. It is available in machine ready syringes or bulk containers.

Properties Uncured

Color	Black
Viscosity	150,000 cps
Filler Content	69% Al ₂ O ₃
Density	2.25
Shelf Life @ 5°C or Less	1 year
Pot Life @ 25°C	1 month

Properties Cured

Color:	Black	Young's Modulus:	1700 kpsi
Hardness:	>90 Rex D	Tensile Strength:	9.7 kpsi
Tg:	120°C	Elongation:	0.7%
Thermal Conductivity:	1.2 W/mK	Lap Shear (Al-Al):	2400 psi
Linear Shrinkage:	0.30%	Total Outgassing:	0.076 µg/g

Cure Profile:

EMCAST 4201 is cured by heat alone.

- ◆ Gel time: 30 minutes @ 100°C
7 minutes @ 125°C
- ◆ Full cure after 15 minutes @ 125°C.
- ◆ High temperature bake-out is recommended for lowest outgassing.
- ◆ Proper surface preparation is important. Substrate must be clean and dry.

Handling & Storage:

EMCAST 4201 is shipped at room temperature and can be stored either at room temperature or at 5°C or less for extended pot life.

- ◆ Allow containers to completely thaw to room temperature before use.
- ◆ Shelf life is 1 month at room temperature, 1 year at 5°C or less.
- ◆ Pot life is 1 month at 25°C.
- ◆ Minimize skin contact. Use of goggles, rubber gloves, and protective creams is recommended.

Shipping and Unpacking Procedure

This material is packed and shipped at ambient temperatures. It is a stable material but should be refrigerated at 5°C or less upon receipt.

- ◆ 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 5°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 5°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.

- ◆ 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.
- ◆ Thaw time varies by package style, size, and ambient temperature, but is typically 30 to 120 minutes.
- ◆ 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.

IMPORTANT NOTICE

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.