

Opti-tec 4220

Semi-opaque, Translucent Polyurethane Encapsulant for Electronics and LED Potting



Description

Opti-tec™ 4220 is a two-part, flexible, room temperature curing polyurethane resin, designed for potting, encapsulation and protection of LED arrays and other lighting products. Opti-tec 4220 cures to form a semi-opaque, milky, translucent material (opalescent) which still allows a high transmission of light. It provides aesthetically pleasing encapsulation, hiding underlying electronics and providing a diffuse light. The material is suitable for outdoor use, with excellent weathering properties; it is formulated with UV resistant materials and includes UV stabilisers.

The image above shows Opti-tec 4220's opalescent properties (left-hand sample) compared to Opti-tec 4200's clear appearance (right-hand sample).

Features & Benefits

- Cures to form milky, opalescent plastic
- Conceals electronics whilst giving high light transmission
- Can be used outdoors – excellent long term UV stability and weather resistance
- Scratch and mark resistant
- Low viscosity – easy to mix and process
- High mechanical strength
- Non-toxic

Applications

- Potting of LED lighting projects, including LED tracks, arrays, luminaires
- Protection of electronics located outside or walked on; uplighters
- Decorative lighting
- Optical instruments

Specifications

Typical Properties	Mixed	Resin	Hardener
Colour	Translucent milky-white (when cured)	Clear	Clear
Specific gravity (g/ml)	1.10	1.04	1.16
Viscosity m.Pa.s @ 25°C	600	600	600
Mix ratio by weight	0.90:1		
Mix ratio by volume	1.00:1		
Cured Properties			
Water absorption	0.87% (30 days @ 25°C)		



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Typical Properties	Mixed	Resin	Hardener
Shore D hardness	30		
Operating temperature (application & geometry dependant)	-55 to +120°C		
Thermal conductivity	0.25 W/mK		
Tensile strength	46 mPa		
Elongation at break	2-4%		
Compressive yield strength	60 mPa		
Coefficient of linear expansion	60-80 pp/m°C		
Volume resistivity	1.3 x 10 ¹³ ohm.cm		
Surface resistivity	1.4 x 10 ¹² ohm		
Electric strength	20 kV/mm		

Opti-tec 4220 is RoHS compliant and contains 0% REACH SVHC.

Cure Schedule

Stage	Time
Pot life (100g mix @ 20-25°C)	20 minutes
Gel time (100g mix @ 20-25°C)	30 minutes
Light handling	24 hours @ 20-25°C 12 hours @ 40°C 6 hours @ 60°C
Full cure	48 hours @ 20-25°C 24 hours @ 40°C 12 hours @ 60°C

Typical values – will vary according to mass and application. Higher cure temperatures will result in greater cure shrinkage and exotherm.

Storage and Shelf Life

12 months at 25 +/- 10 °C

Material stored in the original unopened containers under cool dry condition between 15° and 25°C will have a shelf life of at least one year.

Once used the containers must be kept sealed to prevent effects from water, air or contaminants.

Health and Safety

Polyurethane resin systems may cause sensitisation by skin contact or inhalation may be corrosive, harmful or toxic. It is therefore strongly recommended that skin and eye contact is avoided by the using of appropriate personal protective equipment such as gloves, safety glasses or goggles and overalls.

Wash any contamination from the skin immediately and thoroughly and do not eat, smoke or drink in the working vicinity. Under normal working conditions a good source of ventilation is adequate, however if the material is heated, or where vapour levels are likely to exceed the occupational exposure limits

appropriate respiratory protection must be worn. Local exhaust ventilation (LEV) may be required especially for curing ovens or where large volumes of material are curing.

The above is given as a guide only; please refer to IRS2012-1 safety data sheet individual/specific advice.

Useful Resources

[Product webpage](#)

Warranty

Statements, technical information and recommendations contained herein are based on tests we believe to be reliable but they are not to be construed in any manner as warranties expressed or implied. The user shall determine the suitability of the product for his intended use and the user assumes all risk and liability whatsoever in connection therewith.