

OPTOLINQ™ OLS-5291



Two-part optically clear phenyl silicone encapsulant

- Stable performance at high temperatures
- High refractive index
- Good sulphur resistance

OPTOLINQ OLS-5291 is a two-part (Part A & Part B), optically clear phenyl silicone designed for the encapsulation of mid- and high-power LEDs. It features a very high refractive index of 1.54 at 460 nm, high optical transmittance, and excellent resistance to both UV and heat. Phenyl-type silicones are known to have very high resistance to sulfur penetration or sulfuration, making them well-suited for silver-plated leadframes.

OLS-5291 also has a high level of adhesion to a wide range of metals, silicones, and plastics, and to PPA in particular. It can be dispensed using standard dispensing equipment, or it can also be compression molded using conventional compression molding tools.

Uncured properties

Property	Part A	Part B
Appearance	Transparent	Transparent
Viscosity at 25 °C	4500 cP	4000 cP
Shelf life at 25 °C	6 months	6 months

Process and handling properties

Property	Value	Unit
Mixing ratio	1:5	–
Viscosity at 25 °C	4200	cP
Pot life of 40 g at 40 °C	4	h

Cured properties

Property	Value	Unit
Hardness (<i>Shore A/ Shore D</i>)	86/35	–
Specific gravity	1.16	–
Glass transition temperature	13	°C
Coefficient of thermal expansion, α_1	105	ppm/°C
Coefficient of thermal expansion, α_2	153	ppm/°C
Tensile strength	2.5	MPa
Elongation	>50	%
Shrinkage rate	2.1	%

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Property	Value	Unit
Water vapor transmission rate at 40 °C	8.7	g/(m ² /day)
O ₂ transmission rate at 23 °C	329	cm ³ /(m ² /day)
Refractive Index at 450 nm	1.54	–
Transmittance at 450 nm, 2 mm	>95	%
Temperature resistance	up to 150	°C

Processing Instructions

- Mix Parts A and B in a 1:4 weight ratio. Mix until uniform and streak-free.
- Degas the mixture under vacuum at 3 torr (≈400 Pa abs) for 10–15 minutes, or until bubble-free.
- Remove moisture from parts prior to encapsulation by preheating for 1 hour at 90°C (as compatible with the substrate).
- Typical curing conditions: 80°C for 1 hour, followed by post-cure at 150°C for 4 hours.
- Cure range: 60–80 minutes at 60–80°C + 3–4 hours at 150°C.

Precautions

1. Addition-cure materials may be susceptible to inhibition by certain substances, including organotin and other organometallic compounds, silicone rubber with organotin catalyst, sulfur-containing materials such as polysulfones, amines, urethanes, amine-containing materials, unsaturated hydrocarbon plasticizers, and some solder flux residues. Always exercise caution and conduct thorough compatibility testing when encountering materials or chemicals of concern in your specific application to prevent potential curing issues.
2. Avoid skin and eye contact. In case of contact, rinse thoroughly with soap (for skin) or clean water (for eyes), and seek medical attention if needed.
3. Maintain a clean and ventilated workplace, using extraction trunks when necessary.
4. Wear appropriate protective equipment and minimize direct contact with the human body. Refer to the Safety Data Sheet (SDS) before use.

Cleaning

Uncured silicone can be easily removed using common hydrocarbon solvents, such as toluene and hexane. Polar solvents, including water and alcohols are not suitable.

Storage and Handling

Store in a ventilated, cool (10–25 °C) dry place (40–75% humidity) environment. Do not allow moisture to come into contact with these materials. Containers should always remain tightly sealed. For partially filled containers, it is recommended to purge them with dry air or inert gases like nitrogen to maintain product integrity. At proper storage conditions, Part A and B have a shelf life of 6 months.

The technical information presented in this document is provided for reference only and does not constitute a guarantee of specific properties or performance. Actual results may vary depending on individual conditions and application methods. Users are strongly advised to perform their own testing and validation to determine suitability for their intended use and compliance with relevant regulations.

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