



Technical Data Sheet OPTOLINQ™ OLS-5291

Optically Clear Two-Part Phenyl Silicone LED Liquid Encapsulant – July 2018

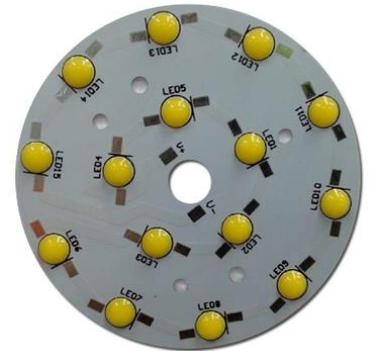
Product Description

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 @ 460nm, high optical transmittance and excellent resistance to both UV and heat resistance in applications as high as 120°C. Phenyl-type silicones are known to have very resistance to sulphur penetration or sulfuration, making it well-suited to silver-plated leadframes. It also has a high level of adhesion to a wide-range of metals, silicones and plastics and to PPA in particular. OLS-5291 can be dispensed from standard dispensing equipment or can also be compression molded using compression mold equipment.



Product Applications

The OPTOLINQ OLS-5291 has been specially designed for mid- and high-power LED devices. These LED devices are those often used in applications that will see higher temperatures such as automotive lighting, industrial baylights used in warehouses as well as for street lighting and high-power data projectors or beamers that require high powered light to be emitted over longer distances. It can mixed with phosphor for die-level color conversion.



OPTOLINQ Family series

CAPLINQ OPTOLINQ™ OLS-Series are a family of optically clear (often called “water-white”) liquid encapsulants that are used to encapsulate optical or optoelectronic devices that require both a high level of light transmittance as well as a good level of mechanical protection. Products in this OLS-Series family can be epoxies, silicones or hybrid technologies. They are used extensively for the encapsulation of LED devices, but could be well suited for other applications that require a clear, optical grade encapsulation system.

The OPTOLINQ OLS Series is CAPLINQ’s Opto Liquid System (OLS) series and is made up of several families of products that each have their own unique attributes and application-specific benefits.

Optoling Epoxy Series

OLS-1 Series

Uses an epoxy-only base chemistry technology that is often characterized by:

- ❖ Max Temperature of 125°C
- ❖ Good sulphur resistance
- ❖ Lowest material price

OPTOLINQ Silicone SERIES

OLS-3 and OLS-5 Series

OLS-3 dimethyl silicone and OLS-5 phenyl silicone series are technologies characterized by:

- ❖ Max Temperature of 150°C (OLS-3)
- ❖ Best-in-class Heat/UV resist
- ❖ Refractive index up to 1.54 (OLS-5)

OPTOLINQ Hybrid SERIES

OLS-7 Series

Unique blends of hybrid chemistries giving a technology that is often characterized by:

- ❖ Max Temperature of 125°C
- ❖ High Refractive Index of 1.52
- ❖ Great balance price/performance

Main Applications:

- Mid-power LED Encapsulation
- High-power LED Encapsulation
- Compression Molding LED devices
- Compression molding opto lenses

Product Features & Benefits:

- Temperatures up to 150°C
- Excellent adhesion to PPA
- High Refractive Index (1.54)
- Good sulphur resistance
- Excellent gas barrier properties

TYPICAL UNCURED PROPERTIES OLS-5291 PART A / PART B

	Unit	Part A	PartB
Visual Appearance	-	Transparent	Transparent
Viscosity @ 25°C	cPs	4500	4000
Shelf Life @ 25°C	months	12	12

Process and Handling

Mix Ratio, by weight	100:500
Mixed viscosity	4200 cPs
Pot Life of 40 grams @ 40°C	4 hours

Cure Schedule

Recommended Cure Schedule	60 min @ 80°C + 4 hours @ 150°C
<i>Range for Cure*</i>	<i>60-80min @ 60-80°C + 3-4hrs @ 150°C</i>

**Note that the ranges indicated suggest parameters that can be tested by the customer. All CURED PROPERTY DATA measured after recommended cure condition*

TYPICAL CURED PROPERTIES*

** Cured data measure on material after recommended cure schedule*

Mechanical Properties	Unit	Value
Hardness, Shore D	N/A	35
Hardness, Shore A	N/A	86
Specific Gravity	g/cc	1.16
Glass Transition Temperature (Tg)	°C	13
Coefficient of Thermal Expansion (CTE)		
Alpha 1	ppm/°C	105
Alpha 2	ppm/°C	153
Tensile Strength	MPa	2.5
Elongation	%	>50
Shrinkage Rate	%	2.1
Moisture vapor permeability @ 40°C	g/m ² /day	8.7
O2 gas permeability @ 23°C	cm ³ /m ³ /day	329

Optical Properties

	Unit	Value
Refractive Index @ 450nm	N/A	1.54
Optical Transmittance, 2mm sample @ 450nm	%	>95%

NOT FOR PRODUCT SPECIFICATIONS

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results Obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, CAPLINQ Corporation specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of CAPLINQ Corporation's products. CAPLINQ Corporation specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits. The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any CAPLINQ Corporation patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patent

ADDITIONAL HANDLING INSTRUCTIONS

Ideally, the mixture of Part A and B will be done in a vacuum and degassed at 3 torr (400 Pa) for 10-15 minutes. This will ensure that all the entrapped air bubbles are removed after mixing. For best results, ensure that all moisture has been removed from the parts to be encapsulated by preheating them for 1 hour @ 90°C. Also for best results, the encapsulation should be carried out in a vacuum.

USING DIFFUSANTS OR PHOSPHOR WITH OLS-5291

Optolinq OLS-5291 can be mixed with diffusing agents or phosphor to achieve customer-specific purposes.

PRECAUTIONS: CURE INHIBITION OF ADDITION-CURE CHEMISTRIES

Optolinq OLS-5291 has a part A and a B, and is therefore an addition-cure chemistry. Certain outside chemicals, curing agents and plasticizers can inhibit the cure of these chemistries – meaning that they do not fully cure and therefore do not exhibit the listed cure properties. The most common of these include: organotin and other organometallic compounds, Silicone rubber containing organotin catalyst, sulfur, polysulfones or other sulfur-containing materials, amines, urethanes or amine-containing materials, unsaturated hydrocarbon plasticizers, certain solder flux residues. If you believe you are experiencing cure inhibition, or you believe that one of the substrates listed above could possibly cause cure inhibition, it is recommended to test a small amount for compatibility before confirming its suitability for a given application.

ADDITION-CURE CHEMISTRIES

Uncured silicone can be readily removed using a hydrocarbon solvent such as hexane or toluene. Polar solvents such as water and alcohols are not suitable.

PACKAGE SIZES

OPTOLINQ OLS-5291A/B has a mix ratio of 1:1, so each order should contain equal amounts of resin and hardener

Part Number	Includes	Package Size	Dimensions Height x Width Diameter	Net Weight	Gross Weight
OLS-5291/500ml	OLS-5291A/100ml	500 ml Glass Jar	125mm x 114mm 102mm diameter	0.1 kg	0.3 kg
	OLS-5291B/500ml	500 ml Glass Jar	125mm x 114mm 102mm diameter	0.5 kg	0.7 kg

STORAGE AND HANDLING

OPTOLINQ OLS-5291 is supplied in glass jars and should be kept in a cool (10°C – 25°C) dry place (40% – 75% humidity) away from direct sunlight or temperature extremes. Part B is particularly sensitive to moisture, so be sure to purge with dry air or nitrogen after using and to keep the lid of the container tightly sealed after use.

For safe handling information on this product, consult the Safety Data Sheet, (SDS).

DATA RANGES

The data contained herein may be reported as a typical value and/or range values based on actual test data and are verified on a periodic basis.

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