LS-3252

Optically clear encapsulation gel

DESCRIPTION

- A two-part, encapsulation gel
- Extended work time
- 1.52 refractive index for matching BK7
- 1:1 Mix Ratio (Part A: Part B)

APPLICATION

- For protection of sensitive photonics assemblies from mechanical shock, thermal shock, dust, and ambient atmosphere
- Extended work time allows voids in complex assemblies to fill in and permits time for any trapped air bubbles to float to the fluid surface and escape
- For LEDs and display element
- For applications requiring an operating temperature range of -40°C to 200°C (-40°F to 392°F) or for soldering operations up to 260°C (500°F) for 1 to 2 minutes

PROPERTIES

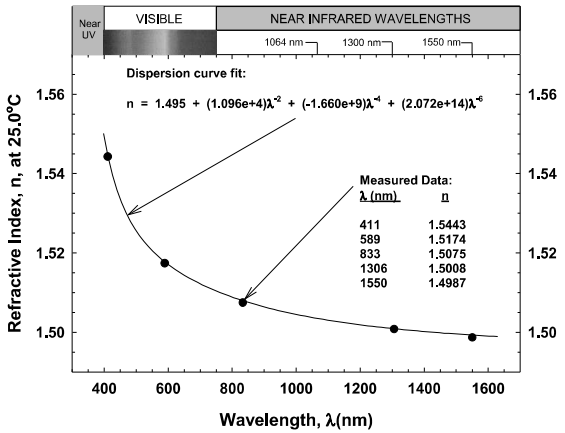
Typical Properties	Average Result	Metric Conv.	Standard	NT-TM
Uncured:				
Appearance	Transparent	-	ASTM D2090	003
Viscosity (initial Part A and Part B mixed)	425 cP	425 mPas	ASTM D1084, D2196	001
Viscosity at 6 hours after catalyzation	475 cP	475 mPas	-	008
Cured: 30 minutes at 150°C (302°F)				
Consistency	Soft, self-healing gel	-	-	-
Durometer, Type 00	10	-	ASTM D2240	006
Specific Gravity	1.07	-	ASTM D1217	003
Moisture Absorption, % gain after 168 hour exposure at 85°C (185°F) / 85% R.H.	<0.2 %	-	-	202
Refractive Index, 589 nm	1.52	-	ASTM D1218	018
Refractive Index vs. Temperature, 589 nm	-3.9 x 10^{-4}/°C	-	ASTM D1218	018
Refractive Index vs. Wavelength	See attached graph	-	-	-
Optical Absorption	See attached graph	-	-	-

Typical Properties	Average Result	Metric Conv.	Standard	NT-TM
Cured: 24 hours at ambient temperature and humidity				
Durometer, Type 000	65	-	ASTM 2240	006

Refractive Index vs. Wavelength (25°C)

Lightspan Encapsulation Gel

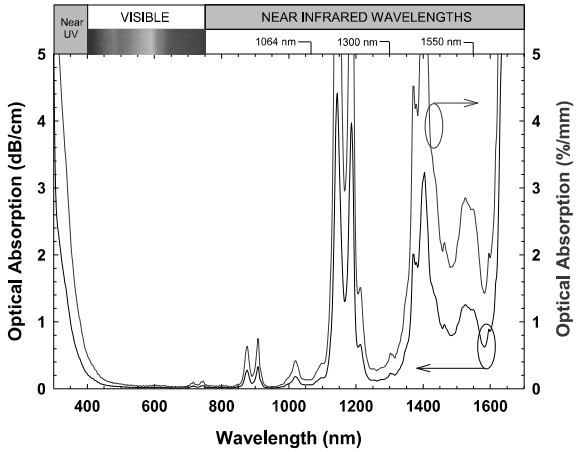
LS-3252 Lot# 11031-0313



Optical Absorption vs. Wavelength

Lightspan Encapsulation Gel

LS-3252 Lot# 21017-0417



INSTRUCTIONS FOR USE

The product is supplied in ready-to-use cartridges that mix the material automatically as it is dispensed without need for vacuum degassing. 1:1 mix ratio (Part A:B).

Deaeration

The assembly should self-deaerate due to the product's long room temperature work time and low viscosity, as long as no pockets of air are trapped beneath mechanical parts. If accelerated deaeration is required, the assembly may be vacuum deaerated using a pressure of 635 mmHg (25 inHg) or greater. Apply the vacuum while observing the uncured fluid for presence of bubble formation and increase vacuum slowly enough to avoid rapid foaming. Hold vacuum until bubbles at the fluid surface collapse and are no longer visible.

Cure Inhibition

LS-3252 cures in contact with most properly cleaned substrate materials including optical glasses, optical plastics, and photonic semiconductors. Adhesion to fluoroplastic substrates is generally poor but may be improved with chemical etching or plasma etching of the substrate. Substrates to avoid include certain butyl, nitrile, chlorinated, and EPDM elastomers, certain plastics with leachable plasticizers, and the cure residues of certain adhesives including UV-cured epoxies and amine-cured epoxies.

Substrate Preparation

Substrates should be free of dust, oil, and fingerprint soils. Clean substrates using suitable industrial techniques for cleaning electro-optics. If using hydrocarbon solvent cleaning (e.g. acetone, toluene), a final rinse with reagent grade isopropanol is recommended. If using aqueous detergent cleaning, multiple final rinses with de-ionized water or a single rinse with reagent grade isopropanol is recommended. Obtain improved gel adhesion to some substrates using suitable primers such as NuSil Technology LS-3200 series Optical Primers. Adhesion to fluoroplastic substrates is generally poor but may be improved with chemical etching or plasma etching of the substrate.

Adjustable Cure Schedule

Product cures at a wide range of cure times and temperatures to accommodate different production needs. Contact NuSil Technology for details. Some cure schedules* include:

Ambient temperature & humidity	70°C (158°F)	100°C (212°C)
24 hours	20 minutes	5 minutes

* Cure time defined as when Controlled Stress Rheometer results becomes stabilized

Packaging	Warranty
50 ml SxS Kit 50 Grams 2 Pint Kit (910 g) 2 Gallon Kit (7.28 kg) 10 Gallon Kit (36.4 kg)	12 Months

Clean-Up

Remove from surfaces by first wiping off excess gel with a suitable, dry, lint-free wipe and then by wiping down the surface with a lint-free wipe soaked with acetone. If the surface material is incompatible with acetone, use isopropanol. Complete the clean-up process with a final rinse with reagent grade isopropanol if removal of acetone residues is necessary. The user is responsible for compliance with all applicable regulations governing disposal of waste materials as indicated in the MSDS.

OPERATING TEMPERATURE

The operating temperature range of a silicone in any application is dependent on many variables, including but not limited to: temperature, time of exposure, type of atmosphere, exposure of the material's surface to the atmosphere, and mechanical stress. In addition, a material's physical properties will vary at both the high and low end of the operating temperature range. This type of silicone typically remains flexible at extremely low temperatures and has been known to perform at -50°C (-58°F) as well as resist breakdown at elevated temperatures up to 200°C (392°F). The user is responsible to verify optical and mechanical performance of a material in a specific application.

SPECIFICATIONS

Do not use the properties shown in this technical profile as a basis for preparing specifications. Please contact NuSil Technology for assistance and recommendations in establishing particular specifications.

WARRANTY INFORMATION

The warranty period provided by NuSil Technology LLC (hereinafter "NuSil Technology") is 12 months from the date of

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shipment when stored below 40°C in original unopened containers. Unless NuSil Technology provides a specific written warranty of fitness for a particular use, NuSil Technology's sole warranty is that the product will meet NuSil Technology's then current specification. NuSil Technology specifically disclaims all other expressed or implied warranties, including, but not limited to, warranties of merchantability and fitness for use. The exclusive remedy and NuSil Technology's sole liability for breach of warranty is limited to refund of purchase price or replacement of any product shown to be other than as warranted. NuSil Technology expressly disclaims any liability for incidental or consequential damages.

WARNINGS ABOUT PRODUCT SAFETY

NuSil Technology believes, to the best of its knowledge, that the information and data contained herein are accurate and reliable. The user is responsible to determine the material's suitability and safety of use. NuSil Technology cannot know each application's specific requirements and hereby notifies the user that it has not tested or determined this material's suitability or safety for use in any application. The user is responsible to adequately test and determine the safety and suitability for their application and NuSil Technology makes no warranty concerning fitness for any use or purpose. NuSil Technology has completed no testing to establish safety of use in any medical application.

NuSil Technology has tested this material only to determine if the product meets the applicable specifications. (Please contact NuSil Technology for assistance and recommendations when establishing specifications.) When considering the use of NuSil Technology products in a particular application, review the latest Material Safety Data Sheet and contact NuSil Technology with any questions about product safety information.

Do not use any chemical in a food, drug, cosmetic, or medical application or process until having determined the safety and legality of the use. The user is responsible to meet the requirements of the U.S. Food and Drug Administration (FDA) and any other regulatory agencies. Before handling any other materials mentioned in the text, the user is advised to obtain available product safety information and take the necessary steps to ensure safety of use.

PATENT / INTELLECTUAL PROPERTY WARNING

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