ADVANCED ENGINEERING

LS4-3354

OPTICALLY CLEAR SILICONE GEL

DESCRIPTION

- A two-part, encapsulation gel
- 1:1 Mix Ratio (Part A: Part B)

APPLICATION

- For potting, encapsulating, backfilling, and dampening applications requiring a soft gel with optical clarity
- Viscosity makes excellent for dispersing phosphors for LED applications
- Longer work time for dispensing applications

PROPERTIES

TYPICAL PROPERTIES	AVERAGE RESULT	ASTM	NT-TM
Uncured:			
Appearance*	Transparent	D2090	002
Refractive Index, 589 nm*	1.54	D1218, D1747	018
Viscosity (V1) (Initial)*	4,200 cP (4,200 mPas)	D1084, D2196	001
Viscosity (V2) (@ 5 hours)*	4,500 cP (4,500 mPas)	D1084, D2196	001
Viscosity (V2/V1)*	1.10	D1084, D2196	001
UV/ Visible Spectrophotometry @ 400 nm*	97%T	E275	100
Cured: 60 minutes @ 70°C (158°F)			
Durometer, Type “000”*	60	D2240	006
Refractive Index vs. Temperature by Wavelength	See Appendix	-	-
Cured: 60 minutes @ 100°C (212°F)			
Durometer, Type “000”*	60	D2240	006

Cured: 24 hours @ ambient temperature and humidity then 2 hours @ 70°C (158°F)

Refractive Index vs. Wavelength (25°C)	See Appendix	-	-

*Properties tested on a lot-to-lot basis. 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.

INSTRUCTIONS FOR USE

Mixing

The product is available in ready-to-use cartridges that mix the material automatically as it is dispensed without need for vacuum degassing. It is also available in individual part A and Part B containers for mixing by weight to add specialized fillers such as phosphors.

Vacuum Deaeration

Remove air entrapped during mixing by common vacuum deaeration procedure, observing all applicable safety precautions. Slowly apply full vacuum to a container rated for use and at least four times the volume of the material being deaerated. Hold vacuum until bulk deaeration is complete.

Packaging

50 mL SxS Kit
20 Gram Kit
50 Gram Kit
2 Pint Kit (910 g)

Warranty

12 Months

Substrate Considerations

LS4-3354 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 (IPA) 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 adhesion to some substrates using suitable primers such as NuSil Technology LS-3200 series Optical Primers.

Clean-Up

Remove from surfaces by first wiping off excess uncured material with a suitable, dry, lint-free wipe and then by wiping down the surface with a lint-free wipe soaked with xylene of reagent grade IPA. Complete the clean-up process with a final rinse with reagent grade isopropanol. The user is responsible for compliance with all applicable regulations governing disposal of waste materials as indicated in the MSDS. For information on removing cured material please visit www.nusil.com and review Silicone Removal for Electronic Rework Applications in our technical resources.

Adjustable Cure Schedule

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

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. Silicone typically remains flexible at extremely low temperatures and has been known to perform at – 40ºC (40°F) as well as resist breakdown at elevated temperatures up to 200ºC (392°F). The user is responsible to verify optical and mechanical performance of a material in a specific application.

RoHS AND REACh COMPLIANCE

LS4-3354 is compliant with the Restriction of the Use of Certain Hazardous Substances in Electrical and Electronic Equipment (RoHS) regulation contained in Article 4(1) of the European Parliament and Council's Directive 2002/95/EC. RoHS mandates that manufacturers restrict the use of lead, mercury, cadmium, hexavalent chromium, polybrominated biphenyls, polychlorinated biphenyls, and polybrominated diphenyl ethers in electrical and electronic equipment.

LS4-3354 is also compliant with the Registration, Evaluation, and Authorization of Chemicals (REACh) regulation (European Union 1907/2006). LS4-3354 does not contain any of the chemicals or substances identified as Substances of Very High Concern (SVHC) by the European Chemicals Agency (ECHA), which oversees REACh compliance.

Please contact NuSil Technology's Regulatory Compliance department with any questions or for further assistance.

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 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

NuSil Technology disclaims any expressed or implied warranty against the infringement of any domestic or international patent/intellectual property right. NuSil Technology does not warrant the use or sale of the products described herein will not infringe the claims of any domestic or international patent/intellectual property right covering the product itself, its use in combination with other products, or its use in the operation of any process.

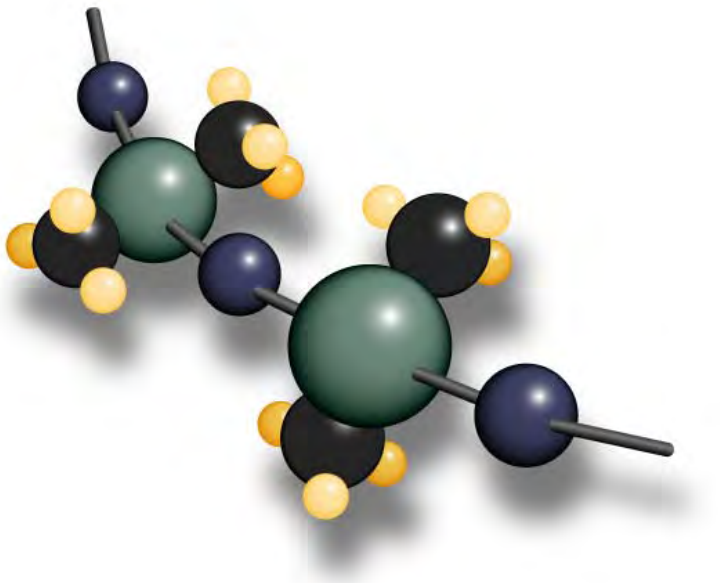
Polymer Systems Technology Limited

NuSil

Silicone Sales & Services
UK - Ireland - Benelux

Unit 2. Network 4. Cressex Business Park,
Lincoln Road, High Wycombe, Bucks. HP12 3RF

Phone +44 (0) 1494 446610
Web: http://www.silicone-polymers.co.uk
Email: sales@silicone-polymers.co.uk



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