

R-2188

Silicone potting and encapsulating elastomer

DESCRIPTION

- Two part, Clear, 1:1 Mix ratio (A:B)
- Pourable and self-leveling
- Cures at room temperature
- Tested per UL-94 and passed V-1

APPLICATION

- For potting, encapsulating and coating of modules, relays, and a variety of AC/DC converters including high power and planar packages
- Provides protection from moisture, dust and contaminants
- Increases resistance to shock and vibration
- Low viscosity allows the potting of complex geometries without the entrapment of air
- Pot life is compatible with processes that require dispensing or coating with Part A and B combined
- Dielectric properties compatible with many devices and increase breakdown voltage of device

PROPERTIES

Typical Properties	Average Result	Standard	NT-TM
Uncured:			
Appearance, Part A	Translucent	ASTM D2090	002
Appearance, Part B	Translucent	ASTM D2090	002
Viscosity, Part A	13,000 cP	ASTM D2196	001
Viscosity, Part B	9,000 cP	ASTM D2196	001
Work Time (Pot Life)	8 hour minimum	-	008
Cured: 30 minutes at 150 °C (302 °F)			
Durometer, Type A	20	ASTM D2240	006
Tensile Strength	475 psi (3.3 MPa)	ASTM D412	007
Elongation	350 %	ASTM D412	007
Tested per UL-94	Passed V-1	-	-
Dielectric Constant, 100 Hz	2.9	ASTM D150	906

Typical Properties	Average Result	Standard	NT-TM
Dielectric Constant, 100 kHz	2.6	ASTM D150	906
Dissipation Factor, 100 Hz	0.0001	ASTM D150	906
Dissipation Factor, 100 kHz	0.0001	ASTM D150	906
Dielectric Strength	500 Volts/mil (19.5 kV/mm)	ASTM D149	243
Ionic Content, Cl	< 5 ppm	MIL STD 883E	-
Ionic Content, K	< 3 ppm	MIL STD 883E	-
Ionic Content, Na	< 1 ppm	MIL STD 883E	-
Thermal Gravimetric Analysis (TGA)	-	ASTM E1131	259
Weight loss 30°C to 380°C	5%	-	-
Weight loss 30°C to 750°C	60%	-	-
Coefficient of Thermal Expansion			
-25°C to 250°C	320 ($\mu\text{m}/(\text{m}^\circ\text{C})$)	ASTM E831	-
Moisture Absorption, % gain after 168 hour exposure at 85°C (185°F) / 85% R.H.	0.2%	JEDEC J-STD-020C	202
% Linear Shrink (1 hour at 100°C)	2.5%	-	059
% Linear Shrink (1 hour at 150°C)	3.8%	-	059
Recommended Cure Times based on 90% cured via ODR*		-	069
Cure time at 70°C	4 hours		
Cure time at 100°C	30 minutes		
Cure time at 150°C	20 minutes		

The test data shown for this material is the average value for typical properties. All of these properties may not be tested on a lot to lot basis and cannot be used to draft specifications. Please [contact](#) NuSil® for assistance and recommendations in establishing limits for product specifications.

*Recommended cure times are based on the testing performed via ODR (Oscillating Disk Rheometer). However the cure times can be affected by multiple factors, including, but not limited to, quantity of silicone used, time to heat the entire device or mold, and whether the material is cured in pre-heated oven or not.

INSTRUCTIONS FOR USE

Mixing and Vacuum Deaeration

Combine Part A and Part B in a 1:1 mix ratio prior to use. Airless mixing, metering or dispensing equipment is recommended for production operations. If mixing by hand, take care to minimize air entrapment and check the work time prior to mixing and dispensing.

Remove air entrapped during mixing by common vacuum deaeration procedure, observing all applicable safety precautions. Slowly apply full vacuum to a suitable container of at least four times the volume of material being de-aired. Hold vacuum until bulk deaeration is complete. For further information please see [Mixing and De-airing Addition Cure Silicones](#).

Substrate Considerations

R-2188 cures in contact with most materials common to electronic assemblies. Exceptions include butyl and chlorinated rubbers, some Tin condensation cure silicones and unreacted residues of some curing agents. Units being encapsulated or potted should be clean and free of surface contaminants. Containers and dispensers being used should also be clean and dry. Cure inhibition can usually be prevented by washing all containers with solvent or volatilizing the contaminant by heating. For further information please see [Avoiding Cure Inhibition](#).

Note: Some bonding application may require the use of a primer. NuSil's CF1-135 silicone primer is recommended.

ROHS AND REACH COMPLIANCE

Please [contact](#) NuSil's Regulatory Compliance department with any questions or for further assistance.

SPECIFICATIONS

Do not use the typical properties shown in this technical profile as a basis for preparing specifications. Please [contact](#) NuSil for assistance and recommendations in establishing limits for product specifications.

WARRANTY INFORMATION

The warranty period provided by NuSil Technology LLC is 12 months from the date of shipment when stored below 40°C in original unopened containers. Unless NuSil provides a specific written warranty of fitness for a particular use, NuSil's sole

Packaging

50 mL SxS Kit (0.054 kg)
400 mL SxS Kit (0.42 kg)
2 Pint Kit (0.91 kg)
2 Gallon Kit (7.28 kg)
10 Gallon Kit (36.4 kg)

Warranty

12 Months

warranty is that the product will meet NuSil's then current specification. NuSil 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'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 expressly disclaims any liability for incidental or consequential damages.

WARNINGS ABOUT PRODUCT SAFETY

NuSil 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 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 makes no warranty concerning fitness for any use or purpose. NuSil has completed no testing to establish safety of use in any medical application.

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

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