Technical Data Sheet

DOWSIL™ JCR 6101 Encapsulant

One-part translucent white silicone die encapsulant

Features & Benefits

- 1-part
- Non solvent
- High quality
- Excellent thermal stability

Composition

- Phenyl methyl siloxane

Applications

- DOWSIL™ JCR 6101 Encapsulant is suitable for LED (light emitting diode)

Typical Properties

Specification Writers: These values are not intended for use in preparing specifications.

Property	Unit	Result
One or Two-Part		One
Color		Translucent White
Viscosity	cP Pa-sec	6200 6.2
Cure	°C	1hr @70 + 2hr @ 150
Specific Gravity (Cured)		1.04
Durometer Shore A		34
Elongation	%	170
Tensile Strength	psi MPa kg/cm^2	245 1.7 17
Youngs Modulus	psi Mpa kg/cm^2	174 1.2 12
Linear CTE (by TMA)	ppm/°C	300
Thermal Conductivity	btu/hr ft degF W/mK	0.098 0.2

Typical Properties (Cont.)

Property	Unit	Result
Impurity (Na+)	ppm	0.1
Impurity (K+)	ppm	0.2
Impurity (Cl-)	ppm	< 1
Volume Resistivity	ohm*cm	1.9E+15
Dielectric Strength	Volts/mil kV/mm	565 22
Dielectric Constant at 1MHz		2.4
Dissipation Factor at 1MHz		6E-04
Transparency at 450 nm, 1 mm thick	%	84
Refractive Index		1.41
Hardening Transition	°F °C	-186 -121

Description

Dow silicone LED (light emitting diode) encapsulants are designed to meet the challenging needs of the LED market, high purity, moisture resistance, thermal stability and optical transmittance. Silicone materials can absorb stresses caused by thermal cycling inside the package, protecting the chip and the bonding wires. And with the electronics industry quickly moving toward lead-free processing, silicone encapsulants, with their demonstrated, excellent stability at reflow temperatures, are a natural fit for LED applications.

Preparing Surfaces

Surfaces should be clean and dry. Recommended cleaning methods include Dow OS Fluids, naphtha, mineral spirits, methyl ethyl ketone (MEK) or other suitable solvent. Rougher surfaces tend to promote adhesion of silicones to other surfaces.

Processing/Curing

These products are also compatible with commercially available equipment and industry standard processes. These products can be dispensed or molded depending on the product and application. Dow OS Fluids are recommended to clean cured or uncured silicone residue from application equipment.

Adhesion

Dow LED materials are specially designed for adhesion to commonly used LED substrates. Surface treatments such as chemical etching or plasma treatment may provide a reactive surface and improve adhesion to these types of substrates. In general, increasing the cure temperature and/or cure time will improve the ultimate adhesion.

Useful Temperature Ranges

For most uses, silicone elastomers should be operational over a temperature range of -45 to 200°C (-49 to 392°F) for long periods of time. However, at both the low- and high temperature ends of the spectrum, behavior of the materials and performance in particular applications can become more complex and require additional considerations and should be adequately tested for the particular end use environment. For low-temperature performance, thermal cycling to conditions such as -55°C (-67°F) may be possible, but performance should be verified for your parts or assemblies. Factors that may influence performance are configuration and stress sensitivity of components, cooling rates and hold times, and prior temperature history. At the high-temperature end, the durability of the cured silicone elastomer is time and temperature dependent. As expected, the higher the temperature, the shorter the time the material will remain useable.

Compatibility

Certain materials, chemicals, curing agents and plasticizers can inhibit the cure of addition cure adhesives. Most notable of these include: organotin and other organometallic compounds, silicone rubber containing organotin catalyst, sulfur, polysulfides, polysulfones or other sulfur containing materials, unsaturated hydrocarbon plasitcizers, and some solder flux residues. If a substrate or material is questionable with respect to potentially causing inhibition of cure, it is recommended that a small scale compatibility test be run to ascertain suitability in a given application. The presence of liquid or uncured product at the interface between the questionable substrate and the cured gel indicates incompatibility and inhibition of cure.

Handling Precautions

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE SAFETY DATA SHEET IS AVAILABLE ON THE DOW WEBSITE AT CONSUMER.DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life and Storage

Shelf life is indicated by the “Use Before” date found on the product label. For best results, Dow one-part products require cold storage at or below -5°C (23°F). Special precautions must be taken to prevent moisture from contacting these materials. Containers should be kept tightly closed with head space minimized. Partially filled containers should be purged with dry air or other gases, such as nitrogen. Check the product label for specific storage conditions.

Packaging Information

Multiple packaging sizes are available for this product. Please contact your local distributor or Dow representative for information on packaging size and availability.

Limitations

This product is neither tested nor represented as suitable for medical or pharmaceutical uses.

Health And Environmental Information

To support customers in their product safety needs, Dow has an extensive Product Stewardship organization and a team of product safety and regulatory compliance specialists available in each area.

For further information, please see our website, consumer.dow.com or consult your local Dow representative.

How Can We Help You?

Tell us about your performance, design, and manufacturing challenges. Let us put our silicon-based materials expertise, application knowledge, and processing experience to work for you.

For more information about our materials and capabilities, visit consumer.dow.com.

To discuss how we could work together to meet your specific needs, go to consumer.dow.com for a contact close to your location. Dow has customer service teams, science and technology centers, application support teams, sales offices, and manufacturing sites around the globe.

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