



## Technical Data Sheet

### **DOWSIL™ DA-6534 Adhesive**

A conductive adhesive with high thermal conductivity

#### **Features & Benefits**

- Low ionic impurities
- Very high thermal conductivity
- Contains silver filler
- Good adhesion to Ni, Al, laminate, and silicon
- Microelectronics grade material
- Increases reliability by removing heat
- Enables electrically conductive performance
- Good adhesive performance for TIM1 or lid seal applications

#### **Composition**

- Polydimethylsiloxane
- Conductive filler

#### **Applications**

- DOWSIL™ DA-6534 Adhesive is suitable for microelectronics thermal interface applications

#### **Typical Properties**

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

Property	Unit	Result
One or Two-part		One
Color		Gray
Viscosity - Cone and Plate Carrimed	cP	103,000
	Pa	103
Thixotropy	NA	2
Heat Cure Time at 150°C	minutes	120
Specific Gravity (Cured)		4.4
Durometer Shore A (JIS <sup>1</sup> )		91
Thermal Conductivity	btu/hr ft degF	11.765
	W/mK	6.8
Thermal Resistance at 40 psi	°C*cm <sup>2</sup> /W	0.12

1. JIS: Japanese Industrial Standard.

## Typical Properties (Cont.)

Property	Unit	Result
Unprimed Adhesion - Lap Shear (Al)	psi	194
	MPa	1.3
	N/cm <sup>2</sup>	134
Impurity (Na+)	ppm	0.1
Impurity (K+)	ppm	0.2
Impurity (Cl-)	ppm	0.5
Volume Resistivity	ohm*cm	1.8E-04
Tm (Melt Temp.) by DSC	°C	-45
Tg (Glass Transition Temp.) by DSC	°C	-125
Linear CTE by TMA	ppm/°C	125

### Description

Dow microelectronics adhesives are designed to meet key criteria in the micro- and optoelectronic packaging industry, including high purity, moisture resistance and thermal and electrical stability. The products deliver outstanding stress relief and high-temperature stability, with excellent primerless adhesion to a wide range of substrate materials and components. These products are ideally suited for microelectronic devices requiring low-modulus materials, for lead-free solder reflow temperatures (260°C), or other high-reliability applications. Dow microelectronics adhesives are supplied as convenient, one-part materials, with specific formulations developed for electrical conductivity, electrical insulation or thermal conductivity, all of which cure via heat without byproducts.

### Preparing Surfaces

All surfaces should be thoroughly cleaned and/or degreased with solvents such as Dow OS fluids, naphtha, mineral spirits, or methyl ethyl ketone (MEK). Light surface abrasion is recommended whenever possible, because it promotes good cleaning and increases the surface area for bonding. A final surface wipe with IPA is also useful to remove residues that may be left behind by other cleaning methods. On some surfaces, different cleaning techniques will give better results than others. Users should determine the best techniques for their applications.

### Substrate Testing

Due to the wide variety of substrate types and differences in substrate surface conditions, general statements on adhesion and bond strength are impossible. To ensure maximum bond strength on a particular substrate, cohesive failure of the product in a lap shear or similar test is needed to ensure compatibility of the adhesive with the substrate being considered. Also, this test can be used to determine minimum cure time or to detect the presence of surface contaminants such as mold release agents, oils, greases and oxide films.

### 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 plasticizers, 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 product indicates incompatibility and inhibition of cure.

<b>Repairability</b>	Removal of Dow microelectronics adhesives to allow for failure analysis can be assisted with Dow OS fluids. Additional information regarding these products is available from Dow.
<b>Handling Precautions</b>	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 DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.
<b>Usable Life and Storage</b>	Shelf life is indicated by the "Use By" date found on the product label. For best results, Dow microelectronics adhesives should be stored at or below the maximum specified storage temperature. Special precautions must be taken to prevent moisture from contacting these materials. Containers should be kept tightly closed and head or air space minimized. Partially filled containers should be purged with dry air or other gases, such as nitrogen. Any special storage and handling instructions will be printed on the product containers.
<b>Packaging Information</b>	DOWSIL™ die attach adhesives are typically supplied in plastic syringe. These products require cold storage between -10 and -25°C (14 to -13°F). Check the product label for specific storage conditions. To prepare a syringe of material for use, please follow the directions in order. Allow the syringe to sit at least one hour at room temperature on its side and without opening the plastic bag. Upon opening the bag, remove the syringe dust cap right away. The tip plug should be removed just prior to placing the syringe in the dispenser. Air pressure from 10–30 psi should be used or augur dispense systems. Multiple packaging sizes are available for this product. Please contact your local distributor or Dow representative for information on packaging size and availability.
<b>Limitations</b>	This product is neither tested nor represented as suitable for medical or pharmaceutical uses.
<b>Health and Environmental Information</b>	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, <a href="http://dow.com">dow.com</a> or consult your local Dow representative.
<b>Disposal Considerations</b>	Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.  It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Dow Technical Representative for more information.
<b>Product Stewardship</b>	Dow has a fundamental concern for all who make, distribute, and use its products, and for the environment in which we live. This concern is the basis for our product stewardship philosophy by which we assess the safety, health, and environmental information on our products and then take appropriate steps to protect employee and public health and our environment. The success of our product stewardship program rests with each and every individual involved with Dow products - from the initial concept and research, to manufacture, use, sale, disposal, and recycle of each product.

## Customer Notice

Dow strongly encourages its customers to review both their manufacturing processes and their applications of Dow products from the standpoint of human health and environmental quality to ensure that Dow products are not used in ways for which they are not intended or tested. Dow personnel are available to answer your questions and to provide reasonable technical support. Dow product literature, including safety data sheets, should be consulted prior to use of Dow products. Current safety data sheets are available from Dow.

## How Can We Help You Today?

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

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

To discuss how we could work together to address your specific needs, go to **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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