Technical Data Sheet

DOWSIL™ ME-1800 Adhesive

DOWSIL™ ME-1800 Adhesive is a conductive adhesive with high electrical/thermal conductivity.

Features & Benefits

- High electrical conductivity (Enables electrically conductive performance)
- High thermal conductivity (Increases reliability by removing heat)
- Good adhesion to Ni, Al, laminate, and silicon (Good for die attach, lid seal, or TIM1)
- Low ionic impurities (Microelectronics grade material)

Composition

- Polydimethylsiloxane (PDMS) with conductive filler

Applications

- Electrically conductive die attach adhesive
- Conductive adhesive for grounding
- 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	Pa.s	103
Thixo. Index		2
Heat Cure Time at 150°C	minutes	120
Specific Gravity (Cured)		4.4
Durometer Shore A (JIS[1])		91
Unprimed Adhesion - Lap Shear (Al)	MPa	1.3
Thermal Conductivity	W/mK	6.8
Thermal Resistance at 40 psi	°C*cm^2/W	0.12
Volume Resistivity	ohm*cm	1.8E-04
Impurity (Na+)	ppm	0.1
Impurity (K+)	ppm	0.2
Impurity (Cl-)	ppm	0.5

1. JIS: Japanese Industrial Standard

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Typical Properties (Cont.)

Property	Unit	Result
Tm (Melt Temp.) by DSC	°C	-45
Tg (Glass Transition Temp.) by DSC	°C	-125
Linear CTE by TMA	ppm/°C	125

Description

DOWSIL™ 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. DOWSIL™ 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.

Adhesion

Dow silicone adhesives are specially formulated to provide unprimed adhesion to many reactive metals, ceramics and glass, as well as to selected laminates, resins and plastics. However, good adhesion cannot be expected on non-reactive metal substrates or non-reactive plastic surfaces such as Teflon, polyethylene or polypropylene. Special surface treatments such as chemical etching or plasma treatment can sometimes provide a reactive surface and promote adhesion to these types of substrates. Dow primers can be used to increase the chemical activity on difficult substrates. Poor adhesion may be experienced on plastic or rubber substrates that are highly plasticized, because the mobile plasticizers act as release agents. Small-scale laboratory evaluation of all substrates is recommended before production trials are made.

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 gel indicates incompatibility and inhibition of cure.

Useful Temperature Ranges

For most uses, silicone adhesives 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. 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.

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 DOW.COM, OR FROM YOUR DOW SALES APPLICATION ENGINEER, OR DISTRIBUTOR, OR BY CALLING DOW CUSTOMER SERVICE.

Usable Life and Storage

Refer to product label for storage temperature conditions. Containers should be kept tightly closed and kept in cold storage at all times to extend shelf life. The product should be stored in its original packaging with the cover tightly attached to avoid any contamination. Store in accordance with any special instructions listed on the product label. The product should be used by its Use Before date as indicated on the product label.

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, dow.com or consult your local Dow representative.

Disposal Considerations

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.

Product Stewardship

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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Form No. 11-4145-01-0221 S2D