Technical Data Sheet

DOWSIL™ TC-5860 Thermally Conductive Compound

One-part, gray, non-curing thermally conductive compound

Features & Benefits

- One-part material – no cure required
- Solvent free formulation – provides material stability
- High thermal conductivity
- High dielectric strength

Applications

- DOWSIL™ TC-5860 Thermally Conductive Compound is suitable for use as a thermally conductive material in high power electronics.

Typical Properties

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

Test[1]	Property	Unit	Result
CTM 0176	One or Two-part		One
CTM 0176, ASTM E284	Color		Gray
CTM 1094, ASTM D4287	Viscosity (CP52#,1RPM)	cP	350,000
CTM 0044, ASTM D70	Density	g/cm^3	3.5
CTM 1163, ISO 22007-2	Thermal Conductivity	W/m·K	6.0
ASTM D5470	Thermal Resistance (40 psi)	°C-cm^2/W	0.111
CTM 1140	Bond Line Thickness (40 psi)	µm	40
CTM 0540	Evaporation (24 hours at 150°C)	%	0.045
CTM 0114, ASTM D149	Dielectric Strength	kV/mm	8.0
CTM 0249, ASTM D257	Volume Resistivity	Ω·cm	$8.0*10^{11}$

1. CTM: Corporate Test Method.
   ASTM: American Society for Testing and Materials.
   ISO: International Organization for Standardization.

Description

DOWSIL™ thermally conductive compounds are grease like materials that are highly loaded with thermally conductive fillers in a silicone matrix. This combination promotes high thermal conductivity, low bleed and high-temperature stability. The compounds are designed to maintain a positive heat sink seal to improve heat transfer from an electrical device or PCB system assembly to a heat sink or chassis, thereby increasing the overall efficiency of the device. PCB system assemblies are continually designed to deliver higher performance.

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Description (Cont.)

Especially in the area of high-power electronics devices, there is also a continual trend towards smaller, more compact designs. In combination these factors typically mean that more heat is generated in the device. Thermal management of PCB system assemblies is a primary concern of design engineers. A cooler device allows for more efficient operation and better reliability over the life of the device. As such, thermally conductive compounds play an integral role here. Thermally conductive materials act as a thermal “bridge” to remove heat from a heat source (device) to the ambient via a heat transfer media (i.e. heat sink). These materials have properties such as high thermal conductivity, and can achieve thin Bond Line Thicknesses (BLTs) which can help to improve the transfer of heat away from the device.

Solvent Free Formulation

DOWSIL™ TC-5860 Thermally Conductive Compound is a solvent free formulation so that the material remains stable after the container is opened. This means the viscosity of the material will not change over time which allows for consistent and easy application.

Application Methods

- Automated dispensing
- Stencil printing

Useful Temperature Ranges

For most uses, thermally conductive compound should be operational over a temperature range of -40 to 150°C. 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. 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

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. Stored below 30°C, DOWSIL™ TC-5860 Thermally Conductive Compound has a shelf life of 12 months after the manufacturing date.

Many highly filled thermal materials may experience some slight settling over time. Re-mixing the material by stirring is recommended before use.

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.

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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.

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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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