



## MGS SERIES – THERMAL GREASE

### [MGS series troubleshooting the electronic heat]

The MGS series are the superior thermal interface material with NANO-dispersion technology to mix the silicone fluid and high performance NANO powder, which can help the thermal dissipating of electric components.

MGS thermal compound is a silicone-based thermal grease made from a silicone fluid with thermally conductive material and metal oxide fillers. The product offers high thermal conductivity, virtually no wide operating bleed or evaporation over temperature range.

The MGS series has low viscosity and easy handling properties to comparable grease. So it easily coats the surface of the component. Especially it has superior wetting properties and so completely fills the microscopic surface of the component, resulting in very low thermal resistance. The MGS series is an efficient thermal coupler, effective and positive heat sink sealers and heat transfer agent.

The MGS series is very stable at elevated temperatures. It does not dry out, settle or harden. So it is superior reliable properties at temperature range. The MGS series also meet all environmental requirements including RoHS.

### [Application Fields]

- CPU (Notebooks, Desktops, Servers)
- Custom ASICS Chips
- GPUs (Graphics Chips)
- North & Southbridge Chipsets
- FBDIMM, UDIMM (Memory Modules)
- Hi-power Modules

#### **AMEC Thermasol**

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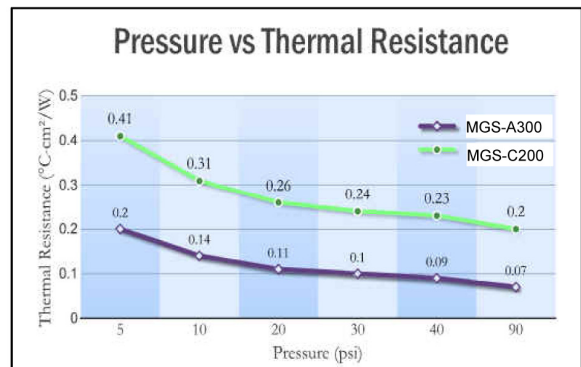
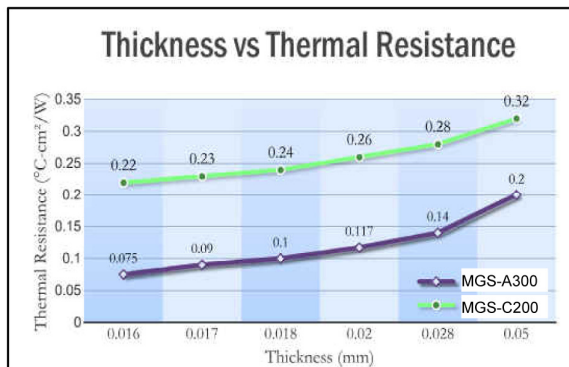
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## MGS SERIES – THERMAL GREASE

### [General Specification]

ITEM	UNIT	CONDITION	TEST METHOD	MGS-A300	MGS-C200
Appearance	-	-	Visual	Grey	White
Specific Gravity	-	25°C	ASTM D70	2.6	2.4
Viscosity	Pa . s	5 rpm, 25°C	Brookfield	95.4	60.2
Thermal Conductivity	W/mK	25°C	Laser Flash	4.0	1.7
Thermal Resistance	°C-cm <sup>2</sup> /W	10 psi	Modified ASTM D5470	0.12	0.31
		20 psi		0.10	0.26
		50 psi		0.09	0.23
		90 psi		0.075	0.22
Operating Temperature	°C	-	-	0 ~ 150	0 ~ 150
Volume Resistivity	Ω . cm	-	ASTM D257	1X10 <sup>14</sup>	2.1X10 <sup>13</sup>
Breakdown Voltage	kV / mm	-	ASTM D149	4.5	4.0
Oil Separation	%	-	-	0.01	0.01
Evaporation Rate	wt%	150°C, 24hr	-	0.02	0.02
Low Molecular Weight Silicone Content	ppm	ΣD <sup>3</sup> ~ D <sup>10</sup>	-	>100	>100
RoHS	-	-	-	n/a	n/a

### [Thermal Performance Curve]



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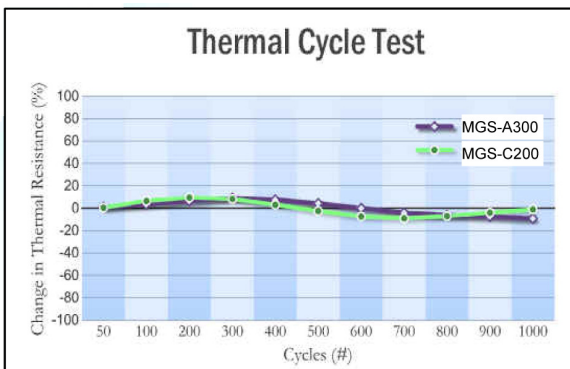
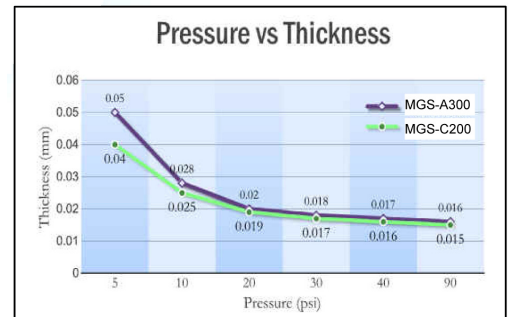
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## MGS SERIES – THERMAL GREASE

### [Reliability Certification]

- Pressure vs Thickness**

- A key factor in selecting a thermal interface material is the relationship between bond line and thickness and thermal resistance.
- The chart on the left shows the thickness of MGS series dependent on the pressure.
- The advantage of these charts allows for tighter control in the use and screen printing of the grease.

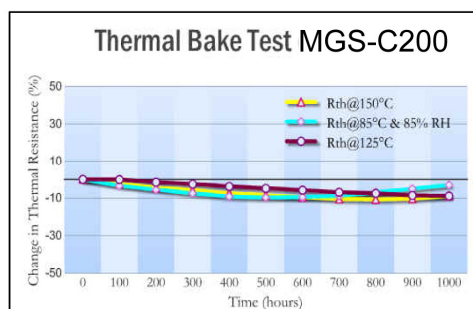
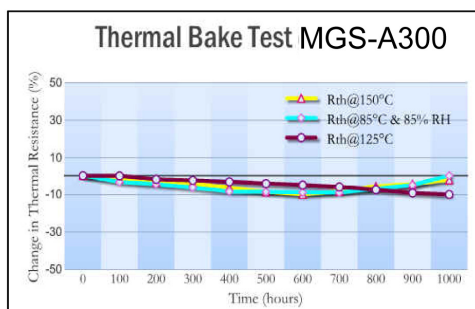


- Thermal Cycle Test**

- These reliability graph shows MGS-A300 & MGS – C200 confirm not to degrade the thermal resistance after thermal cycling, high temperature baking, baking in a high humidity environment.
- During testing, samples of MGS were maintained between two round aluminium disks. Constant pressure was done through clamps.

- Thermal Bake Test**

- Thermal cycles were tested 0 to 100 cycles after the measurement of the thermal resistance.
- The graph on the upper illustrates the stability of the thermal resistance during the thermal cycling.
- Thermal bake were tested 125°C, 150°C and HAST condition after the measurement of the thermal resistance.



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## MGS SERIES – THERMAL GREASE

### [Application Note]

- Organic phase change sheet.
- Easy Handling/Re-workability.
- Low viscosity.
- Highly wetting interface material.
- Handling / Application note.

#### 1. Description

MGS series are a thermal interface material to meet the need of solving the heat from the electronic component. MGS series are a silicone based thermally conductive compound. This material is able to achieve less than thickness of 2mm to minimize the thermal pathway and maximize heat-flow. MGS series is effectively mixed with thermal metal filler and metal oxide, resulting in highly packing factor. MGS series inhibits evaporation, separation and pump-out so to be thermally stable.

MGS series have a low viscosity and easily handling property like traditional screen printing material. This product is able to use high speed dispensing or printing equipment area.

#### 2. Dispense Information

Dispense settings will vary for the type of unit employed. A base line setup when use time/pressure type valve should employ a pressure set at 35psi at a head speed of 5cm / second with a 16 gage taper tip. A small backtrack may have to be employed to reduce tailing at the end of the dispense pattern.

#### 3. Assembly Information

Depending on the size of the die, both an X and a kiss pattern have proven effective in covering the die. 20 to 40 psi of pressure is sufficient to achieve minimal bond line thickness of less than 1mm.

#### 4. Cure Information

MGS series should be cured in a typical forced air convection oven with the material at temperature for the specified time. Typically at 125°C temperature will produce the thermal compound consistency in 1 hour.

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## MGS SERIES – THERMAL GREASE

### 5. Handling and Storage

#### Handling:

- Avoid contact with eyes.
- Avoid prolonged temperature.
- Minimize exposure by inhalation.
- Avoid exposure to vapors at elevated temperature.
- Wash thoroughly after handling, and before eating, drinking or smoking.
- Use with adequate ventilation.

#### Storage:

- Store in a cool dry location with adequate ventilation.
- Store in tightly closed-container.
- Keep away from open flame and heat sources.
- Prevent contact and storage with incompatible materials.

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