

## Thermal Management Materials (6000 Series)

MAJR 6000 thermal Management materials consist of sheet, adhesive, and grease compounds; these thermal materials are used in a wide variety of markets such as chip sets for IC controller packages, IT for industrial and personal computers, DRAM Modules, telecom devices, automotive control units, and a variety of other products used in military and commercial markets.



## Thermal Management Material 6001

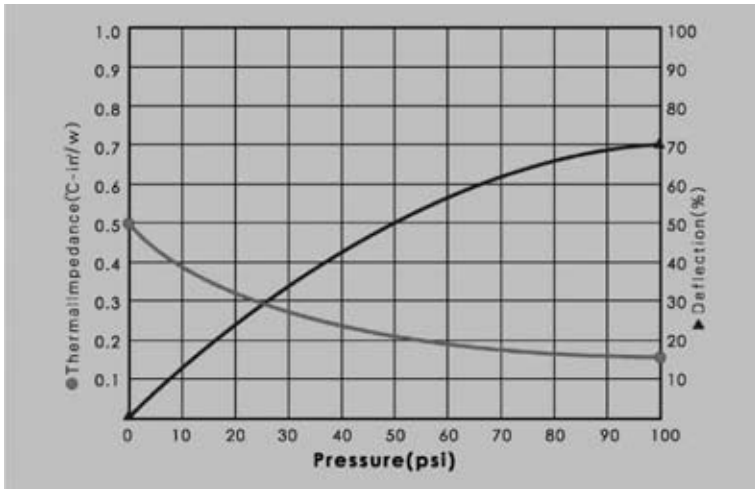
This material is ultra soft and can be applied to irregular surfaces. It incorporates a self adhesive backing for use in general to high altitude and high vibration applications.

This product exhibits good thermal conductivity to effectively conduct heat away from sensitive components to the heat sink.

Being electrically insulating, this thermal conductive material can be applied to electrical devices exhibiting high voltages.

PROPERTY Material 6001	RANGE	UNIT	TEST METHOD
Color	Lt. Yellow	—————	Visual
Thickness	0.3 - 15	mm	ASTM D374
Hardness	5.0+/-3	Shore A	ASTM D2240
Specific Gravity	1.94 +/-0.2	g/cm <sup>3</sup>	ASTM D792
Elongation	0.2 +/-1.02	%	ASTM D412
Tensile Strength	66.4 +/-5	Kgf/cm <sup>2</sup>	ASTM D412
Weight Loss	<1	%	@204°C/24 hr.
Dielectric Breakdown (V)	>10	KV	ASTM D149
Surface Resistance	2.61x10 <sup>13</sup>	Ohm	ASTM D257
Temperature Continuous	-50 to +220	°C	-
Flame Raring	94V-0	UL	UL
Thermal Conductivity	1.7	W/m-k	ASTM D5470

Test Sample Thickness: 1.50mm



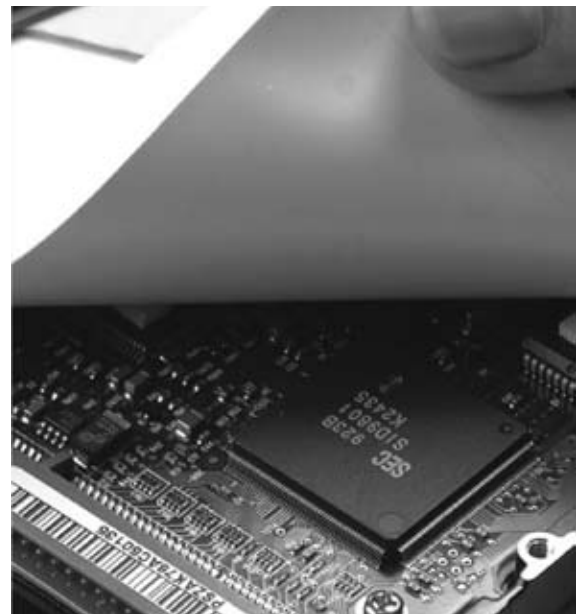
**Thermal Resistance vs. Pressure (Gray)**

The 6001 material provides low thermal impedance; with increasing pressure, thermal impedance becomes lower.

**Deflection vs. Pressure (Black)**

The 6001 material exhibits high deflection (softness); as pressure increases the deflection percentage increases.

*Sample of the 6001 material*



# ■ Thermal Management Materials (6002 Series)



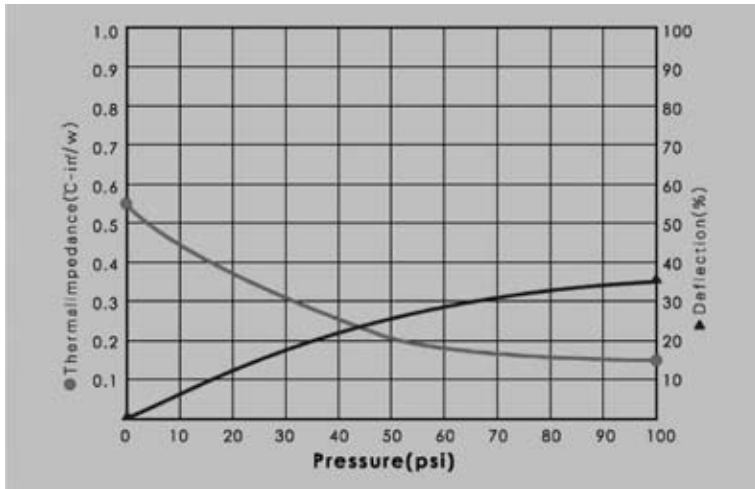
This material exhibits excellent softness, high compressibility, and natural adhesiveness. It is excellent for applications where high electrical insulation is needed.

This product has high thermal conductivity to effectively conduct heat away from sensitive components to a heat sink. The 6002 is an economical thermal conductive interface material.

Being electrically insulating, this thermal conductive material can be applied to electrical devices exhibiting high voltages.

PROPERTY Material 6002	RANGE	UNIT	TEST METHOD
Color	Light gray	—————	Visual
Thickness	0.13 - 15	mm	ASTM D374
Specific Gravity	2.35 +/-0.2	g/cm <sup>3</sup>	ASTM D792
Hardness	15 +/-3	Shore A	ASTM D2240
Elongation	300 +/-0.2	%	ASTM D412
Tensile Strength	12 +/-5	Kgf/cm <sup>2</sup>	ASTM D412
Weight Loss	<1	%	@204°C/24 hr.
Dielectric Breakdown (V)	>7	KV	ASTM D149
Surface Resistance	>10 <sup>17</sup>	Ohm	ASTM D257
Temperature Continuous	-50 to +220	°C	-
Flame Raring	94V-0	UL	UL
Thermal Conductivity	1.6	W/m-k	ASTM D5470

**Test Sample Thickness: 2.0mm**



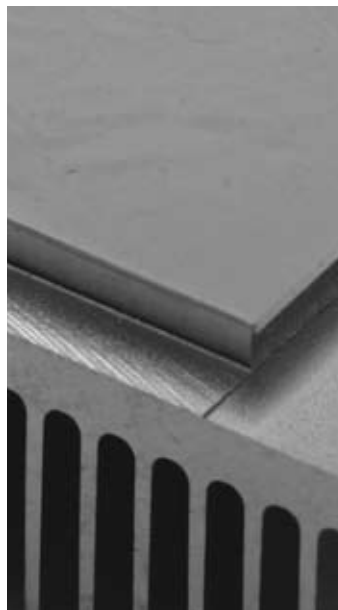
**Thermal Resistance vs. Pressure (Gray)**

The 6002 material provides low thermal impedance; with increasing pressure, thermal impedance becomes lower.

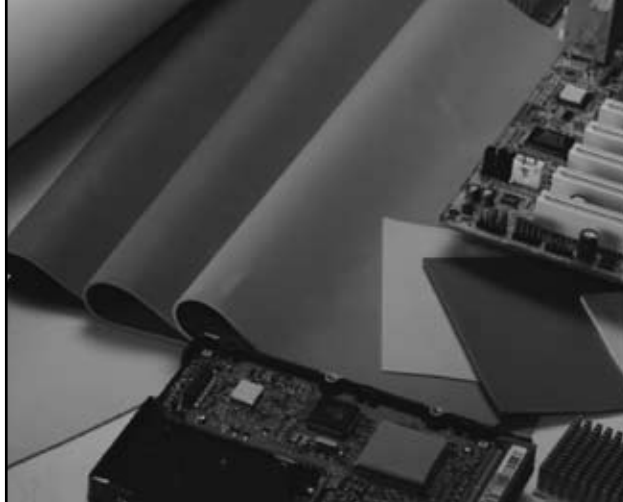
**Deflection vs. Pressure (Black)**

The 6002 material exhibits high deflection (softness); as pressure increases the deflection percentage increases. This material provides good compliance to mating surfaces.

*Sample of the 6002 material*



# ■ Thermal Management Materials (6003 Series)



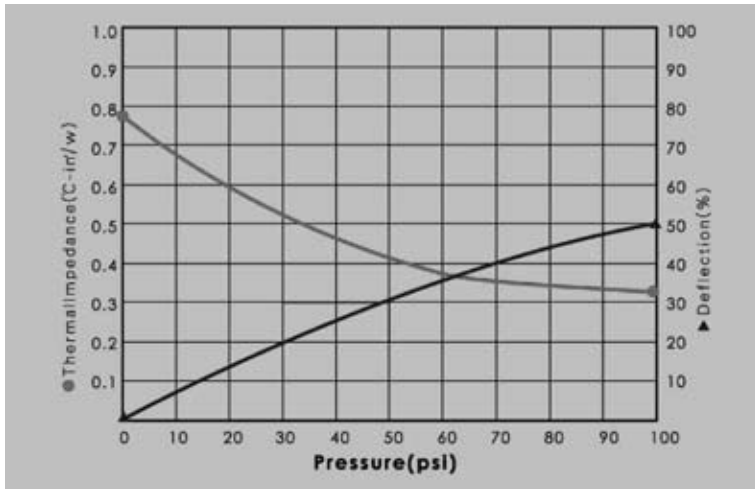
This material is very soft therefore excellently suited to conform to irregular surfaces. In addition, this material exhibits high compressibility and natural adhesiveness. It is excellent for applications where high electrical insulation is needed.

This product has high thermal conductivity to effectively conduct heat away from sensitive components to a heat sink. The 6003 is an excellent mid-level thermal conductive interface material.

Being electrically insulating, this thermal conductive material can be applied to electrical devices exhibiting high voltages.

PROPERTY Material 6003	RANGE	UNIT	TEST METHOD
Color	Dark Red	—————	Visual
Thickness	0.13 - 15	mm	ASTM D374
Specific Gravity	2.26 +/-0.2	g/cm <sup>3</sup>	ASTM D792
Hardness	10 +/-2	Shore A	ASTM D2240
Elongation	282 +/-28	%	ASTM D412
Tensile Strength	7 +/-2	Kgf/cm <sup>2</sup>	ASTM D412
Weight Loss	<1	%	@204°C/24 hr.
Dielectric Breakdown (V)	>5	KV	ASTM D149
Surface Resistance	1.38x10 <sup>14</sup>	Ohm	ASTM D257
Temperature Continuous	-50 to +220	°C	-
Flame Rating	94V-0	UL	UL
Thermal Conductivity	2.2	W/m-k	ASTM D5470

**Test Sample Thickness: 1.5mm**



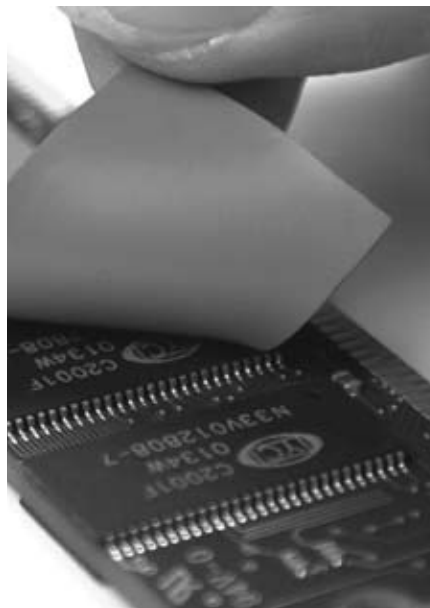
**Thermal Resistance vs. Pressure (Gray)**

The 6003 material provides low thermal impedance; with increasing pressure, thermal impedance becomes lower.

**Deflection vs. Pressure (Black)**

The 6003 material exhibits high deflection (softness); as pressure increases the deflection percentage increases. This material provides good compliance to mating surfaces.

**Sample of the 6003 material**



# ■ Thermal Management Materials (6004 Series)

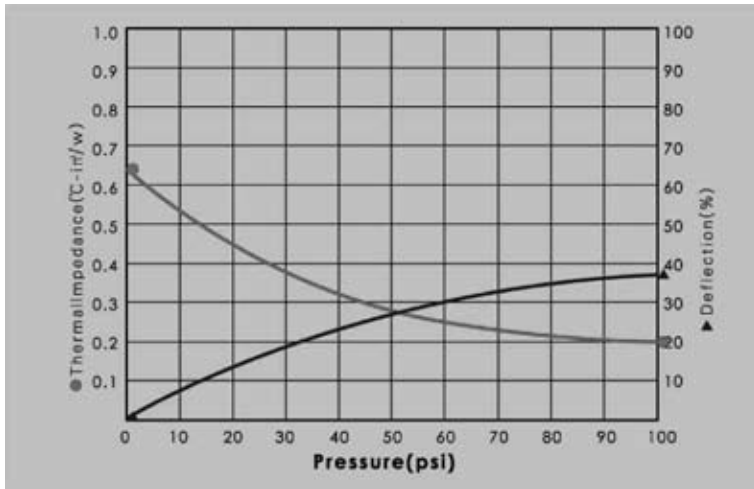


This material exhibits very high thermal conductivity. In addition, this material exhibits high compressibility and natural adhesiveness. It is excellent for applications where electrical insulation and thermal conductivity is needed.

The exceptional ability of this material to conduct heat away from sensitive components makes it applicable for use in very heat sensitive applications. The 6004 is an excellent high-level thermal conductive interface material.

PROPERTY Material 6004	RANGE	UNIT	TEST METHOD
Color	Dark Gray	—————	Visual
Thickness	0.13 - 15	mm	ASTM D374
Specific Gravity	2.28 +/-0.2	g/cm <sup>3</sup>	ASTM D792
Hardness	20 +/-5	Shore A	ASTM D2240
Elongation	130 +/-13	%	ASTM D412
Tensile Strength	8 +/-2	Kgf/cm <sup>2</sup>	ASTM D412
Weight Loss	<1	%	@204°C/24 hr.
Dielectric Breakdown (V)	>7.0	KV	ASTM D149
Surface Resistance	10 <sup>17</sup>	Ohm	ASTM D257
Temperature Continuous	-50 to +220	°C	-
Flame Raring	94V-0	UL	UL
Thermal Conductivity	3.2	W/m-k	ASTM D5470

Test Sample Thickness: 1.5mm



### Thermal Resistance vs. Pressure (Gray)

The 6004 material provides low thermal impedance; with increasing pressure, thermal impedance becomes lower.

### Deflection vs. Pressure (Black)

The 6004 material, exhibits high deflection (softness); as pressure increases the deflection percentage increases. This material provides good compliance to mating surfaces.

*Sample of the 6004 material*



# Thermal Management Materials (6005 Series)



## *Thermal Conductive Grease, Heat Transfer Compound, Paste.*

**The 6005 Material** a heat sink compound formulated with select polydimethyl siloxane fluid in combination with metallic oxide fillers to provide superior thermal conductivity.

This product is designed for use as a heat transfer compound in both the electrical and electronic industries. Characterized by high thermal conductivity, high dielectric constant, and high dissipation factor, the 6005 Heat Transfer Compound is an ideal product for use in power diodes, transistors, semi-conductors, and other applications that require these characteristics. The 6005 material exhibits excellent long-term storage stability without oil separation.

### Features

- \*High thermal conductivity \*High dielectric constant \*High dissipation factor
- \*Use with heat sinks or metal chassis \*Will not dry or harden

### Storage

6005 Material has a shelf-life of eighteen (18) months from the date of manufacture, as indicated by the lot number, when stored in the original unopened container at or below 26°C

PROPERTY Material 6005	RANGE	UNIT	TEST METHOD
Color	White	_____	Visual
Bluk penetration	210-260	_____	_____
Specific Gravity	2.30 +/-0.2	g/cm <sup>3</sup>	ASTM D792
Volatile matter	<0.5% after 4h/200° C	°C	_____
Bleed	No bleed after 4h/200°C	°C	_____
Dielectric Strength	1.0KV @ 0.1mm	KV	ASTM D-149
Volume Resistivity	1x10 <sup>14</sup>	Ohm-cm.	ASTM D-257
Thermal Conductivity	3.6	W/m-k	ASTM D5470

# Thermal Management Materials (6006 Series)



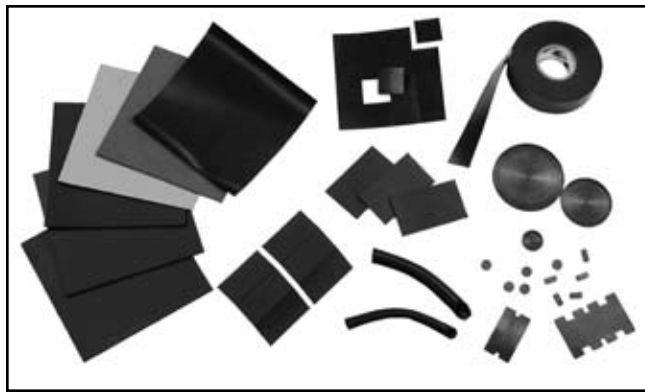
## Thermal Adhesive Transfer Tape

**The 6006 Material** – a thermally conductive adhesive transfer tape with a thickness of 10 mil. This material is a ceramic filled acrylic adhesive film incorporated onto a protective release liner. With excellent thermal conductivity, mechanical bonding properties, environmental, and electrical insulation along with the ease of use due to the release liner, this product provides an effective thermal interface between a heat sink and electronic components. This thermally conductive adhesive is well suited for many thermal management applications.

Example applications include bonding of IC packages, electronic components, and flex circuits to heat sinks.

PROPERTY Material 6006	RANGE	UNIT	TEST METHOD
Color	White	—————	Visual
Thickness	0.25	mm	-
Adhesion	1.5	kg/inch	PSTC-1
Holding Power	>48	hrs/inch <sup>2</sup> @ 100oC	PSTC-7
Weight Loss	<1	@ 204°C/24 hr.	-
Specific Gravity	1.85 +/-0.1	g/cm <sup>3</sup>	ASTM D792
Hardness	20 +/-5	Shore A	ASTM D2240
Dielectric Breakdown (V)	>6	KV/mm	ASTM D149
Surface Resistance	2.2 x 10 <sup>11</sup>	Ohm-meter	ASTM D257
Temperature - continuous	-30 to +120	oC	-
Thermal Conductivity	0.8	W/m-k	ASTM D5470

# Broadband Microwave Absorber Materials (6500 Series)



Introducing the MAJR 6500 EMI Absorber material product line. The 6501 product is an RoHS Compliant 6500 electromagnetic absorbing material, sheet stock. This absorber is used in a wide variety of markets such as Cellular and telecom, electronic device, radar cross section reduction, and a variety of other antenna and electronic housing applications.

The 6501 material is an elastomer based thin, flexible, and easy to install in even the tightest of applications. The absorber can be supplied die cut or water jet cut to your specification. In addition, for installation ease the absorber can be supplied with pressure sensitive adhesive.

*Features*

- \*This material is ultra soft and can be applied to irregular surfaces.
- \*Incorporation of a self adhesive backing for ease of use in general to high altitude / vibration applications.

PROPERTY ABSORBER 6501	CHARACTERISTIC
Frequency	10 MHz - 8 GHz
MIL-A-17161D	Loss dB @ 1.0mm thk: 0.9GHz (-1.7), 1.8 GHz (-2.35), 2.4 GHz (-3.04)
Thickness w/o adh.	0.22mm, 0.25mm, 0.33mm, 0.6mm, 1.0mm, 1.5mm, 2.0mm, 2.5mm
Temperature range	-20°C to 0°C
Surface resistivity	10 <sup>6</sup> Ohm
RoHS	Compliant
Color	Gray/Black
Application use	Computer / Notebook Cellular and Telecom Military — Reduction of radar cross section RFID Tag / Readers - Antenna Systems Oscillators and Amplifiers Aeronautical devices GPS systems Digital camera and video recorders
Standard size	40 cm x 40 cm