



# Thermal Management Specialist

## OpTIM<sup>®</sup> Manufacturing and Processing Facility of Thermal Interface Material

Experts recognize that thermal interface materials (TIMs) are crucial in maintaining reasonable life and reliability of many heat generating electronic components in the electronics industry. As electronic components require increasing watt densities, Schlegel Electronic Material's high-performance TIMs line can provide design engineers with solutions to thermal management problems.

Our OpTIM<sup>®</sup> products are a line of thermal interface materials that offer a wide range of thermal performance and physical properties and resolve even the most challenging thermal problems. These TIMs are used widely in various electronic equipment/components, including advanced microprocessors, high-speed memory modules, micro heat pipe assemblies, and LED lighting.

Our manufacturing facilities in Dongguan, China, are ISO 9001 certified and supported by our North American and European facilities to provide worldwide product coverage. OpTIM products can be die-cut into any shape and size, giving designers cost-effective and easy-to-use thermal management solutions.

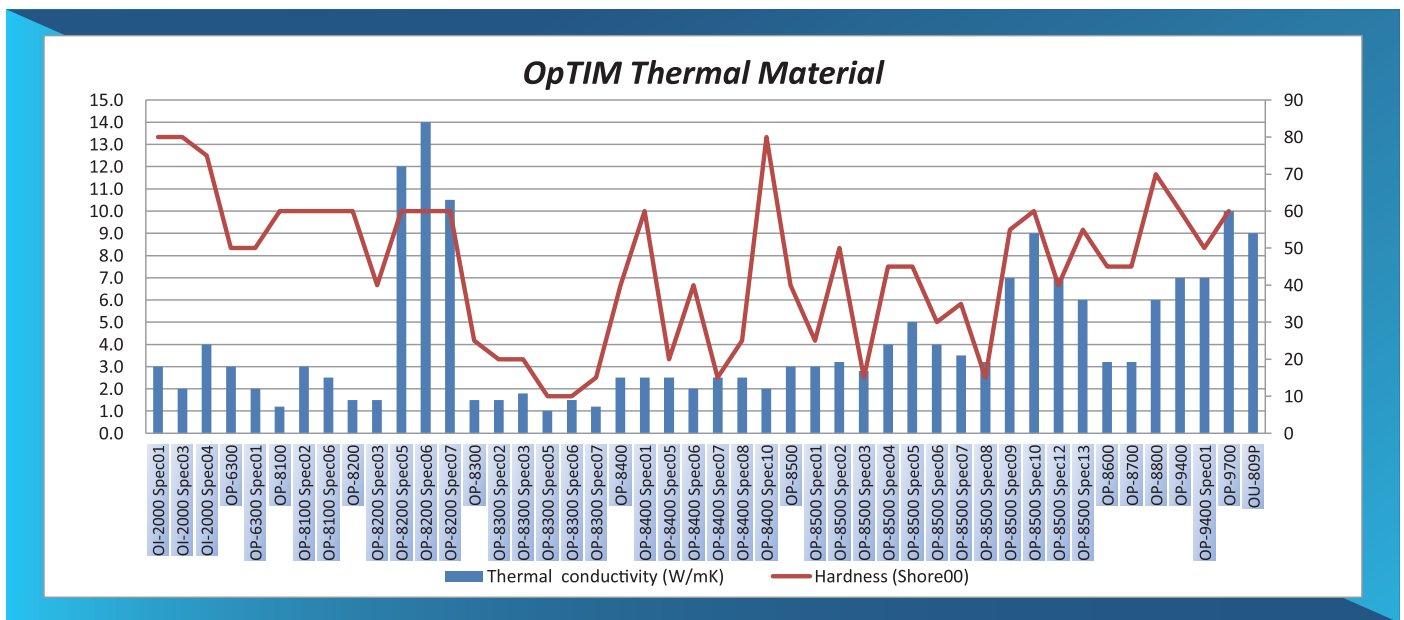
The team at Schlegel is committed to excellent customer service and technical support. We stand ready to meet your thermal needs.

# OpTIM<sup>®</sup> Thermally Conductive Gap Fillers



Product	Color	Thickness Range [inch/(mm)]	Thermal Conductivity [W/mk]	Hardness [Shore 00]	Operation Temperature [°C]
OP-8200 Spec 06	Grey	0.03" (0.76)~0.20" (5.08)	14	60	-40 - 200 °C
OP-8200 Spec 05	Grey	0.02" (0.50)~0.20" (5.08)	12	60	-40 - 200 °C
OP-8200 Spec 07	Grey	0.03" (0.76)~0.40" (10.1)	10.5	60	-40 - 200 °C
OP-9700	Grey	0.02" (0.50)~0.40" (10.1)	10	60	-40 - 200 °C
OP-8200 Spec 08	Grey	0.03" (0.76)~0.40" (10.1)	10	60	-40 - 200 °C
OP-8500 Spec 10	Grey	0.03" (0.76)~0.40" (10.1)	9.0	60	-40 - 200 °C
OP-9400 Spec 01	Grey	0.02" (0.50)~0.40" (10.1)	7.0	50	-40 - 200 °C
OP-8500 Spec 09	Violet	0.02" (0.50)~0.40" (10.1)	7.0	55	-40 - 200 °C
OP-9400 Spec 02	Grey	0.02" (0.50)~0.40" (10.1)	7.0	55	-40 - 200 °C
OP-9400	Grey	0.02" (0.50)~0.40" (10.1)	7.0	60	-40 - 200 °C
OP-8500 Spec 12	Violet	0.02" (0.50)~0.40" (10.1)	7.0	40	-40 - 200 °C
OP-8500 Spec 13	Grey	0.03" (0.76)~0.40" (10.1)	6.0	55	-40 - 170 °C
OP-8800	Yellow	0.01" (0.25)~0.40" (10.1)	6.0	70	-40 - 200 °C
OP-8500 Spec 05	Violet	0.02" (0.50)~0.40" (10.1)	5.0	45	-40 - 200 °C
OP-8500 Spec 05 SE	Violet	0.02" (0.50)~0.40" (10.1)	5.0	35	-40 - 200 °C
OP-8500 Spec 04	Violet	0.02" (0.50)~0.40" (10.1)	4.0	45	-40 - 200 °C
OP-8500 Spec 06	Violet	0.02" (0.50)~0.40" (10.1)	4.0	30	-40 - 200 °C
OP-8500 Spec 07	Violet	0.02" (0.50)~0.40" (10.1)	3.5	35	-40 - 200 °C
OP-8500 Spec 08	Violet	0.02" (0.50)~0.40" (10.1)	3.2	15	-40 - 200 °C
OP-8600	Pink	0.01" (0.25)~0.40" (10.1)	3.2	45	-40 - 200 °C
OP-8700	White	0.02" (0.50)~0.40" (10.1)	3.2	45	-40 - 200 °C
OP-8500 Spec 02	Violet	0.012" (0.30)~0.40" (10.1)	3.2	50	-40 - 200 °C
OP-8500 Spec 01	Violet	0.01" (0.25)~0.40" (10.1)	3.0	25	-40 - 200 °C
OP-8500	Violet	0.01" (0.25)~0.40" (10.1)	3.0	40	-40 - 200 °C
OP-8100 Spec 02	Grey	0.01" (0.25)~0.20" (5.08)	3.0	60	-40 - 200 °C
OP-8500 Spec 01 SE	Violet	0.02" (0.50)~0.40" (10.1)	3.0	10	-40 - 170 °C
OP-8500 Spec 03	Violet	0.01" (0.25)~0.40" (10.1)	2.8	15	-40 - 200 °C
OP-8100 Spec 01	Grey	0.01" (0.25)~0.30" (7.60)	2.5	60	-40 - 200 °C
OP-8400 Spec 07	Pink	0.01" (0.25)~0.40" (10.1)	2.5	15	-40 - 200 °C
OP-8400 Spec 05	Pink	0.012" (0.30)~0.40" (10.1)	2.5	20	-40 - 200 °C
OP-8400 Spec 08	Pink	0.01" (0.25)~0.40" (10.1)	2.5	25	-40 - 200 °C
OP-8400	Pink	0.01" (0.25)~0.40" (10.1)	2.5	40	-40 - 200 °C
OP-8100 Spec 06	Grey	0.01" (0.25)~0.03" (0.75)	2.5	60	-40 - 200 °C
OP-8400 Spec 01	Pink	0.01" (0.25)~0.40" (10.1)	2.5	60	-40 - 200 °C
OP-8400 Spec 09	Pink	0.008" (0.20)~0.02" (0.50)	2.5	70	-60 - 200 °C
OP-8400 Spec 06	Pink	0.01" (0.25)~0.40" (10.1)	2.0	40	-40 - 200 °C
OP-8400 Spec 10	Pink	0.01" (0.25)~0.03" (0.76)	2.0	80	-40 - 200 °C
OP-8300 Spec 03	Sky Blue	0.01" (0.25)~0.40" (10.1)	1.8	20	-40 - 200 °C
OP-8300 Spec 06	Blue	0.02" (0.50)~0.40" (10.1)	1.5	10	-40 - 200 °C
OP-8300 Spec 06 SE	Blue	0.02" (0.50)~0.40" (10.1)	1.5	5	-40 - 200 °C
OP-8300 Spec 02	Sky Blue	0.01" (0.25)~0.40" (10.1)	1.5	20	-40 - 200 °C
OP-8300	Blue	0.01" (0.25)~0.40" (10.1)	1.5	25	-40 - 200 °C
OP-8200 Spec 03	Light Grey	0.01" (0.25)~0.40" (10.1)	1.5	40	-40 - 200 °C
OP-8200	Light Grey	0.01" (0.25)~0.40" (10.1)	1.5	60	-40 - 200 °C
TCR 200	Multi-color	0.02" (0.50)~0.40" (10.1)	1.2	40	-40 - 200 °C
OP-8100	Blue	0.01" (0.25)~0.40" (10.1)	1.2	60	-40 - 200 °C
OP-8300 Spec 07	Blue	0.02" (0.50)~0.40" (10.1)	1.2	15	-40 - 200 °C
OP-8300 Spec 05	Blue	0.01" (0.25)~0.40" (10.1)	1.0	10	-40 - 200 °C

# OpTIM<sup>®</sup> Thermally Conductive Gap Fillers



## OpTIM<sup>®</sup> Thermally Conductive Non Silicone Gap Fillers



Product	Color	Thickness Range [inch/(mm)]	Thermal Conductivity [W/mk]	Hardness [Shore 00]	Operation Temperature [°C]
OP-6300	Dark Grey	0.02" (0.50)~0.20" (5.0)	3.0	50	-40 - 125 °C
OP-6300 Spec01	Dark Grey	0.02" (0.50)~0.20" (5.0)	2.0	50	-40 - 125 °C

## TIMSorb<sup>®</sup> Thermal / EMI Absorber



Product	Color	Thickness Range [inch/(mm)]	Thermal Conductivity [W/mk]	EMI Attenuation @ 10 GHz [dB/cm]	Operation Temperature [°C]
OP-3700	Grey (Part A) Grey (Part B)	dispensable	3.0	28	-40 - 175 °C
OP-3700 Spec01	Grey (Part A) Grey (Part B)	dispensable	2.0	48	-40 - 175 °C
OP-7400 Spec01	Dark Grey	0.02" (0.50)~0.12" (3.05)	3.0	70	-40 - 175 °C
OP-7500 Spec01	Dark Grey	0.02" (0.50)~0.12" (3.05)	4.5	35	-40 - 175 °C
OP-7600 Spec01	Dark Grey	0.02" (0.50)~0.12" (3.05)	3.6	48	-40 - 175 °C

### Features and Benefits

- Superior thermal performance
- Good EMI suppression
- RoHS compliant proprietary formulation
- Halogen-free

### Typical Applications

- Notebook Computers
- Handheld Portable Electronics
- Micro Heat Pipe assemblies
- Micro Processors, Memory Chips and Graphic Processors
- Motor Control
- Wireless Communication Hardware

# OpTIM<sup>®</sup> Phase Change Materials



Product	Color	Thickness Range [inch/(mm)]	Thermal Conductivity [W/mk]	Phase Change Temperature [°C]	Operation Temperature [°C]
OC-7200	Grey	0.005" (0.13)~0.02" (0.50)	5.0	55 °C	-40 - 120 °C
OC-9200	Grey	0.01"(0.25)~0.02"(0.50)	4.5	50°C - 55°C	-40 - 130 °C
OC-7300	Grey	0.005"(0.13)~0.02"(0.5)	4.0	55 °C	-40 - 130 °C
OC-7300 Spec01	Grey	0.005" (0.13)~0.02" (0.50)	4.0	55 °C	-40 - 130 °C
OC-800	White	0.005"(0.13)~0.02"(0.5)	2.5	50 °C	-40 - 130 °C
OC-9100	White	0.01"(0.25)~0.02"(0.50)	1.0	50°C - 65°C	-40 - 130 °C

# OpTIM<sup>®</sup> Thermally Conductive Insulators



Product	Color	Thickness Range [inch/(mm)]	Thermal Conductivity [W/mk]	Hardness [Shore 00]	Breakdown Voltage [kV]
OI-2000 Spec 04	Light Grey	0.01" (0.25)~0.03" (0.76)	4.0	75	>5.0 kV (Thickness ≥ 0.25mm) >5.5 kV (Thickness ≥ 0.30mm) >8.0 kV (Thickness ≥ 0.50mm) >11.0 kV (Thickness ≥ 0.75mm)
OI-2000 Spec 01	White	0.01" (0.25)~0.03" (0.76)	3.0	80	>6.5 kV (Thickness ≥ 0.25mm) >7.3 kV (Thickness ≥ 0.50mm) >8.0 kV (Thickness ≥ 0.75mm)
OI-2000 Spec 02	Pink	0.0086" (0.22)~0.03" (0.76)	2.0	80	>5.0 kV (Thickness ≥ 0.22mm)
OI-2000 Spec 03	White	0.01" (0.25)~0.03" (0.76)	2.0	80	>7.0 kV (Thickness ≥ 0.25mm) >10.5 kV (Thickness ≥ 0.50mm) >13.0 kV (Thickness ≥ 0.75mm)
OI-1000	Grey, Green Yellow	0.01" (0.25)~0.018" (0.45)	1.2	70 (Shore A)	>6.5 kV (Thickness ≥ 0.25mm) >14.5 kV (Thickness ≥ 0.50mm)

# OpTIM<sup>®</sup> Thermally and Electrically Conductive Gap Fillers



Product	Color	Thickness Range [inch/(mm)]	Thermal Conductivity-XY Axis [W/mk]	Thermal Conductivity-Z Axis [W/mk]
OP-400	Pewter	0.002"(0.05)~0.06" (1.52)	>400	>5

# OpTIM<sup>®</sup> Thermally Conductive Grease



Product	Color	Density [g/cm <sup>3</sup> ]	Thermal Conductivity [W/mk]	Operation Temperature [°C]
OG-870	Grey	1.98	7.0	-40 - 160 °C
OG-880	White	1.26	5.5	-40 - 160 °C
OG-600	Grey	1.93	3.0	-40 - 160 °C
OG-850	White	2.30	3.0	-40 - 160 °C
OG-860	White	2.30	0.85	-40 - 160 °C
OG-860 Spec 01	White	1.60	0.55	-40 - 160 °C

# OpTIM<sup>®</sup> Thermally Conductive Putty



Product	Color	Thickness Range [inch/(mm)]	Flow Rate [g/min, 30cc syringe under 90 psi]	Density [g/cm <sup>3</sup> ]	Thermal Conductivity [W/mk]	Operation Temperature [°C]
OU-809P Spec 01	Grey	0.04" (1.0)~0.40" (10.1)	-	3.4	9.0	-40 - 180 °C
OU-809P	Grey	0.04" (1.0)~0.40" (10.1)	-	3.4	9.0	-40 - 180 °C
OU-806	Grey	-	10	3.3	6.0	-40 - 180 °C
OU-805SF	White	-	12	3.03	5.0	-40 - 125 °C
OU-802SF Spec 01	White	-	20	3.02	3.5	-40 - 125 °C
OU-802	White	-	22	3.0	3.5	-40 - 180 °C

# OpTIM<sup>®</sup> 2-Part Thermally Conductive Gap Fillers



Product	Color	Viscosity [cP]	Thermal Conductivity [W/mk]	Hardness after cured [Shore 00]	Cure Time @ 25°C	Cure Time @ 80°C
OP-3500 Spec 04	White (Part A) Blue (Part B)	395000 (Part A) 415000 (Part B)	4.0	65	3 hr	10 min cure time @ 100 °C
OP-3500 Spec 03	White (Part A) Blue (Part B)	225000 (Part A) 245000 (Part B)	3.5	35	12 hr	30 min cure time @ 100 °C
OP-3500	White (Part A) Blue (Part B)	78000 (Part A) 87000 (Part B)	3.0	55	10 hr	10 min
OP-3300 Spec 02	Grey (Part A) White, Black (Part B)	25000 (Part A) 25000 (Part B)	2.0	75	8 hr	15 min
OP-3300 Spec 01	White, Black (Part A) Grey (Part B)	22000 (Part A) 22000 (Part B)	1.5	75	8 hr	15 min
OP-3300	White, Black (Part A) Grey (Part B)	7500 (Part A) 7500 (Part B)	1.0	75	8 hr	15 min
OP-3300 Spec 03	Dark Grey (Part A) White (Part B)	4000 (Part A) 6000 (Part B)	0.85	70	4 hr	15 min
OP-3300 Spec 06	White (Part A) Blue (Part B)	44000 (Part A) 37000 (Part B)	0.8	75	8 hr	15 min

# Thermally Conductive Ceramic Insulator



Product	Density [g/cm <sup>3</sup> ]	Thermal Conductivity [W/mk]	Dielectric Strength [kv/mm]
Thermally Conductive Ceramic Insulator OI-3000	≥3.7	≥24	≥17

All OpTIM products listed are Halogen Free.

Specifications and appearances may change without notice. All statements, technical information and recommendations herein are based on tests that we believed to be reliable, but the accuracy and completeness are not guaranteed. Before using, user should determine the suitability of the product for its intended use, and the user assumes all risks and liabilities whatsoever in connection therewith. Neither the seller nor the manufacturer shall be liable for any loss or damage, direct, incidental or consequential, including loss of profits or revenues arising from the use or inability to use the product. Any statements or recommendations shall have no effect unless contained in an agreement signed by authorized personnel of the seller and manufacturer.

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