



## Thermally Conductive Silicone Gap Fillers (TIM-GAP Series)

**Product Description:** TIM-GAP series is designed to meet industry's growing need for interface material with high conductivity and greater conformability for easier application. Electrically isolating property allows its use in applications requiring isolations between heat sinks and high voltage, bare leaded devices. Available in **Silicone and Non Silicone formulas, thermal conductivity up to 16 W/m<sup>2</sup>K**.

**Typical Application:** Gap Fillers are used to fill air gaps between components or PC boards and heat sinks, metal enclosures and chasses. Ideal for application where large gap tolerances are present due to steps, rough surfaces, and high stack-up. Gap Filler materials allow the designer to be less concerned with components proximity to heat sinks or heat spreaders.

Property	Test Method	1113	1115	1128	1161	HTC-13	HTC-16	NS
Type		Silicone	Silicone	Silicone	Silicone	Silicone	Silicone	Non-Silicone
Color	Visual	Pink	Gray	Gray	Gray	Gray	Gray	Gray
Specific Gravity, @ 25°C	ASTM D792	2.0	2.1	2.5	3.22	3.3	3.2	2.1
Hardness (Shore 00)	ASTM D2240	24	25	50	45	75	72	53
Flammability (Equivalent)	UL 94	V-0	V-0	V-0	V-0	V-0	V-0	V-0
Operating Temperature Range.		-40°C to 150°C	-40°C to 150°C	-40°C to 150°C	-40°C to 150°C	-40°C to 150°C	-40°C to 150°C	-40°C to 150°C
<b>THERMAL</b>								
Thermal Conductivity (W/m-K)	ASTM D5470	1.3	1.7	2.8	6.1	13.2	16.0	1.6
Thermal Resistance with Pressure (°C-in <sup>2</sup> /w) (1 mm Th)	ASTM D5470	15psi 0.93 40psi 0.71 70psi 0.60	15psi 0.90 40psi 0.80 70psi 0.70	15psi 0.55 40psi 0.44 70psi 0.40	14psi 0.37 50psi 0.31 70psi 0.28	14psi 0.16 50psi 0.15 70psi 0.14	14psi 0.13 50psi 0.12 70psi 0.11	14psi 1.02 50psi 0.78 70psi 0.61
<b>ELECTRICAL</b>								
Breakdown Voltage (KV/mm)	ASTM D149	16	13	14	14	12	10	11
Dielectric Constant (1KHz)	ASTM D150	N/A	4.2	6.0	8.1	8.6	4.5	7.2
Dissipation Factor (1KHz)	ASTM D150	N/A	0.04	0.03	0.02	0.04	0.05	0.04
Volume Resistivity (Ohm-m)	ASTM D257	1.2 x 10 <sup>12</sup>	1.1 x 10 <sup>12</sup>	1.2 x 10 <sup>12</sup>	1.5 x 10 <sup>11</sup>	1.0 x 10 <sup>11</sup>	1.0 x 10 <sup>11</sup>	1.0 x 10 <sup>12</sup>
Available Thickness.mm		0.5 to 5.0	0.5 to 5.0	0.5 to 5.0	0.5 to 5.0	0.5 to 3.0	0.3 to 3.0	0.5 to 3.0
Available Sheet size		300mm x 200mm	300mm x 200mm	300mm x 200mm	300mm x 200mm	300mm x 200mm	300mm x 200mm	300mm x 200mm

## Extremely Compressible Gap fillers (P Series)

These gel type gap fillers require very low compression force at high compression rates, allowing it to gently conform to most component shapes and uneven surfaces.

This advanced thermal interface material is ideal for applications that have delicate or wide-variation component heights and require material compression between 30% and 80%.

Property	Test Method	P-28	P-61	HTC-11	P-13
Type		Silicone	Silicone	Silicone	Silicone
Color	Visual	Gray	Reddish/Grey	Gray	Blue
Specific Gravity, @ 25°C	ASTM D792	2.6	3.11	3.3	3.3
Hardness (Shore 00)	ASTM D2240	26	(Gel type)	(Gel type)	(Gel type)
Flammability	UL 94	V-0 Equivalent	V-0 Equivalent	V-0 Equivalent	V-0 Equivalent
Operating Temperature Range.		-40°C to 150°C	-40°C to 150°C	-40°C to 150°C	-40°C to 150°C
<b>THERMAL</b>					
Thermal Conductivity (W/m-K)	ASTM D5470	2.8	6.1	11.0	13.2
Thermal Resistance with compression (°C-in <sup>2</sup> /w) (1 mm Thickness)	ASTM D5470	15psi 0.43 40psi 0.30 70psi 0.22	15psi 0.30 40psi 0.20 70psi 0.12	15psi 0.22 40psi 0.12 70psi 0.07	15psi 0.16 40psi 0.07 70psi 0.05
<b>ELECTRICAL</b>					
Breakdown Voltage (KV/mm)	ASTM D149	18	12	11	12
Dielectric Constant (1KHz)	ASTM D150	6.4	7.2	7.8	7.8
Dissipation Factor (1KHz)	ASTM D150	0.030	0.020	0.017	0.040
Volume Resistivity (Ohm-m)	ASTM D257	1.0 x 10 <sup>12</sup>	1.2 x 10 <sup>12</sup>	1.0 x 10 <sup>10</sup>	1.2 x 10 <sup>12</sup>
Available thickness. mm		1.5 to 5.0	1.5,2.0,2.5	1.0 to 3.0	0.5 to 2.0
Available Sheet size		300mm x 200mm	300mm x 200mm	300mm x 200mm	300mm x 200mm



## Thermally Conductive Silicone Pads (TIM-PAD Series)

**Product Description:** TIM-PAD is a family of thermally conductive and electrically insulating silicone pads. They are clean, production friendly and efficient alternative to mica, ceramics or grease and will provide superb protection against damage due to deformation, shock or vibration. Available with or without adhesive for easy handling and installation.

**Typical Applications:** Interface between a power transistor, CPU or other heat-generating components. Isolate electrical components and power sources from heat sink and/or mounting brackets. Interface for discrete semiconductors requiring low pressure spring clip mounting. Medical devices, military and industrial controls.

Property	Test Method	1001	1002	1003	1041	Gel Pad
Type		Silicone	Silicone	Silicone	Silicone	Silicone
Reinforcement		Fiberglass	Fiberglass	Fiberglass	N/A	N/A
Adhesive Coating		Available	Available	Available	N/A	N/A
Color	Visual	Gray	Brown	White	White	Gray
Specific Gravity, @ 25°C	ASTM D792	2.3	2.4	1.7	2.7	2.6
Hardness (Shore A)	ASTM D2240	87	92	90	80	49 (shore 00)
Elongation %	ASTM D412	>2	>2	>3	65	15
Tensile Strength. PSI	ASTM D412	10,000	5,690	6091	290	11,000
Flammability (Equivalent)	UL 94	V-0	V-0	V-0	V-0	V-0
Operating Temperature Range.		-40°C to 150°C	-40°C to 150°C	-40°C to 150°C	-40°C to 150°C	-40°C to 150°C
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	ASTM D5470	1.1	1.6	3.0	4.1	1.6
Thermal Resistance °C.in <sup>2</sup> /w	ASTM D5470	0.55 (0.15mm Th)	0.55 (0.20mm Th)	0.31 (0.20mm Th)	0.12 (0.20mm Th)	0.39 (0.25mm Th)
<b>ELECTRICAL</b>						
Breakdown Voltage (KV/mm)	ASTM D149	11	6	11	12	5
Dielectric Constant (1KHz)	ASTM D150	4.5	3.3	3.0	7.5	4.0
Dissipation Factor (1KHz)	ASTM D150	0.003	0.003	0.0005	0.052	0.003
Volume Resistivity (Ohm-m)	ASTM D257	1 x 10 <sup>13</sup>	1 x 10 <sup>13</sup>	1 x 10 <sup>13</sup>	1 x 10 <sup>13</sup>	1 x 10 <sup>13</sup>
Available Thickness.mm		0.15, 2.0,3.0	0.15,0.20,0.30	0.20,0.30,0.45,0.85	0.20,0.30,0.45	0.25
Availability		Roll and sheets	Roll and sheets	Roll and sheets	Roll and sheets	Sheets 300mm x 200mm