Information About *Resin Designs*® Brand Thermal Pads

Long-term, reliable protection of sensitive circuits and components is important in today's delicate and demanding electronic applications. With the increase in processing power and the trend toward smaller, more compact electronic modules, the need for thermal management is growing. *Resin Designs'* family of thermal pads provides excellent thermal management options without the challenge of handling and curing liquid materials. Thermal pads offer superior performance in a wide range of applications while providing economic value.

Good heat transfer depends on a good interface between a heat producing device and a heat transfer media. Silicones have a low surface tension that enables them to wet most surfaces, which can lower the thermal contact resistance between the substrate and the material.

In addition to sustaining their physical and electrical properties over a broad range of operating conditions, silicones are resistant to ozone and ultraviolet degredation and have good chemical stability. *Resin Designs'* line of thermal pads include thin thermal materials and gap filler thermal materials.

PRODUCT APPLICATION AND OPTIONS

Thin thermal pads and gap filler thermal pad materials are cold applied and require no heating or curing. The materials can be removed easily and cleanly, with no special tools, for access and rework. Unlike greases, *Resin Designs'* brand thermal materials are not messy to apply and do not flow away from the interface with thermal cycling. These thermally conductive silicones function as heat transfer media, barriers against environmental contaminants and as stress relieving shock and vibration absorbers over a wide temperature and humidity range. For gap filling, their high compressibility accommodates tolerance stack up and requires a lower clamping force, reducing system costs.

Thin Thermal Gap Pads

Type

Reinforced thermally conductive cured silicone gel.

Physical Form
Non messy alumina filled and fiberglass reinforced cured thermal gel.

Special Properties
Low thermal resistance at low pressure; high compressibility; soft; tacky; conformable; UL-94-V-0 or V-1

Potential Uses
Maximum heat transfer from power components.

Gap Filler Thermal Pads

Type

Foam based thermally conductive cured silicone gel.

Physical Form
Soft and tacky open cell reticulate foam with thermally conductive cured gel

Special Properties
Gap filling thermal bridge; high compressibility; soft; tacky; conformable; UL 94 V-1 on TP-2101; others are UL 94 HB or equivalent.

Potential Uses
Maximize heat transfer from power components such as CPUs or microprocessors to heat sinks.

Resin Designs, LLC

TYPICAL PROPERTIES

Specification Writers: Please contact your Resin Designs sales office before writing specifications on this product.

Resin Designs ® Brand Product	Tacky	Hardness, Shore OO	Compression Deflection at 20%,psi	Specific Gravity	Thermal Conductivity W/m°k, min	Tensile Strength, psi	Elongation, %	Tear Strength, 0.5-mm thickness, lb/in	Weight Loss, after 336 hr at 150°C, %	Volume Resistivity, ohm-cm	UL 94 Rating Cert File Number QMFZ2.E177248	
Thin Thermal Gap Pads											Thickness (mm)	UL 94
TP-1502 Thermal Pad	2 Side	40 - 70	26	1.9	1.1	-	-	30	1 max	10 EXP 12 min	0.25 - 2.5	
TP-1562 Thermal Pad	1 Side	40 - 70	26	1.9	1.1	-	-	30	1 max	10 EXP 12 min	0.25 - 1.5	V0
TP-2200HP Thermal Pad	2 Side	70 max	26	2.45 - 2.65	1.6	-	-	25	1 max	10 EXP 13 min	0.25 - 1.0	
											1.5 - 3.0	
TP-2260HP Thermal Pad	1 Side	70 max	26	2.45 - 2.65	1.64	-	-	25	1 max	10 EXP 12 min	0.25 - 2.0	V0
TP-2860 Thermal Pad	1 Side	45 max	26	2.7	2.5	-	-	25	1 max	10 EXP 13 min	0.25 - 2.0	V1
TP-3500 Thermal Pad	2 Side	70 max	26	3.1	3.5	-	-	25	1 max	10 EXP 13 min	0.25 - 3.0	V0
TP-3560 Thermal Pad	1 Side	70 max	26	3.1	3.3	-	-	25	1 max	10 EXP 13 min	0.25 - 2.0	V1
TP-3500-SOFT Thermal Pad	2 Side	45 max	26	3.1	3.3	-	-	25	1 max	10 EXP 13 min	0.25 - 1.5	V1
											2.0 - 3.0	V0
TP-3560-SOFT Thermal Pad	1 Side	45 max	26	3.1	3.3	-	-	25	1 max	10 EXP 13 min	0.25 - 1.5	V1
											2	V0
Gap Filler Thermal Pads												
TP-2101 Thermal Pad	2 Side	70 max	21.3	1.82	0.73	19.9	120	-	1 max	10 EXP 11 min	1.5 - 4.0	V1
											4.6 - 5.3	V0
TP-2160 Thermal Pad	1 Side	70 max	25.5	1.83	0.7	30	120	-	1 max	10 EXP 11 min	2.2 - 5.0	HB
TP-2300 Thermal Pad	2 Side	65 max	25.6	2.3	1.4	30	100	-	1 max	10 EXP 11 min	2.2	HB
											3.0-3.8	V1(1)
											4.0-5.0	V0

(1) is an internal test

Product Nomenclature and Packaging – *Resin Designs* Thermal Gap Pads

Part Numbering System

TP-xxxx-Tx.x-MR-cc-FG

Poly = Matte Poly
RLS = Release paper
MYL = Mylar

Thickness (mm)

1502 = Fiberglass reinforced, Flame Retarded - two sides tacky
1562 = Fiberglass reinforced, Flame Retarded - one side tacky
2200HP = Fiberglass reinforced, two side tacky
2260HP = Fiberglass reinforced, one sides tacky
TP-2860 = Fiberglass reinforced, one side tacky
TP-3500 = Fiberglass reinforced, two side tacky
TP-3560 = Fiberglass reinforced, one side tacky
TP-3500-SOFT = Fiberglass reinforced, two side tacky
TP-3560-SOFT = Fiberglass reinforced, one side tacky
TP-2101 = Foam reinforced, Flame Retarded, two side tacky
TP-2160 = Foam reinforced, one side tacky
TP-2300 = Foam reinforced, two side tacky

Standard Packaging
Thin Fiberglass Reinforced Thermal Gap Pads

Thickness (mm)	T0.25	T0.50	T0.75	T1.0	T1.5	T2.0	T2.5	T3.0
Length (Meters)	56.1	35.4	25.6	19.8	12.7	9.5	7.6	6.3
Width (mm), min	495.3	495.3	495.3	495.3	495.3	495.3	495.3	495.3

Custom roll widths available upon request.

Custom stapmed shapes available upon request.

Standard Packaging
Foam Reinforced Thermal Gap Pads

Thickness (mm)	T2.2	T3.0	T3.8	T4.6	T5.0
Length (Meters)	14.5	10.5	8.5	7.0	6.5
Width (mm), min*	495.3	495.3	495.3	495.3	495.3
* TP-2160 width minimum is 457.2mm					

Multiple product families are available, each with its own balance of properties, to meet the requirements of the most demanding applications:

- Thin Thermal Gap Pads are fiberglass reinforced, cost competitive and thermally conductive soft gel pads. These flame retardant and electrically insulating pads provides shock absorption and easy handling with moderate tackiness. Ideal for use to fill gaps between low power, heat generating components and related heat sinks, boards or chassis that require complex, die cut shapes.

- Gap Filler Thermal Pads are a cost competitive, highly compressible, silicone gap filler with moderate bulk conductivity. These gap filler pads use a foam reinforcement to maintain compressibility, while providing easy handling to simplify application and improve long term reliability. They are ideal for use in low power applications requiring heat transfer across any large air gap.

Resin Designs Thermal Gap Pads are supplied on rolls in standard thicknesses ranging from 0.25- to 4.6-mm. Custom precut stamped shapes are also available.

Installation
Applying *Resin Designs* Thermal Gap Pads – either automatically or manually – is fast, easy, and cost-effective. The pads form instant environmental barriers in both hot and cold temperatures; without the delay of lengthy cure cycles.

STORAGE AND SHELF LIFE

Because these are precured materials, there is no special storage condition or usage date required. The product should be stored in the original packaging under normal warehouse conditions to maintain the integrity of the packaging materials.

LIMITATIONS

These products are neither tested nor represented as suitable for medical or pharmaceutical uses.

SAFE HANDLING INFORMATION

PRODUCT SAFETY INFORMATION REQUIRED FOR SAFE USE IS NOT INCLUDED IN THIS DOCUMENT. BEFORE HANDLING, READ PRODUCT AND MATERIAL SAFETY DATA SHEETS AND CONTAINER LABELS FOR SAFE USE, PHYSICAL AND HEALTH HAZARD INFORMATION. THE MATERIAL SAFETY DATA SHEET IS AVAILABLE ON THE RESIN DESIGNS WEBSITE AT WWW.RESINDESIGNS.COM, OR FROM YOUR RESIN DESIGNS REPRESENTATIVE

LIMITED WARRANTY INFORMATION

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