

### Features and Benefits

- Thermal impedance: 1.13°C-in<sup>2</sup>/W (@50 psi)
- Original Sil-Pad material
- Excellent mechanical and physical characteristics
- Flame retardant



Sil-Pad 400 is a composite of silicone rubber and fiberglass. The material is flame retardant and is specially formulated for use as a thermally conductive insulator. The primary use for Sil-Pad 400 is to electrically isolate power sources from heat sinks.

Sil-Pad 400 has excellent mechanical and physical characteristics. Surfaces are pliable and allow complete surface contact with excellent heat dissipation. Sil-Pad 400 actually improves its thermal resistance with age. The reinforcing fiberglass provides excellent cut-through resistance. In addition, Sil-Pad 400 is non-toxic and resists damage from cleaning agents.

TYPICAL PROPERTIES OF SIL-PAD 400						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Gray	Gray	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.007, 0.009	0.178, 0.229	ASTM D374			
Hardness (Shore A)	85	85	ASTM D2240			
Breaking Strength (lbs/inch) / (kN/m)	30	5	ASTM D1458			
Elongation (%45° to Warp and Fill)	54	54	ASTM D412			
Tensile Strength (psi) / (MPa)	3000	20	ASTM D412			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	3500, 4500	3500, 4500	ASTM D149			
Dielectric Constant (1000 Hz)	5.5	5.5	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>11</sup>	10 <sup>11</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	0.9	0.9	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W) 0.007"		6.62	5.93	5.14	4.38	3.61
TO-220 Thermal Performance (°C/W) 0.009"		8.51	7.62	6.61	5.63	4.64
Thermal Impedance (°C-in <sup>2</sup> /W) 0.007" (1)		1.82	1.42	1.13	0.82	0.54
Thermal Impedance (°C-in <sup>2</sup> /W) 0.009" (1)		2.34	1.83	1.45	1.05	0.69

1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

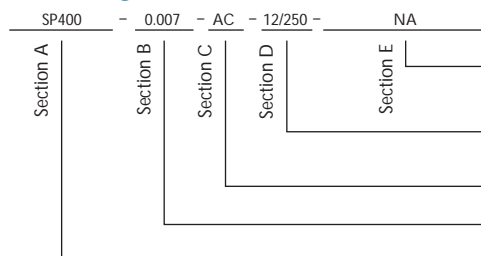
### Typical Applications Include:

- Power supplies
- Power semiconductors
- Automotive electronics
- Motor controls

### Configurations Available:

- Sheet form, die-cut parts and roll form; with or without pressure sensitive adhesive

### Building a Part Number



### Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

— = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side: or 00 = no adhesive

Standard thicknesses available: 0.007", 0.009"

SP400 = Sil-Pad 400 Material

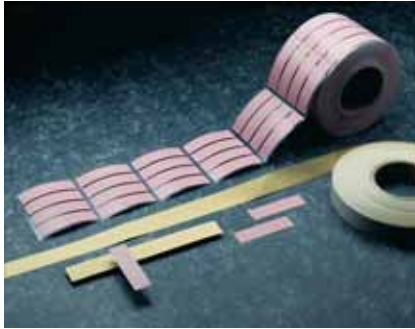
Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

# Sil-Pad® 800

High Performance Insulator for Low-Pressure Applications

## Features and Benefits

- Thermal impedance: 0.45°C-in<sup>2</sup>/W (@50 psi)
- High value material
- Smooth and highly compliant surface
- Electrically isolating



The Sil-Pad 800 family of thermally conductive insulation materials is designed for applications requiring high thermal performance and electrical isolation. These applications also typically have low mounting pressures for component clamping.

Sil-Pad 800 material combines a smooth and highly compliant surface characteristic with high thermal conductivity. These features optimize the thermal resistance properties at low pressure.

Applications requiring low component clamping forces include discrete semiconductors (TO-220, TO-247 and TO-218) mounted with spring clips. Spring clips assist with quick assembly but apply a limited amount of force to the semiconductor. The smooth surface texture of Sil-Pad 800 minimizes interfacial thermal resistance and maximizes thermal performance.

## TYPICAL PROPERTIES OF SIL-PAD 800

PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Gold	Gold	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.005	0.127	ASTM D374			
Hardness (Shore A)	91	91	ASTM D2240			
Elongation (%45° to Warp and Fill)	20	20	ASTM D412			
Tensile Strength (psi) / (MPa)	1700	12	ASTM D412			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	3000	3000	ASTM D149			
Dielectric Constant (1000 Hz)	6.0	6.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>10</sup>	10 <sup>10</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	1.6	1.6	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		3.56	3.01	2.45	2.05	1.74
Thermal Impedance (°C-in <sup>2</sup> /W) (1)		0.92	0.60	0.45	0.36	0.29

1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

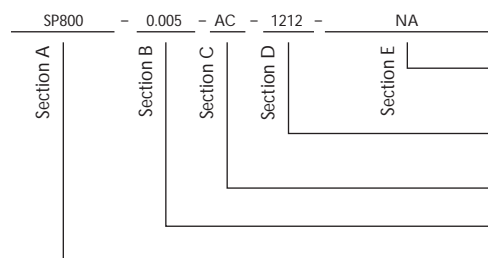
## Typical Applications Include:

- Power supplies
- Automotive electronics
- Motor controls
- Power semiconductors

## Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

## Building a Part Number



## Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

— = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.005"

SP800 = Sil-Pad 800 Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

### Features and Benefits

- Thermal impedance: 0.61°C-in<sup>2</sup>/W (@50 psi)
- Electrically isolating
- Low mounting pressures
- Smooth and highly compliant surface
- General-purpose thermal interface material solution



The true workhorse of the Sil-Pad product family, Sil-Pad 900S thermally conductive insulation material, is designed for a wide variety of applications requiring high thermal performance and electrical isolation. These applications also typically have low mounting pressures for component clamping.

Sil-Pad 900S material combines a smooth and highly compliant surface characteristic with high thermal conductivity. These features optimize the thermal resistance properties at low pressures.

Applications requiring low component clamping forces include discrete semiconductors (TO-220, TO-247 and TO-218) mounted with spring clips. Spring clips assist with quick assembly and apply a limited amount of force to the semiconductor. The smooth surface texture of Sil-Pad 900S minimizes interfacial thermal resistance and maximizes thermal performance.

TYPICAL PROPERTIES OF SIL-PAD 900S						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Pink	Pink	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.009	0.229	ASTM D374			
Hardness (Shore A)	92	92	ASTM D2240			
Elongation (%45° to Warp and Fill)	20	20	ASTM D412			
Tensile Strength (psi) / (MPa)	1300	9	ASTM D412			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	5500	5500	ASTM D149			
Dielectric Constant (1000 Hz)	6.0	6.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>10</sup>	10 <sup>10</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	1.6	1.6	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	3.96	3.41	2.90	2.53	2.32
	Thermal Impedance (°C-in <sup>2</sup> /W) (1)	0.95	0.75	0.61	0.47	0.41
1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.						

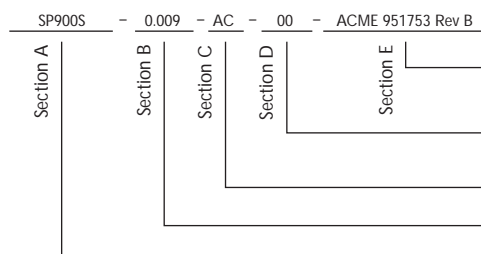
### Typical Applications Include:

- Power supplies
- Automotive electronics
- Motor controls
- Power semiconductors

### Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

### Building a Part Number



### Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

--- = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.009"

SP900S = Sil-Pad 900S Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

# Sil-Pad® 980

High Cut-Through Resistant, Electrically Insulating, Thermally Conductive Material

## Features and Benefits

- Thermal impedance: 1.07°C-in<sup>2</sup>/W (@50 psi)
- Excellent cut-through resistance
- Use in screw-mounted applications with cut-through problems



In addition to excellent heat transfer and dielectric properties, Sil-Pad 980 is specially formulated for high resistance to crushing and cut-through typically found in high-pressure applications where surface imperfections such as burrs and dents are inherently common (e.g. heavily-machined metal surfaces manufactured from extrusions or castings).

With a field-proven history of reliability, Sil-Pad 980 is Bergquist's best material for cut-through resistance in screw-mounted and other applications with cut-through problems.

TYPICAL PROPERTIES OF SIL-PAD 980						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Mauve	Mauve	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.009	0.229	ASTM D374			
Hardness (Shore A)	95	95	ASTM D2240			
Breaking Strength (lbs/inch) / (kN/m)	140	26	ASTM D1458			
Elongation (%45° to Warp and Fill)	10	10	ASTM D412			
Cut-Through (lbs) / (kg)	750	340	ASTM D412			
Continuous Use Temp (°F) / (°C)	-40 to 302	-40 to 150	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	4000	4000	ASTM D149			
Dielectric Constant (1000 Hz)	6.0	6.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>10</sup>	10 <sup>10</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	1.2	1.2	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	5.48	5.07	4.52	4.04	3.56
	Thermal Impedance (°C-in <sup>2</sup> /W) (1)	1.51	1.22	1.07	0.89	0.53
1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.						

## Typical Applications Include:

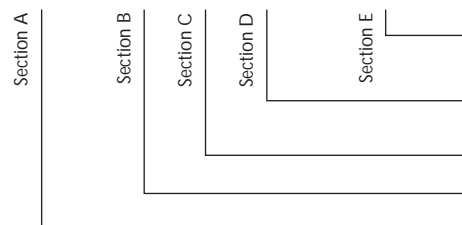
- Silicone-sensitive assemblies
- Telecommunications
- Automotive electronics

## Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

## Building a Part Number

SP980 - 0.009 - AC - 00 - ACME 951753 Rev B



## Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

\_\_\_ = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.009"

SP980 = Sil-Pad 980 Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

Affordable, Electrically Insulating, Thermally Conductive, Soft Tack Elastomeric Material

## Features and Benefits

- Inherent tack on both sides for exceptional thermal performance and easy placement
- Re-positionable for higher utilization, ease of use and assembly error reduction
- Lined on both sides for ease of handling prior to placement in high volume assemblies
- Exhibits exceptional thermal performance even at a low mounting pressure
- Fiberglass reinforced
- Value alternative to Sil-Pad 1500ST



Sil-Pad 1100ST (Soft Tack) is a fiberglass-reinforced thermal interface material featuring inherent tack on both sides. The material exhibits excellent thermal performance at low mounting pressures. The material is supplied on two liners for exceptionally easy handling prior to auto-placement in high-volume assemblies. The material is ideal for placement between an electronic power device and its heat sink.

TYPICAL PROPERTIES OF SIL-PAD 1100ST						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Yellow	Yellow	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.012	0.305	ASTM D374			
Inherent Surface Tack (1 or 2 sided)	2	2	—			
Hardness (Shore 00) (1)	85	85	ASTM D2240			
Breaking Strength (lb/inch) / (kN/m)	2.6	0.5	ASTM D1458			
Elongation (% - 45° to Warp and Fill)	16	16	ASTM D412			
Tensile Strength (psi) / (MPa)	220	1.5	ASTM D412			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	5000	5000	ASTM D149			
Dielectric Constant (1000 Hz)	5.0	5.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>10</sup>	10 <sup>10</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	1.1	1.1	ASTM D5470			
<b>THERMAL PERFORMANCE vs. PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		2.72	2.71	2.68	2.62	2.23
Thermal Impedance (°C-in <sup>2</sup> /W) (2)		0.75	0.71	0.66	0.61	0.57

1) Thirty second delay value Shore 00 hardness scale.  
 2) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

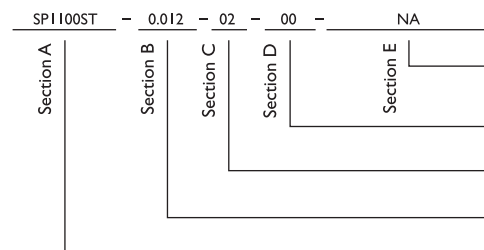
## Typical Applications Include:

- Automotive ECMs
- Motor controls
- Power supplies
- Between an electronic power device and its heat sink

## Configurations Available:

- Sheet form, die-cut parts and roll form
- Top and bottom liners

## Building a Part Number



## Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

1212 = 12"x12" sheets, 12/250 = 12"x 250" rolls or 00 = custom configuration

02 = Natural tack, both sides

Standard thicknesses available: 0.012"

SPI 1100ST = Sil-Pad 1100ST Material

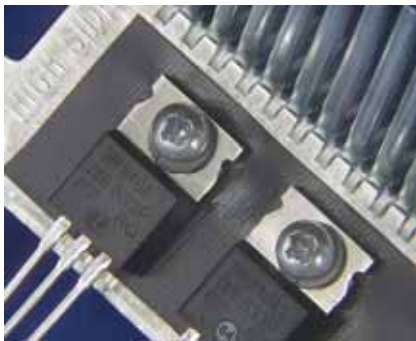
Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

# Sil-Pad® 1200

Exceptional Performance, Thermally Conductive Elastomeric Material

## Features and Benefits

- Thermal Impedance: 0.53°C-in<sup>2</sup>/W (@ 50 psi)
- Exceptional thermal performance at lower application pressures
- Smooth and non-tacky on both sides for easy re-positioning, ease of use and assembly error reduction
- Superior breakdown voltage and surface "wet out" values
- Designed for applications where electrical isolation is critical
- Excellent cut-through resistance, designed for screw and clip mounted applications



Sil-Pad 1200 is a silicone based, fiberglass-reinforced thermal interface material featuring a smooth, highly compliant surface. The material features a non-tacky surface for efficient re-positioning and ease of use, as well as an optional adhesive coating. Sil-Pad 1200 exhibits exceptional thermal performance at low and high application pressures. The material is ideal for placement between electronic power devices and a heatsink for screw and clip mounted applications.

TYPICAL PROPERTIES OF SIL-PAD 1200						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Black	Black	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.009 to 0.016	0.229 to 0.406	ASTM D374			
Hardness Bulk Rubber (Shore 00)	80	80	ASTM D2240			
Elongation (% - 45° to warp and fill)	20	20	ASTM D412			
Tensile Strength (psi) / (MPa)	1300	9	ASTM D412			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	6000	6000	ASTM D149			
Dielectric Constant (1000 Hz)	8.0	8.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>9</sup>	10 <sup>9</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K) (1)	1.8	1.8	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		2.82	2.64	2.41	2.13	1.90
Thermal Impedance (°C-in <sup>2</sup> /W) (2)		0.71	0.62	0.53	0.47	0.41

1) This is the measured thermal conductivity of the Sil-Pad Compound.  
 2) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

## Typical Applications Include:

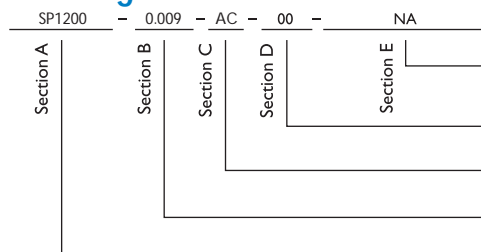
- Automotive electronics control modules
- Motor controls
- Discrete devices
- Power supplies
- Audio amplifiers
- Telecommunications

## Configurations Available:

- Sheet form, slit-to-width roll form
- Die-cut parts
- 9, 12 and 16 mil thicknesses
- Adhesive coating

We produce thousands of specials and customs. Tooling charges vary depending on tolerances and complexity of the part.

## Building a Part Number



## Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

\_\_\_ = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12' x 250" rolls or 00 = custom configuration

AC = Adhesive, one side  
 00 = No adhesive

Standard thicknesses available: 0.009", 0.012", 0.016"

SP1200 = Sil-Pad 1200 Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

Electrically Insulating, Thermally Conductive Elastomeric Material

## Features and Benefits

- Thermal impedance: 0.42°C-in<sup>2</sup>/W (@50 psi)
- Elastomeric compound coated on both sides



Bergquist Sil-Pad A1500 is a silicone-based, thermally conductive and electrically insulating material. It consists of a cured silicone elastomeric compound coated on both sides of a fiberglass reinforcement layer.

Sil-Pad A1500 performs well under clamping pressure up to 200 psi and is an excellent choice for high performance applications requiring electrical isolation and cut-through resistance.

TYPICAL PROPERTIES OF SIL-PAD A1500						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Green	Green	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.010	0.254	ASTM D374			
Hardness (Shore A)	80	80	ASTM D2240			
Breaking Strength (lbs/inch) / (kN/m)	65	12	ASTM D1458			
Elongation (% - 45° to Warp and Fill)	40	40	ASTM D412			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	6000	6000	ASTM D149			
Dielectric Constant (1000 Hz)	7.0	7.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>11</sup>	10 <sup>11</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	2.0	2.0	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		3.03	2.62	2.21	1.92	1.78
Thermal Impedance (°C-in <sup>2</sup> /W) (1)		0.59	0.50	0.42	0.34	0.31

1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

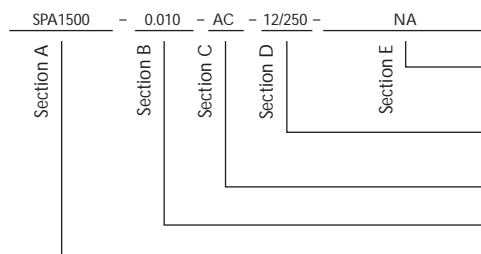
## Typical Applications Include:

- Power supplies
- Automotive electronics
- Motor controls
- Power semiconductors

## Configurations Available:

- Sheet form, die-cut parts, and roll form
- With or without pressure sensitive adhesive

## Building a Part Number



## Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

\_\_\_\_ = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250" rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.010"

SPA1500 = Sil-Pad A1500 Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

# Sil-Pad® 1500ST

Electrically Insulating, Thermally Conductive, Soft Tack Elastomeric Material

## Features and Benefits

- Thermal impedance: 0.23°C-in<sup>2</sup>/W (@50 psi)
- Naturally tacky on both sides
- Pad is repositionable
- Excellent thermal performance
- Auto-placement and dispensable



Bergquist Sil-Pad 1500ST (Soft Tack) is a fiber-glass reinforced thermal interface material that is naturally tacky on both sides. Sil-Pad 1500ST exhibits superior thermal performance when compared to the competitors' thermal interface materials. Sil-Pad 1500ST is supplied in sheet or roll form for exceptional auto-dispensing and auto-placement in high volume assemblies. Sil-Pad 1500ST is intended for placement between an electronic power device and its heat sink.

TYPICAL PROPERTIES OF SIL-PAD 1500ST						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Blue	Blue	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.008	0.203	ASTM D374			
Hardness (Shore 00)	75	75	ASTM D2240			
Breaking Strength (lbs/inch) / (kN/m)	1.9	0.34	ASTM D1458			
Elongation (% - 45° to Warp and Fill)	22	22	ASTM D412			
Tensile Strength (psi) / (MPa)	238	1.6	ASTM D412			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	3000	3000	ASTM D149			
Dielectric Constant (1000 Hz)	6.1	6.1	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>11</sup>	10 <sup>11</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	1.8	1.8	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		1.54	1.52	1.51	1.49	1.46
Thermal Impedance (°C-in <sup>2</sup> /W) (1)		0.37	0.28	0.23	0.21	0.20
1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.						

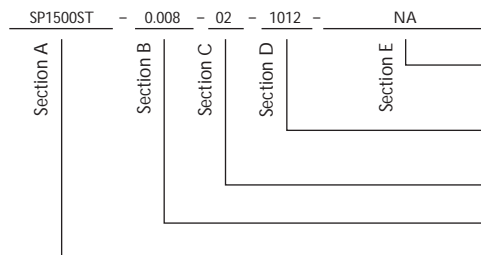
## Typical Applications Include:

- Power supplies
- Automotive electronics
- Motor controls

## Configurations Available:

- Sheet form, die-cut parts and slit-to-width roll form

## Building a Part Number



## Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

— = Standard configuration dash number, 1012 = 10" x 12" sheets, 10/250 = 10" x 250' rolls, or 00 = custom configuration

02 = Natural tack, both sides

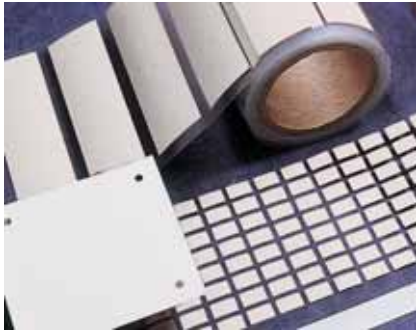
Standard thicknesses available: 0.008"

SP1500ST = Sil-Pad 1500ST Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

### Features and Benefits

- Thermal impedance: 0.33°C-in<sup>2</sup>/W (@50 psi)
- Optimal heat transfer
- High thermal conductivity: 3.5 W/m-K



Sil-Pad 2000 is a high performance, thermally conductive insulator designed for demanding aerospace and commercial applications.

Sil-Pad 2000 is a silicone elastomer formulated to maximize the thermal and dielectric performance of the filler/binder matrix. The result is a grease-free, conformable material capable of meeting or exceeding the thermal and electrical requirements of high-reliability electronic packaging applications.

TYPICAL PROPERTIES OF SIL-PAD 2000						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	White	White	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.010 to 0.020	0.254 to 0.508	ASTM D374			
Hardness (Shore A)	90	90	ASTM D2240			
Continuous Use Temp (°F) / (°C)	-76 to 392	-60 to 200	—			
ELECTRICAL						
Dielectric Breakdown Voltage (Vac)	4000	4000	ASTM D149			
Dielectric Constant (1000 Hz)	4.0	4.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>11</sup>	10 <sup>11</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L.94			
THERMAL						
Thermal Conductivity (W/m-K)	3.5	3.5	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	2.61	2.32	2.02	1.65	1.37
	Thermal Impedance (°C-in <sup>2</sup> /W) (1)	0.57	0.43	0.33	0.25	0.20

1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

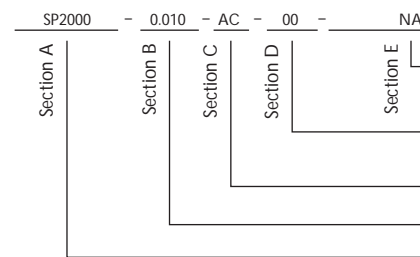
### Typical Applications Include:

- Power supplies
- Power semiconductors
- Avionics
- Motor controls
- Aerospace

### Configurations Available:

- Sheet form, die-cut parts
- With or without pressure sensitive adhesive

### Building a Part Number



### Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

--- = Standard configuration dash number, 1212 = 12" x 12" sheets, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.010", 0.015", 0.020"

SP2000 = Sil-Pad 2000 Material

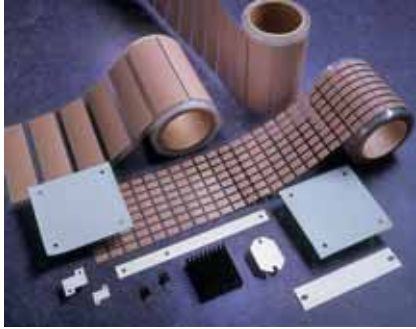
Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

# Sil-Pad® A2000

Higher Performance, High Reliability Insulator

## Features and Benefits

- Thermal impedance: 0.32°C-in²/W (@50 psi)
- Optimal heat transfer
- High thermal conductivity: 3.0 W/m-K



Sil-Pad A2000 is a conformable elastomer with very high thermal conductivity that acts as a thermal interface between electrical components and heat sinks. Sil-Pad A2000 is for applications where optimal heat transfer is a requirement.

This thermally conductive silicone elastomer is formulated to maximize the thermal and dielectric performance of the filler/binder matrix. The result is a grease-free, conformable material capable of meeting or exceeding the thermal and electrical requirements of high reliability electronic packaging applications.

TYPICAL PROPERTIES OF SIL-PAD A2000						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	White	White	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.015 to 0.020	0.381 to 0.508	ASTM D374			
Hardness (Shore A)	90	90	ASTM D2240			
Heat Capacity (J/g-K)	1.0	1.0	ASTM E1269			
Continuous Use Temp (°F) / (°C)	-76 to 392	-60 to 200	—			
ELECTRICAL						
Dielectric Breakdown Voltage (Vac)	4000	4000	ASTM D149			
Dielectric Constant (1000 Hz)	7.0	7.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>11</sup>	10 <sup>11</sup>	ASTM D257			
Flame Rating	V-O	V-O	UL94			
THERMAL						
Thermal Conductivity (W/m-K)	3.0	3.0	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W) 0.015"	2.05	1.94	1.86	1.79	1.72
	Thermal Impedance (°C-in²/W) 0.015" (1)	0.53	0.40	0.32	0.28	0.26
1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.						

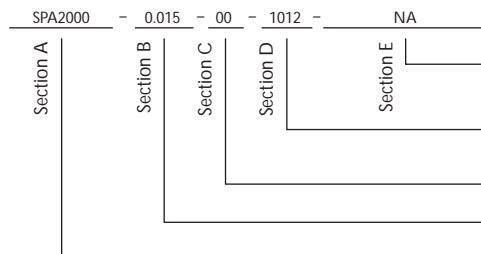
## Typical Applications Include:

- Motor drive controls
- Avionics
- High-voltage power supplies
- Power transistor / heat sink interface

## Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

## Building a Part Number



## Standard Options

◀ example  
 NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

— = Standard configuration dash number.  
 1012 = 10" x 12" sheets, 10/250 = 10" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
 00 = No adhesive

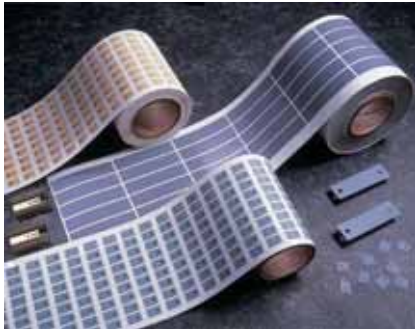
Standard thicknesses available: 0.015", 0.020"

SPA2000 = Sil-Pad A2000 Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

### Features and Benefits

- Thermal impedance:  
0.48°C-in<sup>2</sup>/W (@50 psi)
- Withstands high voltages
- High dielectric strength
- Very durable



Sil-Pad K-4 uses a specially developed film which has high thermal conductivity, high dielectric strength and is very durable. Sil-Pad K-4 combines the thermal transfer properties of well-known Sil-Pad rubber with the physical properties of a film.

Sil-Pad K-4 is a durable insulator that withstands high voltages and requires no thermal grease to transfer heat. Sil-Pad K-4 is available in customized shapes and sizes.

TYPICAL PROPERTIES OF SIL-PAD K-4						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Gray	Gray	Visual			
Reinforcement Carrier	Polyimide	Polyimide	—			
Thickness (inch) / (mm)	0.006	0.152	ASTM D374			
Hardness (Shore A)	90	90	ASTM D2240			
Breaking Strength (lbs/inch) / (kN/m)	30	5	ASTM D1458			
Elongation (%)	40	40	ASTM D412			
Tensile Strength (psi) / (MPa)	5000	34	ASTM D412			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	6000	6000	ASTM D149			
Dielectric Constant (1000 Hz)	5.0	5.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>12</sup>	10 <sup>12</sup>	ASTM D257			
Flame Rating	VTM-O	VTM-O	U.L.94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	0.9	0.9	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	3.66	3.43	3.13	2.74	2.42
	Thermal Impedance (°C-in <sup>2</sup> /W) (1)	1.07	0.68	0.48	0.42	0.38
1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.						

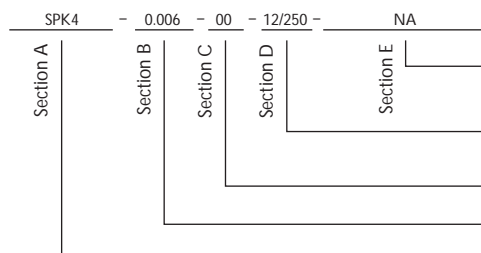
### Typical Applications Include:

- Power supplies
- Power semiconductors
- Motor controls

### Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

### Building a Part Number



### Standard Options

◀ example  
NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

--- = Standard configuration dash number,  
1212 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or  
00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.006"

SPK4 = Sil-Pad K4 Material

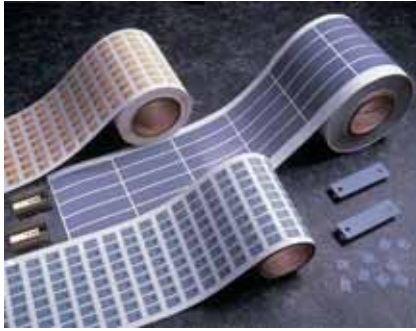
Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

# Sil-Pad® K-6

## The Medium Performance Polyimide-Based Insulator

### Features and Benefits

- Thermal impedance: 0.49°C-in<sup>2</sup>/W (@50 psi)
- Physically strong dielectric barrier against cut-through
- Medium performance film



Sil-Pad K-6 is a medium performance, film-based thermally conductive insulator. The film is coated with a silicone elastomer to deliver high performance and provide a continuous, physically strong dielectric barrier against "cut-through" and resultant assembly failures.

TYPICAL PROPERTIES OF SIL-PAD K-6						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Bluegreen	Bluegreen	Visual			
Reinforcement Carrier	Polyimide	Polyimide	—			
Thickness (inch) / (mm)	0.006	0.152	ASTM D374			
Hardness (Shore A)	90	90	ASTM D2240			
Breaking Strength (lbs/inch) / (kN/m)	30	5	ASTM D1458			
Elongation (%)	40	40	ASTM D412			
Tensile Strength (psi) / (MPa)	5000	34	ASTM D412			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	6000	6000	ASTM D149			
Dielectric Constant (1000 Hz)	4.0	4.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>12</sup>	10 <sup>12</sup>	ASTM D257			
Flame Rating	VTM-O	VTM-O	U.L.94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	1.1	1.1	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	3.24	3.03	2.76	2.45	2.24
	Thermal Impedance (°C-in <sup>2</sup> /W) (1)	0.82	0.62	0.49	0.41	0.36
1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.						

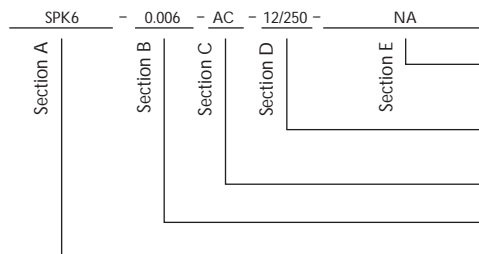
### Typical Applications Include:

- Power supplies
- Motor controls
- Power semiconductors

### Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

### Building a Part Number



### Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

— — — = Standard configuration dash number, 12/12 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.006"

SPK6 = Sil-Pad K6 Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

### Features and Benefits

- Thermal impedance: 0.41°C-in<sup>2</sup>/W (@50 psi)
- Tough dielectric barrier against cut-through
- High performance film
- Designed to replace ceramic insulators



Sil-Pad K-10 is a high performance insulator. It combines special film with a filled silicone rubber. The result is a product with good cut-through properties and excellent thermal performance.

Sil-Pad K-10 is designed to replace ceramic insulators such as Beryllium Oxide, Boron Nitride and Alumina. Ceramic insulators are expensive and they break easily. Sil-Pad K-10 eliminates breakage and costs much less than ceramics.

### TYPICAL PROPERTIES OF SIL-PAD K-10

PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Beige	Beige	Visual			
Reinforcement Carrier	Polyimide	Polyimide	—			
Thickness (inch) / (mm)	0.006	0.152	ASTM D374			
Hardness (Shore A)	90	90	ASTM D2240			
Breaking Strength (lbs/inch) / (kN/m)	30	5	ASTM D1458			
Elongation (%)	40	40	ASTM D412			
Tensile Strength (psi) / (MPa)	5000	34	ASTM D412			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	6000	6000	ASTM D149			
Dielectric Constant (1000 Hz)	3.7	3.7	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>12</sup>	10 <sup>12</sup>	ASTM D257			
Flame Rating	VTM-O	VTM-O	U.L.94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	1.3	1.3	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		2.35	2.19	2.01	1.87	1.76
Thermal Impedance (°C-in <sup>2</sup> /W) (1)		0.86	0.56	0.41	0.38	0.33
1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.						

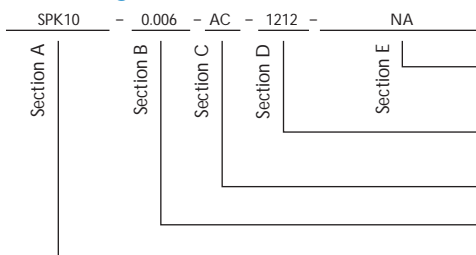
### Typical Applications Include:

- Power supplies
- Power semiconductors
- Motor controls

### Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

### Building a Part Number



### Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

— = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.006"

SPK10 = Sil-Pad K10 Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

# Q-Pad® II

## Foil-Format Grease Replacement for Maximum Heat Transfer

### Features and Benefits

- Thermal impedance: 0.22°C-in<sup>2</sup>/W (@50 psi)
- Maximum heat transfer
- Aluminum foil coated both sides
- Designed to replace thermal grease



Q-Pad II is a composite of aluminum foil coated on both sides with thermally / electrically conductive Sil-Pad rubber. The material is designed for those applications in which maximum heat transfer is needed and electrical isolation is not required. Q-Pad II is the ideal thermal interface material to replace messy thermal grease compounds.

Q-Pad II eliminates problems associated with grease such as contamination of reflow solder or cleaning operations. Unlike grease, Q-Pad II can be used prior to these operations. Q-Pad II also eliminates dust collection which can cause possible surface shorting or heat buildup.

TYPICAL PROPERTIES OF Q-PAD II						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Black	Black	Visual			
Reinforcement Carrier	Aluminum	Aluminum	—			
Thickness (inch) / (mm)	0.006	0.152	ASTM D374			
Hardness (Shore A)	93	93	ASTM D2240			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	Non-Insulating	Non-Insulating	ASTM D149			
Dielectric Constant (1000 Hz)	NA	NA	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>2</sup>	10 <sup>2</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L.94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	2.5	2.5	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	2.44	1.73	1.23	1.05	0.92
	Thermal Impedance (°C-in <sup>2</sup> /W) (1)	0.52	0.30	0.22	0.15	0.12

1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

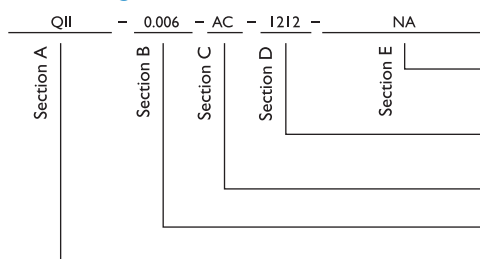
### Typical Applications Include:

- Between a transistor and a heat sink
- Between two large surfaces such as an L-bracket and the chassis of an assembly
- Between a heat sink and a chassis
- Under electrically isolated power modules or devices such as resistors, transformers and solid state relays

### Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

### Building a Part Number



### Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

\_\_\_ = Standard configuration dash number, I212 = 12" x 12" sheets, I2/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

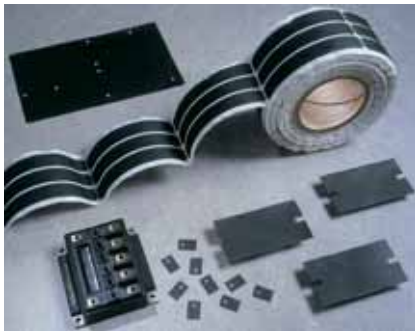
Standard thicknesses available: 0.006"

QII = Q-Pad II Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

### Features and Benefits

- Thermal impedance: 0.35°C-in²/W (@50 psi)
- Eliminates processing constraints typically associated with grease
- Conforms to surface textures
- Easy handling
- May be installed prior to soldering and cleaning without worry



Bergquist Q-Pad 3 eliminates problems associated with thermal grease such as contamination of electronic assemblies and reflow solder baths. Q-Pad 3 may be installed prior to soldering and cleaning without worry. When clamped between two surfaces, the elastomer conforms to surface textures thereby creating an air-free interface between heat-generating components and heat sinks.

Fiberglass reinforcement enables Q-Pad 3 to withstand processing stresses without losing physical integrity. It also provides ease of handling during application.

TYPICAL PROPERTIES OF Q-PAD 3						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Black	Black	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.005	0.127	ASTM D374			
Hardness (Shore A)	86	86	ASTM D2240			
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	Non-Insulating	Non-Insulating	ASTM D149			
Dielectric Constant (1000 Hz)	NA	NA	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>2</sup>	10 <sup>2</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L.94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	2.0	2.0	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	2.26	1.99	1.76	1.53	1.30
	Thermal Impedance (°C-in²/W) (1)	0.65	0.48	0.35	0.24	0.16

1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

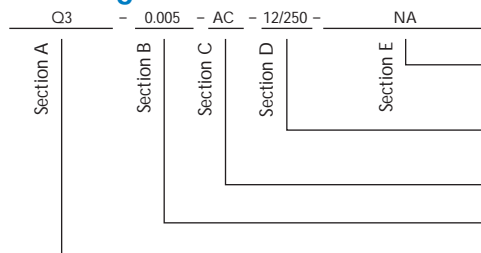
### Typical Applications Include:

- Between a transistor and a heat sink
- Between two large surfaces such as an L-bracket and the chassis of an assembly
- Between a heat sink and a chassis
- Under electrically isolated power modules or devices such as resistors, transformers and solid state relays

### Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

### Building a Part Number



### Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

— = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250" rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.005"

Q3 = Q-Pad 3 Material

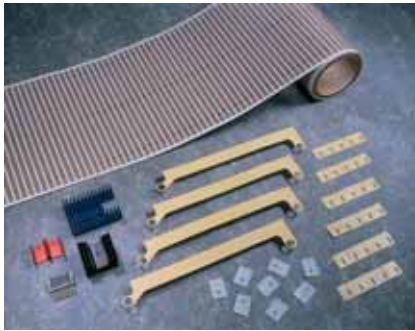
Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

# Poly-Pad® 400

Polyester-Based, Thermally Conductive Insulation Material

## Features and Benefits

- Thermal impedance: 1.13°C-in<sup>2</sup>/W (@50 psi)
- Polyester based
- For applications requiring conformal coatings
- Designed for silicone-sensitive standard applications



Poly-Pad 400 is a fiberglass-reinforced insulator coated with a filled polyester resin. Poly-Pad 400 is economical and designed for most standard applications.

Polyester-based, thermally conductive insulators from Bergquist provide a complete family of materials for silicone-sensitive applications. Poly-Pads are ideally suited for applications requiring conformal coatings or applications where silicone contamination is a concern (telecomm and certain aerospace applications). Poly-Pads are constructed with ceramic-filled polyester resins coating either side of a fiberglass carrier or a film carrier. The Poly-Pad family offers a complete range of performance characteristics to match individual applications.

TYPICAL PROPERTIES OF POLY-PAD 400						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Tan	Tan	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.009	0.229	ASTM D374			
Hardness (Shore A)	90	90	ASTM D2240			
Breaking Strength (lbs/inch)/(kN/m)	100	18	ASTM D1458			
Elongation(% - 45° to Warp and Fill)	10	10	ASTM D412			
Tensile Strength (psi) / (MPa)	7000	48	ASTM D412			
Continuous Use Temp (°F) / (°C)	-4 to 302	-20 to 150	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	2500	2500	ASTM D149			
Dielectric Constant (1000 Hz)	5.5	5.5	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>11</sup>	10 <sup>11</sup>	ASTM D257			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	0.9	0.9	ASTM D5470			
Flame Rating	V-O	V-O	U.L. 94			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	5.85	5.61	5.13	4.59	4.12
	Thermal Impedance (°C-in <sup>2</sup> /W) (1)	1.62	1.35	1.13	0.86	0.61

1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

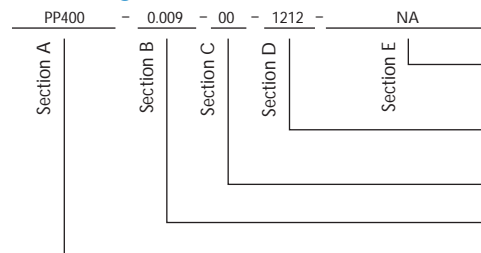
## Typical Applications Include:

- Power supplies
- Automotive electronics
- Motor controls
- Power semiconductors

## Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive
- We produce thousands of specials. Tooling charges vary depending on tolerances and the complexity of the part.

## Building a Part Number



## Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

— = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.009"

PP400 = Poly-Pad 400 Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

### Features and Benefits

- Thermal impedance: 0.82°C-in<sup>2</sup>/W (@50 psi)
- Polyester based
- For applications requiring non-silicone conformal coatings
- Designed for silicone-sensitive applications requiring high performance



Poly-Pad 1000 is a fiberglass-reinforced insulator coated with a filled polyester resin. The material offers superior thermal resistance for high performance applications.

Polyester-based, thermally conductive insulators from Bergquist provide a complete family of materials for silicone-sensitive applications. Poly-Pads are ideally suited for applications requiring conformal coatings or applications where silicone contamination is a concern (telecomm and certain aerospace applications). Poly-Pads are constructed with ceramic-filled polyester resins coating either side of a fiberglass carrier or a film carrier. The Poly-Pad family offers a complete range of performance characteristics to match individual applications.

TYPICAL PROPERTIES OF POLY-PAD 1000						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Yellow	Yellow	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.009	0.229	ASTM D374			
Hardness (Shore A)	90	90	ASTM D2240			
Breaking Strength (lbs/inch) / (kN/m)	100	18	ASTM D1458			
Elongation (%)	10	10	ASTM D412			
Tensile Strength (psi) / (MPa)	7000	48	ASTM D412			
Continuous Use Temp (°F) / (°C)	-4 to 302	-20 to 150	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	2500	2500	ASTM D149			
Dielectric Constant (1000 Hz)	4.5	4.5	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>11</sup>	10 <sup>11</sup>	ASTM D257			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	1.2	1.2	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	4.70	4.25	3.74	3.27	2.89
	Thermal Impedance (°C-in <sup>2</sup> /W) (1)	1.30	1.02	0.82	0.61	0.43

1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

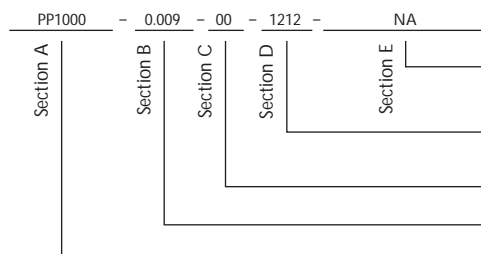
### Typical Applications Include:

- Power supplies
- Automotive electronics
- Motor controls
- Power semiconductors

### Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

### Building a Part Number



### Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

— = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.009"

PP1000 = Poly-Pad 1000 Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

# Poly-Pad® K-4

Polyester-Based, Thermally Conductive Insulation Material

## Features and Benefits

- Thermal impedance: 0.95°C-in<sup>2</sup>/W (@50 psi)
- Polyester based
- For applications requiring non-silicone conformal coatings
- Designed for silicone-sensitive applications
- Excellent dielectric and physical strength



Poly-Pad K-4 is a composite of film coated with a polyester resin. The material is an economical insulator and the film carrier provides excellent dielectric and physical strength.

Polyester-based, thermally conductive insulators from Bergquist provide a complete family of materials for silicone-sensitive applications. Poly-Pads are ideally suited for applications requiring conformal coatings or applications where silicone contamination is a concern (telecomm and certain aerospace applications). Poly-Pads are constructed with ceramic-filled polyester resins coating either side of a fiber-glass carrier or a film carrier. The Poly-Pad family offers a complete range of performance characteristics to match individual applications.

TYPICAL PROPERTIES OF POLY-PAD K-4						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Tan	Tan	Visual			
Reinforcement Carrier	Polyimide	Polyimide	—			
Thickness (inch) / (mm)	0.006	0.152	ASTM D374			
Hardness (Shore A)	90	90	ASTM D2240			
Breaking Strength (lbs/inch) / (kN/m)	30	5	ASTM D1458			
Elongation (%)	40	40	ASTM D412			
Tensile Strength (psi) / (MPa)	5000	34	ASTM D412			
Continuous Use Temp (°F) / (°C)	-4 to 302	-20 to 150	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	6000	6000	ASTM D149			
Dielectric Constant (1000 Hz)	5.0	5.0	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>12</sup>	10 <sup>12</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L.94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	0.9	0.9	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	5.64	5.04	4.34	3.69	3.12
	Thermal Impedance (°C-in <sup>2</sup> /W) (1)	1.55	1.21	0.95	0.70	0.46
1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.						

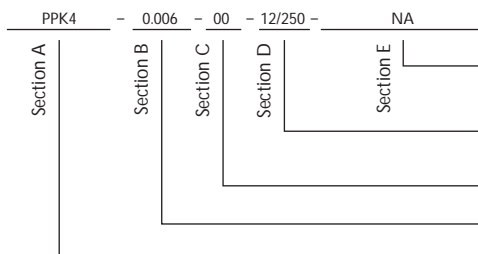
## Typical Applications Include:

- Power supplies
- Motor controls
- Power semiconductors

## Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

## Building a Part Number



## Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

— = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.006"

PPK4 = Poly-Pad K-4 Material

Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

### Features and Benefits

- Thermal impedance: 0.60°C-in<sup>2</sup>/W (@50 psi)
- Polyester based
- For applications requiring non-silicone conformal coatings
- Designed for silicone-sensitive applications
- Excellent dielectric strength and thermal performance



Poly-Pad K-10 is a composite of film coated with a polyester resin. The material offers superior thermal performance for your most critical applications with a thermal resistance of 0.2°C-in<sup>2</sup>/W as well as excellent dielectric strength.

Polyester-based, thermally conductive insulators from Bergquist provide a complete family of materials for silicone-sensitive applications. Poly-Pads are ideally suited for applications requiring conformal coatings or applications where silicone contamination is a concern (telecomm and certain aerospace applications). Poly-Pads are constructed with ceramic-filled polyester resins coating either side of a fiber-glass carrier or a film carrier. The Poly-Pad family offers a complete range of performance characteristics to match individual applications.

### TYPICAL PROPERTIES OF POLY-PAD K-10

PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Yellow	Yellow	Visual			
Reinforcement Carrier	Polyimide	Polyimide	—			
Thickness (inch) / (mm)	0.006	0.152	ASTM D374			
Hardness (Shore A)	90	90	ASTM D2240			
Breaking Strength (lbs/inch) / (kN/m)	30	5	ASTM D1458			
Elongation (%)	40	40	ASTM D412			
Tensile Strength (psi) / (MPa)	5000	34	ASTM D412			
Continuous Use Temp (°F) / (°C)	-4 to 302	-20 to 150	—			
<b>ELECTRICAL</b>						
Dielectric Breakdown Voltage (Vac)	6000	6000	ASTM D149			
Dielectric Constant (1000 Hz)	3.7	3.7	ASTM D150			
Volume Resistivity (Ohm-meter)	10 <sup>12</sup>	10 <sup>12</sup>	ASTM D257			
Flame Rating	V-O	V-O	U.L.94			
<b>THERMAL</b>						
Thermal Conductivity (W/m-K)	1.3	1.3	ASTM D5470			
<b>THERMAL PERFORMANCE vs PRESSURE</b>						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		3.76	3.35	2.75	2.30	2.03
Thermal Impedance (°C-in <sup>2</sup> /W) (1)		1.04	0.80	0.60	0.43	0.30

1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

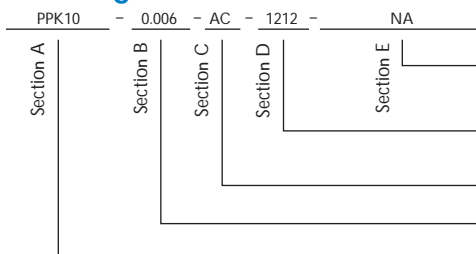
### Typical Applications Include:

- Power supplies
- Motor controls
- Power semiconductors

### Configurations Available:

- Sheet form, die-cut parts and roll form
- With or without pressure sensitive adhesive

### Building a Part Number



### Standard Options

◀ example

NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.

--- = Standard configuration dash number, 1212 = 12" x 12" sheets, 12/250 = 12" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side  
00 = No adhesive

Standard thicknesses available: 0.006"

PPK10 = Poly-Pad K-10 Material

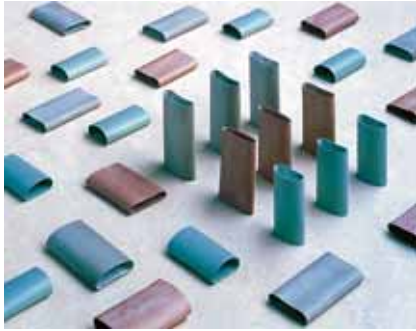
Note: To build a part number, visit our website at [www.bergquistcompany.com](http://www.bergquistcompany.com).

# Sil-Pad® Tubes

## Silicone-Based, Thermally Conductive Tubes

### Features and Benefits

- Thermal conductivity:  
SPT 400 – 0.9 W/m-K  
SPT 1000 – 1.2 W/m-K
- For clip-mounted plastic power packages



SPT 400 and SPT 1000 (Sil-Pad Tubes) provide thermally conductive insulation for clip-mounted plastic power packages. Sil-Pad Tubes are made of silicone rubber with high thermal conductivity.

Sil-Pad Tube 1000 is best suited for higher thermal performance. Sil-Pad Tube 400 is ideal for applications requiring average thermal conductivity and economy.

Sil-Pad Tube 400 and Sil-Pad Tube 1000 are designed to meet VDE, U.L. and TUV agency requirements.

### Typical Applications Include:

- Clip-mounted power semiconductors
- TO-220, TO-218, TO-247 and TO-3P

### Configurations Available:

- TO-220, TO-218, TO-247 and TO-3P

#### TYPICAL PROPERTIES OF SIL-PAD TUBE 400

PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD
Color	Gray/Green	Gray/Green	Visual
Thickness / Wall (inch) / (mm)	0.012	0.305	ASTM D374
Hardness (Shore A)	80	80	ASTM D2240
Breaking Strength (lbs/inch) / (kN/m)	6	1	ASTM D1458
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—
<b>ELECTRICAL</b>			
Dielectric Breakdown Voltage (Vac)	5000	5000	ASTM D149
Dielectric Constant (1000 Hz)	5.5	5.5	ASTM D150
Volume Resistivity (Ohm-meter)	10 <sup>11</sup>	10 <sup>11</sup>	ASTM D257
Flame Rating	V-O	V-O	U.L.94
<b>THERMAL</b>			
Thermal Conductivity (W/m-K)	0.9	0.9	ASTM D5470
Thermal Impedance (°C-in <sup>2</sup> /W) (1)	0.6	0.6	ASTM D5470

#### TYPICAL PROPERTIES OF SIL-PAD TUBE 1000

PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD
Color	Brown	Brown	Visual
Thickness / Wall (inch) / (mm)	0.012	0.30	ASTM D374
Hardness (Shore A)	80	80	ASTM D2240
Breaking Strength (lbs/inch) / (kN/m)	6	1	ASTM D1458
Continuous Use Temp (°F) / (°C)	-76 to 356	-60 to 180	—
<b>ELECTRICAL</b>			
Dielectric Breakdown Voltage (Vac)	5000	5000	ASTM D149
Dielectric Constant (1000 Hz)	4.5	4.5	ASTM D150
Volume Resistivity (Ohm-meter)	10 <sup>11</sup>	10 <sup>11</sup>	ASTM D257
Flame Rating	V-O	V-O	U.L.94
<b>THERMAL</b>			
Thermal Conductivity (W/m-K)	1.2	1.2	ASTM D5470
Thermal Impedance (°C-in <sup>2</sup> /W) (1)	0.4	0.4	ASTM D5470

1) The ASTM D5470 test fixture was used. The recorded value includes interfacial thermal resistance. These values are provided for reference only. Actual application performance is directly related to the surface roughness, flatness and pressure applied.

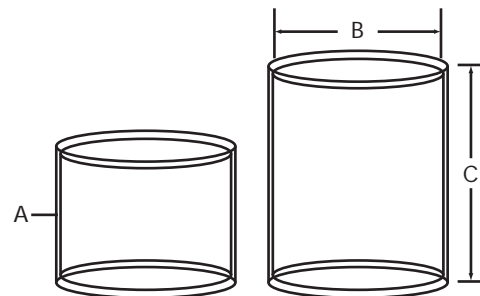
#### Standard Dimensions

- A = Wall Thickness: .305 mm (.012") + .10 mm / -0.0 mm (+.004" / -0.0")  
 B = Inner Diameter: 11 mm (.433") or 13.5 mm (.532") ± 1.0 mm (± .039")  
 C = Length: 25 mm (.985") or 30 mm (1.18") +3.18 mm / -0.0 mm (+.125" / - 0.0")

Special lengths are available. For more information, contact a Bergquist Sales Representative.

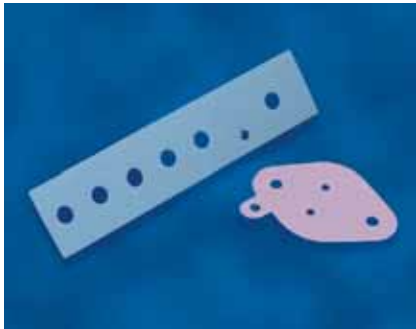
#### Ordering Procedure:

Sample: SPT 400 \_\_\_ - \_\_\_ - \_\_\_  
 "A" – "B" – "C"



### Features and Benefits

- Bonded laminate
- Electrically isolating
- Copper shield between layers of Sil-Pad
- Pre-tinned 60/40 solder point for easy grounding



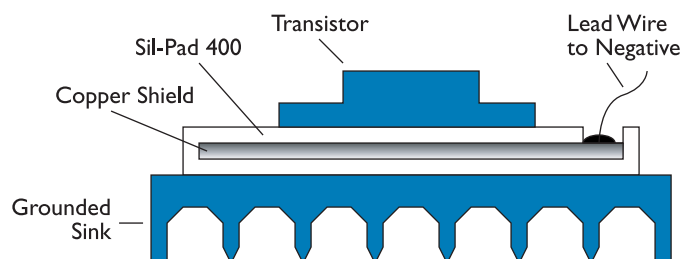
#### PROBLEM:

Radio Frequency Interference (RFI) is produced by heat sink current. The capacitance between a TO-3 encapsulated transistor and its heat sink is typically 100pf when a mica or other insulating washer is used. A power supply constructed with a standard insulator and a grounded heat sink can be expected to produce about 10 times more interference than is permitted.

#### SOLUTION:

1. The use of chokes, filters and LC networks which have to be designed into the circuitry.  
OR
2. Constructing a shield between the transistor and its heat sink by replacing the mica insulator with a Sil-Pad Shield (see illustration).

TYPICAL PROPERTIES OF SIL-PAD SHIELD		
PROPERTY	VALUE	TEST METHOD
Thickness / Total (inches)	0.019	***
Shield / Copper Thickness (inches)	0.0015	***
Approx. Thermal Resistance (TO-3) (°C/W)	0.85 - 1.0	***
Min. Breakdown Voltage Between Device and Copper (Volts)	4500	ASTM D149
Capacitance @ 1000 Hz and 5 Volts (pF)	50	***
Dissipation Factor @ 1000 Hz and 5 Volts (Power Factor)	0.0155	ASTM D150
Dielectric Constant @ 1000 Hz and 5 Volts	5.5	ASTM D150
Continuous Use Temp. (°C)	-60 to 180	***
Recommended Torque (TO-3) (inch-pounds)	6-8	***



### Typical Applications Include:

- Switch mode power supplies
- EMI / RFI shield between PCB's

### Configurations Available:

Sil-Pad Shield is available in many custom configurations to meet special requirements. Tooling charges vary depending on tolerances and complexity of the part.

Sil-Pad Shield is a laminate of copper with Sil-Pad thermally conductive insulators. Sil-Pad Shield provides:

- Shielding effectiveness of 50dB or higher
- Good thermal transfer
- Reduced labor costs due to the elimination of having to apply thermal grease