

# THERM-A-GAP™ Pads

## Thermally Conductive Gap Filler Pads

THERM-A-GAP™ thermal gap filler pads are soft and easily conformable to provide thermal interfaces between heat sinks and electronic devices, accommodating for uneven surfaces, air gaps, and rough surface textures.



### FEATURES/BENEFITS

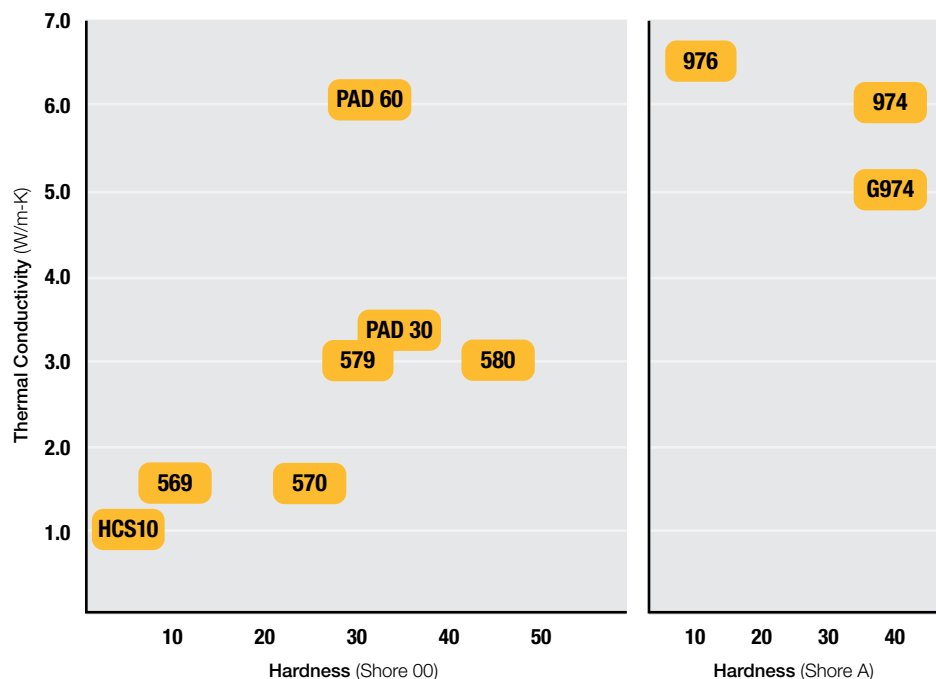
- Ultra low deflection force
- Range of thermal performances available
- High tack surface reduces contact resistance
- “A” version offers high strength acrylic pressure sensitive adhesive for permanent attachment
- Various thicknesses available, finished in standard sheets
- Custom sized configurations and/or cut parts are available as individual parts, or on sheets

THERM-A-GAP thermal gap filler pads are available in various carrier and liner configurations for increased operating performance and have a soft construction that offers high conformability to reduce interface resistance.

### TYPICAL APPLICATIONS

- Telecommunications equipment
- Consumer electronics
- Automotive electronics (ECUs)
- LEDs, lighting
- Power conversion
- Power semiconductors
- Desktop computers, laptops, servers
- Handheld devices
- Memory modules
- Vibration dampening

### PERFORMANCE GUIDE



## THERM-A-GAP™ Gap Filler Pads

Typical Properties†		HCS10	569	570	579	580	Test Method	
Physical	Color	Orange / Gray Carrier	Gray	Blue	Pink	Yellow	Visual	
	Binder	Silicone	Silicone	Silicone	Silicone	Silicone	--	
	Carrier Options G = Woven glass - no pressure sensitive adhesive (PSA) A = Aluminum foil - with acrylic PSA PN = PEN film KT = Thermally enhanced polyimide Unsupported (no carrier) = no letter suffix	HCS10G HCS10A	G569 A569 569PN	G570 A570	G579 A579 579PN 579KT 579	G580 A580 580	--	
	Standard Thicknesses*, in (mm) Unsupported (no carrier): 0.120-0.200 (3.0-5.0)	0.010 - 0.200 (0.25 - 5.0)	0.010 - 0.200 (0.25 - 5.0)	0.020 - 0.200 (0.5 - 5.0)	0.010 - 0.200 (0.25 - 5.0)	0.020 - 0.200 (0.5 - 5.0)	ASTM D374	
	Specific Gravity	2.0	2.2	2.2	2.9	2.9	ASTM D792	
	Hardness, Shore 00	4	10	25	30	45	ASTM D2240	
	Percent Deflection @ Various Pressures** (0.125 in thick sample) @ 5 psi (34 kPa) @ 10 psi (69 kPa) @ 25 psi (172 kPa) @ 50 psi (345 kPa)	% Deflected 26 36 59 73	% Deflected 20 30 50 65	% Deflected 10 15 25 35	% Deflected 22 33 55 68	% Deflected 7 10 20 30	ASTM C165 MOD (0.125 in "G" Type, 0.50 in dia probe, 0.025 in/min rate)	
	Operating Temperature Range, °F (°C)	-67 to 392 (-55 to 200)	-67 to 392 (-55 to 200)	-67 to 392 (-55 to 200)	-67 to 392 (-55 to 200)	-67 to 392 (-55 to 200)	--	
	Thermal	Thermal Conductivity, W/m-K	1	1.5	1.5	3	3	ASTM D5470
		Thermal Impedance, °C-in <sup>2</sup> /W (°C-cm <sup>2</sup> /W) @ 10 psi, @ 0.04 in (1 mm) thick, "G" version only	1.5 (9.7)	1.4 (9.1)	1.4 (9.1)	0.7 (4.5)	0.7 (4.5)	ASTM D5470
Heat Capacity, J/g-K		1	1	1	1	1	ASTM E1269	
Coefficient of Thermal Expansion, ppm/K		N/A	250	250	150	150	Chomerics	
Electrical	Dielectric Strength, Vac/mil (kVac/mm)	200 (8)	200 (8)	200 (8)	200 (8)	200 (8)	ASTM D149	
	Volume Resistivity, ohm-cm	10 <sup>14</sup>	10 <sup>14</sup>	10 <sup>14</sup>	10 <sup>14</sup>	10 <sup>14</sup>	ASTM D257	
	Dielectric Constant @ 1,000 kHz	5.3	6.5	6.5	8.0	8.0	ASTM D150	
	Dissipation Factor @ 1,000 kHz	0.013	0.013	0.013	0.010	0.010	Chomerics Test	
Regulatory	Flammability Rating (See UL File E140244 for details)	V-0	V-0	V-0	V-0	V-0	UL 94	
	RoHS Compliant	Yes	Yes	Yes	Yes	Yes	Chomerics Certification	
	Outgassing, % TML (% CVCM)	0.44 (0.13)	0.42 (0.08)	0.35 (0.09)	0.19 (0.06)	0.18 (0.05)	ASTM E595	
	Shelf Life, months from date of shipment	36	36	36	36	36	Chomerics	
	Shelf Life, months from date of shipment - "A" aluminum foil carrier version only	18	18	18	18	18	Chomerics	
Storage Conditions, °F (°C) @ 50% Relative Humidity	50 to 90 (10 to 32)	50 to 90 (10 to 32)	50 to 90 (10 to 32)	50 to 90 (10 to 32)	50 to 90 (10 to 32)	Chomerics		

† Typical properties: these are not to be construed as specifications.

\* Thickness tolerance, in (mm) ±10% nominal thickness @ 0.1 in (2.5 mm) or less; ± 0.01 in (0.25 mm) @ nominal thickness greater than 0.1 in (2.5 mm). Custom thicknesses may be available upon request.

\*\* The typical deflection range is approximately 5-40%.

\*\*\* Laminated polyester film provides low abrasion on one side as well as improved dielectric isolation.

## THERM-A-GAP™ Gap Filler Pads

Typical Properties†		PAD 30	PAD 60	G974	974	976	Test Method	
Physical	Color	Blue	Green	Blue	Blue	Gold	Visual	
	Binder	Silicone	Silicone	Silicone	Silicone	Silicone	--	
	Carrier Options G = Woven glass - no pressure sensitive adhesive (PSA) A = Aluminum foil - with acrylic PSA PN = PEN film KT = Thermally enhanced polyimide Unsupported (no carrier) = no letter suffix	PAD30G  PAD30A PAD30PN PAD30KT PAD30	PAD60A  PAD60	Only Fiberglass with PSA	Only PSA	Only Unsupported (no carrier)	--	
	Standard Thicknesses*, in (mm)	0.020 - 0.120 (0.50 - 3.0)	0.020 - 0.200 (0.50 - 5.0)	0.010 - 0.100 (0.25 - 2.54)	0.020 - 0.060 (0.51 - 1.52)	0.040 - 0.200 (1.00 - 5.08)	ASTM D374	
	Specific Gravity	2.9	3.3	1.4	1.4	1.3	ASTM D792	
	Hardness	38 Shore 00	31 Shore 00	40 Shore A	40 Shore A	10 Shore A	ASTM D2240	
	Percent Deflection @ Various Pressures**	% Deflection (0.120 in thick sample) @ 5 psi (34 kPa) 23 @ 10 psi (69 kPa) 33 @ 25 psi (172 kPa) 43 @ 50 psi (345 kPa) 51	% Deflection (0.100 in thick sample) @ 10 psi (69 kPa) 12 @ 10 psi (69 kPa), 0.040 in (1 mm) thick, "G" version 27	% Deflection (0.060 in thick sample) @ 50 psi (345 kPa), 0.040 in (1 mm) thick 7 11 12 13	% Deflection (0.060 in thick sample) @ 50 psi (345 kPa), 0.040 in (1 mm) thick 7 11 12 13	% Deflection (0.060 in thick sample) @ 50 psi (345 kPa), 0.040 in (1 mm) thick 6 10 11 45	ASTM C165 MOD (0.060 in thick, 0.50 in diameter, 0.025 in/min rate)***	
	Thermal Conductivity, W/m-K	3.2	6	5	6	6.5	ASTM D5470	
	Thermal Impedance, °C-in <sup>2</sup> /W (°C-cm <sup>2</sup> /W)	0.6 (3.9) @ 10 psi (69 kPa), 0.040 in (1 mm) thick, "G" version	0.2 (1.5) @ 10 psi (69 kPa), 0.040 in (1 mm) thick, no carrier	0.51 (3.3) @ 50 psi (345 kPa), 0.040 in (1 mm) thick	0.45 (2.9) @ 50 psi (345 kPa), 0.040 in (1 mm) thick	0.30 (1.9) @ 50 psi (345 kPa), 0.040 in (1 mm) thick	ASTM D5470	
	Heat Capacity, J/g-K	1	1	0.9	0.9	0.9	ASTM E1269	
Thermal	Coefficient of Thermal Expansion, ppm/°C	150	150	100	100	100	Chomerics	
	Operating Temperature Range, °F (°C)	-67 to 392 (-55 to 200)	-67 to 392 (-55 to 200)	-67 to 392 (-55 to 200)	-67 to 392 (-55 to 200)	-67 to 392 (-55 to 200)	Chomerics	
	Electrical	Dielectric Strength, Vac/mil (kVac/mm)	152 (6.7)	127 (5.0)	200 (5.1)	200 (5.1)	200 (5.1)	ASTM D149
		Volume Resistivity, ohm-cm	10 <sup>13</sup>	10 <sup>13</sup>	10 <sup>14</sup>	10 <sup>14</sup>	10 <sup>14</sup>	ASTM D257
		Dielectric Constant @ 1,000 kHz	8.0	9.3	3.2	3.2	3.2	ASTM D150
Dissipation Factor @ 1,000 kHz	0.0009	0.006	< 0.001	< 0.001	< 0.001	Chomerics		
Regulatory	Flammability Rating (See UL File E140244 for details)	V-0	V-0	V-0	Not Tested	V-0	UL 94	
	RoHS Compliant	Yes	Yes	Yes	Yes	Yes	Chomerics Certification	
	Outgassing, % TML (% CVCM)	0.13 (0.03)	0.05 (0.01)	0.59 (0.18)	0.59 (0.18)	0.64 (0.21)	ASTM E595	
	Shelf Life, months from date of shipment	36 (With aluminum foil carrier: 18)	36 (With aluminum foil carrier: 18)	12	12	24	Chomerics	
Storage Conditions, °F (°C) @ 50% Relative Humidity	50 to 90 (10 to 32)	50 to 90 (10 to 32)	50 to 90 (10 to 32)	50 to 90 (10 to 32)	50 to 90 (10 to 32)	Chomerics		

† Typical properties: these are not to be construed as specifications.

\* THERM-A-GAP 976 is only offered without a carrier, PSA not available.

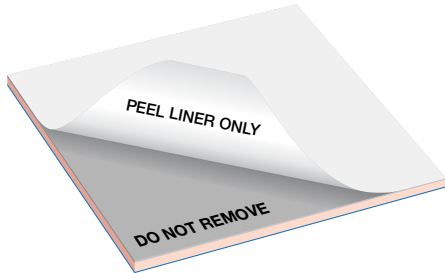
\*\* The typical deflection range for G974 and 974 is approximately 5-20%; 976 is 5-30%; PAD 30 and PAD 60 is 10-35%.

\*\*\* PAD 30: ASTM C165 MOD (0.125 in "G" Carrier, 0.50 in dia. probe, 0.025 in/min rate)

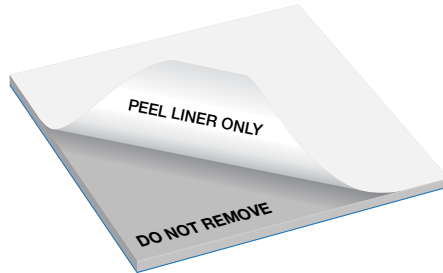
PAD 60: ASTM C165 MOD (0.10 in "A" Carrier, 0.50 in dia. probe, 0.025 in/min rate)

## THERM-A-GAP™ Gap Filler Pads

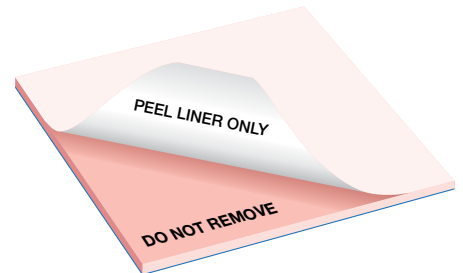
Product examples showing carrier options and liners.



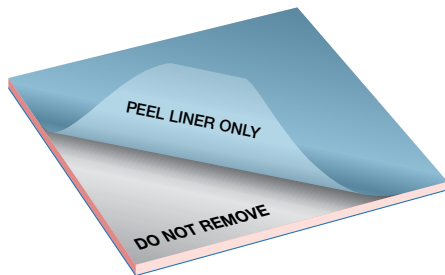
**HCS10G**  
with gray fiberglass carrier,  
peelable liner



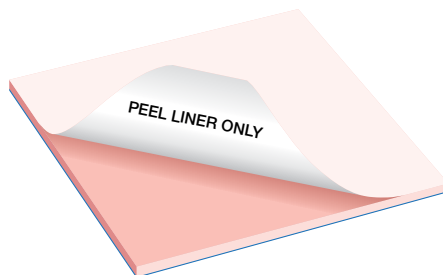
**G569**  
with gray fiberglass carrier,  
peelable liner



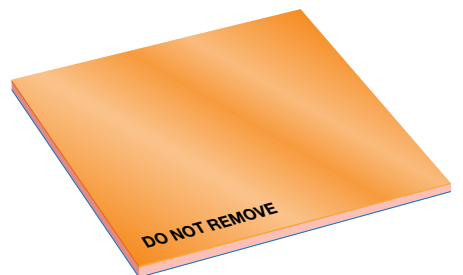
**G579**  
with fiberglass carrier,  
peelable liner



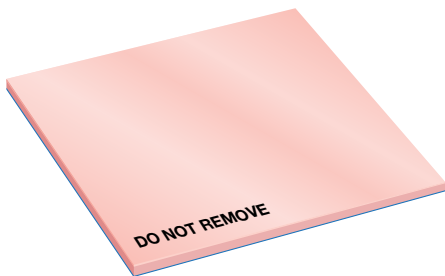
**A579**  
with aluminum PSA carrier,  
peelable liner



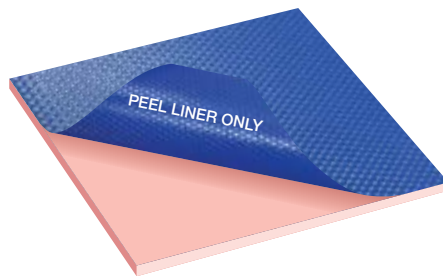
**579**  
unsupported (no carrier),  
peelable liner



**579KT**  
with thermally enhanced polyimide carrier,  
no liner



**579PN**  
with PEN film carrier,  
no liner



**Blue base liner on all pads**  
remove prior to installation

### Available Carriers

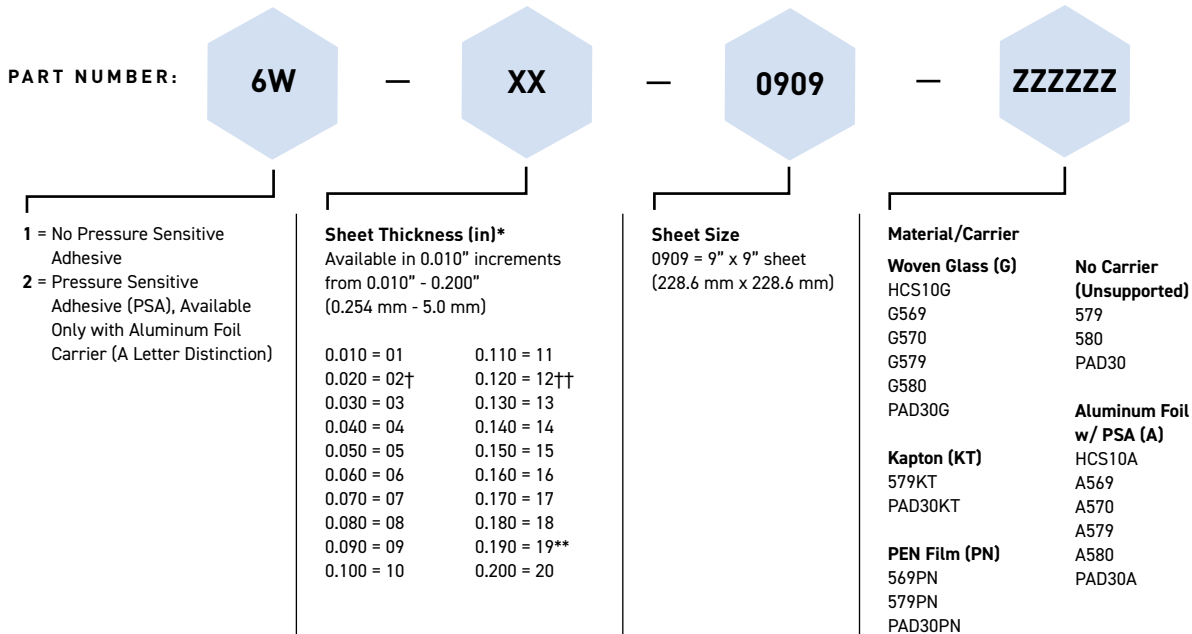
- G – woven fiberglass (no PSA) – this carrier option provides reinforcement and a clean break / low-tack interface surface, allowing for re-use of the pad if necessary or for prototyping.
- A – aluminum foil (with PSA) – this carrier's primary function is to allow a pressure sensitive adhesive on the gap pad.
- PN – PEN film (polyethylenepthalate) – this carrier permits the gap pad to see a shearing motion and offers a clear, cost-effective dielectric film with fair thermal performance.
- KT – thermally enhanced polyimide – this carrier permits the gap pad to see a shearing motion and offers an excellent dielectric film with enhanced thermal performance.
- No carrier (no letter distinction) – the no carrier or “un-reinforced” option allows the gap pad to have high-tack surfaces on both sides, allowing for the pad to be highly conformable, but it does make cutting and handling of the product more difficult.

# Ordering Information

## THERM-A-GAP™ HCS10, 569, 570, 579, 580, and PAD 30 Thermally Conductive Pads

### 9" x 9" Sheets - Pressure Sensitive Adhesive (PSA) only with Aluminum Foil Carrier

"G", "PN", "KT", "A" carrier and unsupported



\* See typical properties table for thicknesses

† Minimum thickness for A570, G570, G579, A580, G580, PAD30, PAD30G, PAD30PN, PAD30KT and PAD30A

†† Minimum thickness for 579 and 580

\*\* Not available for PAD30, PAD30G, PAD30PN, and PAD30KT

### Ordering Information: Custom Configurations

Please contact Parker Chomerics for a pre-assigned part number, for custom widths, lengths and part sizes, etc.

Available options include:

- Custom die-cut parts on sheets, or as individual parts
- "A" version offered die-cut (up to 0.040") on continuous rolls (higher volumes)
- Custom thicknesses available upon request (up to 1" thick)
- Custom molded designs and ribbed sheets

### HANDLING INFORMATION

These products are defined by Parker Chomerics as "articles" according to the following generally recognized regulatory definition for articles:

An article is a manufactured item "formed to a specific shape or design during manufacturing," which has "end use functions" dependent upon its size and shape during end use and which has generally "no change of chemical composition during its end use."

In addition:

- There is no known or anticipated exposure to hazardous materials/substances during routine and anticipated use of the product.
- The product's shape, surface and design is more relevant than its chemical composition.

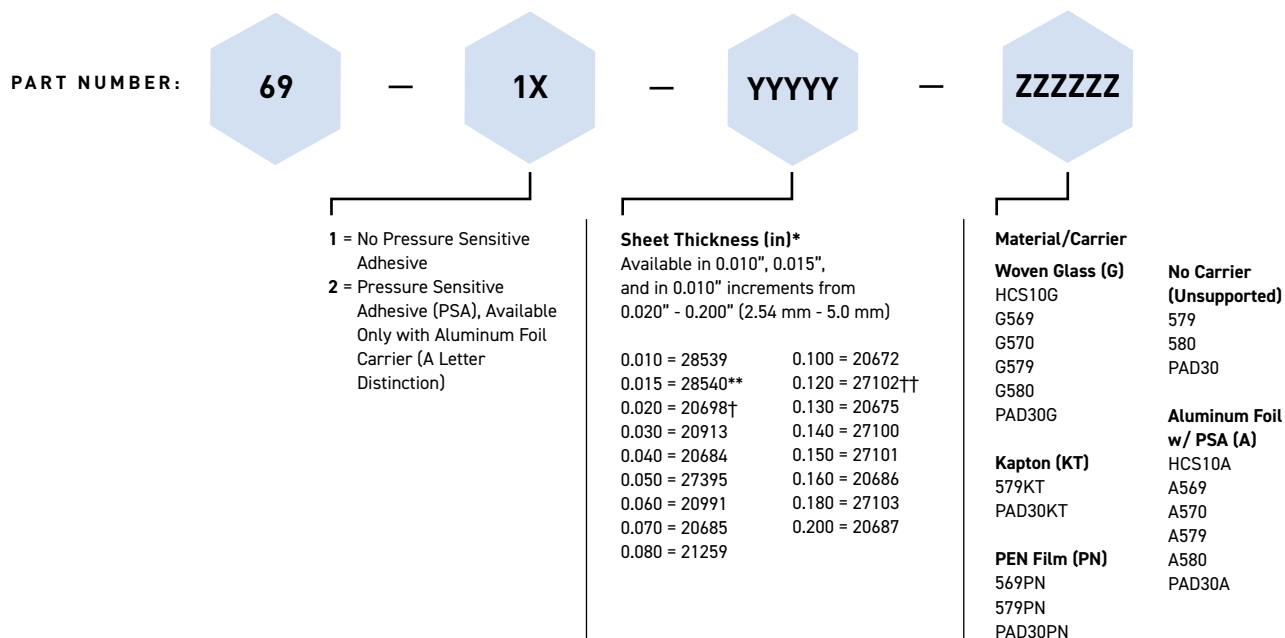
These materials are not deemed by Parker Chomerics to require an MSDS. For further questions, please contact Parker Chomerics at 781-935-4850.

# Ordering Information

## THERM-A-GAP™ HCS10, 569, 570, 579, 580, and PAD 30 Thermally Conductive Pads

### 18" x 18" Sheets - Pressure Sensitive Adhesive (PSA) only with Aluminum Foil Carrier

"G", "PN", "KT", "A" carrier and unsupported



\* See typical properties table for thicknesses

\*\* Minimum thickness for G579

† Minimum thickness for A570, G570, A580, G580, PAD30, PAD30A, PAD30G, PAD30PN, and PAD30KT

†† Minimum thickness for 579 and 580

#### Ordering Information: Custom Configurations

Please contact Parker Chomerics for a pre-assigned part number, for custom widths, lengths and part sizes, etc.

Available options include:

- Custom die-cut parts on sheets, or as individual parts
- "A" version offered die-cut (up to 0.040") on continuous rolls (higher volumes)
- Custom thicknesses available upon request (up to 1" thick)
- Custom molded designs and ribbed sheets

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An article is a manufactured item "formed to a specific shape or design during manufacturing," which has "end use functions" dependent upon its size and shape during end use and which has generally "no change of chemical composition during its end use."

In addition:

- There is no known or anticipated exposure to hazardous materials/substances during routine and anticipated use of the product.
- The product's shape, surface and design is more relevant than its chemical composition.

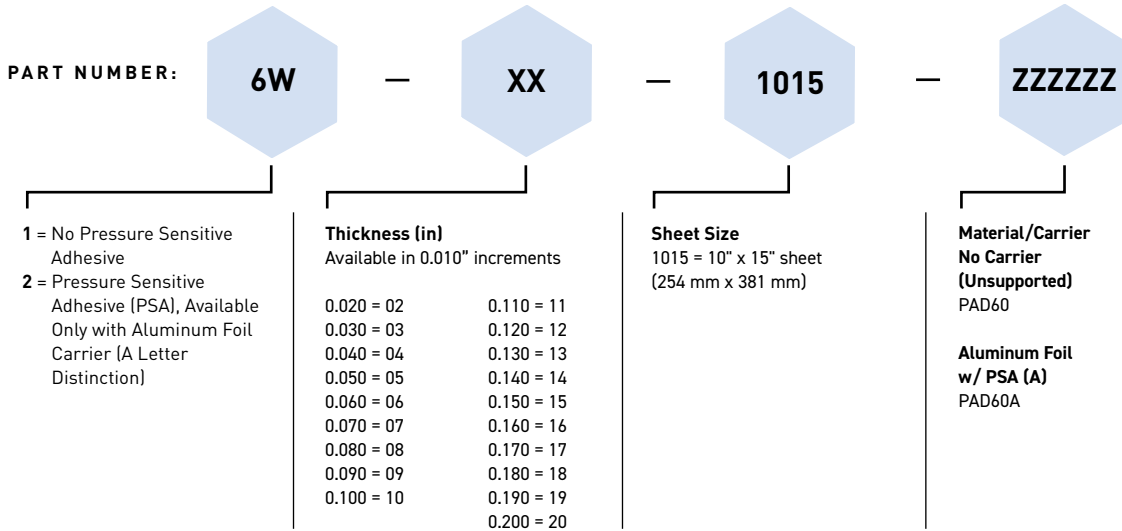
These materials are not deemed by Parker Chomerics to require an MSDS. For further questions, please contact Parker Chomerics at 781-935-4850.

# Ordering Information

## THERM-A-GAP™ PAD 60 Thermally Conductive Pads

### 10" x 15" Sheets - THERM-A-GAP™ PAD 60 Only

"A" carrier and unsupported



### HANDLING INFORMATION

These products are defined by Parker Chomerics as "articles" according to the following generally recognized regulatory definition for articles:

An article is a manufactured item "formed to a specific shape or design during manufacturing," which has "end use functions" dependent upon its size and shape during end use and which has generally "no change of chemical composition during its end use."

In addition:

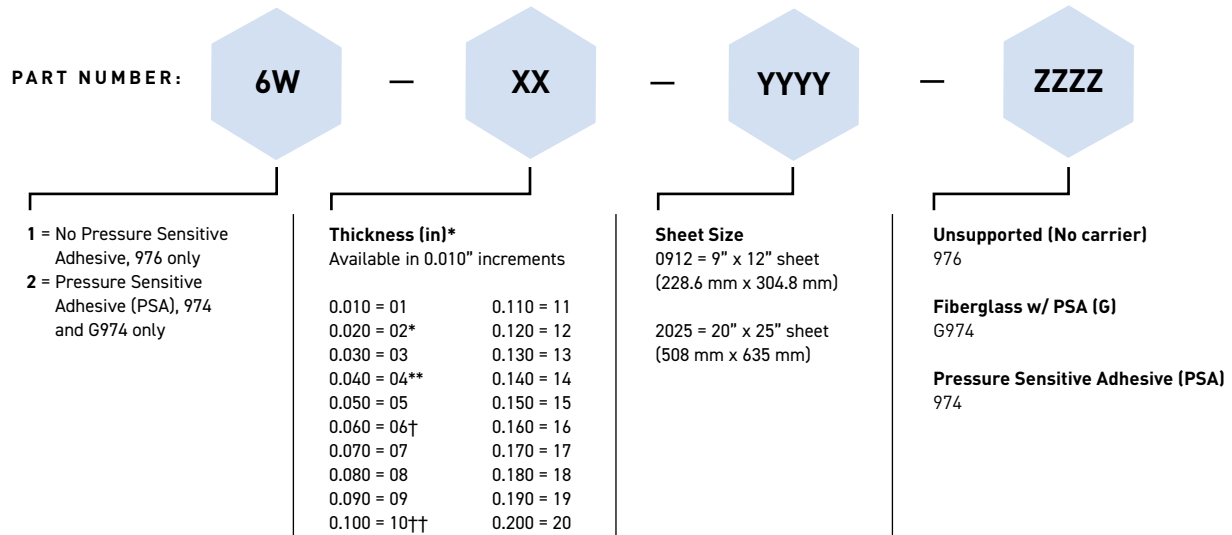
- There is no known or anticipated exposure to hazardous materials/substances during routine and anticipated use of the product.
- The product's shape, surface and design is more relevant than its chemical composition.

These materials are not deemed by Parker Chomerics to require an MSDS. For further questions, please contact Parker Chomerics at 781-935-4850.

# Ordering Information

## THERM-A-GAP™ 974, G974, and 976 Thermally Conductive Pads

9" x 12" and 20" x 25" Sheets - Pressure Sensitive Adhesive (PSA) 974 and G974 Only



\* Minimum thickness 974  
 \*\* Minimum thickness 976  
 † Maximum thickness 974  
 †† Maximum thickness G974

### Ordering Information: Custom Configurations

Please contact Parker Chomerics for a pre-assigned part number, for custom widths, lengths and part sizes, etc.

Available options include:

- Custom die-cut parts on sheets, or as individual parts
- "A" version offered die-cut (up to 0.040") on continuous rolls (higher volumes)
- Custom molded designs and ribbed sheets

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An article is a manufactured item "formed to a specific shape or design during manufacturing," which has "end use functions" dependent upon its size and shape during end use and which has generally "no change of chemical composition during its end use."

In addition:

- There is no known or anticipated exposure to hazardous materials/substances during routine and anticipated use of the product.
- The product's shape, surface and design is more relevant than its chemical composition.

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