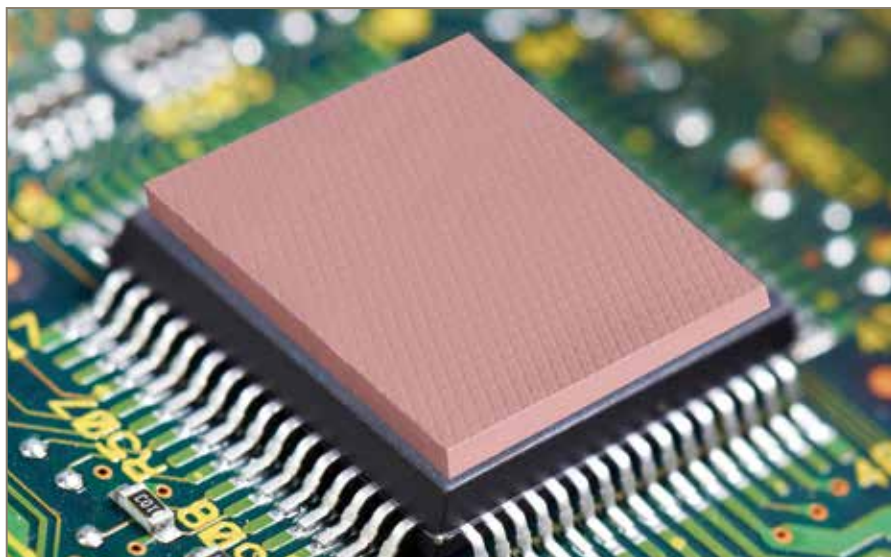


THERM-A-GAP™ Pads

Thermally Conductive Gap Filler Pads

THERM-A-GAP™ gap-filler sheets and pads offer excellent thermal properties and highest conformability at low clamping forces.



FEATURES/BENEFITS

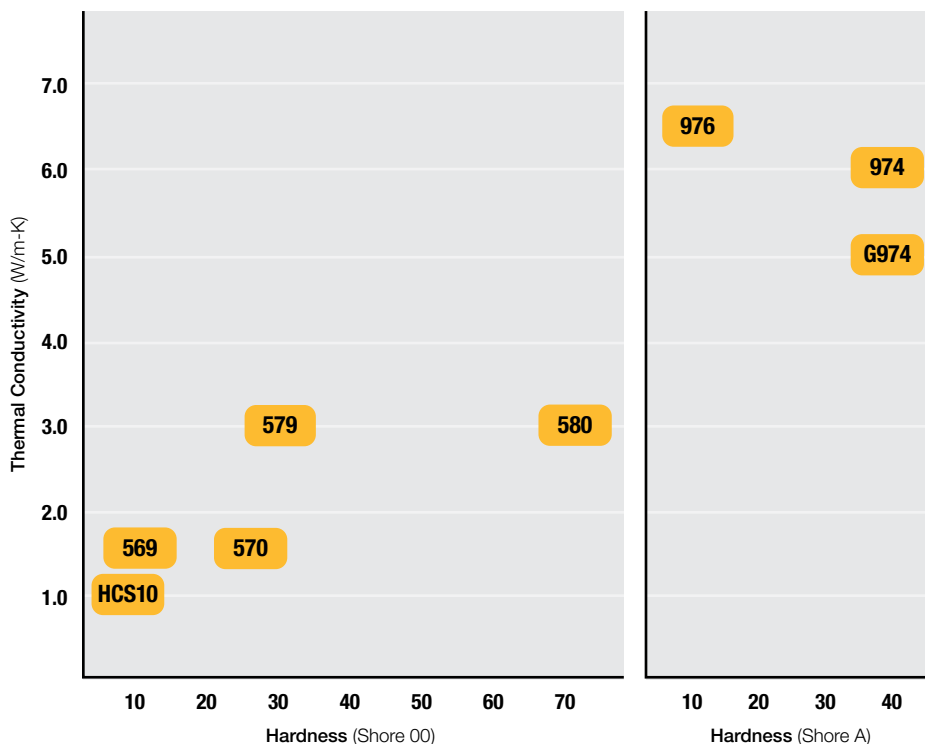
- Ultra low deflection force
- High thermal conductivity
- High tack surface reduces contact resistance
- 974 and G974 supplied with PSA for ease of use
- 976 is softer compared to similar high conductivity materials
- “A” version offers high strength acrylic PSA for permanent attachment

All products are available on aluminum foil “A” or on “clean break” glass “G” fiber carrier. As with all previous Parker Chomerics gap-fillers, the “A” versions have a high strength acrylic pressure sensitive adhesive (PSA) for permanent attachment to the cold surfaces.

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 Supported (standard): G = Woven glass carrier - no PSA A = Aluminum foil carrier - with acrylic PSA Supported (custom): PN = PEN film carrier KT = Thermally enhanced polyimide carrier Unsupported (no carrier): 579 and 580 only - no letter notation needed	HCS10A or HCS10G	A569, G569 or 569PN	A570 or G570	A579, G579, 579PN, 579KT, or 579	A580, G580, or 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	75	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 ² /W (°C-cm ² /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 ¹⁴	10 ¹⁴	10 ¹⁴	10 ¹⁴	10 ¹⁴	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†		G974	974	976	Test Method
Physical	Color	Blue	Blue	Gold	Visual
	Binder	Silicone	Silicone	Silicone	--
	Carrier	Fiberglass with PSA	PSA	None*	--
	Standard Thicknesses*, in (mm)	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	1.4	1.4	1.3	ASTM D792
	Hardness, Shore A	40	40	10	ASTM D2240
	Penetrometer, mm	25	25	60	Chomerics
	Percent Deflection @ Various Pressures** (0.060 in thick sample) @ 5 psi (34 kPa) @ 10 psi (69 kPa) @ 25 psi (172 kPa) @ 50 psi (345 kPa)	% Deflection 7 11 12 13	% Deflection 7 11 12 13	% Deflection 6 10 11 45	ASTM C165 MOD (0.060 in thick, 0.50 in diameter, 0.025 in/min rate)
Thermal	Thermal Conductivity, W/m-K	5.0	6.0	6.5	ASTM D5470
	Thermal Impedance, °C-in ² /W (°C-cm ² /W) @ 50 psi (345 kPa), 0.040 in (1 mm)	0.51 (3.3)	0.45 (2.9)	0.30 (1.9)	ASTM D5470
	Heat Capacity, J/g-K	0.9	0.9	0.9	ASTM E1269
	Coefficient of Thermal Expansion, ppm/°C	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)	--
Electrical	Dielectric Strength, Vac/mil (kVac/mm)	200 (5.1)	200 (5.1)	200 (5.1)	ASTM D149
	Volume Resistivity, ohm-cm	10 ¹⁴	10 ¹⁴	10 ¹⁴	ASTM D257
	Dielectric Constant @ 1,000 kHz	3.2	3.2	3.2	ASTM D150
	Dissipation Factor @ 1,000 kHz	< 0.001	< 0.001	< 0.001	Chomerics
Regulatory	Flammability Rating (See UL File E140244 for details)	V-0	Not Tested	V-0	UL 94
	RoHS Compliant	Yes	Yes	Yes	Chomerics Certification
	Outgassing, % TML (% CVCM)	0.59 (0.18)	0.59 (0.18)	0.64 (0.21)	ASTM E595
	Shelf Life, months from date of shipment	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)	Chomerics	

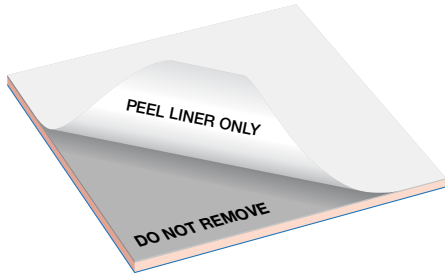
† Typical properties: these are not to be construed as specifications.

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

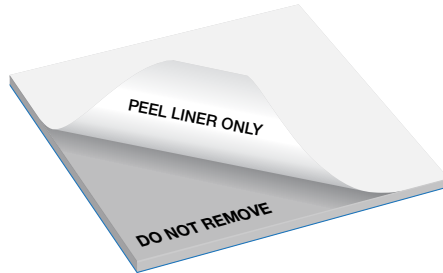
** The typical deflection range for G974 and 974 is approximately 5-20%; 976 is 5-30%.

THERM-A-GAP™ Gap Filler Pads

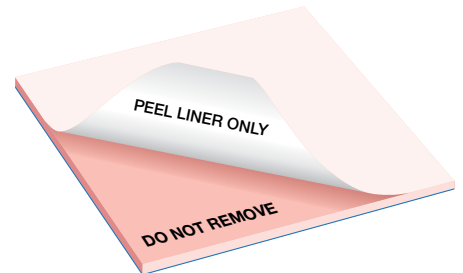
Product examples showing carrier options and liners.



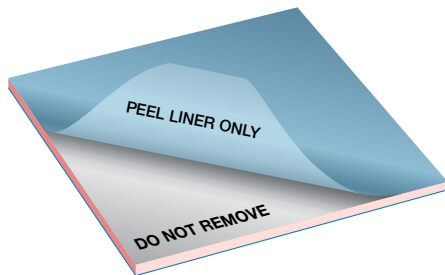
HCS10G
with gray fiberglass carrier,
peelable liner



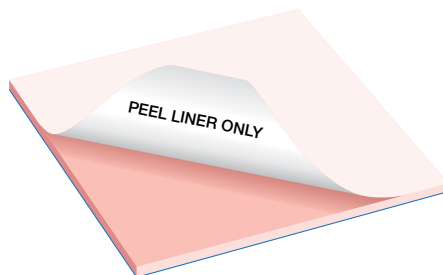
G569
with gray fiberglass carrier,
peelable liner



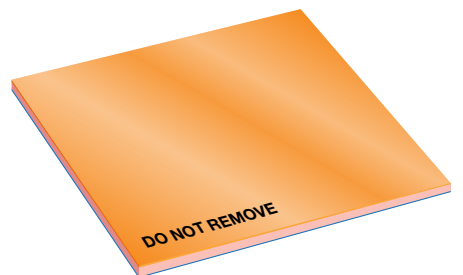
G579
with fiberglass carrier,
peelable liner



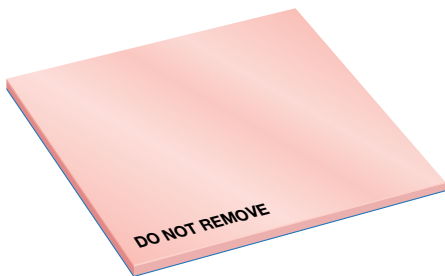
A579
with aluminum PSA carrier,
peelable liner



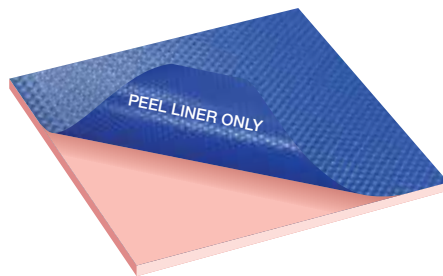
579
unsupported (no carrier),
peelable liner



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 (polyethylenenaphthalate) – 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.

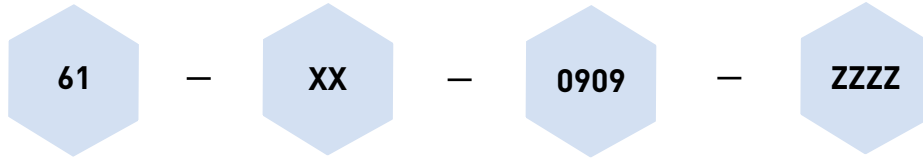
Ordering Information

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

9" x 9" Sheets - No Pressure Sensitive Adhesive (PSA)

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

PART NUMBER:



Sheet Thickness (in)*

Available in 0.010" increments from 0.010" - 0.200" (0.254 mm - 5.0 mm)

0.010 = 01	0.110 = 11
0.020 = 02†	0.120 = 12††
0.030 = 03	0.130 = 13
0.040 = 04	0.140 = 14
0.050 = 05	0.150 = 15
0.060 = 06	0.160 = 16
0.070 = 07	0.170 = 17
0.080 = 08	0.180 = 18
0.090 = 09	0.190 = 19
0.100 = 10	0.200 = 20

Sheet Size

0909 = 9" x 9" sheet (228.6 mm x 228.6 mm)

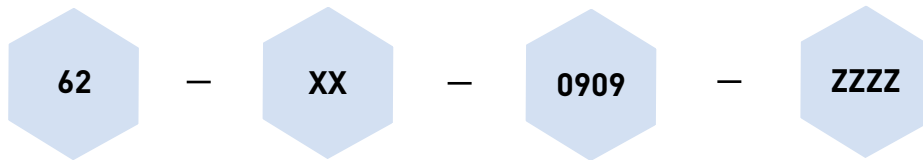
Material Type

HCS10G
G569
569PN
G570
G579
579PN
579KT
579
G580
580

9" x 9" Sheets - Pressure Sensitive Adhesive (PSA) 1 Side

"A" carrier only

PART NUMBER:



Sheet Thickness (in)*

Available in 0.010" increments from 0.010" - 0.200" (0.254 mm - 5.0 mm)

0.010 = 01	0.110 = 11
0.020 = 02†	0.120 = 12
0.030 = 03	0.130 = 13
0.040 = 04	0.140 = 14
0.050 = 05	0.150 = 15
0.060 = 06	0.160 = 16
0.070 = 07	0.170 = 17
0.080 = 08	0.180 = 18
0.090 = 09	0.190 = 19
0.100 = 10	0.200 = 20

Sheet Size

0909 = 9" x 9" sheet (228.6 mm x 228.6 mm)

Material Type

HCS10A
A569
A570
A579
A580

* See typical properties table for thicknesses

† Minimum thickness for A570, G570, G579 and A580, G580

†† 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

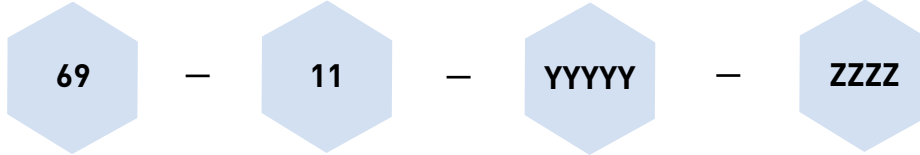
Ordering Information

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

18" x 18" Sheets - No Pressure Sensitive Adhesive (PSA)

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

PART NUMBER:



Sheet Thickness (in)*
Available in 0.010", 0.015", and in 0.010" increments from 0.020" - 0.200" (2.54 mm - 5.0 mm)

0.010 = 28539	0.100 = 20672
0.015 = 28540**	0.120 = 27102††
0.020 = 20698†	0.130 = 20675
0.030 = 20913	0.140 = 27100
0.040 = 20684	0.150 = 27101
0.050 = 27395	0.160 = 20686
0.060 = 20991	0.180 = 27103
0.070 = 20685	0.200 = 20687
0.080 = 21259	

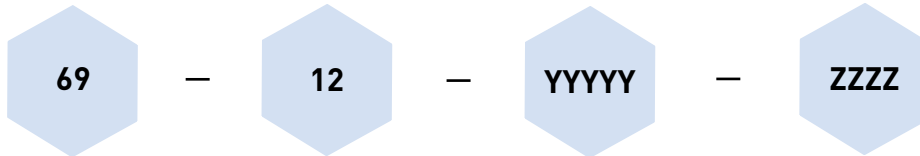
Material Type

HCS10G
G569
569PN
G570
G579
579PN
579KT
579
G580
580

18" x 18" Sheets - Pressure Sensitive Adhesive (PSA) 1 Side

"A" carrier only

PART NUMBER:



Sheet Thickness (in)*
Available in 0.010", 0.015", and in 0.010" increments from 0.020" - 0.200" (2.54 mm - 5.0 mm)

0.010 = 28539	0.100 = 20672
0.015 = 28540	0.120 = 27102
0.020 = 20698†	0.130 = 20675
0.030 = 20913	0.140 = 27100
0.040 = 20684	0.150 = 27101
0.050 = 27395	0.160 = 20686
0.060 = 20991	0.180 = 27103
0.070 = 20685	0.200 = 20687
0.080 = 21259	

Material Type

HCS10A
A569
A570
A579
A580

* See typical properties table for thicknesses

** Minimum thickness for G579

† Minimum thickness for A570, G570, and A580, G580

†† 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:

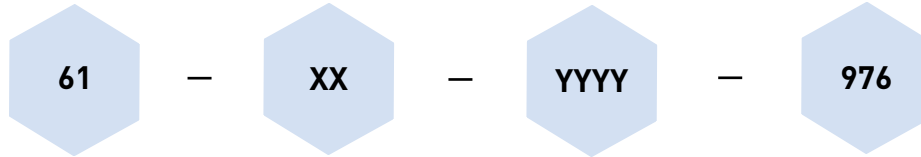
- Custom die-cut parts on sheets, or as individual parts
- "A" version offered die-cut (up to 0.040") on continuous rolls (higher volumes)
- Custom thicknesses available upon request (up to 1" thick)
- Custom molded designs and ribbed sheets

Ordering Information

THERM-A-GAP™ 976 Thermally Conductive Pads

9" x 12" and 20" x 25" Sheets - No Pressure Sensitive Adhesive (PSA)
976 only

PART NUMBER:



Thickness (in)*

Available in 0.010" increments from 0.040" - 0.200" (1.00 mm - 5.0 mm)

0.040 = 04	0.130 = 13
0.050 = 05	0.140 = 14
0.060 = 06	0.150 = 15
0.070 = 07	0.160 = 16
0.080 = 08	0.170 = 17
0.090 = 09	0.180 = 18
0.100 = 10	0.190 = 19
0.110 = 11	0.200 = 20
0.120 = 12	

Sheet Size

0912 = 9" x 12" sheet
(228.6 mm x 304.8 mm)

2025 = 20" x 25" sheet
(508 mm x 635 mm)

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

* See typical properties table for thicknesses

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.

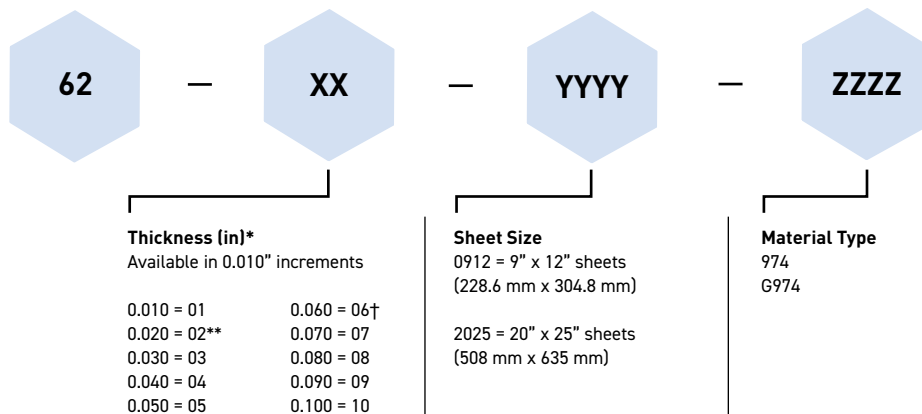
These materials are not deemed by Parker Chomerics to require an MSDS. For further questions, please contact Parker Chomerics at 781-935-4850.

Ordering Information

THERM-A-GAP™ 974 and G974 Thermally Conductive Pads

9" x 12" and 20" x 25" Sheets - Pressure Sensitive Adhesive (PSA) 1 Side
974 and G974 only

PART NUMBER:



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

* See typical properties table for thicknesses

** Minimum thickness 974

† Maximum thickness 974

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.

Authorized Distributor

800-525-9085
www.mfcpinc.com

