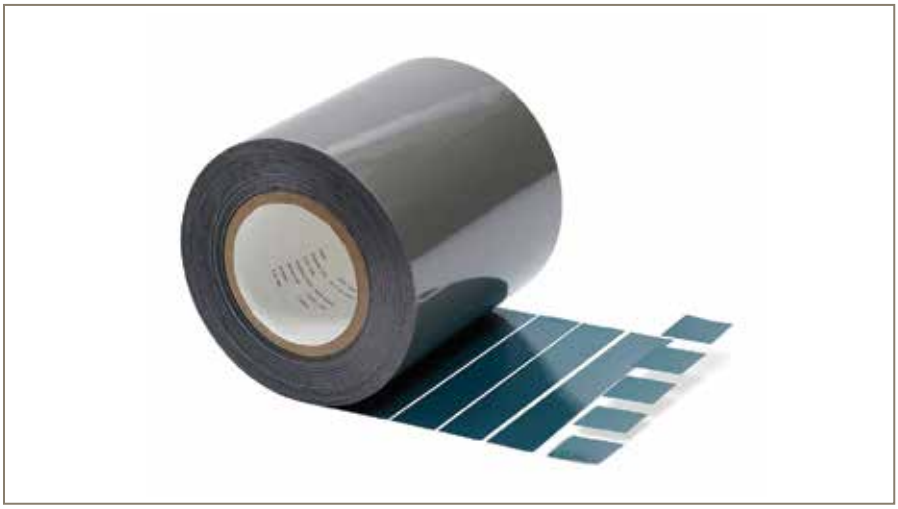
THERMATTACH® Double-Sided Thermal Tapes

Thermally Conductive Attachment Tapes

THERMATTACH® double-sided thermal interface tapes provide exceptional bonding properties between electronic components and heat sinks, eliminating the need for mechanical fasteners.



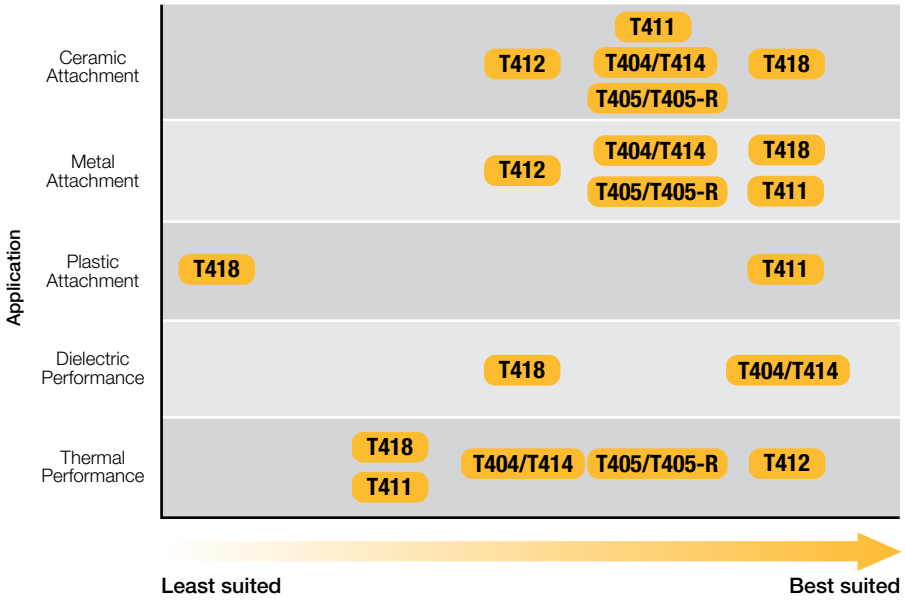
FEATURES / BENEFITS

- Offered in various forms to provide thermal, dielectric, and flame retardant properties
- Offered in custom die-cut configurations to suit a variety of applications
- Eliminates the need for mechanical attachment (i.e. screws, clips, rivets, fasteners)
- Proven reliability under various mechanical, thermal and environmental stresses
- Embossed version available
- UL recognized V-0 flammability
- No curing required, unlike epoxy or acrylic preforms or liquid systems
- Easily reworkable

TYPICAL APPLICATIONS

- Mount heat sinks to components dissipating < ~25 W
- Attach heat sinks to PC (esp. graphics) processors
- Heat sink attachment to motor control processors
- Telecommunication infrastructure components

PERFORMANCE GUIDE



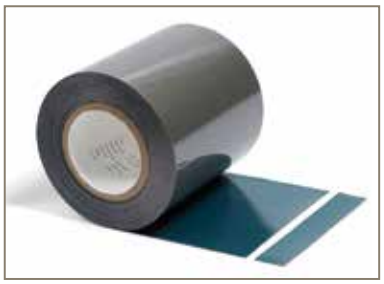
THERMATTACH® Thermally Conductive Attachment Tapes

	Typical Properties	T404/T414	T405/T405-R	T411	T418	T412	Test Method
Physical	Color	Beige	White	Clear/Metallic	Light Yellow	Gray	--
	Recommended for Plastic Component Attachment	No	No	Yes	No	No	--
	Embossed	Standard	Standard	No	Optional	Standard	--
	Reinforcement Carrier	Filled Polyimide	Aluminum	Aluminum Mesh	Fiberglass	Aluminum Mesh	Visual
	Thickness, in (mm)	0.005 (0.127)	0.006 (0.15)	0.010 (0.25)	0.010 (0.25)	0.009 (0.23)	ASTM D374
	Thickness Tolerance, in (mm)	± 0.001 (0.025)	± 0.001 (0.025)	± 0.001 (0.025)	± 0.001 (0.025)	± 0.001 (0.025)	--
	Adhesive CTE, ppm/°F	300	300	400	300	300	ASTM D3386
	Glass Transition Temperature Range, °F (°C)	-22 (-30)	-22 (-30)	-58 (-50)	-4 (-20)	-22 (-30)	ASTM D1356
	Operating Temperature Range, °F (°C)	-22 to 257 (-30 to 125)	-22 to 257 (-30 to 125)	-58 to 302 (-50 to 150)	-22 to 257 (-30 to 125)	-22 to 257 (-30 to 125)	--
Thermal	Thermal Impedance °C-in^2 / W (°C-cm^2/W) @ 300psi	0.6 (3.7)	0.5 (3.4)	1.0 (6.5)	1.2 (7.7)	0.30 (2.0)	ASTM D5470
	Thermal Conductivity, W/m-K	0.4	0.5	0.5	0.5	1.4	ASTM D5470
Electrical	Voltage Breakdown, kVac	5	N/A	N/A	5	N/A	ASTM D149
	Volume Resistivity, ohm-cm	3.0 X 10^{14}	N/A	N/A	1.0 X 10^{13}	1.0 X 10^{2}	ASTM D257
Mechanical/Adhesion	Lap Shear Al-Al @ 25°C, psi (kPa)	100 (689)	100 (689)	40 (270)	150 (1,034)	70 (480)	ASTM D1002
	90° Peel Adhesion to 0.002" aluminum foil, lbf /in (N/cm)	1.5 (2.6)	1.5 (2.6)	2.0 (3.5)	4.0 (6.9)	1.0 (1.76)	ASTM D1000
	Die Shear Adhesion after 400 psi attachment, psi (kPa) – 2 hour sample dwell time 77°F (25°C)	130 (897)	125 (862)	110 (759)	150 (1,034)	135 (931)	Chomerics #54
	Creep Adhesion, days 77°F (15°C) 302°F (125°C)	>50 >10	>50 >10	>50 >10	>50 >10	>50 >10	PSTC-7
Regulatory	Flammability Rating (See UL File E140244 for details)	V-0	V-0	V-0	V-0	Not Tested	UL 94
	RoHS Compliant	Yes	Yes	Yes	Yes	Yes	Chomerics Certification
	Shelf Life, months from shipment	12	12	12	12	12	Chomerics
	Outgassing, % TML (% CVCM)	0.56 (0.02)	0.25 (0.01)	Not Tested	Not Tested	0.14 (0.00)	ASTM E595

Ordering Information

THERMATTACH® Thermally Conductive Attachment Tapes

These attachment tapes are available on continuous rolls.



PART NUMBER: 67 — XX — YYYY — ZZZZ

Length
10 = 100 ft
40 = 400 ft

Width
0750 = 7.5"
1150 = 11.5"
2400 = 24"

Material Type
T405
T405-R
T411
T412
T418

PART NUMBER: 67 — XX — YYYY — ZZZZ

Length
10 = 100 ft
40 = 400 ft

Width
0600 = 6"
0900 = 9"
1900 = 19"

Material Type
T404
T414

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 kiss cut parts on sheets, or as individual parts

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.

THERMATTACH® Thermally Conductive Attachment Tapes
Tape Application Instructions: T404, T405, T405-R, T411, T412, T413, T414, T418

MATERIALS NEEDED

- Clean lint-free cloth rag
- Industrial solvent
- Rubber gloves

For optimal performance, Parker Chomerics recommends interface flatness of 0.001 in/in (0.025 mm/25 mm) to 0.002 in/in (0.050 mm/25 mm) maximum.

Step 1: Ensure that bonding surfaces are free from oil, dust or any contamination that may affect bonding. Using rubber gloves, wipe surfaces with a cloth dampened with industrial solvents such as MEK, toluene, acetone or isopropyl alcohol.

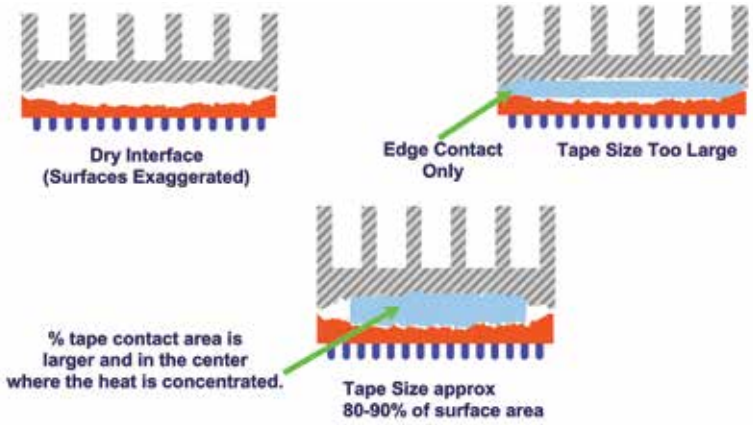
Step 2: Cut tape to size* and remove a liner or remove pre-cut tape from roll.

*Note: Due to variations in heat sink surfaces, Parker Chomerics' data indicates that it sometimes is beneficial to be cut slightly smaller than the area of the heat sink. See illustration.

Step 3: Apply to center of heat sink bonding area and smooth over entire surface using moderate hand pressure / rubbing motion. A roller may be useful to help smooth the part to the surface by rolling from the center out to beyond the edges of the part. This ensures optimal contact between tape and heat sink.

Step 4: Center heat sink onto component and apply using any one of the recommended temperature/ pressure options:

More pressure equals better wetting out of the adhesive to the contact surfaces. A twisting motion during assembly of the substrates will typically improve wetting.



Minimum: 10 psi at room temperature for 15 seconds
PREFERRED: 30 psi at room temperature for 5 seconds

Note that typically 70% of the ultimate adhesive bond strength is achieved with initial application, and 80-90% is reached within 15 minutes. Ultimate adhesive strength is achieved within 36 hours; however the next manufacturing step can typically occur immediately following the initial application.

REMOVAL INSTRUCTIONS

Materials needed: Single-edged razor blade or a small, thin-bladed pocketknife; soft, thin metal spatula. Use safety precautions when handling sharp instruments and organic solvents.

Step 1: Carefully insert the blade edge into the bond line at a corner between the heat sink and the component. The penetration need not be very deep.

Step 2: Remove the blade and insert the spatula into the wedge. Slowly twist the spatula blade so that it exerts a slight upward pressure.

Step 3: As the two surfaces start to separate, move the spatula blade deeper into the bond line and continue the twisting motion and upward force.

Step 4: After the two components are separated, the tape can be removed and discarded. If adhesive remains on the component surfaces, it must be removed. Wipe with a clean rag (lint-free) dabbed with MEK, toluene, or isopropyl alcohol. Use sufficient solvent to remove all adhesive.

Step 5: Solvent cleaned components must be verified 100% free of cleaning solvent prior to reattachment of adhesive.

Thermally Conductive Attachment Tapes

	Typical Properties	T418	T412	T404/T414	T405/T405-R	T411
Performance	Ceramic Attachment	●●●●●	●●●○○	●●●●○	●●●●○	●●●●○
	Metal Attachment	●●●●●	●●●○○	●●●●○	●●●●○	●●●●○
	Plastic Attachment	●○○○○*	○○○○○*	○○○○○*	○○○○○*	●●●●●
	Dielectric Performance	●●●○○	○○○○○*	●●●●●	○○○○○*	○○○○○*
	Thermal Performance	●●○○○	●●●●●	●●●○○	●●●●○	●●○○○

* Not Recommended