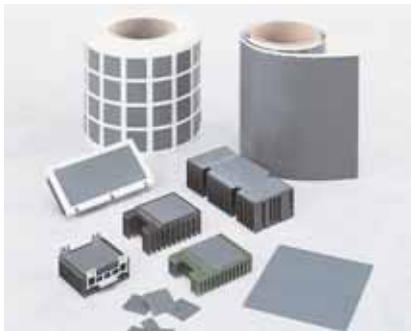


Features and Benefits

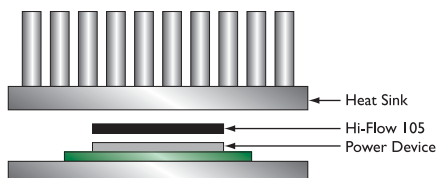
- Thermal impedance: 0.37°C-in²/W (@25 psi)
- Used where electrical isolation is not required
- Low volatility – less than 1%
- Easy to handle in the manufacturing environment
- Flows but doesn't run like grease



Hi-Flow 105 is a phase change material coated on both sides of an aluminum substrate. It is designed specifically to replace grease as a thermal interface, eliminating the mess, contamination and difficult handling associated with grease. Hi-Flow 105 is tack-free and scratch resistant at room temperature and does not require a protective liner in shipment when attached to a heat sink.

At 65°C (phase change temperature), Hi-Flow 105 changes from a solid and flows, thereby assuring total wet-out of the interface. The thixotropic characteristics of Hi-Flow 105 reduce the pump-out from the interface.

Hi-Flow 105 has thermal performance equal to grease with 0.10°C-in²/W contact thermal resistance.



TYPICAL PROPERTIES OF HI-FLOW 105						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Dark Gray	Dark Gray	Visual			
Reinforcement Carrier	Aluminum	Aluminum	—			
Thickness (inch) / (mm)	0.0055	0.139	ASTM D374			
Continuous Use Temp (°F) / (°C)	266	130	—			
Phase Change Temp (°F) / (°C)	149	65	ASTM D3418			
ELECTRICAL						
Dielectric Constant (1000 (Hz))	3.2	3.2	ASTM D150			
Flame Rating	V-O	V-O	U.L. 94			
THERMAL						
Thermal Conductivity (W/m-K) (1)	0.9	0.9	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		0.95	0.80	0.74	0.69	0.64
Thermal Impedance (°C-in ² /W) (2)		0.39	0.37	0.36	0.33	0.30

1) This is the measured thermal conductivity of the Hi-Flow coating. It represents one conducting layer in a three-layer laminate. The Hi-Flow coatings are phase change compounds. These layers will respond to heat and pressure induced stresses. The overall conductivity of the material in post-phase change, thin film products is highly dependent upon the heat and pressure applied. This characteristic is not accounted for in ASTM D5470. Please contact Bergquist Product Management if additional specifications are required.

2) The ASTM D5470 test fixture was used and the test sample was conditioned at 70°C prior to test. 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.

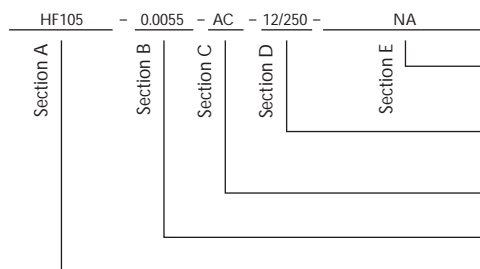
Typical Applications Include:

- Power semiconductors
- Microprocessors mounted on a heat sink
- Power conversion modules
- Spring or clip mount applications where thermal grease is used

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: 0.0055"

HF105 = Hi-Flow 105 Phase Change Material

Note: To build a part number, visit our website at www.bergquistcompany.com.

Hi-Flow® 225F-AC

Reinforced, Phase Change Thermal Interface Material

Features and Benefits

- Thermal impedance: 0.10°C-in²/W (@25 psi)
- Can be manually or automatically applied to the surfaces of room-temperature heat sinks
- Foil reinforced, adhesive-coated
- Soft, thermally conductive 55°C phase change compound

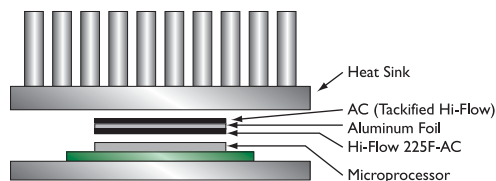


Hi-Flow 225F-AC is a high performance, thermal interface material for use between a computer processor and a heat sink. Hi-Flow 225F-AC consists of a soft, thermally conductive 55°C phase change compound coated to the top surface of an aluminum carrier with a soft, thermally conductive adhesive compound coated to the bottom surface to improve adhesion to the heat sink.

Above the 55°C phase change temperature, Hi-Flow 225F-AC wets-out the thermal interface surfaces and flows to produce low thermal impedance.

Hi-Flow 225F-AC requires pressure from the assembly to cause material flow. The Hi-Flow coatings resist dripping in vertical orientation.

The material includes a base carrier liner with differential release properties to facilitate simplicity in roll form packaging and application assembly. Please contact Bergquist Product Management for applications that are less than 0.07" square.



TYPICAL PROPERTIES OF HI-FLOW 225F-AC

PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Black	Black	Visual			
Reinforcement Carrier	Aluminum	Aluminum	—			
Thickness (inch) / (mm)	0.004	0.102	ASTM D374			
Carrier Thickness (inch) / (mm)	0.0015	0.038	ASTM D374			
Continuous Use Temp (°F) / (°C)	248	120	—			
Phase Change Temp (°F) / (°C)	131	55	ASTM D3418			
ELECTRICAL						
Flame Rating	V-O	V-O	U.L. 94			
THERMAL						
Thermal Conductivity (W/m-K) (1)	1.0	1.0	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		0.87	0.68	0.57	0.50	0.45
Thermal Impedance (°C-in ² /W) (2)		0.12	0.10	0.09	0.08	0.07

1) This is the measured thermal conductivity of the Hi-Flow coating. It represents one conducting layer in a three-layer laminate. The Hi-Flow coatings are phase change compounds. These layers will respond to heat and pressure induced stresses. The overall conductivity of the material in post-phase change, thin film products is highly dependent upon the heat and pressure applied. This characteristic is not accounted for in ASTM D5470. Please contact Bergquist Product Management if additional specifications are required.
2) The ASTM D5470 test fixture was used and the test sample was conditioned at 70°C prior to test. 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.

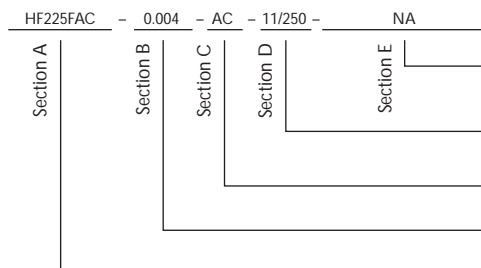
Typical Applications Include:

- Computer and peripherals
- Power conversion
- High performance computer processors
- Power semiconductors
- Power modules

Configurations Available:

- Roll form, kiss-cut parts, and sheet form

Building a Part Number



Standard Options

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

1112 = Standard configuration dash number, 11/250 = 11" x 250' rolls, or 00 = custom configuration

AC = Adhesive, one side

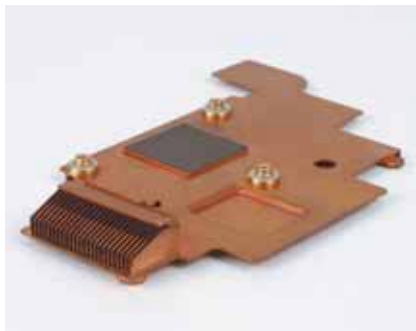
Standard thicknesses available: 0.004"

HF225FAC = Hi-Flow 225F-AC Phase Change Material

Note: To build a part number, visit our website at www.bergquistcompany.com.

Features and Benefits

- Thermal impedance: 0.08°C-in²/W (@25 psi)
- 55°C phase change composite with inherent tack characteristics
- High-visibility protective tabs
- Pressure sensitive phase change thermal interface material



Hi-Flow 225UT is designed as a pressure sensitive thermal interface material for use between a high performance processor and a heat sink. Hi-Flow 225UT is a thermally conductive 55°C phase change composite with inherent tack. The material is supplied on a polyester carrier liner and is available with high-visibility protective tabs.

Above its phase change temperature, Hi-Flow 225UT wets-out the thermal interface surfaces and flows to produce the lowest thermal impedance. The material requires pressure of the assembly to cause flow.

Application Methods:

1. Hand-apply Hi-Flow 225UT to a room-temperature heat sink. The Hi-Flow 225UT pad exhibits inherent tack and can be hand-applied similar to an adhesive pad. The tab liner can remain on the heat sink and pad throughout shipping and handling until it is ready for final assembly.

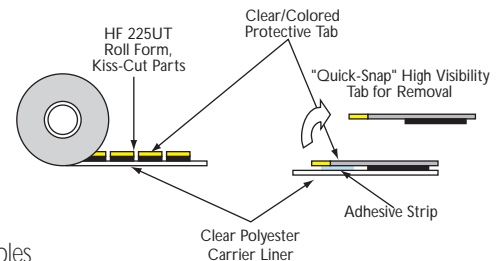
TYPICAL PROPERTIES OF HI-FLOW 225UT						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Black	Black	Visual			
Reinforcement Carrier	None	None	—			
Thickness (inch) / (mm)	0.003	0.077	ASTM D374			
Continuous Use Temp (°F) / (°C)	248	120	—			
Phase Change Temp (°F) / (°C)	131	55	ASTM D3418			
ELECTRICAL						
Flame Rating	V-O	V-O	U.L. 94			
THERMAL						
Thermal Conductivity (W/m-K) (1)	0.7	0.7	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	0.60	0.53	0.46	0.40	0.35
	Thermal Impedance (°C-in ² /W) (2)	0.09	0.08	0.07	0.06	0.05

1) This is the measured thermal conductivity of the Hi-Flow coating. It represents one conducting layer in a three-layer laminate. The Hi-Flow coatings are phase change compounds. These layers will respond to heat and pressure induced stresses. The overall conductivity of the material in post-phase change, thin film products is highly dependent upon the heat and pressure applied. This characteristic is not accounted for in ASTM D5470. Please contact Bergquist Product Management if additional specifications are required.

2) The ASTM D5470 test fixture was used and the test sample was conditioned at 70°C prior to test. 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:

- Computer and peripherals
- High performance computer processors
- Graphic cards
- Power modules

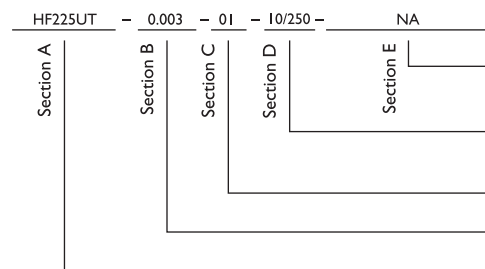


Configurations Available:

- Roll form with tabs, kiss-cut parts – no holes

Hi-Flow 225UT is limited to a square or rectangular part design. Dimensional tolerance is +/- 0.020 inch (0.5mm).

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 Hi-Flow 225UT configuration, 10/250 = 10" x 250' rolls, or 00 = custom configuration
- 01 = Pressure sensitive adhesive, one side
- Standard thicknesses available: 0.003"
- HF225UT = Hi-Flow 225UT Phase Change Material

Note: To build a part number, visit our website at www.bergquistcompany.com.

Hi-Flow[®] 225U

Un-Reinforced Phase Change Thermal Interface Material

Features and Benefits

- Thermal impedance: 0.07°C-in²/W (@25 psi)
- Hi-Flow coating will resist dripping
- Thermally conductive 55°C phase change compound
- Available in roll form with kiss-cut parts



Hi-Flow 225U is designed for use as a thermal interface material between a computer processor and a heat sink. The product consists of a thermally conductive 55°C phase change compound coated on a release liner and supplied on a carrier.

Above its phase change temperature, Hi-Flow 225U wets-out the thermal interface surfaces and flows to produce low thermal impedance. Hi-Flow 225U requires pressure of the assembly to cause flow.

Application Methods:

1. Hand-apply to 35° - 45°C heat sink. The heat sink is heated in an oven or via heat gun to between 35° - 45°C. The Hi-Flow 225U part is then applied like an adhesive pad. The heat sink is cooled to room temperature and packaged. A protective tab liner remains in place until the unit is ready for final assembly. The protective tab can be readily removed from the applied Hi-Flow 225U pad at a maximum temperature of 28°C.
2. Automated equipment with 30-psi pressure. A pick-and-place automated dispensing unit can be used to apply the Hi-Flow 225U pad to a room-temperature heat sink. The placement head should have a silicone rubber pad, and should apply approximately 30-psi pressure to the pad on transfer to the 25° - 35°C heat sink. Once applied, the protective tab can be readily removed from the Hi-Flow 225U pad at a maximum temperature of 28°C.

TYPICAL PROPERTIES OF HI-FLOW 225U

PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Black	Black	Visual			
Reinforcement Carrier	None	None	—			
Thickness (inch) / (mm)	0.0015	0.036	ASTM D374			
Continuous Use Temp (°F) / (°C)	302	150	—			
Phase Change Temp (°F) / (°C)	131	55	ASTM D3418			
ELECTRICAL						
Flame Rating	V-O	V-O	U.L. 94			
THERMAL						
Thermal Conductivity (W/m-K) (1)	1.0	1.0	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		0.53	0.47	0.39	0.34	0.32
Thermal Impedance (°C-in ² /W) (2)		0.08	0.07	0.06	0.05	0.04
<small>1) This is the measured thermal conductivity of the Hi-Flow coating. It represents one conducting layer in a three-layer laminate. The Hi-Flow coatings are phase change compounds. These layers will respond to heat and pressure induced stresses. The overall conductivity of the material in post-phase change, thin film products is highly dependent upon the heat and pressure applied. This characteristic is not accounted for in ASTM D5470. Please contact Bergquist Product Management if additional specifications are required. 2) The ASTM D5470 test fixture was used and the test sample was conditioned at 70°C prior to test. 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.</small>						

Typical Applications Include:

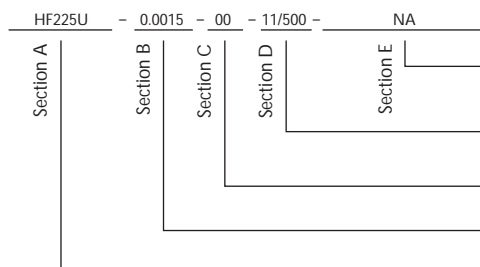
- Computer and peripherals
- High performance computer processors
- Graphic cards
- Power modules

Configurations Available:

- Roll form with tabs, kiss-cut parts – no holes

Hi-Flow 225U is limited to a square or rectangular part design. Dimensional tolerance is +/- 0.020 inch (0.5mm).

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 Hi-Flow 225U configuration, 11/500 = 11" x 500' rolls, or 00 = custom configuration

00 = No adhesive

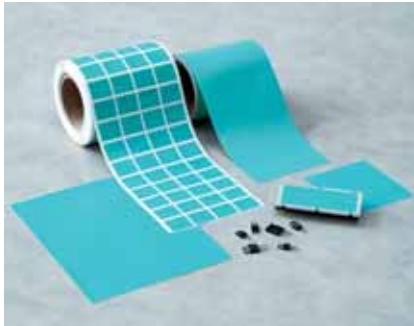
Standard thicknesses available: 0.0015"

HF225U = Hi-Flow 225U Phase Change Material

Note: To build a part number, visit our website at www.bergquistcompany.com.

Features and Benefits

- Thermal impedance: 0.71°C-in²/W (@25 psi)
- Electrically isolating
- 65°C phase change compound coated on PEN film
- Tack-free and scratch-resistant



Hi-Flow 625 is a film-reinforced phase change material. The product consists of a thermally conductive 65°C phase change compound coated on PEN film. Hi-Flow 625 is designed to be used as a thermal interface material between electronic power devices that require electrical isolation and a heat sink. The reinforcement makes Hi-Flow 625 easy to handle, and the 65°C phase change temperature of the coating material eliminates shipping and handling problems. The PEN film has a continuous use temperature of 150°C.

Hi-Flow 625 is tack-free and scratch-resistant at production temperature and does not require a protective liner in most shipping situations. The material has the thermal performance of 2-3 mil mica and grease assemblies.

TYPICAL PROPERTIES OF HI-FLOW 625						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Green	Green	Visual			
Reinforcement Carrier	PEN Film	PEN Film	—			
Thickness (inch) / (mm)	0.005	0.127	ASTM D374			
Elongation (%45° to Warp and Fill)	60	60	ASTM D882A			
Tensile Strength (psi) / (MPa)	30,000	206	ASTM D882A			
Continuous Use Temp (°F) / (°C)	302	150	—			
Phase Change Temp (°F) / (°C)	149	65	ASTM D3418			
ELECTRICAL						
Dielectric Breakdown Voltage (Vac)	4000	4000	ASTM D149			
Dielectric Constant (1000 Hz)	3.5	3.5	ASTM D150			
Volume Resistivity (Ohm-meter)	10 ¹⁰	10 ¹⁰	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
THERMAL						
Thermal Conductivity (W/m-K) (1)	0.5	0.5	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	2.26	2.10	2.00	1.93	1.87
	Thermal Impedance (°C-in ² /W) (2)	0.79	0.71	0.70	0.67	0.61
<small>1) This is the measured thermal conductivity of the Hi-Flow coating. It represents one conducting layer in a three-layer laminate. The Hi-Flow coatings are phase change compounds. These layers will respond to heat and pressure induced stresses. The overall conductivity of the material in post-phase change, thin film products is highly dependent upon the heat and pressure applied. This characteristic is not accounted for in ASTM D5470. Please contact Bergquist Product Management if additional specifications are required. 2) The ASTM D5470 test fixture was used and the test sample was conditioned at 70°C prior to test. 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.</small>						

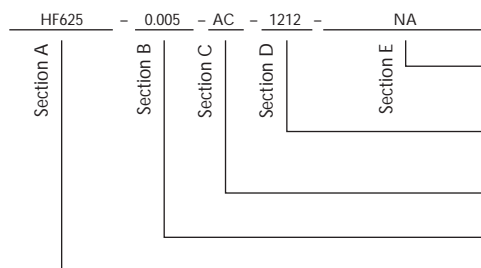
Typical Applications Include:

- Spring / clip mounted
- Power semiconductors
- Power modules

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.
 1212 = 12" x 12" sheets, 12/200 = 12" x 200' rolls, or 00 = custom configuration
 AC = Adhesive, one side
 00 = No adhesive
 Standard thicknesses available: 0.005"
 HF625 = Hi-Flow 625 Phase Change Material

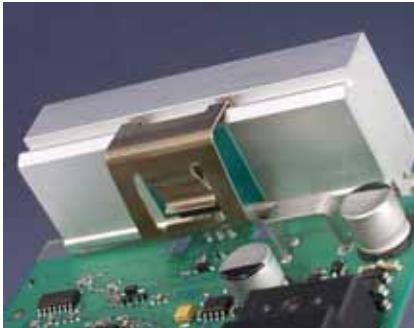
Note: To build a part number, visit our website at www.bergquistcompany.com.

Hi-Flow® 300P

Electrically Insulating, Thermally Conductive Phase Change Material

Features and Benefits

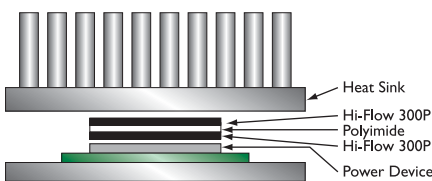
- Thermal impedance: 0.13°C-in²/W (@25 psi)
- Field-proven polyimide film
 - excellent dielectric performance
 - excellent cut-through resistance
- Outstanding thermal performance in an insulated pad



Hi-Flow 300P consists of a thermally conductive 55°C phase change compound coated on a thermally conductive polyimide film. The polyimide reinforcement makes the material easy to handle and the 55°C phase change temperature minimizes shipping and handling problems.

Hi-Flow 300P achieves superior values in voltage breakdown and thermal performance when compared to its competition. The product is supplied on an easy release liner for exceptional handling in high volume manual assemblies. Hi-Flow 300P is designed for use as a thermal interface material between electronic power devices requiring electrical isolation to the heat sink.

Bergquist suggests the use of spring clips to assure constant pressure with the interface and power source. Please refer to thermal performance data to determine nominal spring pressure for your application.



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

TYPICAL PROPERTIES OF HI-FLOW 300P

PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Green	Green	Visual			
Reinforcement Carrier	Polyimide	Polyimide	—			
Thickness (inch) / (mm)	0.004 - 0.005	0.102 - 0.127	ASTM D374			
Film Thickness (inch) / (mm)	0.001 - 0.002	0.025 - 0.050	ASTM D374			
Elongation (%)	40	40	ASTM D882A			
Tensile Strength (psi) / (MPa)	7000	48	ASTM D882A			
Continuous Use Temp (°F) / (°C)	302	150	—			
Phase Change Temp (°F) / (°C)	131	55	ASTM D3418			
ELECTRICAL						
Dielectric Breakdown Voltage (Vac)	5000	5000	ASTM D149			
Dielectric Constant (1000 Hz)	4.5	4.5	ASTM D150			
Volume Resistivity (Ohm-meter)	10 ¹²	10 ¹²	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
THERMAL						
Thermal Conductivity (W/m-K) (1)	1.6	1.6	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W) 0.0010"		0.95	0.94	0.92	0.91	0.90
TO-220 Thermal Performance (°C/W) 0.0015"		1.19	1.17	1.16	1.14	1.12
TO-220 Thermal Performance (°C/W) 0.0020"		1.38	1.37	1.35	1.33	1.32
Thermal Impedance (°C-in ² /W) 0.0010" (2)		0.13	0.13	0.12	0.12	0.12
Thermal Impedance (°C-in ² /W) 0.0015" (2)		0.17	0.16	0.16	0.16	0.15
Thermal Impedance (°C-in ² /W) 0.0020" (2)		0.19	0.19	0.19	0.18	0.18

1) This is the measured thermal conductivity of the Hi-Flow coating. It represents one conducting layer in a three-layer laminate. The Hi-Flow coatings are phase change compounds. These layers will respond to heat and pressure induced stresses. The overall conductivity of the material in post-phase change, thin film products is highly dependent upon the heat and pressure applied. This characteristic is not accounted for in ASTM D5470. Please contact Bergquist Product Management if additional specifications are required.

2) The ASTM D5470 test fixture was used and the test sample was conditioned at 70°C prior to test. 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:

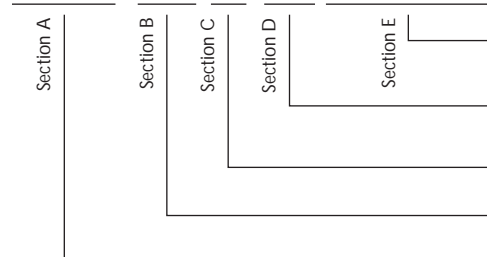
- Spring / clip mounted
- Discrete power semiconductors and modules

Configurations Available:

- Roll form, die-cut parts and sheet form, dry both sides

Building a Part Number

HF300P - 0.001 - 00 - 00 - ACME10256 Rev a



Standard Options

◀ example

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

1112 = 11" x 12" sheets, 11/250 = 11" x 250' rolls, or 00 = custom configuration

00 = No adhesive

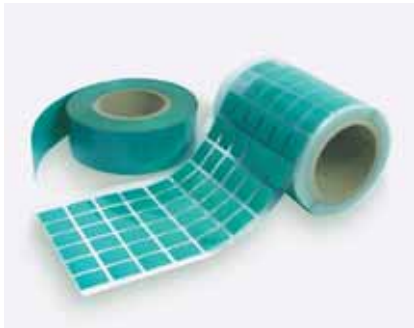
Standard polyimide thicknesses available: 0.001", 0.0015", 0.002"

HF300P = Hi-Flow 300P Phase Change Material

Note: To build a part number, visit our website at www.bergquistcompany.com.

Features and Benefits

- Thermal impedance: 0.20°C-in²/W (@25 psi)
- Resists running or dripping
- Phase change compound coated on a fiberglass carrier



Hi-Flow 300G consists of a thermally conductive 55°C phase change compound coated on a fiberglass web. Hi-Flow 300G is designed as a thermal interface material between a computer processor and a heat sink.

Above the phase change temperature, Hi-Flow 300G wets-out the thermal interface surfaces and flows to produce low thermal impedance. The material requires pressure of the assembly to cause flow. Hi-Flow 300G will resist running or dripping.

Application Methods

1. Hand-apply to 40°- 50°C heat sink. The heat sink is heated in an oven or by a heat gun to between 40°- 50°C allowing the Hi-Flow 300G pad to be applied like an adhesive pad. The heat sink is then cooled to room temperature and packaged.
2. Hand-apply to 20°- 35°C heat sink. Hi-Flow 300G can be applied to a room temperature heat sink with the assistance of a foam roller. The pad is positioned on the heat sink and a hand roller is used to apply pressure of 30 psi.
3. Automated equipment with 30 psi pressure. A pick-and-place automated dispensing unit can be used to apply Hi-Flow 300G to a room temperature heat sink. The placement head should have a soft silicone rubber pad, and apply 30 psi pressure to the pad on transfer to the 20°- 35°C heat sink.

TYPICAL PROPERTIES OF HI-FLOW 300G						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Green	Green	Visual			
Reinforcement Carrier	Fiberglass	Fiberglass	—			
Thickness (inch) / (mm)	0.005	0.127	ASTM D374			
Elongation (%45° to Warp and Fill)	40	40	ASTM D882A			
Tensile Strength (psi) / (MPa)	400	3	ASTM D882A			
Continuous Use Temp (°F) / (°C)	212	100	—			
Phase Change Temp (°F) / (°C)	131	55	ASTM 3418			
ELECTRICAL						
Dielectric Breakdown Voltage (Vac)	300	300	ASTM D149			
Dielectric Constant (1000 Hz)	3.5	3.5	ASTM D150			
Volume Resistivity (Ohm-meter)	10 ⁸	10 ⁸	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
THERMAL						
Thermal Conductivity (W/m-K) (1)	1.6	1.6	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W)		0.96	0.92	0.88	0.85	0.84
Thermal Impedance (°C-in ² /W) (2)		0.27	0.20	0.16	0.15	0.14

1) This is the measured thermal conductivity of the Hi-Flow coating. It represents one conducting layer in a three-layer laminate. The Hi-Flow coatings are phase change compounds. These layers will respond to heat and pressure induced stresses. The overall conductivity of the material in post-phase change, thin film products is highly dependent upon the heat and pressure applied. This characteristic is not accounted for in ASTM D5470. Please contact Bergquist Product Management if additional specifications are required.
 2) The ASTM D5470 test fixture was used and the test sample was conditioned at 70°C prior to test. 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.

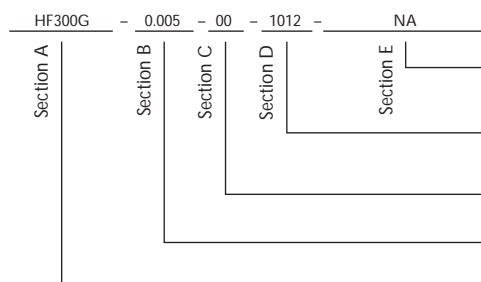
Typical Applications Include:

- Computer and peripherals
- As a thermal interface where bare die is exposed and needs to be heat sunk

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.

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: 0.005"

HF300G = Hi-Flow 300G Phase Change Material

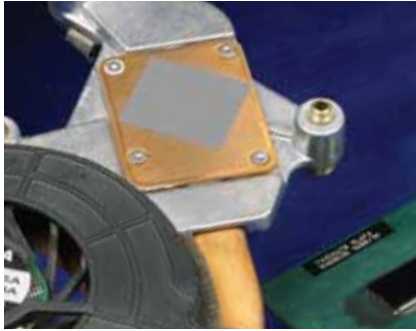
Note: To build a part number, visit our website at www.bergquistcompany.com.

Hi-Flow[®] 565U

High Performance, Un-Reinforced Phase Change Thermal Interface Material

Features and Benefits

- Thermal impedance: 0.04°C-in²/W (@25 psi)
- Very high thermal conductivity: 3.5 W/mk
- 52°C phase change temperature
- Unsupported



Hi-Flow 565U is a thermally conductive phase change material which is applied in tabulated pad form. In the application the easy to use material undergoes a phase change at 52°C. After phase change, Hi-Flow 565U wets out the thermal interfaces producing a very low thermal impedance.

Hi-Flow 565U displaces easily at low pressures to provide a thermal performance comparable to the best thermal greases. Hi-Flow 565U is provided at a consistent thickness to ensure reliable performance. Hi-Flow 565U is attached to the target surface via pressure from a hard rubber roller or squeegee.

TYPICAL PROPERTIES OF HI-FLOW 565U						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Gray	Gray	Visual			
Reinforcement Carrier	None	None	—			
Thickness (inch) / (mm)	0.010	0.254	ASTM D374			
Continuous Use Temp (°F) / (°C)	257	125	—			
Phase Change Temp (°F) / (°C)	126	52	ASTM D3418			
ELECTRICAL						
Flame Rating	V-O	V-O	U.L. 94			
THERMAL						
Thermal Conductivity (W/m-K) (1)	3.5	3.5	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	0.29	0.27	0.25	0.24	0.23
	Thermal Impedance (°C-in ² /W)(2)	0.05	0.04	0.04	0.04	0.03
<small>1) This is the measured thermal conductivity of the Hi-Flow coating. It represents one conducting layer in a three-layer laminate. The Hi-Flow coatings are phase change compounds. These layers will respond to heat and pressure induced stresses. The overall conductivity of the material in post-phase change, thin film products is highly dependent upon the heat and pressure applied. This characteristic is not accounted for in ASTM D5470. Please contact Bergquist Product Management if additional specifications are required. 2) The ASTM D5470 test fixture was used and the test sample was conditioned at 70°C prior to test. 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.</small>						

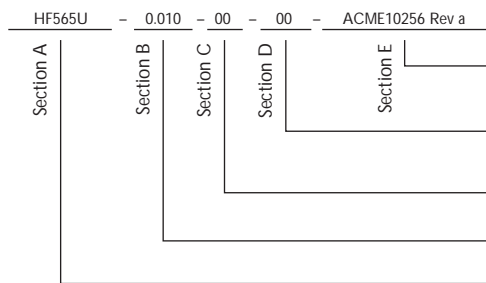
Typical Applications Include:

- Processor lid to heat sink
- Processor die to lid or heat sink
- FBDIMM to heat spreader

Configurations Available:

- Tabulated in roll form, kiss-cut parts - no holes
- Hi-Flow 565U is limited to a square or rectangular part design. Dimensional tolerance is +/- 0.20 inch (0.5mm)

Building a Part Number



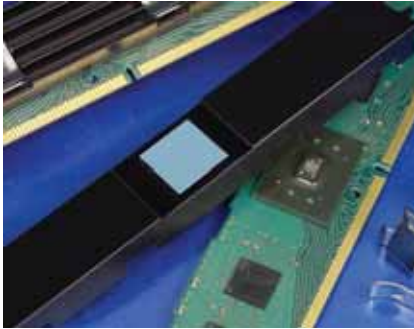
Standard Options

- ◀ example
- NA = Selected standard option. If not selecting a standard option, insert company name, drawing number, and revision level.
- 11/100 = Standard configuration dash number, 11/100 = 11" x 100' rolls, or 00 = custom configuration
- 00 = No adhesive
- Standard Thickness Available = 0.010"
- HF565U = Hi-Flow 565U Phase Change Material

Note: To build a part number, visit our website at www.bergquistcompany.com.

Features and Benefits

- Thermal impedance: 0.05°C-in²/W (@25 psi)
- High thermal conductivity: 3.0 W/mk
- Phase change softening temp 52°C
- Naturally tacky
- Tabulated for ease of assembly



Hi-Flow 565UT is a naturally tacky, thermally conductive phase change material which is supplied in an easy to use tabulated pad form. In the application the material undergoes a phase change softening, starting near 52°C. The phase change softening feature improves handling characteristics prior to a facilitated assembly. At application temperatures and pressures, Hi-Flow 565UT wets out the thermal interfaces producing a very low thermal impedance.

The thermal performance of Hi-Flow 565UT is comparable to the best thermal greases. Hi-Flow 565UT is provided at a consistent thickness to ensure reliable performance. Hi-Flow 565UT can be applied in high volumes to the target surface via low pressure from a roller or manual application.

TYPICAL PROPERTIES OF HI-FLOW 565UT						
PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Blue	Blue	Visual			
Reinforcement Carrier	None	None	—			
Thickness (inch) / (mm)	0.005, 0.010	0.127, 0.254	ASTM D374			
Continuous Use Temp (°F) / (°C)	257	125	—			
Phase Change Softening Temp (°F) / (°C)	126	52	ASTM D3418			
ELECTRICAL						
Flame Rating	V-O	V-O	U.L. 94			
THERMAL						
Thermal Conductivity (W/m-K) (1)	3.0	3.0	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
	TO-220 Thermal Performance (°C/W)	0.37	0.35	0.34	0.30	0.26
	Thermal Impedance (°C-in ² /W)(2)	0.09	0.05	0.03	0.02	0.02
<small>1) This is the measured thermal conductivity of the Hi-Flow coating. It represents one conducting layer in a three-layer laminate. The Hi-Flow coatings are phase change compounds. These layers will respond to heat and pressure induced stresses. The overall conductivity of the material in post-phase change, thin film products is highly dependent upon the heat and pressure applied. This characteristic is not accounted for in ASTM D5470. Please contact Bergquist Product Management if additional specifications are required.</small>						
<small>2) The ASTM D5470 test fixture was used and the test sample was conditioned at 70°C prior to test. 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.</small>						

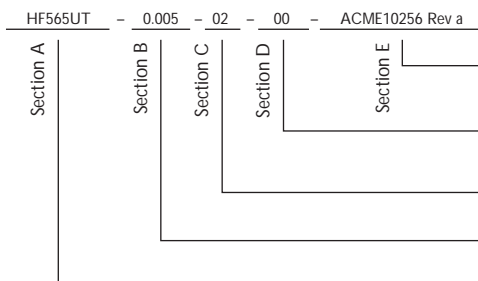
Typical Applications Include:

- Processor lid to heat sink
- Processor die to lid or heat sink
- FBDIMM to heat spreader

Configurations Available:

- Tabulated in roll form, kiss-cut parts - no holes
- Hi-Flow 565UT is limited to a square or rectangular part design. Dimensional tolerance is +/- 0.20 inch (0.5mm)

Building a Part Number



Standard Options

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

11/250 = Standard configuration dash number, 11" x 250' rolls, or 00 = custom configuration

02 = Natural Tack

Standard Thickness Available = 0.005", 0.010"

HF565UT = Hi-Flow 565UT Phase Change Material

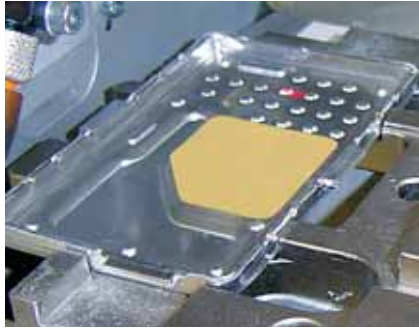
Note: To build a part number, visit our website at www.bergquistcompany.com.

Hi-Flow® 650P

Electrically Insulating, High Performance, Thermally Conductive Phase Change Material

Features and Benefits

- Thermal Impedance: 0.20°C-in²/W (@25 psi)
- 150°C high temperature reliability
- Natural tack one side for ease of assembly
- Exceptional thermal performance in an insulated pad



Hi-Flow 650P is a thermally conductive phase change material, reinforced with a polyimide film that is naturally tacky on one side. The polyimide film provides a high dielectric strength and high cut through resistance. Hi-Flow 650P offers high temperature reliability ideal for automotive applications.

Hi-Flow 650P is designed for use between a high-power electrical device requiring electrical isolation from the heat sink and is ideal for automated dispensing systems.

Bergquist recommends the use of spring clips to assure constant pressure with the component interface and the heat sink. Please refer to the TO-220 thermal performance data to determine the nominal spring pressure for your application.

Typical Applications

- Spring / clip-mounted devices
- Discrete power semiconductors and modules

Configurations Available

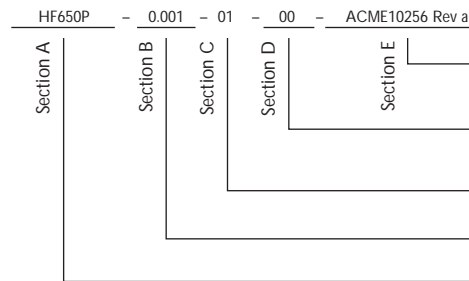
- Roll form, die-cut parts, sheet form
- Available with 1.0, 1.5 or 2.0 mil Polyimide reinforcement carrier

TYPICAL PROPERTIES OF HI-FLOW 650P

PROPERTY	IMPERIAL VALUE	METRIC VALUE	TEST METHOD			
Color	Gold	Gold	Visual			
Reinforcement Carrier	Polyimide	Polyimide	—			
Thickness (inch) / (mm)	0.0045 - 0.0055	0.114 - 0.140	ASTM D374			
Film Thickness (inch) / (mm)	0.001 - 0.002	0.025 - 0.050	ASTM D374			
Inherent Surface Tack (1 or 2-Side)	1	1	—			
Elongation (%)	40	40	ASTM D882A			
Tensile Strength (psi)	7000	7000	ASTM D882A			
Continuous Use Temp (°F / °C)	-40 to 302	-40 to 150	—			
Phase Change Softening Temp (°F / °C)	126	52	ASTM D3418			
ELECTRICAL						
Dielectric Breakdown Voltage (Vac)	5000	5000	ASTM D149			
Dielectric Constant (1000 Hz)	4.5	4.5	ASTM D150			
Volume Resistivity (Ohm-meter)	10 ¹²	10 ¹²	ASTM D257			
Flame Rating	V-O	V-O	U.L. 94			
THERMAL						
Thermal Conductivity (W/m-K)(1)	1.5	1.5	ASTM D5470			
THERMAL PERFORMANCE vs PRESSURE						
	Pressure (psi)	10	25	50	100	200
TO-220 Thermal Performance (°C/W) 0.0010"		1.20	1.15	1.11	1.06	1.00
TO-220 Thermal Performance (°C/W) 0.0015"		1.47	1.41	1.37	1.33	1.29
TO-220 Thermal Performance (°C/W) 0.0020"		1.59	1.48	1.43	1.38	1.35
Thermal Impedance (°C-in²/W)(2) 0.0010"		0.21	0.20	0.19	0.18	0.17
Thermal Impedance (°C-in²/W)(2) 0.0015"		0.23	0.22	0.21	0.20	0.20
Thermal Impedance (°C-in²/W)(2) 0.0020"		0.27	0.27	0.26	0.25	0.24
<p>1) This is the measured thermal conductivity of the Hi-Flow wax coating. It represents one conducting layer in a three-layer laminate. The Hi-Flow coatings are phase change compounds. These layers will respond to heat and pressure induced stresses. The overall conductivity of the material in post-phase change, thin film products is highly dependent upon the heat and pressure applied. This characteristic is not accounted for in ASTM D5470. Please contact Bergquist Product Management if additional specifications are required.</p> <p>2) The ASTM D5470 test fixture was used and the test sample was conditioned at 70°C for 5 minutes prior to test. 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.</p>						

HI-FLOW

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.
- 1112 = 11" x 12" sheets, 11/250 = 11" x 250' rolls, or 00 = custom configuration
- 01 = Natural Tack
- Standard Polyimide Thickness Available = 0.001", 0.0015", 0.002"
- HF650P = Hi-Flow 650P Phase Change Material

Note: To build a part number, visit our website at www.bergquistcompany.com.