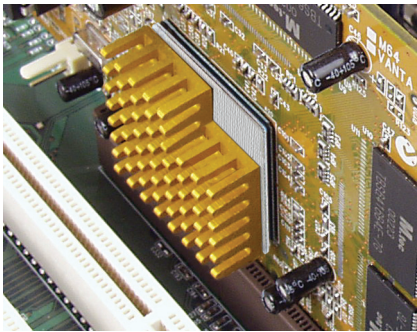


Bond-Ply® 100

Thermally Conductive, Fiberglass Reinforced Pressure Sensitive Adhesive Tape

Features and Benefits

- Thermal impedance: 0.52°C-in²/W (@50 psi)
- High bond strength to a variety of surfaces
- Double-sided, pressure sensitive adhesive tape
- High performance, thermally conductive acrylic adhesive
- Can be used instead of heat-cure adhesive, screw mounting or clip mounting



Typical Applications Include:

- Mount heat sink onto BGA graphic processor or drive processor
- Mount heat spreader onto power converter PCB or onto motor control PCB

Configurations Available:

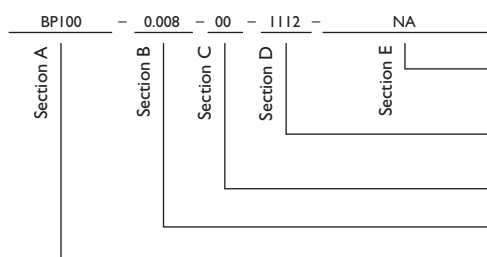
- Sheet form, roll form and die-cut parts

Shelf Life: The double-sided, pressure sensitive adhesive used in Bond-Ply products requires the use of dual liners to protect the surfaces from contaminants. Bergquist recommends a 6-month shelf life at a maximum continuous storage temperature of 35°C or 3-month shelf life at a maximum continuous storage temperature of 45°C, for maintenance of controlled adhesion to the liner. The shelf life of the Bond-Ply material, without consideration of liner adhesion (which is often not critical for manual assembly processing), is recommended at 12 months from date of manufacture at a maximum continuous storage temperature of 60°C.

TYPICAL PROPERTIES OF BOND-PLY 100

| PROPERTY | IMPERIAL VALUE | METRIC VALUE | TEST METHOD | | |
|--|---------------------|---------------------|-------------|------|------|
| Color | White | White | Visual | | |
| Reinforcement Carrier | Fiberglass | Fiberglass | — | | |
| Thickness (inch) / (mm) | 0.005, 0.008, 0.011 | 0.127, 0.203, 0.279 | ASTM D374 | | |
| Temp. Resistance, 30 sec. (°F) / (°C) | 392 | 200 | — | | |
| Elongation (%45° to Warp & Fill) | 70 | 70 | ASTM D412 | | |
| Tensile Strength (psi) / (MPa) | 900 | 6 | ASTM D412 | | |
| CTE (ppm) | 325 | 325 | ASTM D3386 | | |
| Glass Transition (°F) / (°C) | -22 | -30 | ASTM I 356 | | |
| Continuous Use Temp (°F) / (°C) | -22 to 248 | -30 to 120 | — | | |
| ADHESION | | | | | |
| Lap Shear @ RT (psi) / (MPa) | 100 | 0.7 | ASTM D1002 | | |
| Lap Shear after 5 hr @ 100°C | 200 | 1.4 | ASTM D1002 | | |
| Lap Shear after 2 min @ 200°C | 200 | 1.4 | ASTM D1002 | | |
| Static Dead Weight Shear (°F) / (°C) | 302 | 150 | PSTC#7 | | |
| ELECTRICAL | | VALUE | TEST METHOD | | |
| Dielectric Breakdown Voltage - 0.005" (Vac) | | 3000 | ASTM D149 | | |
| Dielectric Breakdown Voltage - 0.008" (Vac) | | 6000 | ASTM D149 | | |
| Dielectric Breakdown Voltage - 0.011" (Vac) | | 8500 | ASTM D149 | | |
| Flame Rating | | V-O | UL94 | | |
| THERMAL | | | | | |
| Thermal Conductivity (W/m-K) | | 0.8 | ASTM D5470 | | |
| THERMAL PERFORMANCE vs PRESSURE | | | | | |
| Initial Assembly Pressure (psi for 5 seconds) | 10 | 25 | 50 | 100 | 200 |
| TO-220 Thermal Performance (°C/W) 0.005" | 5.17 | 4.87 | 4.49 | 4.18 | 4.10 |
| TO-220 Thermal Performance (°C/W) 0.008" | 5.40 | 5.35 | 5.28 | 5.22 | 5.20 |
| TO-220 Thermal Performance (°C/W) 0.011" | 6.39 | 6.51 | 6.51 | 6.50 | 6.40 |
| Thermal Impedance (°C-in²/W) 0.005" (I) | 0.56 | 0.84 | 0.52 | 0.50 | 0.50 |
| Thermal Impedance (°C-in²/W) 0.008" (I) | 0.82 | 0.80 | 0.78 | 0.77 | 0.75 |
| Thermal Impedance (°C-in²/W) 0.011" (I) | 1.03 | 1.02 | 1.01 | 1.00 | 0.99 |
| I) 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. | | | | | |

Building a Part Number



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

Bond-Ply®: U.S. Patent 5,090,484 and others.

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, 11250 = 11" x 250" rolls or 00 = custom configuration
- 00 = No adhesive
- Standard thicknesses available: 0.005", 0.008", 0.011"
- BP100 = Bond-Ply 100 Material

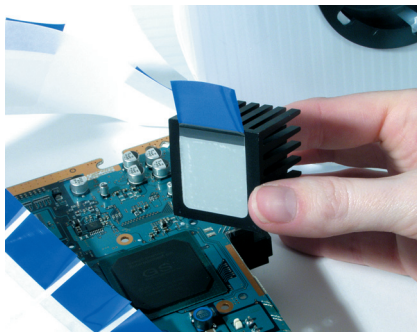
BOND-PLY

Bond-Ply® 400

Thermally Conductive, Un-Reinforced, Pressure Sensitive Adhesive Tape

Features and Benefits

- Thermal impedance:
0.87°C-in²/W (@50 psi)
- Easy application
- Eliminates need for external hardware
(screws, clips, etc.)
- Available with easy release tabs



Bergquist Bond-Ply 400 is an un-reinforced, thermally conductive, pressure sensitive adhesive tape. The tape is supplied with protective topside tabs and a carrier liner. Bond-Ply 400 is designed to attain high bond strength to a variety of "low energy" surfaces, including many plastics, while maintaining high bond strength with long term exposure to heat and high humidity.

Typical Applications Include:

- Secure:
- Heat sink onto BGA graphic processor
 - Heat sink to computer processor
 - Heat sink onto drive processor
 - Heat spreader onto power converter PCB
 - Heat spreader onto motor control PCB

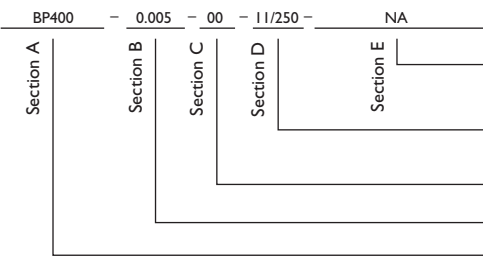
Configurations Available:

- Die-cut parts (supplied on rolls with easy release, protective tabs)

| TYPICAL PROPERTIES OF BOND-PLY 400 | | | | | | |
|--|--|----------------|-----|----------------|-----|-------------|
| PROPERTY | | IMPERIAL VALUE | | METRIC VALUE | | TEST METHOD |
| Color | | White | | White | | Visual |
| Thickness (inch) / (mm) | | 0.003 to 0.010 | | 0.076 to 0.254 | | ASTM D374 |
| Glass Transition (°F) / (°C) | | -22 | | -30 | | ASTM E1356 |
| Continuous Use Temp (°F) / (°C) | | -22 to 248 | | -30 to 120 | | — |
| ADHESION | | | | | | |
| Lap Shear @ RT (psi) / (MPa) | | 100 | | 0.7 | | ASTM D1002 |
| Lap Shear after 5 hr @ 100°C | | 200 | | 1.4 | | ASTM D1002 |
| Lap Shear after 2 min @ 200°C | | 200 | | 1.4 | | ASTM D1002 |
| ELECTRICAL | | | | VALUE | | TEST METHOD |
| Dielectric Breakdown Voltage (Vac) | | | | 3000 | | ASTM D149 |
| Flame Rating | | | | V-O | | UL94 |
| THERMAL | | | | | | |
| Thermal Conductivity (W/m-K) | | | | 0.4 | | ASTM D5470 |
| THERMAL PERFORMANCE vs PRESSURE | | | | | | |
| Initial Assembly Pressure (psi for 5 seconds) | | 10 | 25 | 50 | 100 | 200 |
| TO-220 Thermal Performance (°C/W) 0.005" | | 5.4 | 5.4 | 5.4 | 5.4 | 5.4 |
| Thermal Impedance (°C-in²/W) (I) | | | | 0.87 | | |
| I) 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. | | | | | | |

Shelf Life: The double-sided pressure sensitive adhesive used in Bond-Ply products requires the use of dual liners to protect the surfaces from contaminants. Bergquist recommends a 6-month shelf life at a maximum continuous storage temperature of 35°C, or 3-month shelf life at a maximum continuous storage temperature of 45°C, for maintenance of controlled adhesion to the liner. The shelf life of the Bond-Ply material, without consideration of liner adhesion (which is often not critical for manual assembly processing), is recommended at 12 months from date of manufacture at a maximum continuous storage temperature of 60°C.

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.
- 11/250 = 11" x 250' rolls or 00 = custom configuration
- 00 = No adhesive
- Standard thicknesses available: 0.003", 0.005", 0.010"
- BP400 = Bond-Ply 400 Material

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

Bond-Ply®: U.S. Patent 5,090,484 and others.

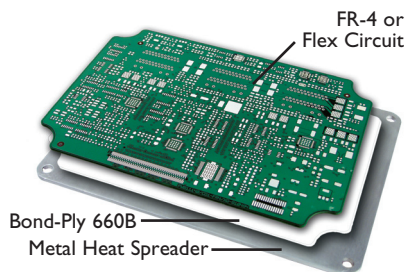
BOND-PLY

Bond-Ply® 660B

Thermally Conductive, Film Reinforced, Pressure Sensitive Adhesive Tape

Features and Benefits

- Designed to replace mechanical fasteners or screws
- For applications that require electrical isolation
- Double-sided pressure sensitive adhesive tape



Bond-Ply 660B is a thermally conductive, electrically insulating, double-sided pressure sensitive adhesive tape. The tape consists of a high performance, thermally conductive acrylic adhesive coated on both sides of a PEN film. Use Bond-Ply 660B in applications to replace mechanical fasteners or screws.

Typical Applications Include:

- Mount heat sink onto BGA graphic processor
- Mount heat sink onto drive processor
- Mount heat spreader onto power converter PCB
- Mount heat spreader onto motor control PCB

Configurations Available:

- Roll form and die-cut parts

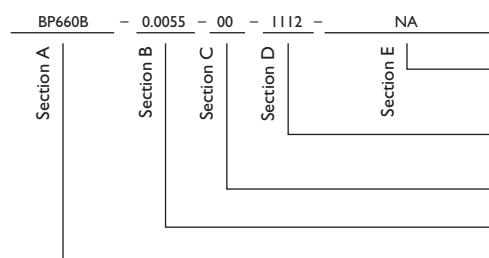
The material as delivered will include a continuous base liner with differential release properties to allow simplicity in roll packaging and application assembly.

TYPICAL PROPERTIES OF BOND-PLY 660B

| PROPERTY | IMPERIAL VALUE | METRIC VALUE | TEST METHOD | | |
|---|----------------|--------------|-------------|------|------|
| Color | White | White | Visual | | |
| Reinforcement Carrier | PEN Film | PEN Film | — | | |
| Thickness (inch) / (mm) | 0.0055 | 0.14 | ASTM D374 | | |
| Temp. Resistance, 30 sec. (°F) / (°C) | 392 | 200 | — | | |
| Elongation (%) | 40 | 40 | ASTM D412 | | |
| Tensile Strength (psi) / (MPa) | 30000 | 210 | ASTM D412 | | |
| CTE (ppm) | 250 | 250 | ASTM D3386 | | |
| Glass Transition (°F) / (°C) | -22 | -30 | ASTM E1356 | | |
| Continuous Use Temp (°F) / (°C) | -22 to 248 | -30 to 120 | — | | |
| ADHESION | | | | | |
| Lap Shear @ RT (psi) / (MPa) | 100 | 0.7 | ASTM D1002 | | |
| Lap Shear after 5 hr @ 100°C | 200 | 1.4 | ASTM D1002 | | |
| Lap Shear after 2 min @ 200°C | 200 | 1.4 | ASTM D1002 | | |
| Static Dead Weight Shear (°F) / (°C) | 302 | 150 | PSTC#7 | | |
| ELECTRICAL | | | | | |
| Dielectric Breakdown Voltage (Vac) | 6000 | 6000 | ASTM D149 | | |
| Flame Rating | V-O | V-O | UL94 | | |
| THERMAL | | | | | |
| Thermal Conductivity (W/m-K) | 0.4 | 0.4 | ASTM D5470 | | |
| THERMAL PERFORMANCE vs PRESSURE | | | | | |
| Initial Assembly Pressure (psi for 5 seconds) | 10 | 25 | 50 | 100 | 200 |
| TO-220 Thermal Performance (°C/W) | 5.28 | 5.10 | 4.95 | 4.80 | 4.51 |
| Thermal Impedance (°C-in²/W) (I) | 0.59 | 0.59 | 0.58 | 0.58 | 0.58 |
| I) The ASTM D5470 (Bergquist modified) 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. | | | | | |

Shelf Life: The double-sided pressure sensitive adhesive used in Bond-Ply products requires the use of dual liners to protect the surfaces from contaminants. Bergquist recommends a 6-month shelf life at a maximum continuous storage temperature of 35°C, or 3-month shelf life at a maximum continuous storage temperature of 45°C, for maintenance of controlled adhesion to the liner. The shelf life of the Bond-Ply material, without consideration of liner adhesion (which is often not critical for manual assembly processing), is recommended at 12 months from date of manufacture at a maximum continuous storage temperature of 60°C.

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

00 = No adhesive

Standard thicknesses available: 0.0055"

BP660B = Bond-Ply 660B Material

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

Bond-Ply®: U.S. Patent 5,090,484 and others.

Bond-Ply® 660P

Thermally Conductive, Film Reinforced, Pressure Sensitive Adhesive Tape

Features and Benefits

- Thermal impedance:
0.87°C-in²/W (@50 psi)
- Highly puncture resistant Polyimide reinforcement carrier
- Double-sided pressure sensitive adhesive tape
- Provides a mechanical bond, eliminating the need for mechanical fasteners or screws

Bond-Ply 660P is a thermally conductive, electrically insulating, double sided pressure sensitive adhesive tape. The tape consists of a high performance, thermally conductive acrylic adhesive coated on both sides of a Polyimide film. Use Bond-Ply 660P in applications to replace mechanical fasteners or screws.

Typical Applications Include:

- Heat sink onto BGA graphic processor
- Heat sink onto drive processor
- Heat spreader onto power converter PCB
- Heat spreader onto motor control PCB

Configurations Available:

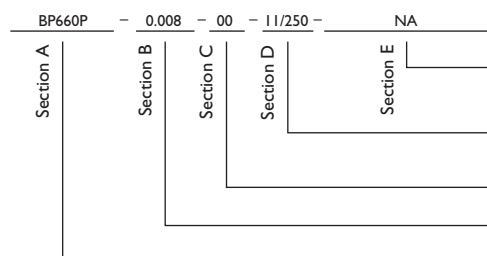
- Roll form and die-cut parts

The material as delivered will include a continuous base liner with differential release properties to allow for simplicity in roll packaging and application assembly.

| TYPICAL PROPERTIES OF BOND-PLY 660P | | | | | | |
|--|--|----------------|------|----------------|------|-------------|
| PROPERTY | | IMPERIAL VALUE | | METRIC VALUE | | TEST METHOD |
| Color | | Light Brown | | Light Brown | | Visual |
| Reinforcement Carrier | | Polyimide Film | | Polyimide Film | | — |
| Thickness (inch) / (mm) | | 0.008 | | 0.203 | | ASTM D374 |
| Glass Transition (°F) / (°C) | | -22 | | -30 | | ASTM E1356 |
| Continuous Use Temp (°F) / (°C) | | -22 to 248 | | -30 to 120 | | — |
| ADHESION | | | | | | |
| Lap Shear @ RT (psi) / (MPa) | | 100 | | 0.7 | | ASTM D1002 |
| Lap Shear after 5 hr @ 100°C | | 200 | | 1.4 | | ASTM D1002 |
| Lap Shear after 2 min @ 200°C | | 200 | | 1.4 | | ASTM D1002 |
| ELECTRICAL | | | | VALUE | | TEST METHOD |
| Dielectric Breakdown Voltage (kVAC) | | | | 6000 | | ASTM D149 |
| Flame Rating | | | | V-O | | UL94 |
| THERMAL | | | | | | |
| Post-Cured Thermal Conductivity (W/m-K) | | | | 0.4 | | ASTM D5470 |
| THERMAL PERFORMANCE vs PRESSURE | | | | | | |
| Initial Assembly Pressure (psi for 5 seconds) | | 10 | 25 | 50 | 100 | 200 |
| TO-220 Thermal Performance (°C/W) | | 5.48 | 5.47 | 5.15 | 5.05 | 5.00 |
| Thermal Impedance (°C-in²/W) (1) | | 0.83 | 0.82 | 0.81 | 0.80 | 0.79 |
| 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. | | | | | | |

Shelf Life: The double-sided pressure sensitive adhesive used in Bond-Ply products requires the use of dual liners to protect the surfaces from contaminants. Bergquist recommends a 6-month shelf life at a maximum continuous storage temperature of 35°C, or 3-month shelf life at a maximum continuous storage temperature of 45°C, for maintenance of controlled adhesion to the liner. The shelf life of the Bond-Ply material, without consideration of liner adhesion (which is often not critical for manual assembly processing), is recommended at 12 months from date of manufacture at a maximum continuous storage temperature of 60°C.

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.

11/250 = 11" x 250' rolls or 00 = custom configuration

00 = No adhesive

Standard thicknesses available: 0.008"

BP660P = Bond-Ply 660P Material

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

Bond-Ply®: U.S. Patent 5,090,484 and others.

BOND-PLY