

**BondaTherm Equalizer**

# BondaTherm Equalizer Kit <sup>TM</sup>



**Key Features of the BondaTherm Equalizer Kits:**

- Eliminates improper ratios and mixing errors
- Reduces material waste
- Eliminates employee contact with resins
- Eliminates messy hand mixing and transferring
- Increases productivity
- Resins are protected from moisture contamination

| Wakefield Vette Part Number | Description   | Applications                                     | Packaging            |
|-----------------------------|---|--|----------------------|
| BT-101-50M                  | Non-Sag 5 Minute BondaTherm Epoxy Adhesive                                      | Staking of wires and components, field repairs   | 50ml Dual Cartridges |
| BT-102-50M                  | Toughened, Flexible BondaTherm Adhesive System                                  | Structural bonding of dissimilar substrates      | 50ml Dual Cartridges |
| BT-301-50M                  | Quick Curing BondaTherm Thermally Conductive Adhesive                           | Rapid bonding of aluminum to aluminum substrates | 50ml Dual Cartridges |
| BT-01-50M                   | BondaTherm Equalizer Dispense Gun   | Manual Dispense Gun                              | Accessory            |
| BT-02-50M                   | BondaTherm Equalizer Static Mixer   | Static Mixers                                    | Accessory            |
| BT-101-50M-EQZ              | Two Dual Cartridges (BT-101-50M), One Gun (BT-01-50M), Three Mixers (BT-02-50M) |  | Kit                  |
| BT-102-50M-EQZ              | Two Dual Cartridges (BT-102-50M), One Gun (BT-01-50M), Three Mixers (BT-02-50M) |  | Kit                  |
| BT-301-50M-EQZ              | Two Dual Cartridges (BT-301-50M), One Gun (BT-01-50M), Three Mixers (BT-02-50M) |  | Kit                  |

**BondaTherm <sup>TM</sup>**  
Individual 50ml  
Dual Cartridges



BT-101-50M  
 BT-102-50M  
 BT-301-50M

**BondaTherm <sup>TM</sup>**  
Dispense Gun



BT-01-50M

**BondaTherm <sup>TM</sup>**  
Static Mixer



BT-02-50M

# BondaTherm Equalizer Kit <sup>TM</sup>

(2) Dual Cartridges, (1) Dispense Gun, (3) Static Mixers



BT-101-50M-EQZ  
 BT-102-50M-EQZ  
 BT-301-50M-EQZ

## BondaTherm Equalizer



### BT-101-50M

This high bond strength adhesive is a clear 100% solids, two component, non-sag adhesive with a quick setting time of 5 minutes at room temperature. It is excellent for bonding plated metals, pewter, glass, wood, ceramic, felt, cement, gem stones, most plastics and rubbers, etc...

#### **DESCRIPTION:**

These high bond strength adhesives are clear 100% solids, two component, non-sag adhesives with a quick setting time of 5-46 minutes at room temperature. They are excellent for bonding plated metals, pewter, glass, wood, ceramic, felt, cement, gem stones, most plastics and rubbers, etc...

These adhesives were tested in our laboratory for flame retardancy properties. According to our test results they meet the requirements of UL94HB.

#### **APPLICATIONS:**

These unique adhesives are ideally suited for a wide range of electronic, electrical, industrial, structural, and jewelry applications. These adhesives are also an excellent choice for field repairs. They are offered in the popular BondaTherm Equalizer Kit dual barrel cartridge dispensing system and bulk packaging.

#### **FEATURES:**

- Non-sag consistency
- High bond strength
- Fast room temperature cure – three speeds to choose from
- Water & chemical resistance
- Outstanding thermal shock resistance
- 1:1 mix ratio
- Impact resistance

#### **SPECIFICATIONS:**

|                              |                                       |
|------------------------------|---------------------------------------|
| Color                        | Semi-transparent (available in black) |
| Mix ratio by volume          | 1:1                                   |
| Mixed viscosity, 25°C cps*   | Non-Sag                               |
| Solids content, %            | 100                                   |
| Specific gravity, 25°C       | 1.15                                  |
| Shore D hardness             |                                       |
| 10-3005NS                    | 86                                    |
| 10-3020NS                    | 72                                    |
| 10-3046NS                    | 65                                    |
| Work Life, 25°C, minutes     |                                       |
| 10-3005NS                    | 3-5                                   |
| 10-3020NS                    | 10-15                                 |
| 10-3046NS                    | 25-30                                 |
| Handling time, 25°C, minutes |                                       |
| 10-3005NS                    | 15-20                                 |
| 10-3020NS                    | 30-35                                 |
| 10-3046NS                    | 55-60                                 |
| Cure time, 25°C, hours       | 24-48                                 |

### BT-101-50M (Cont.)



|  |                        |
|--|------------------------|
| Coefficient of thermal expansion (in/in/°C)        | 60x10 <sup>-6</sup>    |
| Operating temperature range, °C                    | -50 to +130            |
| Dielectric strength, V/mil                         | 420                    |
| Izod Impact ft-lb/in                               | 2.7                    |
| Dielectric constant, 1KHz at 25°C                  | 4.00                   |
| Dissipation factor, 1KHz at 25°C                   | .017                   |
| Volume resistivity, ohm-cm at 25°C                 | 2.0 x 10 <sup>14</sup> |
| Shear strength, psi                                |                        |
| Aluminum (etched)                                  | 1,500                  |
| Cold rolled steel                                  | 1,000                  |
| Copper   | 960                    |
| Brass  | 725                    |
| Stainless Steel                                    | 750                    |
| Galvanized Steel                                   | 900                    |
| ABS  | 500                    |
| PVC  | 335                    |
| Polycarbonate                                      | 250                    |
| Compression strength, psi                          | 8,500                  |
| Coverage, .005 in. thick bond line, sq. ft./gallon | 320                    |

#### **INSTRUCTIONS FOR USE:**

1. Thoroughly mix equal parts of resin to catalyst by weight or volume.
2. Apply evenly to both surface(s) to be bonded.
3. Application to the substrates should be made within five minutes. Larger quantities and/or higher temperatures will reduce the working time. Avoid mixing large quantities and/or at high temperature due to the possibility of creating a high exothermic temperature.
4. Join the coated surfaces. Allow to cure at 60°F (16°C) or higher until adhesive is set. Heat may be added up to 200°F (93°C) to accelerate the cure.
5. Avoid moving parts during cure. Pressure to the substrates is recommended. Maximum shear strength is obtained with a 3-5 mil bond line.

## BondaTherm Equalizer



### BT-102-50M

A two component system that forms strong structural bonds at room temperature. This unique adhesive system provides high peel and shear strengths. This is excellent for bonding many metals and woods, most plastics and rubbers and masonry products.

#### **DESCRIPTION:**

BT-102-50M is a toughened, flexible, and impact resistant epoxy adhesive. BT-102-50M is a two component system that forms strong structural bonds at room temperature. This unique adhesive system provides high peel and shear strengths. BT-102-50M is excellent for bonding many metals and woods, most plastics and rubbers and masonry products. This system is designed for electronic, aerospace and other demanding industrial applications.

This product is available in the popular BondaTherm Equalizer dual barrel cartridge system.

#### **FEATURES:**

- Impact resistant
- Excellent electrical insulator
- High peel and shear
- Outstanding structural bonds
- Convenient 1:1 Ratio
- Retention of strength after environmental aging

#### **Typical Specifications:**

|   |                      |
|---|----------------------|
| Mixed viscosity, 25°C, cps                          | 150,000              |
| Specific gravity, 25°C,                             |                      |
| Resin   | 1.32                 |
| Catalyst  | 1.20                 |
| Gel time, 100 grams, 25°C                           | 70 minutes           |
| Tensile shear strength, psi                         | 2,600                |
| Durometer, shore D                                  | 70                   |
| Dielectric strength, V/mil                          | 410                  |
| Dielectric constant, 60 Hz                          | 4.4                  |
| Dissipation factor, 60 Hz                           | .02                  |
| Volume resistivity, ohm-cm                          | $1.1 \times 10^{15}$ |
| Thermal conductivity, btu-in/hr·ft <sup>2</sup> ·°F | 4.0                  |
| Coefficient of thermal expansion, per °C            | $10 \times 10^{-5}$  |

Adhesive coverage: a .005-inch bond line will yield approximately 320sq. ft./gallon

## BondaTherm Equalizer



### BT-102-50M (cont.)

#### **INSTRUCTIONS FOR USE:**

- 1) Surfaces must be clean and grease free. Use an oil free solvent such as acetone to wipe surfaces. Adhesion can be substantially increased by abrading the surfaces to be bonded with emery cloth, sand paper, carbide grinding tools, sand blasting, etc... A roughened, porous surface will produce the best results. Any oxidized metal films should be removed just prior to application of the epoxy adhesive mixture.
- 2) Thoroughly mix equal parts of resin and catalyst by volume.
- 3) Apply mixed product evenly to both surfaces.
- 4) Join the adhesive coated surfaces within 60 minutes of mixing resin and catalyst.
- 5) Cure according to one of the following schedules:

|       |             |
|-------|-------------|
| 77°F  | 24-48 hours |
| 150°F | 2 hours     |
| 180°F | 1 hour      |
| 200°F | 30 minutes  |

#### **STORAGE, HANDLING, AND AVAILABILITY:**

Store in a cool, dry place in original containers. Keep containers closed and stir well before using.

## BondaTherm Equalizer



### BT-301-50M

BT-301-50M has a simple 1:1 mix ratio and develops a 1,400 psi Lap Shear strength (aluminum to aluminum) in four hours at room temperature. After just twenty four hours the strength is over 2,200 psi. This is perfect for any thermally conductive applications.

#### **DESCRIPTION:**

BT-301-50M is a two component fast curing thermally conductive epoxy adhesive. This product was specifically formulated for use in the convenient BondaTherm Equalizer dual barrel cartridge system.

BT-301-50M has a simple 1:1 mix ratio and develops a 1,400 psi Lap Shear strength (aluminum to aluminum) in four hours at room temperature. After just twenty four hours the strength is over 2,200 psi.

BT-301-50M offers fast heat dissipation for a wide range of electronic applications. The black resin and white hardener provide an excellent visual indication of a complete mix.

#### **FEATURES:**

- Fast room temperature cure
- Thermally conductive
- Forms strong bonds to a variety of substrates
- Electrically insulating
- Vibration and impact resistant
- 

#### **TYPICAL PROPERTIES:**

Color

|          |           |
|----------|-----------|
| Resin    | Black     |
| Hardener | White     |
| Mixed    | Dark Gray |

Viscosity, @25°C, cps

|          |        |
|----------|--------|
| Resin    | 70,000 |
| Hardener | 70,000 |

Specific Gravity, @25°C

|          |     |
|----------|-----|
| Resin    | 1.5 |
| Hardener | 1.5 |

Gel Time, 25°C, 15 grams

15 minutes

Durometer, Shore D

|       |    |
|-------|----|
| @25°C | 80 |
| @70°C | 50 |

Lapshear Strength (Al to Al), psi

|                |       |
|----------------|-------|
| After 4 hours  | 1,413 |
| After 24 hours | 2,231 |

## BondaTherm Equalizer



### BT-301-50M (cont.)

|  |                        |
|--|------------------------|
| Thermal Conductivity, W/m- K             | 1.04                   |
| Dielectric Strength, V/mil               | 440                    |
| Dielectric Constant, 25°C, 100Hz         | 5.3                    |
| Volume Resistivity, ohm-cm, 25°C         | 2.4 x 10 <sup>12</sup> |
| Coefficient of Thermal Expansion, ppm/°C |                        |
| Below Tg                                 | 45                     |
| Above Tg                                 | 175                    |
| Operating Temperature, °C                | -40 to +120            |

#### NOTES:

- 1) At room temperature, BT-301-50M will reach handle cure within 1-2 hours. The lap shear strength is 1,413 psi after 4 hours.
- 2) This product is an adhesive and is not designed for potting and encapsulating applications. BT-301-50M is a fast reacting epoxy system and it will create a high exothermic temperature in large mass sizes (avoid mass sizes greater than 25 grams).

#### INSTRUCTIONS FOR USE:

- 1) Surfaces must be clean and grease free. Use an oil free solvent such as acetone to wipe surfaces. Adhesion can be substantially increased by abrading the surfaces to be bonded with emery cloth, sand paper, carbide grinding tools, sand blasting, etc... A roughened, porous surface will produce the best results. Any oxidized metal films should be removed just prior to application of the epoxy adhesive mixture.
- 2) Dispense material from BondaTherm Equalizer.  
Apply mixed product to substrate to be bonded.
- 3) Join substrates within 3-5 minutes.
- 4) Cure according to one of the following schedules:
- 5)

|      |              |
|------|--------------|
| 25°C | 2-4 hours    |
| 65°C | < 10 minutes |

#### STORAGE, HANDLING AND AVAILABILITY:

Store in a cool, dry place in original containers.

Please read and understand the Safety Data Sheet (SDS) before using this product.

**BondaTherm Equalizer Accessories**



BT-01-50M

Dispensable Gun

Available from Distribution Partners



BT-02-50M

Dispensable Gun

Available from Distribution Partners

**BondaTherm Equalizer Kit™**

Available from Distribution Partners

(2) Dual Cartridges, (1) Dispense Gun, (3) Static Mixers



BT-101-50M-EQZ

BT-102-50M-EQZ

BT-301-50M-EQZ

|                |   |
|----------------|---|
| BT-101-50M-EQZ | Two Dual Cartridges (BT-101-50M), One Gun (BT-01-50M), Three Mixers (BT-02-50M) |
| BT-102-50M-EQZ | Two Dual Cartridges (BT-102-50M), One Gun (BT-01-50M), Three Mixers (BT-02-50M) |
| BT-301-50M-EQZ | Two Dual Cartridges (BT-301-50M), One Gun (BT-01-50M), Three Mixers (BT-02-50M) |



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