

January 2019

## Technical Data Sheet Dissipator<sup>®</sup> 746

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### Product Description

**Hernon<sup>®</sup> Dissipator<sup>®</sup> 746** is a thermally conductive adhesive formulated for bonding electrical components to heat sinks or printed circuit boards. Fast room temperature cure combined with excellent heat dissipation for thermally sensitive components and controlled strength for service repair provide perfect replacement for tapes, epoxies, silicones, fasteners and mechanical clips.

### Typical Applications

Typical applications include bonding transformers, transistors and other heat generating electronic components to printed circuit board assemblies or heat sinks.

### Typical Properties (Uncured)

| Property   | Value                                      |
|--|--|
| Chemical type  | Modified acrylic                           |
| Appearance   | White paste                                |
| Viscosity at 77°F (25°C), cP<br>at 2.5 rpm<br>at 5 rpm | 500,000 to 1,000,000<br>300,000 to 800,000 |
| Specific gravity                                       | 1.64                                       |
| Flash point  | See MSDS                                   |

### Typical Properties (Cured)

#### Physical Properties

| Property   | Value                   |
|--|-------------------------|
| Coefficient of thermal expansion, ASTM D696 (K <sup>-1</sup> ) | 50 x 10 <sup>-6</sup>   |
| Coefficient of thermal conductivity, ASTM C 177, W/(m·K)       | 1.215                   |
| Tensile Strength at break, ISO 527, N/mm <sup>2</sup> (psi)    | 12.8 (1,860)            |
| Elongation at break, ISO 527, %                                | 0.92                    |
| Young's Modulus, N/mm <sup>2</sup> (psi)                       | 2,760 (400,000)         |
| Temperature Range, °C (°F)                                     | -55 to 150 (-65 to 300) |

### Electrical Properties

| Property   | Value                 |
|--|-----------------------|
| Dielectric Strength, kV/mm<br>IEC 60243-1, kV/mm | 26.7                  |
| Dielectric Constant @ 100 Hz<br>IEC 60250        | 1.34<br>1.31          |
| Dissipation Factor @ 100 Hz<br>IEC 60250         | 0.047<br>0.003        |
| Volume Resistivity, Ω·cm, IEC 60093              | 6 x 10 <sup>6</sup>   |
| Sheet Resistance, Ω/sq., IEC 60093               | 1.5 x 10 <sup>8</sup> |

### Impedance Measurements

Specimens cured at 10:1 weight ratio with EF 15 activator. Mixed quickly for a few minutes and cured under compression for 24 hours at room temperature. The results are as follows:

| Area: 1 sq. in.<br>Stainless Steel<br>electrodes | 1 kHz   | 10 kHz  | 100 Hz | 120 Hz |
|--|---------|---------|--------|--------|
| <b>746 cured @<br/>2.0 mm thick</b>              | 10.3 MΩ | 1.06 MΩ | 100 MΩ | 83 MΩ  |
| <b>746 uncured @<br/>2.0 mm thick</b>            | 406 kΩ  | 308 kΩ  | 416 kΩ | 417 kΩ |
| <b>746 cured @<br/>0.4 mm thick</b>              | 6.2 MΩ  | 620 kΩ  | 60 mΩ  | 49 MΩ  |
| <b>746 uncured<br/>@ 0.4 mm thick</b>            | 64 kΩ   | 51 kΩ   | 65kΩ   | 65 kΩ  |

### Typical Curing Performance

**Dissipator<sup>®</sup> 746**, when used with **Hernon<sup>®</sup> EF<sup>®</sup> Activator 63**, fixtures at room temperature in less than five minutes.

### Typical Cured Performance

Cured for 24 hours @ 22°C.

Lap-shear specimens (**EF<sup>®</sup> Activator 63** applied to one surface), Shear Strength, ASTM D1002

| Cure @ 22°C | Substrates          | N/mm <sup>2</sup> (psi) |
|-------------|---------------------|-------------------------|
| 5 min       | G/B Stainless Steel | ≥ 1 (≥ 145)             |
| 1 hour      | G/B Steel           | ≥ 3.4 (≥ 500)           |
| 24 hours    | G/B Steel           | ≥ 12.4 (≥ 1800)         |
| 24 hours    | G/B Aluminum        | ≥ 12.4 (≥ 1800)         |
| 72 hours    | G/B Steel           | ≥15.1 (≥2200)           |
| 72 hours    | G/B Aluminum        | ≥13.7 (≥2000)           |

**Typical Environmental Resistance**

Cured for 72 hours @ 22°C.

steel lap-shear specimens (**EF® Activator 63** applied to one surface), Shear Strength, ASTM D1002.

**Chemical/Solvent Resistance**

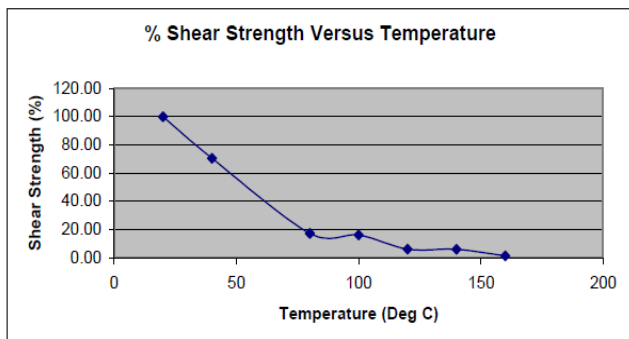
Aged under conditions indicated for 720 hours and tested at 22°C.

| Chemical/Solvent | Temp (°C) | % of Initial Strength |
|------------------|-----------|-----------------------|
| Air              | 87        | 104.4                 |
| Water            | 87        | 53.6                  |

**Hot Strength**

Cured for 24 Hours at RT with **EF® Activator 63**.

Shear strength was determined for grit-blasted steel to steel specimens according to ASTM D1002



**General Information**

For safe handling information on this product, consult the Material Safety Data Sheet (MSDS).

**Directions for use**

1. For best performance bond surfaces should be clean and free from grease.
2. Use applicator to apply the activator to the surface to be bonded.
3. After the solvent evaporates, the active ingredients will appear wet, and will remain active for up to 2 hours after application. Contamination of the surface before bonding should be prevented.
4. Apply adhesive to the unactivated surface.
5. Secure the assembly and wait for the adhesive to fixture (approximately 5 minutes) before any further handling. Full cure occurs in 4 to 12 hours.
6. The amount of adhesive applied to the part or heat sink should be limited to the amount necessary to fill the bond and just enough to give a small fillet.
7. The dispensing or application of the adhesive should be done as to minimize air entrapment within the bondline.

**Device Removal/Repair**

Components or devices with this thermally conductive adhesive can be removed while hot using heat from a hot air jet. Bond strength decreases at approximately 65°C to 93°C allowing components to be removed with lower shear forces. Method of removal/repair should be specifically determined due to the variety of components or devices bonding behavior.

**Storage**

**Dissipator® 746** should be stored in a cool, dry location in unopened containers at a temperature between 45°F to 85°F (7°C to 29°C) unless otherwise labeled. Optimal storage is at the lower half of this temperature range. To prevent contamination of unused material, do not return any material to its original container.

**Dispensing Equipment**

**Hernon®** offers a complete line of semi and fully automated dispensing equipment. Contact **Hernon® Sales** for additional information.

These suggestions and data are based on information we believe to be reliable and accurate, but no guarantee of their accuracy is made. HERNON MANUFACTURING, INC. shall not be liable for any damage, loss or injury, direct or consequential arising out of the use or the inability to use the product. In every case, we urge and recommend that purchasers, before using any product in full scale production, make their own tests to determine whether the product is of satisfactory quality and suitability for their operations, and the user assumes all risk and liability whatsoever, in connection therewith. Hernon's Quality Management System for the design and manufacture of high performance adhesives and sealants is registered to the ISO 9001 Quality Standard.