



# TRA-BOND 2151

March 2012

## PRODUCT DESCRIPTION

TRA-BOND 2151 provides the following product characteristics:

|  |   |
|--|---|
| <b>Technology</b>                              | Epoxy   |
| <b>Appearance</b>                              | blue  |
| <b>Components</b>                              | Two component - requires mixing   |
| <b>Product Benefits</b>                        | <ul style="list-style-type: none"> <li>Thermally conductive</li> <li>Electrically Insulating</li> <li>High adhesion</li> <li>Room temperature cure</li> </ul> |
| <b>Mix Ratio, by weight - Resin : Hardener</b> | 100 : 9.5   |
| <b>Typical Assembly Applications</b>           | Staking transistors, Diodes, Resistors, Integrated circuits and Heat sensitive components   |
| <b>Cure</b>                                    | Room Temperature or Heat Cure   |
| <b>Operating Temperature</b>                   | -70 to 115 °C   |
| <b>Application</b>                             | Conductive adhesive   |
| <b>Surfaces</b>                                | Many metals, Silica, Steatite, Alumina, Sapphire, Glass, Plastics and Ceramics  |

TRA-BOND 2151 is a thixotropic, two-part adhesive that develops strong, durable high-impact bonds at room temperature, improving heat transfer while maintaining electrical insulation. TRA-BOND 2151 bonds offer resistance to salts, mild acids and alkalis, petroleum products, lubricating oils and alcohol.

TRA-BOND 2151 passes NASA outgassing standards.

## TYPICAL PROPERTIES OF UNCURED MATERIAL

### Mixed Properties:

|                                     |        |
|-------------------------------------|--------|
| Viscosity @ 25 °C, mPa·s (cP):      |        |
| rv#7, 10 rpm                        | 40,000 |
| Thixotropic Index (5/5 rpm)         | 1.7    |
| Specific Gravity, g/cm <sup>3</sup> | 2,300  |
| Reactive solids contents, %         | 100    |
| Pot life , minutes:                 |        |
| @ 25 grams                          | 45     |
| @ 100 grams                         | 35     |
| Work Life, hours:                   |        |
| @ 25 grams                          | 1.5    |
| @ 100 grams                         | 1.25   |
| Flash Point - See MSDS              |        |

## TYPICAL CURING PERFORMANCE

### Cure Schedule

|                     |
|---------------------|
| 24 hours @ 25°C or  |
| 2 to 4 hours @ 65°C |

The above cure profile is a guideline recommendation. Cure conditions (time and temperature) may vary based on customers' experience and their application requirements, as well as customer curing equipment, oven loading and actual oven temperatures.

## TYPICAL PROPERTIES OF CURED MATERIAL

### Physical Properties:

|  |      |
|--|------|
| Coefficient of Thermal Expansion, ppm/°C | 26   |
| Glass Transition Temperature (Tg), °C    | 60   |
| Thermal Conductivity, W/(m-K)            | 0.95 |
| Hardness, Shore D                        | 90   |

### Electrical Properties:

|                              |                       |
|------------------------------|-----------------------|
| Volume Resistivity, ohms-cm: |                       |
| @ 25 °C                      | 2.10×10 <sup>15</sup> |
| @ 75 °C                      | 2.10×10 <sup>15</sup> |

## TYPICAL PERFORMANCE OF CURED MATERIAL

### Lap Shear Strength :

#### Alum to Alum:

|                            |                      |               |
|----------------------------|----------------------|---------------|
| Cured @ 65 °C for 2 hours  | N/mm <sup>2</sup> 20 | (psi) (2,850) |
| Cured @ 25 °C for 24 hours | N/mm <sup>2</sup> 15 | (psi) (2,150) |

#### Gold to gold:

|                              |                     |             |
|------------------------------|---------------------|-------------|
| Cured @ 65 °C for 30 minutes | N/mm <sup>2</sup> 6 | (psi) (880) |
|------------------------------|---------------------|-------------|

|                                       |                      |               |
|---------------------------------------|----------------------|---------------|
| Tensile Strength, cured 30 min @ 65°C | N/mm <sup>2</sup> 50 | (psi) (7,500) |
|---------------------------------------|----------------------|---------------|

### IZOD Impact Resistance :

|                       |      |
|-----------------------|------|
| Ft. lbs/inch of notch | 0.49 |
| J/m                   | 26   |

## GENERAL INFORMATION

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

## DIRECTIONS FOR USE

- Carefully clean and dry all surfaces to be bonded.
- Remove clamp and thoroughly mix the TRA-BOND 2151 epoxy adhesive system components in the handy BIPAX mixing-dispenser package until color is uniform throughout.
- Apply this completely mixed adhesive to the prepared surfaces, and gently press these surfaces together. Contact pressure is adequate for strong, reliable bonds; however, maintain contact until adhesive is completely cured.
- Some separation of components is common during shipping and storage. For this reason, it is recommended that the contents of the shipping container be thoroughly mixed prior to use.



5. Some ingredients in this formulation provided in BIPAX, TRA-PAX and bulk packaging may crystallize when subjected to low temperature storage. A gentle warming cycle of 52°C for 30 minutes prior to mixing components may be necessary. Crystallized epoxy components do not react as well as liquid components and should be redissolved prior to use for best results.

#### Trademark usage

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Reference 0.6

#### Not for product specifications

The technical data contained herein are intended as reference only. Please contact your local quality department for assistance and recommendations on specifications for this product.

#### Storage

Store product in the unopened container in a dry location. Storage information may be indicated on the product container labeling.

#### Optimal Storage : 27 °C

Material removed from containers may be contaminated during use. Do not return product to the original container. Henkel Corporation cannot assume responsibility for product which has been contaminated or stored under conditions other than those previously indicated. If additional information is required, please contact your local Technical Service Center or Customer Service Representative.

#### Conversions

$(^{\circ}\text{C} \times 1.8) + 32 = ^{\circ}\text{F}$   
 $\text{kV/mm} \times 25.4 = \text{V/mil}$   
 $\text{mm} / 25.4 = \text{inches}$   
 $\text{N} \times 0.225 = \text{lb}$   
 $\text{N/mm} \times 5.71 = \text{lb/in}$   
 $\text{N/mm}^2 \times 145 = \text{psi}$   
 $\text{MPa} \times 145 = \text{psi}$   
 $\text{N}\cdot\text{m} \times 8.851 = \text{lb}\cdot\text{in}$   
 $\text{N}\cdot\text{m} \times 0.738 = \text{lb}\cdot\text{ft}$   
 $\text{N}\cdot\text{mm} \times 0.142 = \text{oz}\cdot\text{in}$   
 $\text{mPa}\cdot\text{s} = \text{cP}$

#### Note

The data contained herein are furnished for information only and are believed to be reliable. We cannot assume responsibility for the results obtained by others over whose methods we have no control. It is the user's responsibility to determine suitability for the user's purpose of any production methods mentioned herein and to adopt such precautions as may be advisable for the protection of property and of persons against any hazards that may be involved in the handling and use thereof. In light of the foregoing, **Henkel Corporation and its affiliates ("Henkel") specifically disclaims all warranties expressed or implied, including warranties of merchantability or fitness for a particular purpose, arising from sale or use of Henkel products. Henkel specifically disclaims any liability for consequential or incidental damages of any kind, including lost profits.** The discussion herein of various processes or compositions is not to be interpreted as representation that they are free from domination of patents owned by others or as a license under any Henkel patents that may cover such processes or compositions. We recommend that each prospective user test his proposed application before repetitive use, using this data as a guide. This product may be covered by one or more United States or foreign patents or patent applications.

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