



Adhesive Films and Preforms

31 Dunham Road  
Billerica, MA 01821

Toll Free: (888) 832-4345  
Fax: (978) 670-4956

Email: info@techfilm.com  
www.techfilm.com

## E3213 ELECTRICALLY CONDUCTIVE ADHESIVE

### Description:

TechFilm E3213 is an electrically conductive screen printable liquid adhesive. E3213 features good chemical, heat, and moisture resistance.

### Applications:

TechFilm E3213 is a liquid adhesive that is designed for electrically conductive applications.

### Shelf Life:

Two days @ 25°C    Two weeks @ 10°C    Two months @ -10°C    One year @ -40°C

### Cure Schedules:

Cure Schedule                      60 minutes at 150°C  
Alternate Cure Schedules        30 minutes at 165°C

### Cured Properties:

| <u>Property</u>                                         | <u>Method</u>   | <u>Value Obtained</u> |
|---------------------------------------------------------|-----------------|-----------------------|
| Color                                                   | Visual          | Silver                |
| Specific Gravity                                        | ASTM D790       | 3.5                   |
| Lap Shear Strength to Aluminum at 25°C, psi             | ASTM D1002      | 2400                  |
| Lap Shear Strength to Gold at 25°C, psi                 | ASTM D1002      | 2000                  |
| Glass Transition, DSC, °C                               | ASTM E1356      | 144                   |
| Volume Resistivity, Ohm-cm at 25°C                      | TFTEST004A      | $6 \times 10^{-3}$    |
| Weight Loss at 150°C, TGA, 20°C/min, N <sub>2</sub> , % | ASTM D3850      | 0.05                  |
| at 200°C                                                | and MIL-STD-883 | 0.05                  |
| at 250°C                                                | Section 3.8.5.1 | 0.11                  |
| at 300°C                                                |                 | 0.27                  |

**All values reported above are typical values from the recommended cure, and are reported as a means of reference. Individual testing should be done to determine actual results, tested at specific conditions.**

Rev. 11/10/06-LM

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**Liquid Properties:**

T3213 in its uncured state has the following properties:

|                                     |            |         |
|-------------------------------------|------------|---------|
| Viscosity at 25°C, TE at 1 RPM, cP  | TFTEST001B | 550,000 |
| Viscosity at 25°C, TE at 10 RPM, cP | TFTEST001B | 140,000 |
| Thixotropic Index                   | TFTEST001B | 4       |

**Warnings:**

Use with adequate ventilation. Wear protective clothing and safety goggles.

Medical Conditions Aggravated by Exposure: Exposure may aggravate preexisting skin conditions and/or eye disorders.

Eye Contact: Contains materials that may cause moderate eye irritation. Use good hygiene, wear protective gloves and do not touch eyes. Molten material may cause thermal burns.

Skin Contact: Contains materials that cause moderate skin irritation. Prolonged or repeated exposure to the film may cause dermatitis in susceptible individuals. This product may cause skin sensitization/allergic skin reactions that may be severe, symptoms may include rash, swelling, itching and hives.

Inhalation: At ambient conditions vapors are unlikely to cause harm. Heating can generate vapors that could cause respiratory irritation if inhaled. If abraded dust may cause irritation of the respiratory passages.

Ingestion: Harmful if swallowed.

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