

Turbo-Coat Acrylic Conformal Coating Product# 2108

Product Description

TurboCoat Acrylic Conformal Coating is designed to speed up board production throughput without additional investment of expensive UV systems or other capital equipment. Conformal coating cure time is often considered a production bottleneck for PCB assembly operations. TurboCoat dries tack free in 3 minutes, allowing manufactures to handle boards in 1/3 the time of the leading acrylic coating! Full cure can be achieved as quickly as 10 minutes with elevated temperatures.

Features / Benefits

- Fastest Cure – Dry to Touch in 3 Minutes!
- Faster Throughput without Capital Investment
- Thick Coating – One-Pass Application
- Fast & Easy Rework & Repair
- IPC-CC-830 & MIL-I-46058C Tested
- UL94 V-0 Rated
- Crystal Clear & Glossy Finish
- UV Indicator for Black Light QC Inspection
- MEK, Toluene & Xylene Free
- Adjustable spray head (Aerosol)

Applications

Electronic Assemblies for...

- Automotive
- Aviation
- Consumer Electronics
- Appliances
- Industrial Meters & Control

Usage Instructions

For industrial use only. Read MSDS carefully prior to use. Before applying Fine-L-Kote™ conformal coatings, clean circuit boards to remove contamination and allow to dry. Cleaning may be performed with Techspray G3, E-LINETM and Precision-V defluxers.

Spray Application: Apply top to bottom, allowing coating to flow evenly around components. Rotate PCB 90° and repeat application. Rotate and apply coating two additional times, then allow board to cure. If additional thickness is desired, apply additional coatings. When using liquid spray with automatic dispensing equipment, adjustments may be required in application rate and viscosity.

Dip Application: Using automatic equipment or hand immersion technique, slowly immerse PCB into the coating and remove slowly. Use an average rate of approximately 1 foot per minute. After allowing the board to cure, process may be repeated to achieve desired thickness.

Brush Application: Evenly apply coating to areas desired at thickness required. Allow time for curing before reapplying to achieve a thick coating. Use WonderMASK to protect components during conformal coating process. After application, cured Fine-L-Kote™ may be removed using Techspray Conformal Coating Removal Pen (2510-N or 2510-P).



Typical Product Data and Physical Properties

| | |
|-------------------------------|------------------------------------|
| Physical State: | Liquid |
| Odor: | Characteristic odor |
| Color: | Clear, colorless |
| Percent Volatile: | 93.4 at 25°C (77°F) |
| Vapor pressure: | 14.52 mmHg @ 20°C |
| Vapor density: | >1 (Air=1) |
| Boiling Point: | 39.4°C (103°F) |
| Flashpoint and method: | 1.49°C (35°F) |
| Solubility in water: | Negligible |
| Evaporation rate: | >1 (n-Butyl Acetate=1) |
| Density: | 0.834 at 25°C (77°F) |
| Viscosity #1: | 10 to 20 Centipoise at 25°C (77°F) |
| VOC: | 33.240% by weight |
| Shelf life: | 2 years |

Chemical Components

| | |
|---------------------------------|--------------|
| Acrylic Polymer (non-hazardous) | |
| n-Propyl acetate | CAS#109-60-4 |
| Acetone | CAS#67-64-1 |
| n-Heptane | CAS#142-82-5 |

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Thinning/Removal

Techspray® coatings can be thinned to meet production requirements using Conformal Coating Thinner (2105). Conformal Coating Remover (2510) is also available for rework and repair, although coating is often just burnt through in the soldering process for spot repairs.

Techspray® coatings contain Opti/Scan to allow quality control inspection of coverage and evenness of the coating on a PCB. A coated board can be passed under a standard, low-cost UV (black) light, and the coated areas glow. The brighter the glow, the thicker the coating.

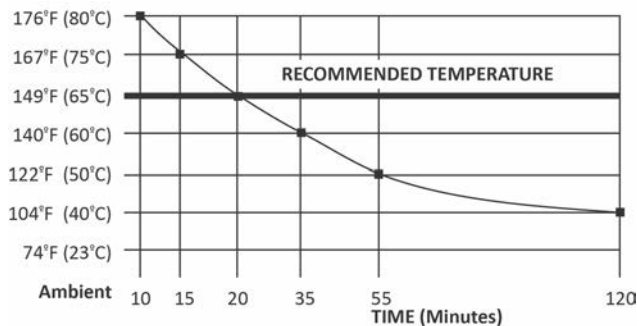
Coverage

(1mil dry film) 1 aerosol can = 14ft² (1.3M²)
 1 gal. liquid = 272ft² (25.3M²)

Cure Profile

Accelerated Cure: 20 minutes @ 149°F / 65°C
Ambient Cure: 15 hours @ 74°F / 23°C (ambient temp)
Tack-Time (dry to touch): 3 minutes @ 74°F / 23°C (ambient temp)

Cure time depends on a number of factors, including the method and thickness of application. Dilution will also change the cure profile. 149°F / 65°C is recommended as the best accelerated temperature to optimize leveling, providing the smoothest possible finish. A faster cure may be achieved, but should be thoroughly tested first.



Test Data

Application

| Application Method | Test Method* | 2108 Test Results |
|---------------------------------------|--------------|--|
| Application Method | | Spray system, dip, or brush |
| Cure time | TS-053 | 24 hours |
| Accelerated cure time | TS-054 | 25 min @65C |
| Dry time to touch | TS-055 | 3 min |
| Quality inspection method of coverage | | UV (long-wave black) light |
| Removal method | | Alkane, Acetone or Acetate, Solder iron burn through |

Characteristics

| As Supplied: | Test Method | 2108 Test Results |
|---------------------------------------|------------------------------------|---------------------------|
| Visual appearance | TS-050 | Clear |
| Density (25 C) | TS-019-1 | 0.8603 g/ml |
| Viscosity (25 C) | Instrument (Brookefield RVT) guide | 20 cp |
| Operating Temperature | | -85° -257°F / -65° -125°C |
| Solids % | TS-015 | 15.70% |
| Flash point | ASTM D-56 (TAG CC) | 1.7C(35F) |
| Vapor pressure (20 C) (VOC composite) | Calculated | 25.02mm Hg |
| Initial boiling point | TS-051 | 39.4C (103F) |
| Stability (30-day test @ 37 C/100 F) | TS-052 | Stable |
| Stability (30-day test @ 6.1 C/21 F) | TS-052-1 | Stable |
| Resin T g | provided by supplier | 50-55C |
| Resin mol wt | provided by supplier | 60,000 |

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Competitive Comparison

| | MIL-I-46058C / IPC-CC-830 | UL94 Tested V-0 Rated | Tack-Free Time (minutes) | Contains MEK, Toluene, Xylene | Threshold Limit Value (TLV) - Lower is more hazardous | Hardness (Gardner Pencil) - Lower is harder | Adhesion (ASTM D3359) - Higher is better | Observations |
|--------------------------------|------------------------------|--------------------------|-----------------------------|----------------------------------|---|---|--|--|
| Techspray 2108-125 | YES | YES | 3 | NO | 200 | 2B | 5B | High gloss, fast/even level, soft/med spray pattern |
| Techspray 2103-125 | YES | NO | 17 | NO | 200 | 4B | 4B | Med gloss, even level, soft/med spray pattern |
| Humiseal 1B31 | YES | NO | 9 | MEK, Toluene | 50 | 4B | 4B | Good gloss, patchy level, good pattern |
| Humiseal 1B73 | YES | YES | 33 | MEK, Toluene | 50 | 2B | 4B | Good gloss, good level, very wide pattern |
| Loctite 3900 | NO | NO | 6 | Toluene | 50 | 4B | 5B | Good gloss, good level, med cone pattern |
| MG 419B | NO | NO | 10 | Toluene, Xylene | 50 | 6B | 4B | Uneven gloss, orange peel texture, very soft spray pattern |
| Chemtronics CTAR-12 | YES | YES | 33 | MEK | 50 | 4B | 4B | High gloss, uneven spray pattern, large amount of material |

Certified Testing

| As Cured - Physical | Test Method | 2108 Test Results |
|----------------------------------|--|----------------------|
| Dielectric strength | ASTM D-149, IPC-TM-650 2.5.6.1, Rev. A | 1000 volts |
| Adhesion | ASTM D-3359 | 5B |
| Film hardness | ASTM D-3363 | 2B |
| Film thickness (1 dip) | ASTM D-1005 | 1 mil (0.001") |
| UL Qualification | Test Method | 2108 Test Results |
| Coating flammability | UL94/746E | V-0 |
| IPC-CC-830B Qualification | Test Method | 2108 Test Results |
| Appearance | IPC-CC-830B 3.5.2 | pass |
| Fluorescence | IPC-CC-830B 3.5.3 | pass |
| Flammability | IPC-CC-830B 3.5.6 | pass |
| Fungus resistance | IPC-TM-650 2.6.1.1 | pass |
| Flexibility | IPC-TM-650 2.4.5.1 | pass |
| Dielectric withstand voltage | IPC-TM-650 2.5.7.1 | pass |
| Moisture & insulation resistance | IPC-TM-650 2.6.3.4 | pass |
| Thermal shock | IPC-TM-650 2.6.7.1 | pass |
| Temperature humidity ageing | IPC-TM-650 2.6.11.1 | pass |

Chemical Compatibility – Industrial Chemicals

| INDUSTRIAL CHEMICALS | EFFECT | CAS # |
|----------------------|-------------|------------|
| Methanol | Soften | 67-56-1 |
| Ethanol | Dissolution | 64-17-5 |
| IPA | Dissolution | 67-63-0 |
| 70% IPA | Dissolution | 67-63-0 |
| 50% Ethanol | No effect | 64-17-5 |
| DPM | Dissolution | 34590-94-8 |
| Glycol ether EB | Dissolution | 111-76-2 |
| THF | Dissolution | 109-99-9 |
| Acetone | Dissolution | 67-64-1 |
| n-propyl acetate | Dissolution | 109-60-4 |
| t-butyl acetate | Dissolution | 540-88-5 |
| Hexane | Dissolution | 110-54-3 |
| Heptane | Soften | 142-82-5 |
| Cyclopentane | Dissolution | 287-92-3 |
| Cyclohexane | Dissolution | 110-82-7 |
| Toluene | Dissolution | 108-88-3 |
| Trans-dce | Dissolution | |

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Chemical Compatibility – Household Chemicals

| HOUSEHOLD CHEMICALS | EFFECT | EXAMPLE OF US BRAND NAME |
|--------------------------|-------------|--------------------------------|
| 5% Acetic acid | No effect | Heinz Vinegar |
| 0.1N Hydrochloric acid | No effect | Lime-A-Way Toilet Bowl Cleaner |
| 50% Nitric acid | No effect | |
| Parson's solution | No effect | Windex |
| 0.1N Potassium hydroxide | No effect | 10% Liquid Plumber |
| 45% Potassium hydroxide | No effect | Liquid Plumber |
| d-limonene | Dissolution | Orange Glo |
| Chlorox neat | No effect | Chlorox |
| Chlorox 1:1 | No effect | 50% Chlorox |
| Chlorox 1:4 | No effect | 20% Chlorox |
| Pine-Sol Lemon | No effect | Pine-Sol Lemon |
| Pro 409 | No effect | 409 Professional |

In most cases, Techspray® corporate test methods (TS designation) correspond to standard ASTM. Copies of Techspray® corporate test methods are available upon request.

Packaging and Availability

| | |
|-----------------|-----------------|
| 2108-12S | 12oz. Liquid |
| 2108-P | 1 Pint Liquid |
| 2108-G | 1 Gallon Liquid |
| 2108-5G | 5 Gallon Liquid |

Environmental Policy

Techspray® is committed to developing products to ensure a safer and cleaner environment. We will continue to meet and sustain the regulations of all federal, state and local government agencies.

Resources

Techspray® products are supported by a global sales, technical and customer services resources.

For additional technical information on this product or other Techspray® products in the United States, call the technical sales department at 800-858-4043, email tsales@techspray.com or visit our web site at: www.techspray.com.

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