



Turbo-Coat™ Acrylic Conformal Coating

2108

Introduction

Techspray's new Turbo-Coat™ 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. Turbo-Coat 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.

Like all Techspray conformal coatings, Turbo-Coat can be either sprayed or brushed, or boards can be dipped directly into the coating for a thicker layer of protection.

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 Sprayhead (Aerosol)

Applications

Electronic Assemblies for...

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

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.

Thinning / Removal

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.

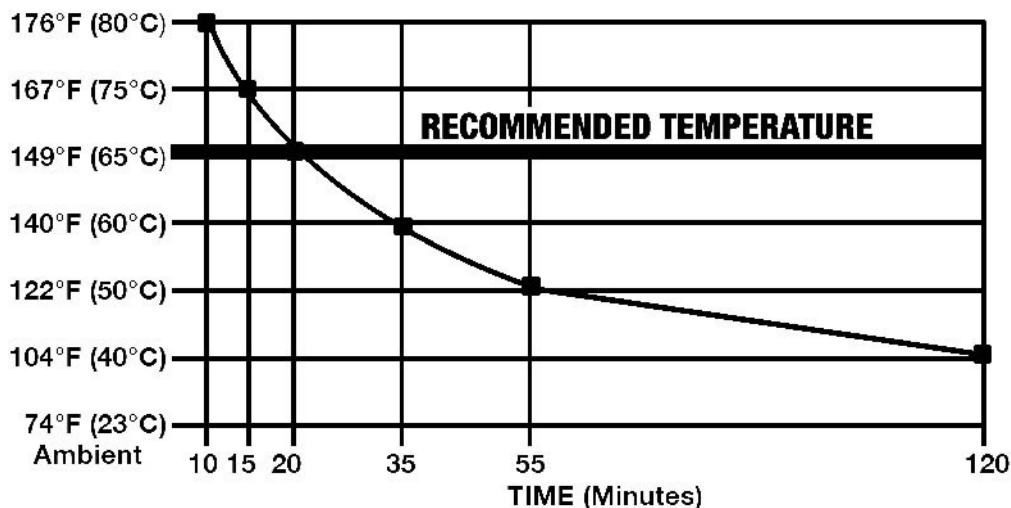
Chemical Components

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

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

| | 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 @65 C |
| 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 |
| Solids % | TS-015 | 15.70% |
| Flash point | ASTM D-56 (TAG CC) | 1.7 C (35 F) |
| 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 – 55 C |
| Resin mol wt | provided by supplier | 60,000 |

Competitive Comparison

| | Techspray 2108-12S | Techspray 2103-12S | Humiseal 1B31 | Humiseal 1B73 | Loctite 3900 | MG 419B | Chemtronics CTAR-12 |
|--|---|--|--|--|---|--|--|
| MIL-I-46058C / IPC-CC-830 | YES | YES | YES | YES | NO | NO | YES |
| UL94 Tested V-0 Rated | YES | NO | NO | YES | NO | NO | YES |
| Tack-Free Time (minutes) | 3 | 17 | 9 | 33 | 6 | 10 | 33 |
| Contains MEK, Toluene, Xylene | NO | NO | MEK, Toluene | MEK, Toluene | Toluene | Toluene, Xylene | MEK |
| Threshold Limit Value (TLV) - Lower is more hazardous | 200 | 200 | 50 | 50 | 50 | 50 | 50 |
| Hardness (Gardner Pencil) - Lower is harder | 2B | 4B | 4B | 2B | 4B | 6B | 4B |
| Adhesion (ASTM D3359) - Higher is better | 5B | 4B | 4B | 4B | 5B | 4B | 4B |
| Observations | High gloss, fast/even level, soft/med spray pattern | Med gloss, even level, soft/med spray pattern | Good gloss, patchy level, good pattern | Good gloss, good level, very wide pattern | Good gloss, good level, med cone pattern | Uneven gloss, orange peel texture, very soft spray pattern | 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 | 156-60-5 |

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.

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.

Packaging and Availability

| | |
|----------|-------------------------|
| 2108-12S | 12 oz. Aerosol |
| 2108-P | 1 pint in glass bottle |
| 2108-G | 1 gallon in metal pail |
| 2108-5G | 5 gallons in metal pail |

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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