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 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 SDS carefully prior to use. Before applying Turbo-Coat™ conformal coating, clean circuit boards to remove contamination and allow to dry. Cleaning is recommended for optimal adhesion, and may be performed with Techspray G3, E-LINE™ and Precision-V defluxers.

Spray Application: Apply top to bottom, allowing coating to flow evenly around components. Repeat application 3 additional times from varying directions to prevent component shadowing. 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 25ºC (77ºF)
Vapor pressure:	14.52 mmHg @ 20ºC
Vapor density:	>1 (Air=1)
Boiling Point:	39.4ºC (103ºF)
Flashpoint and method:	1.49ºC (35ºF)
Solubility in water:	Negligible
Evaporation rate:	>1 (n-Butyl Acetate=1)
Density:	0.834 at 25ºC (77ºF)
Viscosity #1:	10 to 20 Centipoise at 25ºC (77ºF)
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.

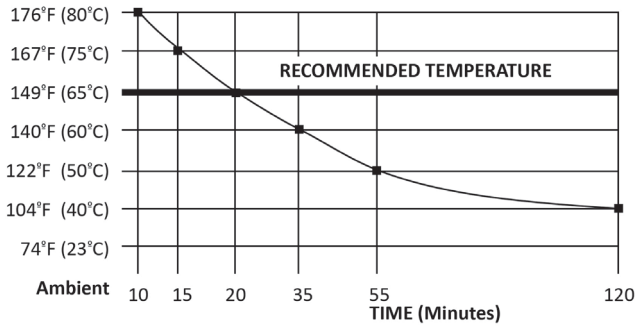
Coverage

(1mil dry film) 1 aerosol can = 14ft^2 (1.3M^2)
1 gal. lquid = 272ft^2 (25.3M^2)

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 @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		-85º -257ºF / -65º -125ºC
Solids %	TS-015	Aerosol - 16% Bulk - 16-18%
Flash point	ASTM D-56 (TAG CC)	1.7C(35F)
Vapor pressure (20 C) (VOC composite)	Calculated	25.02mm Hg
Maximum Incremental Reactivity (MIR)		0.35
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 2108-12S	YES	YES	3	NO	200	2B	5B	High gloss, fast/even level, soft/med spray pattern
Techspray 2103-12S	YES	NO	17	NO	200	4B	4B	Med gloss, even level, soft/med spray pattern
Humiseal 1B31	YES	N0	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
T oluene	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 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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