4228A Liquid

Red Insulating Varnish

4228A is an easy-to-use, HAPs-free, 1-part red insulating varnish that insulates high-voltage parts such as motor windings and transformer coils against arcing and discharge. This dielectric coating cures at room temperature and adheres well to many substrates, including metals, glass and most plastics.

The coating's low viscosity makes it easy to coat parts with intricate geometries, and the distinct red color helps operators inspect coverage.

Features & Benefits

Material Group I (CTI ≥600 V, PLC=0)

Excellent dielectric properties

Fast dry time

HAPs-free

Adheres well to metals, glass and many plastics

Provides excellent protection against moisture

Cure Instructions

Allow to dry at room temperature for 10 hours, or after letting sit for 30 minutes, cure the coating in an oven at:

Temperature	80 °C
Time	2 h

Storage and Handling

Store between -5 and 25 ˚C in a in a dry area, away from sunlight (see SDS).

Available Packaging

Part #	Packaging	Net Vol.	Net Wt.
4228A-55ML	Bottle	55 mL	57.2 g
4228A-225ML	Can	225 mL	234 g
4228A-1L	Can	850 mL	884 g
4228A-4L	Can	3.60 L	3.74 kg

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Liquid Properties

Binder System	Acrylic, modified alkyd	—
Dry Time to Handle	1 h	—
Minimum Recoat Time	10 min	—
Recommended Film Thickness	25–38 µm	—
Density	1.0 g/mL	ASTM D1475
Viscosity @ 25 ˚C	800 cP	Brookfield Engineering labs Inc. IPCTM-65- Method 2.4.24.4
Percent Solids	55 %	—
Theroretical Coverage @ Recommended Thickness	130 ft^2/L	Calculated
Calculated VOC	561 g/L	—
Shelf Life	5 y	—

Cured Properties

Color	Red	—
Dielectric Strength	3 700 V/mil	ASTM D149
Comparative Tracking Index (CTI)	600 V	ASTM D3638
Service Temperature Range	-40–180 ˚C	—

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Application Instructions

Read the product SDS before using this product (downloadable at www.mgchemicals.com).

Recommended Preparation

Clean the substrate with MG #824 99.9% Isopropyl Alcohol, so the surface is free of oils, dust, and other residues.

Recommended Thinner

When thinning is required, use MG #4354 Thinner 2.

Brush

This product can be applied by brush for rework or touch-ups. Thinning is not required for most brush applications. Desired coating thickness can be achieved in a single application. Applied coating can be cured immediately.

Manual Spray Guns

Use a standard fluid nozzle gun with a minimum tip diameter of 0.8–1.0 mm. The settings listed below are recommendations; however, performance will vary with different brands:

Inlet	Air Flow	Air Cap
20–40 psi	10–15 SCFM	8–10 psi

1. Dilute 1-part coating to 1-part thinner (MG #4352 Thinner 2). Adjust ratio if required.
2. Stir the coating gently, but thoroughly.
3. Spray a test pattern to ensure good flow quality.
4. Tilt the board at 45° and spray a thin even coat from a distance of 20–25 cm (8–10 in). Use spray-and-release strokes with an even motion to avoid paint buildup in one spot. Start and end each stroke off the surface.
5. Wait 10 min between coats to avoid trapping solvent.
6. Rotate the board 90° and spray again to ensure good coverage.
7. Apply additional coats until desired thickness is achieved (go to step 3).
8. Let dry for 30 min at room temperature before applying heat cure.

Dip Coat

Use a Ford or Zahn cup to monitor the viscosity of the coating, as the solvent will evaporate over time.

1. Hang the PCB on a dipping arm.
2. Slowly lower the PCB into a tank and leave immersed in the coating for 2 min to allow penetration.
3. Slowly withdraw the PCB from the tank at a rate of approximately 6" per minute.
4. Let dry for 3 min before applying additional coats or 10 min before heat cure.

Clean-up

Clean spray system and equipment with MEK or acetone, MG #434.