

TMC SPECIFICATION

NO. S1394

REV:

COMPILED: R.U.

CHECKED:

APPD:

SHEET

OF

TITLE:

TMC PROTECTIVE COATING SPECIFICATION
FOR PRINTED WIRING BOARD ASSEMBLIES

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PURPOSE:

To provide environmental protection for printed wiring board assemblies.

APPLICABLE DOCUMENTS:

MIL-I-46058

SM-A-587204-C (Drawing)

MATERIALS REQUIRED:

1. Acrylic
2. Thinner (toluene) if necessary
3. Tape (use for masking)
4. Isopropyl alcohol
5. Distilled water

EQUIPMENT REQUIRED:

1. Spray gun
2. Ultra violet light source
3. Oven (temperature range of 100° to $200^{\circ} \pm 5^{\circ}$ F)
4. Various stainless steel tanks
5. Mechanical dipper

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DESCRIPTION:

- A. Protective coating material to be acrylic (thinned with toluene) if necessary. As per MIL-I-46058.
- B. Cleaning agent to be a mixture of 30% distilled water and 70% isopropyl alcohol.

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PREPARATION FOR COATING:

All etched circuit board assemblies shall be thoroughly cleaned of flux or contaminates.

1. a. After the soldering operations remove tape or any other solder masking device. Place the assembly in a stainless steel tray containing freon TMC or equivalent. Lightly brush to aid in flux removal.
- b. Transfere the assembly to a second tray containing distilled water and agitate.
- c. Transfere the assembly to a third tray containing 100% isopropyl alcohol for a period of 3 to 10 minutes. Slight agitation may be employed.
- d. Transfere the assembly to a fourth tray containing 100% isopropyl alcohol for a period of 3 to 10 minutes. Slight agitation may be employed.
- e. Clean assemblies should be handled with white gloves or by edges only. This is to insure against contamination.

At this point the assembly should be completely clean and free from any evidence of flux, masking material or other contaminates.

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PREPARATION OF ACRYLIC FOR SPRAY OR DIP APPLICATION:

Acrylic material must be checked for correct viscosity. The following procedure is recommended.

1. Lower a clean number 2 cup into sufficient acrylic mixture (to cover cup). Holding the handle, raise the cup out of the mixture. When the bottom of the cup leaves the solution, activate a stop watch. When the steady stream of fluid flowing out of the cup breaks (is interrupted) stop the stop watch.
2. Repeat this procedure three times in order to obtain an average viscosity reading of 18 ± 2 seconds.
3. If necessary add acrylic to raise viscosity. Add thinner (toluene) to lower viscosity.

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APPLICATION OF PROTECTIVE COATING (SPRAY):

1. Mask all areas to be free of coating using masking tape or an equivalent.
2. Holding the assembly at a distance of 8 to 12 inches away from the spray gun, spray 4 passes over the surface, turn assembly 90° and repeat 4 more passes. All components are to be completely enveloped. Resultant coating shall be $.002 \pm .001$ inches after cure per MIL - I - 46058.
3. The coating shall be air dried for 5 minutes at room ambient temperature.
4. Bake at $170^{\circ} F \pm 5^{\circ} F$ for 1 hour.
5. Remove masking tape.
6. Using a micrometer, measure the thickness of an area uncoated on both sides and with no surface circuitry. Then measure a circuit free area which has been coated on both sides and is near or adjacent to the uncoated area. The difference between the first and second reading is total thickness of the coating. Divide total coating by (2) to obtain the single coating thickness.
7. Examine board under black light for uncoated surfaces. Re-spray areas not coated and recheck thickness.

NOTE: Re-mask where required.

8. Place completed board into clean polyethylene bags for storage.

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APPLICATION OF PROTECTIVE COATING (DIP):

1. Mask all areas to be free of coating using masking tape or an equivalent.
2. To facilitate drainage, the boards shall be suspended by one corner at an angle such that no components are horizontal.
3. Lower board into the acrylic and then withdraw at a uniform rate of 4 inches per minute using a mechanical dipper.
4. Air dry for 5 minutes at room ambient temperature followed by 1 hour at $170 \pm 5^{\circ}$ F.
5. Remove masking.
6. Holding the board at a distance of 8 to 12 inches away from the spray gun, spray 4 passes over the surface. Turn board 90° and repeat 4 more passes. All components are to be completely enveloped. Resultant coating shall be $0.002 \pm .001$ inches after cure per MIL-I-46058.
7. Place completed boards into clean polyethylene bags for storage.