The Institute for Interconnecting and Packaging Electronic Circuits
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IPC-TM-650
TEST METHODS MANUAL

Number	
2.3.1.1	
Subject	
Chemical Cleaning of Metal-Clad Laminate	
Date	Revision
5/86	**B**
Originating Task Group	
N/A	

1.0 Scope This method evaluates the chemical cleanability of metal-clad laminate surfaces of oxidation and anti-oxidation protective coatings.

2.0 Applicable Document None.

3.0 Test Specimen The size of the test specimen shall be determined by the post etching tests to be performed.

4.0 Apparatus

4.1 Standard conveyorized spray cleaning modules or suitable laboratory equipment.

4.2 Personal safety equipment needed to perform this test are as follows: rubber or polyethylene gloves, plastic or coated apron and safety goggles.

4.3 Chemicals

4.3.1 Method A—Sodium Persulfate

Chemical	Concentration	Temperature
Cleaner/ Degreaser	Per manufacturer's recommended limits	As recommended
Sodium Persulfate	1.5 lbs/gal (± 0.5 lb/gal)	100° ± 5°F (38° ± 3°C)

4.3.2 Method B—Ammonium Persulfate

Chemical	Concentration	Temperature
Cleaner/ Degreaser	Per manufacturer's recommended limits	As recommended
Ammonium Persulfate Tech Grade	2.0 lbs/gal (± 0.5 lb/gal)	100°F Max

5.0 Procedure

5.1 Specimen Preparation Shear the material to the required specimen size and remove the rough edges from the specimen by sanding or other suitable means.

5.2 Cleaning

5.2.1 Conveyorized Spray Cleaning Process the specimen through the conveyorized modules at a speed which will permit 30 ± 5 seconds of exposure to the micro etching solution. Rinse specimens with deionized water for 1-2 minutes after micro etching.

5.2.2 Laboratory Cleaning Place the specimen in a cleaner/degreaser solution and gently agitate for 30 ± 5 seconds. Remove the specimen and flush with tap water. Next place the specimen in a micro etch solution for 30 ± 5 seconds and vigorously agitate. Remove the specimen and flush with deionized water for 1-2 minutes.

5.3 Surface Evaluation The metal cladding on the test specimen shall be cleaned to a uniform matte finish. Deionized or distilled water poured on the metal surface does not bead or form puddles.

6.0 *Notes*

6.1 Sodium persulfate solution shall be replaced if the copper concentration exceeds 3.0 oz/gal (22.5 gal).

6.2 Solution spray from nozzles should be checked for uniformity across the specimen.