1.0 Scope
This method evaluates the chemical cleanability of metal-clad laminate surfaces so 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

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Concentration</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaner/Degreaser</td>
<td>Per manufacturer’s recommended limits</td>
<td>As recommended</td>
</tr>
<tr>
<td>Sodium Persulfate</td>
<td>1.5 lbs/gal (± 0.5 lb/gal)</td>
<td>100°F ± 5°F (38°F ± 3°C)</td>
</tr>
</tbody>
</table>

4.3.2 Method B—Ammonium Persulfate

<table>
<thead>
<tr>
<th>Chemical</th>
<th>Concentration</th>
<th>Temperature</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cleaner/Degreaser</td>
<td>Per manufacturer’s recommended limits</td>
<td>As recommended</td>
</tr>
<tr>
<td>Ammonium Persulfate Tech Grade</td>
<td>2.0 lbs/gal (± 0.5 lb/gal)</td>
<td>100°F Max</td>
</tr>
</tbody>
</table>

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.