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Product Data Sheet

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PRODUCT #: N8057

LAYER CLEAN CR

Acid Cleaner for Enhanced Chromate Removal

DESCRIPTION:

An acid, non-etching cleaner that provides the most effective removal of chromate conversion coating from copper laminate. ***LAYER CLEAN CR*** also removes soils such as fingerprints and oxides. Used prior to photoresist lamination, it reduces imaging defects by improving photoresist adhesion. ***LAYER CLEAN CR***'s non-chelating, non-chloride formula cleans and conditions copper surfaces, and provides consistent high speed cleaning at low concentrations. It is effective in both spray and soak applications.

BENEFITS:

- **Effectively removes chromate conversion coating**
- **Highly concentrated liquid formula cleans quickly at low concentrations**
- **Completely non-etching for use with very thin copper foils**
- **Non-chelating formula with no hydrochloric acid for easier waste treatment**
- **Easily adapted to feed and bleed system**

SPECIFICATIONS:

Density:	1.32 g/ml, 11.0 lbs./gal.
pH @10% :	0.3
Flash Point:	None
VOC Content (EPA Method 24):	None
Shelf life:	Indefinite

INSTRUCTIONS:

	Spray	**Soak**
Concentration:	5 - 10% by volume	5 - 10% by volume
Temperature:	80º - 100ºF	95º - 120ºF
Time:	20 seconds - 1 minute	40 seconds - 2 minutes

LAYER CLEAN CR will process 2000-3000 square feet per gallon of concentrate. It is recommended that the working solution be dumped when the copper level exceeds 500 PPM of copper, or once per month.

Equipment should be constructed of polypropylene, polyethylene, or CPVC. Heaters should be quartz or Teflon®.

CAUTIONS:

LAYER CLEAN CR is acidic; glasses or goggles, gloves and protective clothing should be worn when handling this product. In case of contact with skin or eyes, flush immediately with water and obtain medical attention. For further information, refer to Material Safety Data Sheet.

DISPOSAL:

Analyze for metal content. If above local limits, treat with caustic to precipitate metals. Add caustic to raise pH to 7.0 - 8.0. Dispose of in accordance with all local, state and federal regulations.

LAYER CLEAN CR

Solution Strength Analysis

ANALYSIS:

Equipment required:

25 ml burette
20 ml volumetric pipette
250 ml Erlenmeyer flask or 250 ml beaker
Dropper
pH meter (optional)

Reagents required:

1.0N sodium hydroxide standard solution
Mixed indicator (equal parts of 0.1% phenolphthalein indicator solution and 0.1% thymolphthalein indicator solution)
Distilled water

Procedure:

1. Pipette 20 ml of ***LAYER CLEAN CR*** working solution into a 250 ml Erlenmeyer flask (or beaker for pH end point procedure).
2. Add 50 ml of distilled water. Mix.
3. Add 10-15 drops of mixed indicator solution.
4. Titrate with 1.0N sodium hydroxide until the color changes from colorless to purple.

   OR

   Titrate to a pH end point of 10.0, using a pH meter.
5. Record ml used.

Calculation:

ml of 1.0N sodium hydroxide X 0.45 = % strength ***LAYER CLEAN CR***

Copper Concentration

Equipment required:

25 ml pipette
50 ml burette
250 ml Erlenmeyer flask
Graduated cylinder

Reagents required:

1.0N sodium thiosulfate standard solution
Potassium iodide crystal, reagent grade
Glacial acetic acid
Ammonium hydroxide buffer (140 g/l ammonium chloride. Adjust pH to 9.5 with ammonium hydroxide)
Starch indicator

Procedure:

1. Pipette a 25 ml sample of the bath into a 250 ml Erlenmeyer flask.
2. Add 55 ml ammonium hydroxide buffer. Then add 7 ml glacial acetic acid.
3. Add about 3 grams of reagent grade potassium iodide, and mix until dissolved.
4. Titrate immediately with sodium thiosulfate solution until the color changes to a pale straw yellow.
5. Add 3 ml starch indicator, and titrate to the disappearance of the blue color.

Calculation:

$$\text{ml sodium thiosulfate} \times \text{N sodium thiosulfate} \times \frac{63540}{\text{sample size}} = \text{ppm copper}$$