



Product Data Sheet

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PRODUCT #: N8148

LAYER CLEAN NP

Phosphate-Free 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 NP** also removes soils such as fingerprints and oxides. Used prior to photoresist lamination, it reduces imaging defects by improving photoresist adhesion. **LAYER CLEAN NP**'s non-chelating, non-chloride, phosphate free 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
- Non-etching for use with very thin copper foils
- Non-chelating formula with no hydrochloric acid for easier waste treatment
- No Phosphates

EQUIPMENT:

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

SPECIFICATIONS:

Density: 1.28 g/ml, 10.7 lbs./gal.
Flash Point: None
VOC Content (EPA Method 24): None
Shelf life: Indefinite

MAKE-UP/

OPERATING

INSTRUCTIONS:

	<u>Spray</u>	<u>Soak</u>
Concentration:	5 - 10% by volume	5 - 10% by volume
D.I. Water:	90 - 95%	90 - 95%
Temperature:	80° - 120°F	95° - 120°F
Time:	20 seconds - 1 minute	40 seconds - 2 minutes

Procedure:

1. Fill tank $\frac{3}{4}$ full with D.I. water.
2. Add the required amount of **LAYER CLEAN NP** and mix well.
3. Adjust to final volume with D.I. water and mix well.

ANALYSIS & REPLENISHMENT:

ANALYSIS PROCEDURE FOR LAYER CLEAN NP

Equipment:	20 ml volumetric pipette	pH 7.0 buffer
	50 ml burette	pH 10.0 buffer
	250 ml Erlenmeyer flask or beaker	
	pH meter (optional)	

Reagents: 1.0N sodium hydroxide (NaOH) – Commercially available from chemical supplier.
Mixed indicator – Equal parts of 0.1% phenolphthalein indicator solution and 0.1% thymolphthalein indicator solution.

Procedure:

1. Pipette 20 ml of *LAYER CLEAN NP* 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 NaOH until the color changes from colorless to purple. Record the number of mls.

OR

Titrate with 1.0N NaOH using a pH meter to an end point of pH 10.0. Record the number of mls.

Calculation: ml of 1.0N NaOH x 0.52 = % strength by vol. *LAYER CLEAN NP*

ANALYSIS PROCEDURE FOR COPPER CONCENTRATION

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

Reagents: 0.10N sodium thiosulfate (Na₂S₂O₃) - Commercially available from chemical supplier.

Potassium iodide crystal, reagent grade

Ammonium hydroxide buffer – Dissolve 140 g ammonium chloride into 1 Liter D.I. water. Adjust pH to 9.5 with ammonium hydroxide.

Starch indicator – Commercially available from chemical supplier.

Procedure:

1. Pipette a 25 ml sample of the bath into a 250 ml Erlenmeyer flask.
2. Add 55 ml ammonium hydroxide buffer.
3. Add 3 grams of reagent grade potassium iodide, and mix until dissolved.
4. Titrate immediately with 0.10 Na₂S₂O₃ 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: ml of Na₂S₂O₃ x N of Na₂S₂O₃ x $\frac{63540}{\text{sample size}}$ = ppm copper

BATH LIFE: *LAYER CLEAN NP* 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.

CAUTIONS: *LAYER CLEAN NP* 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.

WASTE 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.

This product should be used only for its intended purpose. The information stated above is based on our laboratory tests and experience, and is accurate to the best of our knowledge. Since actual use is beyond our control, the recommendations or suggestions are made without warranty, expressed or implied.