ENVIRO ◊ GOLD #816/18.54A

PCBA Applications

We would like to introduce to you our **Enviro ◊ Gold #816/18.54A** chemistry. **#816** is a saponifier in concentrated form, for use in the cleaning of electronic and precision assemblies, as well as bare-boards.

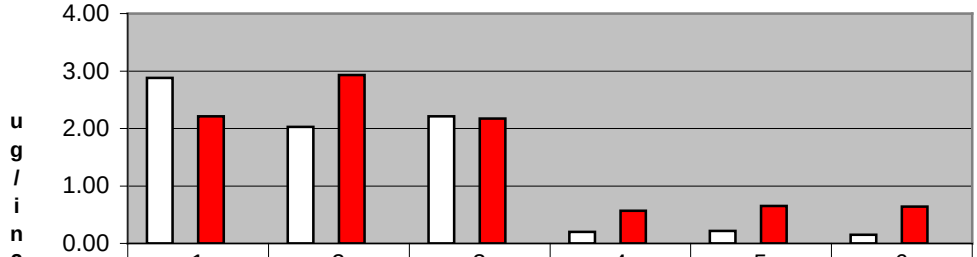
- **The chemistry does not contain any Ozone depleting chemicals and is very low in V.O.C. content.**
- **The base material MEA in the Enviro ◊ Gold #816/18.54A is on the U.S. EPA's Environmentally Preferred List.**
- **The #816/18.54A is 100% biodegradable**
- **The #816 is capable of removing Leaded as well as Lead Free flux residues from soldering**
- **It removes traditional RA/RMA's (Rosins), Water Soluble's O/A (Organic Acid) residues using concentrations of 3% to 10% of the formula in de-ionized water**
- **The #816 is unique in that it utilizes multiple surfactants that enables the chemistry's saponifying agents to be carried under stand-offs as low as .10 mil**

In simple terms; when **#816** is combined with water the water becomes "wetter". This reduction of the surface tension allows **#816** compounds to substantially reduce or eliminate ionic species left on PCB's or PCBAs (from process and/or flux residues) by as much as 20X versus water alone.

More assemblers now verify their PCBA cleanliness through the utilization of Ion Chromatography versus bulk ionic testing equipment. The graphing below is of a case study performed by an independent (IPC member) laboratory.

Samples 1 - 3 (D.I. "water only" cleaned) at 45C in an Inline (spray and conveyorized) cleaning system

Samples 4 - 6 #816 cleaned (w/a 5% solution) at 45C in an Inline (spray and conveyorized) cleaning system



SAMPLE#	1	2	3	4	5	6
Chloride	2.88	2.03	2.21	0.20	0.22	0.15
Bromide	0.00	0.00	0.00	0.00	0.00	0.00
SO42	2.21	2.93	2.17	0.57	0.65	0.64
WOA	0.00	0.00	0.00	0.00	0.00	0.00

"Water only" cleaned PCA's | #816/18.54A Cleaned PCA's

Ion Chromatography Anion Data: All values are in µg/in^2, unless otherwise noted. Ionic species tested for: Chloride, Nitrate, Bromide, Phosphate, Methane Sulfonic Acid, Fluoride, Sulfates, Weak Organic Acid (WOA), Carbonate, Succinate, Glutarate, and Adipate

Applications:

- **Removing Water soluble OA (Organic Acid) assembly flux residues at a bath temperature of 55C at 5% (#816 by volume in D.I. water) at 1 meter per minute**
- **Removing Rosin RMA (Rosin Mildly Activated) assembly flux residues at a bath temperature of 60C at 10% - 12% (#816 by volume in D.I. water) at .50 to .75 meters per minute**
- **Removing No Clean LS (Low Solid) assembly flux residues at a bath temperature of 65C at 10% to 12% #816 by volume in D.I. water) at .50 to .75 meters per minute**

Notes: The above pertains to and includes reflow pastes, wave solder liquids as well as "touch-up"/rework liquid fluxes.

The use of water as the only cleaning media, conveyor speeds in excess of 3 meters per minute, machinery wash section lengths being under two feet (.66 meters) are contributing factors for high ionic levels that produce electric failure mechanisms; such as metal migration, corrosion and dendritc growth.

Some other PCBA assembly process uses are:

- **Cleaning plastic and metals to be used for electronics "box-builds"**
- **Cleaning misprinted PCBs**
- **Cleaning solder stencils**
- **Cleaning Kapton tape residues and fingerprint oils**
- **Preparing surface of PCAs for conformal coating**
- **At high concentration; will remove acrylic and urethane conformal coatings**
- **Cleaning wave solder and/or reflow equipment**
- **Cleaning and deoxidizing older components; making them solderable again (Will also improve solderability of oxidized copper)**
- **Removing or leveling "over-thickness" OSP coatings**

Application/Finish	Cleaning Time	Concentration	Temperature
PCBA Lead Free flux residues	120 sec	12%-15%	65C to 70C
Stencils/RMA Pastes	90 sec	10%	35C to 45C
Stencils w/Water Soluble Pastes	60 sec	5-6%	35C to 45C

Note: Varying cleaning dwell time, temperature or concentration is recommended to optimize results.

For further information, please call (408) 213-2291, Fax (408) 213-2396 or write to us at: EnviroSense Inc., 10061 Bubb Road, Suite 200, Cupertino, California, 95014 U.S.A., Attn: Mark Palmer or visit our website: www.envirosense-inc.com