



EnviroSense



ENVIRO ◊ GOLD #816/18.54A

PCB Applications

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

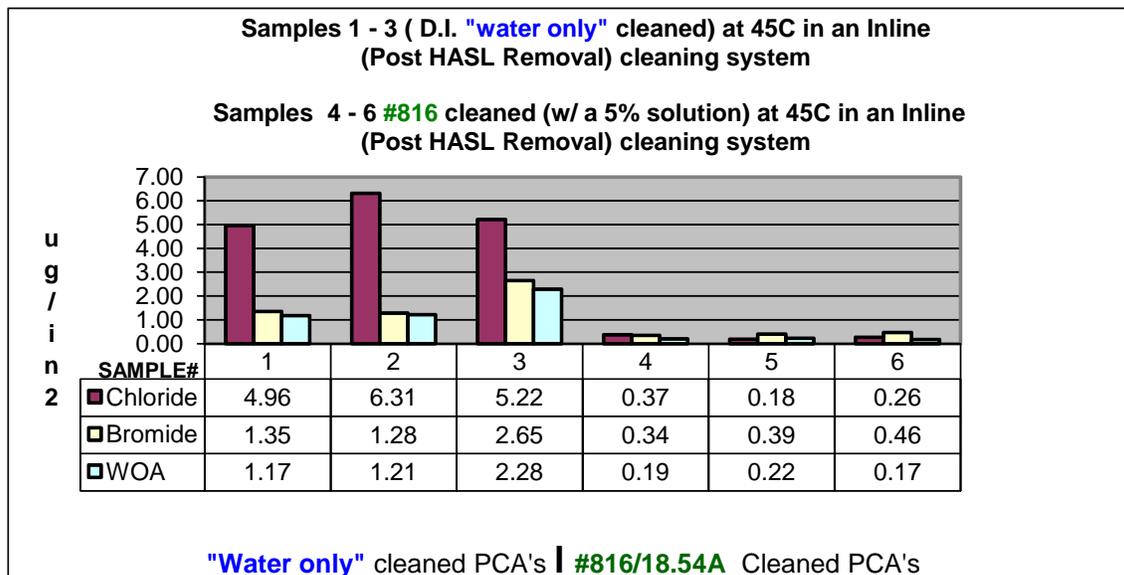
Since the advent and use of No-Clean flux it is imperative that the PCB be as clean as possible upon receipt at the assembler's facilities. Many OEMs and Contract Assemblers have removed their flux cleaning machinery; leaving them unable to clean any contamination they may have inherited on the incoming PCB. With ever increasing amperages, voltages, decreasing spacing between circuits, via diameters, die sizing decreasing and BGA-IO counts increasing; electrical leakage, corrosion, metal migration and dendrite issues are becoming more frequent. Cleaning with water only at PCB (Fabrication) or not cleaning at PCBA (Assembly) can lead to electrical failures.

Enviro ◊ Gold #816/18.54A's characteristics include;

- **#816/18.54A chemistry does not contain any Ozone depleting chemicals and is very low in V.O.C. content.**
- **Enviro ◊ Gold #816/18.54A's base material is on the U.S. EPA's Environmentally Preferred List.**
- **#816/18.54A is 100% biodegradable**
- **Enviro ◊ Gold #816/18.54A is capable of removing Leaded and Lead Free HASL flux residues**
- **#816 cleaning of PCB process; flux residues can be reduced by as much as 20X versus water alone.**

The below graphing is of an PCB cleanliness report excerpt; performed by an (IPC member) Laboratory:

HASL'ed "Bare" Board Cleanliness Evaluation



Ion Chromatography Anion Data: All values are in $\mu\text{g}/\text{in}^2$, unless otherwise noted
 Ionic species tested for: Anions: Chloride, Nitrate, Bromide, Phosphate, Methane Sulfonic Acid, Fluoride, Sulfates, Weak Organic Acid (WOA), Carbonate, Succinate, Glutarate, and Adipate

Ion Chromatography Test Procedure:

1. Each test board was placed into a clean Kapak (heat seal able polyester film) bag.
2. A volume of isopropanol (75%) and de-ionized water (25%) was introduced into each bag immersing the test sample.
3. Each bag 1s heat sealed, however each bag contains a vent hole.
4. Each bag/test sample is placed into an 80°C water bath for one hour. After one hour the bags are removed from the water bath and the test samples removed from the bags. The test samples are allowed to air dry or baked out in an oven.
5. A 3 ml sample (may vary in volume) of each extract solution is analyzed using a Dionex Ion Chromatography system with a sodium bicarbonate eluent.

Applications:

Enviro ◇ Gold #816/18.54A's saponifying and cleaning abilities are extremely effective in reducing HASL flux and plating residues created from the metallization processes. HASL boards have always been the most contaminated, however we are now finding OSP/Copper and Silver/Tin boards are failing due to not properly cleaning etching solutions and bath stabilizers: such as KOH (Potassium Hydroxide) and MSA (Methyl Sulfonic Acid). The use of water as the only cleaning media, conveyor speeds in excess of 3 meters per minute, machine wash section lengths being under two feet (.66 meters) are the main contributing factors for high ionic levels that produce electric failure mechanisms such as the aforementioned possibility of metal migration and/or dendrite growth. In simple terms; when **#816** is combined with water the water becomes "wetter" and increases the pH which promotes the cleaning of acidic residues.

The product **Enviro Gold #816/18.54A** is used for the following processes:

- Post HASL Flux removal and metalization etchants
- Cleaning atmospheric residues, out-gassed solvent residues from LPI cure and fingerprint oils from gold finishes; therefore improving ultrasonic wire bonding
- Cleaning sulfuric acid copper prep residues prior to OSP
- Cleaning nitric acid residues from Silver Immersion finishes
- Cleaning Methyl Sulfonic Acid from Tinned finishes
- Cleaning Router dust and finger- print oils
- Cleaning product before packaging to insure no ionic materials were picked up from Conveyors/rollers, handling trays/pallets, fingerprint oils, test probes, etc.

Recommended operating parameters for the #816/18.54A chemistry by application:

<u>Application/Finish</u>	<u>Time</u>	<u>Concentration</u>	<u>Temperature</u>
HASL	20 sec	5%	60C
OSP	15 sec	3%	60C
Gold	10 sec	3%	43C
Silver	10 sec	3%	50C
Tin	15 sec	5%	43C
Router Dust	10 sec	4%	43C
Final Clean	20 sec	3%	50C

Note: Varying time, temperature or concentration is recommended to optimize results. We also recommend the **#816** chemistry for a final cleaning process; as means to increase the margin for error.

- 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