Emerald™ Acid Clean #1

Emerald Acid Clean #1 is an acidic soak, ultrasonic, spray cleaner that may be used for the removal of a variety of soils and oxides from aluminum, stainless steel, copper, brass, Monel, and other high nickel alloys. Emerald Acid Clean #1 contains a high percentage of "Safer Choice" acceptable surfactants and solubilizers, designed to remove forming lubricants, machining oils, and light rust or scale from these substrates. It is also effective for lime scale removal.

Note: Emerald Acid Clean #1 will not remove heavy scale from stainless steel alloys or heavy rust and scale from steel. Emerald Acid Clean #1 when used as recommended will produce little if any etch on most aluminum alloys.

Emerald Acid Clean #1 can be used for part-on-part burnishing and vibratory finishing of copper alloys, stainless steel, steel, Monel, and other substrates.

Features & Benefits

Contains no mineral acids	Non-fuming
"Safer choice" approved wetting and solvent system	Removes light rust and scales
Can be used as a burnishing compound	High detergency

Physical Data

Specific gravity	1.21
Solubility in water	Complete
Appearance and odor	Water white, clear, citrus color
pH	1.0 – 2.0

Operating Conditions

Concentraion is 5% to 25% (volume) - the dilution will depend upon the soils involved. The rate at which soils, rust, and oxides are removed can be affected by build-up of iron or other metallic salts in the working solutions. This may be compensated for to some extent by increasing the temperature and or the solution concentration.

Temperature	Ambient – 170°F (77°C)
Ventilation	When heated or used in spray systems

When used for cleaning aluminum a concentration of 5 to 10% by volume at temperatures up to
170° F with dwell times of 5 to 10 min. is recommended. These parameters will result in little or no etch on most aluminum alloys.

For spray applications a concentration of 2 to 5% by volume with a temperature of 160°F to 170°F. is recommended.

When used as a burnish compound a concentration of 0.2 to 1% by volume is recommend. For the removal of heavier oxides concentration of 5 to 10% by volume may be required.

Note: Processing copper, brass, or bronze parts in the same tank as steel may eventually lead to immersion copper deposits on the steel parts. It is recommended to use a separate tank for cleaning copper and copper-based alloys.

Equipment	Stainless steel, Polypropylene, Polyethylene, fiberglass or rubber lined tanks
Heater	Stainless steel or nickel-plated steel piping

Titration Method

1. Take a 25 mL sample of Emerald Acid Clean #1 solution into a 250 mL Erlenmeyer flask and dilute to 50 mL with water.
2. Add 3 to 5 drops of Phenolphthalein indicator.
3. Titrate to pink endpoint with 1.0 N Sodium Hydroxide until a color change is observed.
4. Record mL Hydroxide used.

Calculation

Concentration = mL 1.0 N NaOH x 0.490

Test Kit Method

1. Using the syringe provided, place a ½ mL sample into sample bottle and fill bottle 1/4 full of water.
2. Add 5 to 10 drops of Phenolphthalein indicator.
3. Add 0.72 N Sodium Hydroxide solution drop wise until solution turns a definite pink.
4. Record the number of drops used.

Calculation

Concentration = # Drops 0.72 N NaOH x 0.60

Waste Disposal

Neutralize solutions of Emerald Acid Clean #1 to a pH of 6.0 to 8.0 with either caustic soda or soda ash before discarding. To be completely informed on those latest waste disposal regulations for your area; please contact the local authorities.

Caution

Emerald Acid Clean #1 is an acidic product; avoid skin, eye and oral contact. Wear protective clothing, facemask, chemical goggles and gloves when handling the product and its made-up solutions. Flush exposed areas immediately with copious amounts of clean, cold water. Contact a doctor immediately in case of injury.

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For more information on this process,
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