

Aquaease™ E 450

Aquaease E 450 is a powdered alkaline electro cleaner for use in lines, which process ferrous metals. Because of Aquaease E 450's exceptional high conductivity and formulation, it is suitable for cleaning ferrous metals soiled by smut, light weld or heat scale, rust stains or other general stains. Aquaease E 450 may be used either anodically (reverse) or with periodic reverse (P.R.) electro cleaning in rack or barrel lines. The P.R. is generally used when the removal of scale is involved. Aquaease E 450 is a phosphate and cyanide free product and its surfactant system is biodegradable. Although Aquaease E 450 was formulated for smut and scale removal, it may be used in operations which only require an anodic cleaner (reverse). The added benefits of the formulation provide additional insurance in an operation.

Features & Benefits

This heavy-duty alkaline cleaner has the high conductivity necessary for passage of large currents	Low sludging, even when scale or rust are being removed
Exceptional penetrating and soaking action	Fast-acting-removes dirt and scale in one to three minutes

Physical Data

Specific gravity	Appreciable
Appearance and odor	White or off-white powder

Operating Conditions

Concentration	6 – 32 oz/Gal (45 – 240 g/L)
Temperature	130°F – 205°F (54°C – 91°C)
Current density	60 – 100 amps/ft ² (6 – 10 amps/dm ²)
Time	30 sec – 3 min

Equipment	Mild steel tanks, anodes and heating coil
Ventilation	Required when used as electro cleaner

Note: Operating temperature may be as low as 130°F (54°C) when normal shop soils and oils are involved, especially when a soak cleaner precedes the anodic cleaner.

P.R. electro cleaning is usually required when the removal of heat treat, or weld scale are present on the ferrous metals.

P.R. Electro Cleaning

Concentration	12 – 32 oz/Gal (90 – 240 g/L)
Temperature	140°F – 200°F (60°C – 93°C)
Voltage	6 – 12 volts (12 volts for barrel operation)
Current density	30 – 100 ASF (3.0 – 10.0 amps/dm ²)
Type of current	DC with a reversing switch or PR equipment A 10 second direct and 10 second reverse cycle is satisfactory for most work.
Electrodes	Graphite type AGX (national carbon) are preferred Alternate stainless-steel type 316
Anode to cathode ratio	1:1
Tank	Steel
Heating and cooling	Steel
Barrels	Lucite, Tempron, or Polypropylene
Tumbling barrels	Steel, koroseal, rubber or neoprene lined
Racks	Steel or stainless steel, titanium

	or steel tips plastisol coated
Time	1 – 10 min
Ventilation	Desirable for hot solutions

To keep voltage requirement at a minimum, firmly connect graphite electrodes to the electrode bars. A steel strap should be bolted to the electrodes and the straps bolted to the electrode bars. Cooling is required only when the heat generated by electrical current causes the temperature to rise above the recommended limit. Generally, cooling is required when the current requirement exceeds about 4 amperes per gallon.

Scale and rust may generally be removed when the work is anodic (reverse current) however, if this is not achieved, P.R. electro cleaning will be required.

The P.R. cycle: 10 sec cathodic, 10 sec anodic.
 Exact time cycle is usually established by trials.

Tank Make Up Procedure

Considerable heat is generated when Aquaease E 450 is dissolved in water. A new solution should be prepared by filling the tank half full of warm water (approx. 100°F, 37°C), and slowly adding Aquaease E 450 while continuously stirring. After the Aquaease E 450 has been dissolved, add the remainder of the cold water. Heat or cool to desired operating temperature before use.

Note: When adding Aquaease E 450 to an operating solution, add slowly to avoid solution eruption.

Titration Method

1. Pipette 10 mL sample of cleaner into 250 mL Erlenmeyer flask.
2. Dilute with 50 mL of water and add 3 drops of Phenolphthalein indicator.
3. Titrate with 0.5 N Hydrochloric Acid until solution becomes colorless.
4. Record mL used.

Calculation

Factor (oz/Gal)	0.34
Factor (g/L)	2.60
<i>Concentration = mL 0.5 N HCl x Factor</i>	

Test Kit Method

1. Fill bottle 1/3 full of water, add 1/2mL cleaner sample.
2. Add 3 drops of Methyl Orange indicator and swirl to mix well.
3. Titrate with 0.72 N Hydrochloric Acid, counting the drops until the solution becomes colorless.



4. Record the number of drops used.

Calculation

$$\begin{array}{r} \text{Factor (oz/Gal)} \qquad \qquad \qquad 0.45 \\ \text{Factor (g/L)} \qquad \qquad \qquad \qquad 3.40 \\ \text{Concentration} = \# \text{ Drops } 0.72 \text{ N HCl} \times \text{Factor} \end{array}$$

Waste Disposal

Discharge to a disposal system. To be completely informed on the latest regulations for your area, please contact the local authorities.

Caution

Aquaease E 450 is highly alkaline. Avoid contact with skin and eyes. Wear protective clothing, goggles, and rubber gloves. Flush exposed areas immediately with clean, cold water. In case of injury, contact a doctor immediately. Consult SDS for details.

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Our People. Your Problem Solvers.

For more information on this process,
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Hubbard-Hall holds certifications for **ISO 9001:2015**, Responsible Distribution, as accredited by the **ACD** (Alliance for Chemical Distributors) and as a **Women-Owned Small Business**, as well as maintaining an association with **Omni-Chem**¹³⁶.