

RE/Gen CC-45

A Sodium Chlorate Based Regeneration Method for Cupric Chloride Final Etching

Product Description

RE/Gen CC-45 (CC-45) is a concentrated, buffered sodium chlorate solution designed to economically and safely regenerate cupric chloride etching systems. The use of sodium chlorate versus chlorine gas as the “regenerative” oxidizer, provides several safety advantages; most important of which is the elimination of chlorine gas storage. Additionally, sodium chlorate final etching systems can be operated at comparable speeds while improving the undercut or “etch factor”, compared to traditional chlorine gas system. Being a concentrated liquid, CC-45 is easier to handle than dry sodium chlorate and was designed for replenishment systems which employ an ORP controller, specific gravity controller, and specific ion electrode.

Performance Features

- CC-45 eliminates the need for chlorine gas storage, and when operated properly, reduces the risk of chlorine gas exposure.
- Cupric chloride etching solutions regenerated with CC-45 can be operated at comparable speeds to chlorine gas systems.
- In most processes, CC-45 is a drop-in replacement for chlorine gas, requiring only minor equipment modification.

Physical Specifications

Physical State	Liquid
Appearance	Water White Solution
Odor	Mild Bleach
Stability	Stable
Freeze/Thaw Stability	Keep from Freezing
Specific Gravity	1.4
pH	5-6 (neat)

Technical Data Sheet

Equipment Requirements

Tanks: Constructed Of Polypropylene, PVC Or CPVC.

Heaters: Quartz, Titanium, Teflon Or Teflon/Plastisol Encased Steel.

Racks: Constructed of Polypropylene, Titanium Or Plastisol Coated Steel.

Cooling Coils: Constructed Of Polypropylene, Teflon Or Teflon/Plastisol Coated Steel.

Ventilation: Required

Agitation: Conveyorized Spray Only.

Filtration: Depending On The Acid Normality Of Operation, Continuous Carbon Filtration Is Recommended.

Product Make-Up

Cupric chloride final etching processes are typically operated within the following specifications.

Parameter	Range
Copper - as metal - oz./gal. (g/L)	22 - 32 (165 - 195)
Hydrochloric Acid (N)	0.2 - 3.0
Specific Gravity	1.330 - 1.430

The following procedure is for a 100 gallon bath (378.5 liters) prepared at the recommended concentrations. Should you desire to operate at concentrations other than those recommended, you will be required to make volume adjustments accordingly.

Procedure

1. Thoroughly rinse the tank and inspect for cleanliness paying special attention to the heaters and heater sheathings, and cooling coils.
2. Fill the tank to 75 gallons with electroless grade cupric chloride, 25 opg.
3. Add 10.3 Gallons of hydrochloric acid, 37%.
4. Dilute to volume with electroless grade cupric chloride, 25 opg.

NOTE: Alternatively, you may use the "overflow" cupric chloride from an existing operation.

Technical Data Sheet

Operating Parameters

CC-45 was designed to be operated in a conveyerized spray system. Additions of CC-45, Hydrochloric acid, 37% /w/w, and water, are made based upon the oxidation/reduction potential, "free" chloride normality, and deionized water respectively.

Typical operating parameters for a cupric chloride etchant are as follows:

Temperature	120 - 130°F
Line Speed	40 - 45 ipm (1 ounce copper at 1.25 N HCl) 18 - 22 ipm (2 ounce copper at 1.25 N HCl)
Spray Pressure	30 - 35 psi

Control and Replenishment

It is necessary to periodically measure the copper concentration (as metal) and hydrochloric acid normality to assure the feed rates of CC-45, hydrochloric acid, and water are correct. Once the ORP controller settings have been established, it is recommended that frequency of testing be maintained to assure safe operation of the etchant. Contact Seacole for further information regarding testing procedures and calculations.

Safety and Handling

Read and understand this product's MSDS before handling.

Waste Treatment

Individual users should verify the nature of spent solutions to assure compliance with local, state, and federal regulations. Contact Seacole for specific details and/or further waste treatment recommendations.

Ordering Information

CC-45 is available in 55 gallon drums and 275 gallon totes.

13505 Industrial Park Blvd. Plymouth, MN 55441