Acid Salt CAP

Acid Salt CAP is a proprietary blend of acid salts, dispersants, accelerators and surfactants, designed especially for pickling steel, brass, copper alloys, and Stainless Steel. Its formulation provides for effective neutralization of alkaline films and activation of the metal substrate, for additional processing in a wide range of plating, mass finishing, and surface treatment cycles. Acid Salt CAP may be used to activate nickel plated surfaces and nickel alloys. Acid Salt CAP has been formulated for immersion application, or as a cathodic pickle, in a wide range of bath temperature applications.

Features & Benefits

Powder blend	Safer to handle than liquid acids
Buffered	Longer bath life, reduced cost
Inhibited	Less base metal attack, longer bath life
Free rinsing	Higher productivity
High fluoride content	Faster action, higher productivity

Physical Data

Appearance	Off white, bead like, granular mixture
Odor	Odorless
Dusty	No
Foaming tendency	Low
Maximum solubility	48 oz/Gal at 75°F (3600 g/L at 24°C)

Citrates	No
Phosphate	No
Amines	No
Complexors (Gluconate type)	No
Chelates (EDTA, NTA types)	No

Operating Conditions

Equipment

Tank	Koroseal or rubber lined steel, reinforced polypro, or fiberglass
Heater	Teflon coil, karbate, graphite, chemical lead
Ventilation	Mechanical to maintain levels below permissible exposure limits
Agitation	Stirrer, pump, work movement, or mild air
Electrodes	Chemical lead or carbon type AGR (series 030)

Recommendation for Application of Anodes

The life of the anodes is dependent upon the ampere hours used.

Note: When carbon anodes are used, they must be securely fastened to the bus bar.

Lead anodes because of their weight will maintain a secure contact with the bus bar. As a rule, the lead anode's service life will surpass that of carbon anode.

It is also preferred that when carbon anodes are used, they are bagged to prevent or minimize carbon particles from spreading throughout the Acid Salt CAP solution. A carbon anode, in time, will slowly begin to disintegrate. High current densities and solution temperature are contributing factors to the degrading of a carbon anode, in addition to long-time service.

For immersion applications where the soils on the ferrous metals may consist of either light rust, weld scale or heat scale, the Acid Salt CAP concentrations may range from 16 to 32 ounces per gallon, to accelerate and improve their removal.

Solution Makeup

Be sure the process tank has been drained and cleaned. Fill to within two thirds of final operating volume with clean, warm water (100°F to 120°F, 38°C to 49°C). With good stirring, gradually add the required amount of Acid Salt CAP. After the required amount of Acid Salt CAP has been added and dissolved, adjust final solution operating volume and temperature.

Note: Unlike mineral acids, additions of Acid Salt CAP will not heat up water.

Immersion Acid Dip & Base Metal Activator

Base Metal	Range	Optimum
Steel	8 – 32 oz/Gal (60 – 180 g/L)	20 oz/Gal (150 g/L)
Brass	6 – 12 oz/Gal (45 – 90 g/L)	9 oz/Gal (67.5 g/L)
Copper Alloys	8 – 16 oz/Gal (60 – 120 g/L)	12 oz/Gal (90 g/L)
Stainless Steel	20 – 48 oz/Gal (150 – 360 g/L)	34 oz/Gal (255 g/L)

Zinc	4 – 8 oz/Gal (30 – 60 g/L)	6 oz/Gal (45 g/L)

Time	2 – 5 minutes	As required
Agitation	Solution movement or mild air	As required

Cathodic Pickling of Steels

	Range	Optimum
Concentration	16 – 24 oz/Gal (60 – 180 g/L)	20 oz/Gal (150 g/L)
Temperature	85 – 120°F (29 – 49°C)	102°F (39°C)
Voltage (rack)	2 – 6 volts	As required
C D (cathodic, rack)	20 – 60 ASF	As required
Anodes (2:1 ratio)	Carbon or Lead	As required
Time	1 – 5 minutes	As required
Agitation	Solution movement or mild air	As required

Cathodic Activation of Electroplated Nickel

	Range	Optimum
Concentration	16 – 24 oz/Gal (60 – 180 g/L)	20 oz/Gal (150 g/L)
Temperature	75 – 90°F (24 – 32°C)	82°F (28°C)
Voltage (rack)	1 – 2 volts	As required
C D (cathodic, rack)	20 – 40 ASF	As required
Anodes (2:1 ratio)	Carbon or Lead	As required
Time	1 – 3 minutes	As required
Agitation	Solution movement or mild air	As required

Mass Finishing in Vibratory Bowls & Tubs

Horizontal & Oblique Tumbling Barrels

	Range	Optimum
Concentration	4 – 16 oz/Gal (30 – 120 g/L)	See below
Temperature	Ambient	Ambient
Media (optional)	Ceramic, plastic, granite	See below
Ratio of Media to parts	10:1 – 20:1	As required
Time	30 min – 4 hr	See below

Note: Each specific mass finishing application has its own unique operating parameters and conditions. Optimum cycle development is accomplished by evaluating the combined effect of media (if required), concentration, time and mechanical action of the mass finishing equipment being used.

When using horizontal barrels, the barrel should periodically be gradually and slowly opened, to relieve any built-up pressure.
The active components are typically consumed in the appropriate process. Surfactants and detergents are consumed in the cleaning operation by emulsifying oils and grease. Drag out of the acid bath and replenishment of the bath with water also dilutes the working solution. In double cleaning cycles, drag in of the preceding electro cleaner will neutralize some of the acidity.

Regular maintenance additions of Acid Salt CAP are recommended to replenish the bath. This can be accomplished by observing quality of: activation, pickling or descaling, and making appropriate additions per requirements of the process. Alternatively, the acid bath can be analyzed to determine actual concentration of Acid Salt CAP, and the required addition of product can be made to restore the balanced ratio of all the acid bath components.

Acid Salt CAP sufficiently neutralizes alkaline films from the preceding cleaner dip, while activating the base metal, prior to plating or subsequent operation. The solution is fortified with surfactants, which emulsify residual oils and grease that may be dragged into the acid bath. Light rust and oxides are normally removed in the immersion dip. Metallic smuts, light scales and spot welds are best removed by immersion or catholically at higher concentrations of Acid Salt CAP.

Problems that may occur in the line include:

Problem	Potential Cause
Hardened floating tar balls or crust lining the acid tank	Indicates drag in of cleaner solution, oils, and grease. Maintenance of the cleaners and optimizing line rinsing is recommended.
Water breaks after the acid	Usually poor cleaning or contaminated acid solution.

Rusting after the acid dip	This may be due to long transfer times or extended immersion in rinses. Otherwise, the acid solution may be saturated with dissolved metal, requiring it's dumping.
Base metal smuts in the acid	The acid may be too strong for the alloy or contaminated with dissolved metals.
Surface smut or immersion deposit (such as copper on steel), exiting the acid	Excessive metallic contamination. Replace the acid with a fresh make up.

Titration Method

1. Pipette 10 mL of bath sample into a 250 mL Erlenmeyer flask.
2. Add 50 mL of water and 5 to 10 drops Bromocresol Green indicator.
3. Titrate with 1.0 N Sodium Hydroxide solution until solution turns a blue-green color
4. Record mL used.

Calculation

Factor (oz/Gal) 1.5
Factor (g/L) 11.5
Concentration = mL of 1.0 N NaOH x Factor

Waste Disposal

Acid Salt CAP and its working solutions are acidic. They may be waste-treated to meet local POTW or municipal effluent discharge requirements. Sludges and oils should be separated out before discharge. Spent Acid Salt CAP solutions may contain dissolved metals from the activation and pickling process. Therefore, additional treatment of the solution may be required to meet discharge requirements.

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

Caution

Consult Acid Salt CAP SDS before handling this product.

Acid Salt CAP is an acidic product and should be handled accordingly. Consult product SDS. 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.

WARRANTY: THE QUALITY OF THIS PRODUCT IS GUARANTEED ON SHIPMENT FROM OUR PLANT. IF THE USE RECOMMENDATIONS ARE FOLLOWED, DESIRED RESULTS WILL BE OBTAINED. SINCE THE USE OF OUR PRODUCTS IS BEYOND OUR CONTROL, NO GUARANTEE EXPRESSED OR IMPLIED IS MADE AS TO THE EFFECTS OF SUCH USE, OR THE RESULTS TO BE OBTAINED.

Our people. Your problem solvers.

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