Ultrex CAA

Ultrex CAA is a powdered, highly alkaline product, blended with selected sequestrants and alkaline agents. It's unique formulation conditions the surface of steel prior to plating and other subsequent surface treatments and finishes. Ultrex CAA effectively activates nickel for re-plating, or prior to chromium or brass plating.

Ultrex CAA can be used in many surface treatment applications for steel. The following uses and operating parameters serve as a guide to help confirm the specific, optimum cycle.

Features & Benefits

Versatile	Use for multiple applications, simpler inventory control
No organic compounds	Low COD, BOD loading to waste; lower cost to treat

Physical Data

Appearance	Free flowing, white to off white powder
Odor	Slight
Dusty	No
Foaming tendency	Low
Maximum solubility	48 oz/Gal at 180°F (360 g/L at 82°C)

Product Profile

Caustic	Yes
Phosphate	No
Silicate	No
Complexors (Gluconate type)	Yes
Chelates (EDTA, NTA types)	No

Hazard Classification

DOT Hazard Class	8 (Corrosive Material)
DOT Shipping Name	Corrosive Solid, Basic, Inorganic N.O.S.
UN Number	3262
Packing Group	II
Guide Number	154

Operating Conditions

Recommended Application – Soak Cleaning

Removal of light scales, rust, smuts, and iron phosphate coatings

	Range	Optimum
Concentration	16 – 24 oz/Gal (120 – 180 g/L)	20 oz/Gal (150 g/L)
Temperature	140°F – 190°F (60°C – 88°C)	165°F (74°C)
Time	2 – 5 minutes	As required
Agitation	Solution movement or mild air	As required

Note: Because of its highly alkaline formulation, Ultrex CAA is not recommended for sensitive metals such as aluminum, brass, and zinc, Your Hubbard-Hall sales representative or the Technical Center can recommend the appropriate Ultrex or Enerox process to meet the specified cleaning requirements,

Oils and grease should be removed in a suitable Ultrex or Enerox soak cleaner, and thoroughly rinsed, before transfer to the Ultrex CAA working solution.

Recommended Application – Reverse Current Electro Cleaner

Removal of light to moderate scales, rust, and smuts

	Range	Optimum
Concentration	10 – 16 oz/Gal (75 – 120 g/L)	13 oz/Gal (97 – 5 g/L)
Temperature	140°F – 190°F (60°C – 88°C)	165°F (74°C)
C D (anodic, rack)	50 – 120 ASF	As required
Voltage (rack)	4 – 6	As required

C D (anodic, barrel)	10 – 30 ASF	As required
Voltage (barrel)	10 – 13 minutes	As required
Time	2 – 5 minutes	As required
Agitation	Solution movement or mild air	As required

Recommended Application – Periodic Reverse Current Electro Cleaner

Removal of heavy scales, rust, and smuts

	Range	Optimum
Concentration	24 – 32 oz/Gal (180 – 240 g/L)	28 oz/Gal (210 g/L)
Temperature	140°F – 190°F (60°C – 88°C)	165°F (74°C)
*C D (anodic, rack)	50 – 120 ASF	As required
Voltage (rack)	4 – 6	As required
*C D (anodic, barrel)	10 – 30 ASF	As required
Voltage (barrel)	10 – 13	As required
Time	2 – 5 minutes	As required
Agitation	Solution movement or mild air	As required

* The current should be reversed every 7-10 seconds, for equal anodic and cathodic durations.

Recommended Application (Sodium Cyanide) – Periodic Reverse Current Electro Cleaner

Removal of heavy scales, rust, and smuts

	Range	Optimum
Concentration Ultrex CAA	24 – 32 oz/Gal (180 – 240 g/L)	28 oz/Gal (210 g/L)
Conc. Sodium Cyanide	8 – 16 oz/Gal (60 – 120 g/L)	12 oz/Gal (90 g/L)
Temperature	110°F – 130°F (43°C – 54°C)	120°F (49°C)
*C D (anodic, rack)	50 – 120 ASF	As required
Voltage (rack)	4 – 6	As required
*C D (anodic, barrel)	10 – 30 ASF	As required
Voltage (barrel)	10 – 13	As required
Time	25 minutes	As required
Agitation	Solution movement or mild air	As required

* The current should be reversed every 7-10 seconds, for equal anodic and cathodic durations.

Recommended Application – Derusting & Descaling

Vibratory bowls & tubs; horizontal & oblique tumbling barrels

	Range	Optimum
Concentration	8 – 16 oz/Gal (60-120 g/L)	12 oz/Gal (90 g/L)
Temperature	75°F – 105°F (24 – 41)	90°F (32°C)
Media (optional)	Mineral, ceramic, or steel	As required
Ratio of media to parts	6:1 to 1: 1	As required
Time	30 minutes – 2 hours	As required

Note: Each specific mass finishing application has its own unique operating parameters and conditions. The optimum cycle can be developed by evaluating the effects of: media (if required), concentration of Ultrex CAA, time of process, and mechanical action of the mass finishing equipment being used.

Recommended Application – Cathodic Nickel Activator

	Range	Optimum
Concentration Ultrex CAA	6 – 8 oz/Gal (45 – 60 g/L)	7 oz/Gal (52.5 g/L)
Conc. Sodium Cyanide	4 – 6 oz/Gal (30 – 45 g/L)	5 oz/Gal (37.5 g/L)
Temperature	110°F – 130°F (43°C – 54°C)	120°F (49°C)
* Cathodic current density	30 – 50 ASF	As required
Voltage (rack)	4 – 6	As required
Time	2 – 3 minutes	As required
Agitation	Solution movement or mild air	As required

Equipment

Tank	Mild steel, reinforced polypro, fiberglass, rubber or PVC lined
Heater	Steel coil, steel immersion type, steam fed, or gas fired
Electrodes	Graphite or steel

Rectifier & PR	Enough to handle expected current
Ventilation	Mechanical to maintain levels below permissible exposure limits
Agitation	Stirrer, pump, work movement, or mild air

Solution make up

Danger!! Ultrex CAA contains Sodium Hydroxide. Consult Ultrex CAA SDS sheet before handling this product. It should be handled with all the safety precautions associated with Sodium Hydroxide.

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 solution stirring,

gradually add the required amount of Ultrex CAA. Rapid additions may result in localized boiling and spattering!

After the required amount of Ultrex CAA has been added and dissolved, adjust final solution operating volume and temperature.

Ultrex CAA working solutions provide high conductivity for excellent scrubbing action, facilitating attack on scales, rust, and smuts. The conditioning agents and sequestrants quickly break down these surface imperfections. Ultrex CAA is buffered with enough reserve alkalinity, to protect high current density surfaces from tarnish, etching, and formation of brown iron hydroxide films.

Thorough rinsing is essential for any of the process applications being used. Where steel is to be treated in an acid plating cycle after treatment in Ultrex CAA, the parts should be dipped in a 1% to 2% v/v acid solution compatible with the plating cycle, to neutralize any residual alkali which might be retained on the parts. A cathodic treatment in an Ultrex CAA & Sodium Cyanide solution may be followed by a thorough rinse, then transfer to plate in any alkaline plating cycle.

Ultrex CAA has a fair cleaning ability, and can, in some cases, be used as a soak cleaner. However, heavy soils, oils, and grease should be removed in a more appropriate soak cleaner.

Because of if s alkaline nature, Ultrex CAA produces no chemical attack on steel and does not corrode equipment. Ultrex CAA does not corrode equipment as is the case with acids, and embrittles steel far less than corresponding acid descaling and de rusting cycles. A special additive can be supplied with the Ultrex CAA bath, added as required (generally at the rate of pints 00 Gal of solution), to produce a controlled, thin surface foam blanket, minimizing corrosive spray and mist.

After cathodic activation of nickel-plated surfaces in the Ultrex CAA & Sodium Cyanide solution, parts to be re-nickel or chrome plated, should first be thoroughly rinsed, then dipped in a 1 to 2% v/v Sulfuric Acid, before transfer to the plating bath. No acid dip is required following the activation cycle, prior to brass or other alkaline cyanide plating.

Solutions of Ultrex CAA can be pumped through typical three and five stage iron phosphate machines, as routine chemical maintenance, dissolving iron phosphate coatings and clearing plugged spray nozzles.

Hexavalent chromium contamination (only 30 ppm) will shorten the cleaner bath service life. Although flash and hard chrome deposits can be stripped in Ultrex CAA, there is no hexavalent chrome reducer blended in the product. For applications where periodic or excessive stripping of chrome occurs, booster additions of Enerox Chrome Reducer CER are recommended to keep the hexavalent chrome contaminant level minimal. If the stripping solution has developed an intense yellow color, with absence of foam, hexavalent chrome reduction is required. Tolerable levels of hexavalent chromium are indicated by a green solution color.

Although tolerance of copper, iron, nickel, and zinc are high, enough loading of these contaminants will result in deposition of a black smut. When this occurs the electro, cleaner bath should be replaced with a fresh make up.

Ultrex CAA is soap free. Therefore, no residues are left on cleaned surfaces.
With proper post rinsing, parts entering the acid should be water break free.

Titration Method

The alkaline components are typically consumed in the electrolysis process. Conditioning agents and activators are consumed in the cleaning and activating process. Drag out of the cleaner bath and replenishment of the bath with water also dilutes the working solution. In double cleaning cycles, drag in of acid into the second electro cleaner will neutralize some of the alkalinity. Regular maintenance additions of Ultrex CAA are recommended to replenish the bath. This can be accomplished by observing quality of cleaning & conditioning and making appropriate additions per requirements of the process. Alternatively, the cleaner bath can be analyzed to determine actual concentration of Ultrex CAA and the required addition of product to restore the balanced ratio of all the cleaner components.

1. Pipette a 10 mL sample of the cleaner bath into a 250 mL Erlenmeyer flask.
2. Add 50 to 100 mL of clean water.
3. Add 2 to 4 drops of Phenolphthalein indicator to develop a pink solution color.

4. Titrate with Hydrochloric or Sulfuric Acid of known normality, until the pink color has been discharged.
5. Record the mL used.

Calculation

Ultrex CAA (oz/Gal) = (mL of titrant) x (Normality) x 0.659

Analysis Procedure for Sodium Cyanide

1. Pipette a 5 mL sample of the cleaner bath into a 250 mL Erlenmeyer flask.
2. Add 100 mL of clean water and 10 mL of 10% w/v Potassium Iodide solution.
3. Titrate with standard Silver Nitrate (0.1 Normal recommended), until the turbid solution endpoint.
4. Record mL used.

Calculation

Sodium Cyanide (oz/Gal) = (mL $AgNO_3$) x (Normality) x 2.614

Waste Disposal

Ultrex CAA and it's working solutions are alkaline. They may be neutralized with acid to meet local POTW or municipal effluent discharge requirements. Solutions containing sodium cyanide require special treatment before neutralization. Sludges and oils should be separated out before discharge. Spent Ultrex CAA solutions may contain dissolved metals from the cleaning process. Therefore, additional treatment of the solution may be required to meet discharge requirements.

Caution

When processing parts in a sealed horizontal barrel!! When the run is completed stop the barrel. Slowly and carefully open the ventilation valve, to bleed any pressure that may have built up during the process run. Only after this has been done can the barrel be safely opened.

Please read and understand the Ultrex CAA Safety Data Sheet before handling and using this product.

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.

For more information on this process please call us at
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