



**NORTHSTAR**

**CHEMICAL CORPORATION**

CHEMICALS FOR THE METAL PROCESSING INDUSTRY

# PRODUCT LIST

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# RUST PREVENTION and RUST REMOVER

## **RUSTGUARD 1226**

Water-Soluble Rust Preventative

A petroleum-based emulsion oil designed to provide a protective coating over zinc phosphate, plated or painted surfaces. Rustguard 1226 provides dry-to-touch finishes while providing excellent salt-spray results.

Product Benefits:

- non-toxic and non-hazardous
- rack, barrel or spray applications
- highly stable bath, providing "no dump" system
- low cost of operation per ton of steel processed
- consistent quality

## **RP2110 Series**

Water-Displacing Rust Preventative

Extremely long corrosion-prevention over all metals that leaves dry-to-touch finish. Light viscosity oils easily drain off treated surfaces. Ideal for both indoor and outdoor storage. Designed to be used as is.

Product Benefits:

- non-toxic and non-hazardous
- non-staining - safe for use on coiled or stacked metals
- rack, barrel or spray applications
- highly stable bath, providing "no dump" system
- low cost of operation per ton of steel processed
- consistent quality

## **NORCLEAN NDR**

A pH neutral liquid cleaner designed to safely remove rust from corroded steel substrates. It may be used in a recirculating spray, immersion, and spray wand applications. After rinsing, the de-rusted parts may be immediately treated in a coating process or dried and protected with a corrosion control product such as Rustguard 1226 or RP 2110.

# PHOSPHATE PROCESSES

## PHOS REPLENISHER and PHOS MAKE-UP

### Zinc Phosphate

Uniform coating zinc phosphate compound designed for use in applying highly adherent functional lubricant and pre-paint coatings to ferrous metals which assist in the cold forming, extrusion and drawing of various parts. The phosphate lubrication process provides a chemically bonded crystallization-type coating which, when subsequently treated in various final coating such as Reactive Lube 500, lime, oils, or paints, provides superior lubrication and corrosion resistance qualities.

## PHOSCOAT 1000

### Heavy Zinc Phosphate

Nickel-free, reduced sludge phosphate that provides a heavy zinc phosphate coating with excellent corrosion resistance when finished with oil, stain or paint.

## PHOSCOAT MIP

### Manganese (Iron) Phosphate

Manganese (iron) phosphate coating process for ferrous alloys designed to reduce wear on bearing surfaces and retard corrosion of these parts.

## PHOSCOAT MP

### Manganese (Iron) Phosphate

Manganese (iron) phosphate coating process for ferrous alloys designed to reduce wear on bearing surfaces and retard corrosion of these parts. Phoscoat MP produces lighter and tighter grained phosphate coatings than Phoscoat MIP and operates at lower temperatures.

## NEROPHOS P

### Blackening Agent

Nerophos P produces a black immersion coating prior to the zinc phosphate step. A subsequent application of rust preventative oil produces a durable, corrosion-resistant black finish.

## RUSTGUARD 1226

### Rust Preventative Emulsion Oil

A blended formulation of water-emulsified oil used as a protective film over zinc phosphate coated and alkaline blackened steels.

## RP 2110

### Rust Preventative

A blended organic liquid formulation used as a water displacing compound that leaves a residual protective film on iron and steel surfaces to prevent any rusting.

# ALUMINUM TREATMENT PROCESSES

## NORSAL ADO

Formulated for use in removing oxides and smut films from aluminum and aluminum alloys; depending on the type of alkaline cleaner used in the cleaning cycle.

## NORSAL ADS-F

Salts compounded for use in removing oxides and smut films from aluminum and aluminum alloys depending on the type of alkaline cleaner used in the cleaning cycle. No nitric acid fumes or chromium salts present. A very uniform etch is produced on the surface leaving it free of oxides and smut, such that it can be anodized, chromated, spot-welded, electroplated or painted.

## NORSAL AES

Formulated as a highly alkaline etchant for aluminum and its alloys. Norsal AES salts may be used wherever an etch type cleaner is needed. The etch salts formulation is specific where it is desired to maintain a constant, uniform etching rate.

## NORSAL APS

A formulated powder mixture for use in the pickling step of cleaning cycles for aluminum and aluminum alloys. The Norsal APS salts are used in combination with nitric acid for removal of smuts developed on high silicon type aluminum alloys, whether sand or machine cast.

## NORDAC 110

Is a unique blend of mild alkaline, non-caustic materials containing emulsifiers, dispersing agents, and surfactants for soak cleaning aluminum and its alloys without etching.

The Nordac 110 does not contain caustic soda, not the usual additions of silicated compounds as inhibitors to provide non-etching of the aluminum surfaces during the cleaning procedure. In addition, the cleaner is biodegradable.

Nordac 110 eliminated the difficulty of rinsing the cleaned aluminum surfaces usually associated with the silicate-bearing cleaners, facilitating subsequent treatments such as anodizing, chromating, or welding.

## NORDAC 6A

Is a carefully balanced blend of emulsifiers, dispersing agents, and surfactants with proper inhibition to eliminate etching in the soak cleaning of aluminum and its alloys.

## NORDAC 7AE

Is an alkaline material blended in such a formulation as to produce a fine uniform etching and cleaning action on the surface of the aluminum metal and its alloys.

The Nordac 7-AE contains sequestrants to prevent the formation of the metallic hydroxides and hard water precipitates. The easy and thorough rinsing of the residues which remain on the surface of the aluminum is thereby facilitated.

### **NORDAC ALDS**

Is a combination of dry acid salts, which when dissolved in water, replaces conventionally used liquid acids in the desmutting of aluminum surface. The use of Nordac ALDS eliminates the hazards involved in shipping, storing, handling and mixing liquid acids. The Nordac ALDS formulation does not contain any chromate salt additive.

### **NORLOK 2698**

Is formulated for use in the sealing of anodized aluminum surfaces. Due to the porous structure obtained in commercial acid anodizing, sealing is required. Chromic acid and phosphoric acid processed surfaces do not require sealing. Oxalic acid anodizing processes may or may not be sealed.

The use of Norlok 2698 solution for sealing anodized and dyed aluminum surfaces prevents leaching out of the dye in the hot solution before the pores are completely closed. In addition, the Norlok 2698 is so formulated as to minimize the tendency for smut to deposit on the surface of the work.

### **NORDICOTE ACI**

A formulated powder for use as a single dip chromate passivating treatment over aluminum surfaces, producing a yellow iridescent chromate conversion coating. Coating will absorb water-soluble organic dyes.

### **NORDICOTE ACI-M2**

A formulated product of chromic acid powder blended with catalysts for producing protective chromate films on aluminum alloys. Provides coatings yellow to brown in color, which can be dyed or bleached clear.

### **NORDICOTE ACI-16**

A conversion coating that is formed, provides a clear to yellow iridescent or brown color film which can be used as a final finish for maximum protection against corrosion of the aluminum surface. The coating can be used as a base for adhesives, rubber, vinyl and other bondings.

Nordicote ACI-16 can be applied by immersion, spraying, and by brushing if desired.

### **NORDICOTE ACI-92**

A liquid formulation to produce yellow, corrosion resistant chromate coating on aluminum and its alloys. The conversion coating produced is very heavy and has good adhesion even when wet. The ACI-92 process does not contain any cyanide compounds.

The Nordicote ACI-92 process is very economical and is available in a dry powder form. No additional acid is required during initial make-up.

### **NORDICOTE AZ-1227**

A formulated powder blend containing salts of chromium and other inorganic compounds to produce light to dark-yellow-brown coating on aluminum and aluminum-zinc alloy surfaces. The formulation does not contain any cyanide compound.

### **NORZAL**

A liquid blend of activating salts, which will chemically activate the surface of aluminum to ensure that subsequent electroplated coatings will be strongly adherent.

# CADMIUM PLATING PROCESSES

## **NOVABRIGHT 370**

A two-part additive system, when used in neutral pH electrolyte for cadmium plating process produces semi-bright to bright deposits on various metallic substrates. The deposit is smooth and fine-grained at current densities up to 60 ASF. This process has the aerospace approval.

## **NOVABRIGHT 390**

A two-part additive system which produces a bright and ductile deposit of cadmium at current densities of 1 – 150 ASF from acidic cadmium sulfate solution.

## **NORLYTE 302-L**

A liquid brightening agent recommended for barrel and rack type applications to produce brilliant deposits out of the cyanide-type bath.

## **NORLYTE 302-O**

A liquid additive to be used in cyanide cadmium plating baths in which a metallic type brightener has given rise to problems of darkening of the plated deposit during post treatment.

## **NORLYTE 302-W**

A liquid wetting agent for use in cyanide cadmium plating solutions which have been contaminated with drag-in of oil, grease, etc., due to the ineffective cleaning cycles. Its use promotes better-plated work and reduces maintenance cost, drag-out losses, and cyanide waste treatment costs.

## **NORLYTE 312-L**

A single liquid additive for use with alkaline cyanide electrolytes, utilizing bath compositions with comparatively low cyanide to metal content ratios. Give excellent covering and throwing power, with good brightness. The cadmium deposits readily accept all types of specific post treatments.



# CHROMIUM PLATING ADDITIVES

## **NORLYTE CFS**

A liquid addition agent for use in chromium plating solutions for minimizing the tendency of mist formation. The Norlyte CFS will not effect in any manner the catalyst radical, or radicals, in mixed catalyst type bath. Will not cause pitting in thick deposits as used in hard chromium applications.

## **NOVACHROME HC**

A very economic high-speed industrial chrome plating bath of low concentration and high tolerance to metallic contamination. The solution can be operated over a wide range of conditions. Drag-out losses are minimized due to its low concentration. Deposits of hardness in excess of 1,000 v.p.n are maintained and the electrolyte is less corrosive than other proprietary baths. Uniform deposits at high speed, with less nodularity and better metal distribution at significantly lower cost can be obtained through the use of this process.

## **NOVACHROME 52**

Is a proprietary mixture of chromic acid blended with specific catalysts to produce an effective activation action on nickel plated and stainless steel surfaces providing exceptional throwing power. The chromium deposit is micro-cracked and is highly suitable for plating bright chromium layer over bright nickel.

# COPPER AND COPPER ALLOYS PLATING PROCESSES

## **NOVALYTE NC-CU/NC-CU-M**

A low-metal process based on a non-toxic, biodegradable organic complexing agent, for plating copper from an alkaline cyanide-free electrolyte. The two-part additive system produces a semi-bright to bright deposit, which is suitable as a strike on steel surfaces or as a base for semi-bright or bright nickel deposits. The deposit also is useful on steel components as a mask for selective carburizing.

## **NOVALYTE BR**

Is similar in chemistry to Novalyte NC-CU except that the electrolyte contains both zinc and copper salts to produce brass (zinc-copper alloy) deposits. The two-part additive system produces semi-bright to bright deposits, and the fine-grained quality can be maintained in this alkaline non-cyanide process. The alloy proportion can be readily varied to maximize the application.

## **NOVALYTE 707**

A liquid addition agent for use in air agitated copper cyanide plating solution. The addition agent is so formulated to function as a single additive brightening system. Will produce bright, uniform deposits from cathode rod agitated solutions. The deposits are smooth, ductile, and free of any alloying metallic brightening constituents since the additive is all-organic in chemical nature.

## **NOVALYTE 747**

A liquid addition agent for use in air agitated cyanide copper plating solutions. Promotes high anode efficiency and imparts good tolerance to the usual contaminants normally associated with bright cyanide copper plating.

## **NORLYTE 715-W**

A liquid wetting agent for use in air agitated copper cyanide plating solutions to reduce surface tension and increase the tolerance to organic contamination where constant filtration through an activated carbon pack is not feasible.

## **NORLYTE 716-W**

A liquid addition agent for use in copper plating solutions where high detergency type surfactant is desired. The addition agent is of the anionic surfactant type.

## **NORLYTE ACA**

A liquid addition agent formulated for use in copper cyanide plating solutions to assist and enhance the proper corrosion of the anode. Compatible with most types of copper cyanide electrolytes.

## **NORLYTE CRA**

A liquid addition agent for use in copper cyanide plating solutions for controlling the detrimental effects of hexavalent chromium contamination. Compatible with most types of copper cyanide electrolytes.

## **NORLYTE BRIGHT ACID COPPER DEPOSITS**

This three-part system produces bright and ductile copper deposits from an acidic electrolyte. The process has excellent leveling characteristics that make it ideal as a base layer for various nickel-chromium cycles on steel, zinc-based die-castings, and plastics. The process has excellent throwing power for bright deposits in low current density areas.

# NICKEL PLATING PROCESSES

## **NOVALYTE SN-SB-74**

Sulfamate nickel plating process is suitable for recording, printing, electroforming, aerospace and electronic industries. The mechanical properties of the deposit such as hardness, ductility, tensile strength and internal stress can be closely controlled.

## **NORLYTE 500-BN**

A three-part coumarin-free system that produces a brilliant, level, ductile, and compressively stressed deposit which is ideal as the precursor for chromium. The process responds to either cathode rod or air agitation.

## **NORLYTE 500-SB**

A coumarin-free and sulfur-free process, which produces semi-bright and highly ductile deposits with remarkable leveling power. These deposits are ideally suited as the initial layer of a duplex system.

## **NORLYTE ACNS-570**

A highly stable multi-purpose high-speed process, which deposits a bright nickel-phosphorus, alloy coating by chemical reduction on steel surface without impressed electric current.

# ZINC PLATING PROCESSES

## **NOVALYTE 421-D**

A completely cyanide-free zinc plating process, which can be used in both barrel or rack applications. Produces zinc deposits comparable to those obtained in cyanide systems. Readily permits all kinds of post treatments.

## **NOVALYTE 421-ZDL-2**

Is a one-part system that produces bright, ductile deposits and excellent metal distribution over wide current density and metal concentration ranges. This process is at home in either barrel or rack installations.

## **NOVALYTE CAZ**

A non-cyanide, alkaline zinc plating system formulated for use where high plating efficiency is of paramount importance. The system is based on two additives, a carrier and a brightener. The plating bath can produce good work even at temperatures as high as 110°F. Novalyte CAZ can be used effectively in both rack and barrel plating.

## **NOVALYTE 400-P**

A dry powder mixture formulated to eliminate low current density dark deposits, obtained during plating from alkaline cyanide-free zinc bath.

## **NOVALYTE 400-PL**

A liquid additive to be used as a purifier in alkaline cyanide-free zinc baths where the use of polysulfides type purifier is prohibited.

## **NOVALYTE 421-W**

A liquid wetting agent that can be used in the Novalyte 421-D and similar cyanide-free alkaline zinc plating solutions which have been contaminated with drag-in of oils, greases, etc., due to ineffective cleaning cycles. Its use promotes better plating work and reduces maintenance costs and drag-out losses.

## **NOVACHLOR 404**

A two-part system which produces a brilliant and ductile deposit from an all potassium or mixed salt electrolyte. The system allows the plater to plate zinc at a temperature up to 130°F. However, by adding Temp Care addition agent, plating can be carried out continuously up to a temperature of 140°F.

## **NORLYTE 222-LM**

A liquid brightening agent recommended for both barrel and rack type applications. Has excellent stability and produces high quality deposits out of low cyanide zinc plating bath.

## **NORLYTE ZP-471**

A highly stable liquid purifier for precipitation of common heavy metals, with the exception of copper, from zinc cyanide plating solutions.

# ZINC ALLOY PLATING PROCESSES

## NOVALYTE COZ

A two-part system, which allows simple control of both the alloy composition and brightener, levels in an alkaline zinc-cobalt alloy bath. The deposit is bright over a wide current density range. The deposit readily accepts black and other conventional chromate coating for additional corrosion protection.

## NOVALYTE 421-ZDL-FE

A two-part system zinc-iron alloy process, which features easy maintenance. The alloy deposit is bright over a wide current density range. The deposit responds to clear, iridescent, and black chromate conversion coatings. Standard salt spray tests have shown that the iridescent and silver-free black chromates offer more than 300 hours resistance before the appearance of white products of corrosion. The deposit itself will afford an additional 400-700 hours of protection against red rust.

## NOVALYTE ZCO

A mildly acidic (pH 5.0 – 6.0) two-part zinc-cobalt system which utilizes a chloride based electrolyte. The deposit is bright, ductile, and highly leveled and contains 0.5 – 0.8% cobalt. The deposit readily accepts chromate conversion coatings for additional corrosion protection.

## NOVALYTE ZNA

A two-part system which provides a zinc-nickel deposit (10 –14% nickel) from a virtually neutral electrolyte in either barrel or rack applications. The deposit is bright and ductile over a current density range of 1 – 95 ASF. In combination with the appropriate Aldoa chromate, the deposit can protect steel surfaces against red rust for more than 2000 hours in standard salt spray testing.

## NOVALYTE AZN

Novalyte AZN is an alkaline non-cyanide zinc-nickel alloy plating process, which gives 10 – 14% Nickel in the alloy deposit. The deposit has a superior corrosion protection compared with the alloy deposits with only 4 – 7% nickel.

Novalyte AZN process is simple to maintain because it has only two additives in addition to the nickel complex. The deposit out of the bath is bright, which can easily accept different types of post-treatments.

# CHROMATE CONVERSION COATING

## ALUMINUM

### NORDICOTE ACI

A formulated powder for use as a single dip chromate passivating treatment over aluminum surfaces, producing a yellow iridescent chromate conversion coating. Coating will absorb water-soluble organic dyes.

### NORDICOTE ACI-M2

A formulated product of chromic acid powder blended with catalysts for producing protective films on aluminum alloys. Provides coatings, yellow to brown in color, which can be dyed or bleached clear.

### NORDICOTE ACI-92

A liquid formulation to produce yellow, corrosion resistant chromate coating on aluminum and its alloys. The conversion coating produced is very heavy and has good adhesion even when wet. The ACI-92 process does not contain any cyanide compounds.

### NORDICOTE AZ-1227

A formulated powder blend containing salts of chromium and other inorganic compounds to produce light to dark-yellow-brown coatings on aluminum and aluminum-zinc alloys surfaces. The formulation does not contain any cyanide compound.

# CHROMATE CONVERSION COATING

## CADMIUM

### NORDICOTE CDNI

A formulated powder for use as a single-dip chromate passivating treatment over cadmium plated surfaces, producing films that are non-iridescent, clear and bright directly out of the treatment solution.

### NORDICOTE CSD-LNA

A formulated liquid product for use as a single-dip chromate over cadmium plated specifically for absorbing water-soluble organic dyes for color identification purposes. Can also be used as a single dip bright chromate over cadmium plate with certain modifications.

### NORDICOTE DC-70

A liquid chromate for use as a single-dip treatment to produce a bronze iridescent chromate coating over zinc base die-castings. It can also be used for electrodeposited zinc and cadmium surfaces.

### NORDICOTE DQ

A powder chromate for use as a single-dip treatment to produce a gray color chromate conversion coating over zinc and cadmium plated surfaces. Will absorb water-soluble organic dyes producing deep, rich colors.

### NORDICOTE VIB

A formulated powder for use in producing multi-type conversion coatings on zinc and cadmium plated surfaces.

### NORDICOTE ZP-4

A variable purpose powder chromate to produce bright clear coatings to yellow, iridescent coatings on zinc plated surfaces. Norkote ZP-4 can also be used to produce yellow, iridescent coatings over cadmium plated surfaces, zinc base die-castings and galvanized steel.

# CHROMATE CONVERSION COATING

## SILVER

### NORDICOTE 107-P

Is formulated for use as a single-dip chromate type passivating treatment over silver plated surfaces, producing films that are non-iridescent, clear, protective and tarnish resistant.

The Nordicote 107 P treatment provides excellent protection towards retarding the formation of corrosion products on silver surfaces where appearance and functional performance are critically important.

Electrical or electronic components which are silver plated will not undergo critical dimensional changes, nor will the film adversely affect subsequent soldering or brazing operations. The electrical contact resistance of the film is of low order.



# CHROMATE CONVERSION COATING

## COPPER and ALLOYS

### NORDICOTE CU

A formulated chromic acid powder used for producing a specific type of chromate conversion coating on copper and its alloys, such as brass and bronze.

Nordicote CU can be used to produce heavy conversion coatings that are used primarily for maximum corrosion protection, or for thin coatings, which offer lesser protection but provide an excellent base for paint. The heavy chromate films can also be used for dye absorption where colors are used for identification purposes.

### NORDICOTE 63-P

Formulated for use as a single dip chromate to produce bright, lustrous finishes on copper and copper bearing alloys. The conversion coating that is formed provides maximum protection towards the formation of corrosion products.

### NORDICOTE 63-1-P

Formulated for use as a single dip chromate to produce bright, lustrous finishes on brass. The conversion coating that is formed provides maximum protection against tarnish.

# CHROMATE CONVERSION COATING

## ZINC

### NORDICOTE TCB

Nordicote TCB is a single dip formulation based on the trivalent chromium salts, to produce a black conversion coating on electroplated zinc-iron/cobalt deposits. Under the optimum conditions of use the coating provides about 48-72 hours of neutral salt spray protection against white corrosion. Further protection can be achieved by using an appropriate corrosion protection enhancer. The working solution of Nordicote TCB is used at room temperature and is easy to maintain. The process is suitable for both rack and barrel operations.

### NORDICOTE 300-LM

A liquid concentrate that produces yellow to orange chromate conversion coatings on electroplated zinc, zinc-cobalt, zinc-iron and zinc-nickel. Salt spray tests on zinc deposits treated with Nordicote 300-LM solution have shown no white products corrosion after more than 300 hours of exposure.

### NORDICOTE E 300-P

A powder version of Nordico300-LM with similar advantages.

### NORDICOTE NZP-L1 & L2

Nordicote NZP-L1 and L2 are formulated as a two-part liquid concentrates which when diluted with a requisite amount of water will produce a black chromate conversion coating with either a glossy or matte appearance. The process can be applied over electrodeposited coatings of zinc, and zinc base die-castings or hot dipped galvanized surfaces. The conversion coating that is formed provides some protection toward retarding the formation of white corrosion products.

When properly applied, the complex-chromate film is chemically integrated with the treatment surface with no tendency to flake, chip, and peel or to powder. The coating serves as an excellent base for organic finishes.

The Nordicote NZP process can be applied to both rack plated or bulk-process plated surfaces.

### NORDICOTE DC-70

A liquid chromate for use as a single-dip treatment to produce a bronze iridescent chromate coating over zinc base die casting. It can also be used for electrodeposited zinc and cadmium surfaces.

### NORDICOTE DQ

A powder chromate for use as a single-dip treatment to produce a gray color chromate conversion coating over zinc plated surfaces. Will absorb water-soluble organic dyes producing deep, rich colors.

### **NORDICOTE OD**

Produces olive to green colored chromate conversion coating on zinc deposits. The coating provides excellent corrosion resistance and absorbs organic dyes producing deep rich surfaces.

### **NORDICOTE ODL**

A two-part liquid system for producing a maximum protection chromate coating on zinc and cadmium electrodeposited surfaces and zinc base die-castings. The coating exhibits a brownish-green color, and will also absorb water-soluble organic dyes.

### **NORDICOTE OG**

A formulated powder for use as a single-dip chromate passivating treatment over zinc and cadmium surfaces producing greenish conversion coating.

### **NORDICOTE VIB**

A formulated powder for use in producing multi-type conversion coatings on zinc and cadmium plated surfaces.

### **NORDICOTE ZNI-L**

A formulated liquid for use as a single dip passivation treatment over zinc plated surfaces, producing films that are truly non-iridescent, white bright with freedom from varying shades of blue color. Where maximum brightness of deposit is desired, the Nordicote ZNI should be preceded by a nitric acid type bright dip. Coating will not absorb water-soluble dyes.

### **NORDICOTE ZP-4**

A variable purpose powder chromate to produce bright clear coating to yellow, iridescent coatings on zinc plated surfaces. Nordicote ZP-4 can also be used to produce yellow iridescent coatings over cadmium plated surfaces, zinc base die-castings and galvanized steel.

### **NORDICOTE ZP-4M**

A formulated variable purposed powder chromate to produce bright clear to yellow iridescent coatings on zinc plated surfaces, can also be used to produce yellow-iridescent coatings over cadmium plated surfaces, zinc base die castings and galvanized steel.

### **NORDICOTE ZSD-1**

A low cost formulated powder for use as a single-dip chromate to produce a blue bright, clear coating over zinc plated surfaces. Excellent for producing pastel colors by water-soluble dye absorption.

### **NORDICOTE ZSD-NA**

A formulated powder for use as a single-dip chromate to produce a blue bright, clear coating over zinc plated surfaces. Can be used without nitric acid additions, or with very slight nitric acid additions to prolong the life of the bath.

### **NORDICOTE ZN-3**

A single-dip liquid chromate conversion formulation based on trivalent chromium salts. This acidic liquid when properly diluted with water will give working bath that can be used to produce a highly corrosion resistant, clear to slightly iridescent conversion coating on electroplated zinc surfaces.

### **NORDICOTE TCL**

Trivalent chromium based, two parts, conversion coating to provide excellent absorption of organic dyes. The conversion coating produced over zinc surfaces gives 48-72 hours of neutral salt spray protection against white corrosion.

# CHROMATE CONVERSION COATING

## ZINC ALLOYS

### NORDICOTE 300-BLK

A liquid concentrate, when diluted with water will produce chromate conversion coatings on treated electroplated zinc, zinc-iron and zinc-cobalt alloy layers. The conversion coatings are highly corrosion resistant. The conversion coatings produced on zinc-iron are black and are olive green on zinc.

### NORDICOTE 300-LM

A liquid concentrate that produces yellow to orange chromate conversion coatings on electroplated zinc, zinc-cobalt, zinc-iron and cadmium. Salt Spray tests on zinc deposits treated with NORDICOTE 300-LM solution have shown no white products of corrosion after more than 300 hours of exposure.

### NORDICOTE COZ-L

A liquid formulation developed to produce a yellow iridescent protective conversion coating on surfaces of zinc, cadmium and alloys of zinc, such as, cobalt-zinc, iron-zinc and nickel-zinc (containing a low percentage of nickel). NORDICOTE COZ L formulation produces clear chromate conversion coating on zinc-nickel alloy surfaces containing more than 8% nickel.

### NORDICOTE NHC

A non-hexavalent chromium formulation when properly diluted with water will produce yellow passivation film on zinc-nickel alloy deposits containing 10 – 14% nickel. NORDICOTE NHC is a two-part system that works at room temperature and produces a corrosion resistant coating in 45 to 90 seconds of immersion time.

### NORDICOTE ZNA-P

A powder formulation, when dissolved in water gives a highly corrosion resistance chromate conversion coating on electroplated zinc-nickel alloy deposits with 10 – 18% nickel.

### NORDICOTE ZNW

Nordicote ZNW-1 and ZNW-2 are formulated to produce a black chromate conversion coating when diluted with the requisite amounts of water. The process is specifically developed for zinc-nickel alloy deposits with 10 – 16% nickel content. Subsequent immersion of the coated parts in Nordicote ZNW-Seal solution gives a glossy appearance to the coating.

### NORDICOTE 2109

It is difficult to apply yellow chromate conversion coatings to the baked zinc-nickel alloy plated parts. In the majority of cases, the baked parts have to be replated with a thinner coating of zinc-nickel and then treated with the conventional yellow chromates.

Nordicote 2109 was specially formulated to avoid replating of the baked parts. Nordicote 2109 in a water solution, gives a highly corrosion resistant coating directly on the baked zinc-nickel plated parts.

## ZINC BASED DIE CAST SURFACES

### NORDICOTE ZDC-14

Is formulated for use as a chemical dip process to produce a bright, chemically polished and protective coating on zinc based die-castings of the ZAMAK 3 type.

### NORDICOTE DC-70

A liquid chromate for use as a single-dip treatment to produce a bronze iridescent chromate coating over zinc base die casting. It can also be used for electrodeposited zinc and cadmium surfaces.

### NORDICOTE DQ

A powder chromate for use as a single-dip treatment to produce a gray color chromate conversion coating over zinc plated surfaces. Will absorb water-soluble organic dyes producing deep, rich colors.

### NORDICOTE ZN-3

Trivalent chromium based conversion coating that gives more than 96 hours of neutral salt spray protection against white corrosion.

# DYES

The use of water-soluble dyes over chromate conversion coatings on basis metals such as electrodeposited zinc and cadmium, aluminum, and copper has been known for many years. The process has been used for identification purposes extensively and for decorative value in certain areas. In the case of the latter application, it is necessary to apply a clear, organic topcoat for optimum results. The organic coating can be of the air-dry or high-temperature cure type. These dyes are available in a variety of colors and can be matched to your needs.

# STEEL TREATMENT PROCESSES

## CLEANERS

### NORDAC CDN-NP

A non-phosphate formulated cleaner for thorough soak cleaning of steel parts. The surfactants used in this formulation were chemically selected to displace the contaminants from the work rather than emulsify them. The Nordac CDN-NP is of the non-rosin acid and non-fatty acid type.

### NORDAC EC-333

A dustless alkaline powder containing a biodegradable surfactant system that works as a heavy-duty electrocleaner on ferrous metals.

### NORDAC SC-100-NP

A mildly alkaline, non-phosphated spray cleaner used for inspection cleaning and in plant corrosion protection of steel surfaces. A dustless powder containing a biodegradable surfactant package.

### NORDAC 34-HDS

An alkali soak cleaner with high detergency characteristics. Exhibits excellent cleaning action through a wide temperature range of operation. Equally effective in both hard and soft water.

### NORDAC 623

A formulated mildly alkaline, non-silicated cleaner non-etch type, for cleaning aluminum, steel, and brass. The surfactant system in the NORDAC 623 is of the biodegradable type.

### NORDAC 1315

A formulated cleaner for fast, thorough electrolytic cleaning of steel, copper and various copper-based alloys. All ingredients contribute to the overall cleaning action. The surfactants used in this formulation were chemically selected for high detergency and stability to temperature and oxidation to give dustless, facilitating the handling of the material. The NORDAC 1315 cleaner performs exceptionally well in hard water areas.

### NORDAC 2680

A powdered alkaline compound formulated for the non-electrolytic chemical dissolution of rust and heat treat scale on ferrous metals. Can be used to remove phosphate coatings and scale. Does not contain sodium cyanide.

### NORDAC 365-L



Is formulated for use as a liquid inhibitor for hydrochloric acid pickling solution.

NORDAC 365-L in conjunction with hydrochloric acid is used for the bright pickling of steel to remove mill scale, rust, and other forms of oxides with minimum attack on the exposed surface.

It is used to overcome the common difficulties encountered in the pickling of steel, such as over pickling, smudge formation, and pitting. The surface of the steel remains bright and uniform when pickled in hydrochloric acid solution containing NORDAC 365-L inhibitor.

### **NORHIB 98-L**

An organic type inhibitor formulation for use in sulfuric acid pickling solutions for the preparation of chemically clean steel surfaces prior to metallic coatings there on.

Norhib can be easily rinsed off the pickled steel surface and therefore, can be used in acid pickling solutions that do not have an alkaline cleaner following the pickling step.

## SPECIALTY PRODUCTS

### FERRO HONE SALTS

Formulated salts for use in bright-dipping and mild deburring of plain carbon steels. Not recommended for low or high-alloy type steel. Can be used effectively for removal of smut formation on pickled metal surfaces prior to plating. Formulations are also available for bright dipping brass parts.

### NORSAL BO55

A formulated salt for use in producing black finishes on steel and iron surfaces at relatively low temperatures with a single stage process.

### NORSAL MB

Formulated inorganic salts to produce black coating on electroplated zinc and cadmium surfaces without the presence of chromium salts. The black coating produced does not impart corrosion resistance to the electroplated layer.

### NORWET 18-R

A liquid wetting agent for use in final hot water rinses following bright chromium plating cycles. The Norwet 18-R added in very dilute concentration, reduces staining due to more effective chrome rinsing.

### NORWET 18-RM

A formulated liquid for use in final hot water rinses in pickling, phosphating and plating processes of certain parts exposing bare steel unplated surfaces, to prevent rusting.

### NORDICOTE NCB

Powder formulation to produce black coating on zinc and zinc-alloy deposits. The corrosion resistance of the coating can be improved by using an appropriate topcoat.

# METAL CLEANERS

## **SOAK CLEANER 3000**

A highly effective alkaline cleaner designed to economically remove all industrial oils and greases. It can be used as either a soak or electro cleaner with varying concentrations. Soak Cleaner 3000 will not pose waste water treatment problems and has demonstrated long life when maintained properly.

## **NORDAC 110**

Is a unique blend of mild alkaline, non-caustic materials containing emulsifiers, dispersing agents, and surfactants for soak cleaning aluminum and its alloys without etching.

The Nordac 110 cleaner is formulated to remove light oils, mild shop soils, lubricants, and certain types of marking inks.

Nordac 110 does not contain caustic soda, nor the usual addition of silicated compounds as inhibitors to provide non-etching of the aluminum surfaces during the cleaning procedure. In addition, the cleaner is biodegradable.

Nordac 110 eliminates the difficulty of rinsing the cleaned aluminum surfaces usually associated with the silicate-bearing cleaners, facilitating subsequent treatments such as anodizing, chromating or welding.

## **NORDAC 2680**

A powdered alkaline compound formulated for the non-electrolytic chemical dissolution of rust and heat treat scale on ferrous metals. Can be used to remove phosphate coatings and scale. Does not contain sodium cyanide.

## **NORDAC 1315**

A formulated cleaner for fast, thorough electrolytic cleaning of steel, copper and various copper-based alloys. All ingredients contribute to the overall cleaning action. The surfactants used in this formulation were chemically selected for high detergency and stability to temperature and oxidation to give dustless, facilitating the handling of the material.

The Nordac 1315 cleaner performs exceptionally well in hard water areas.

## **NORDAC 623**

A formulated mildly alkaline, non-silicated cleaner non-etch type, for cleaning aluminum, steel, and brass. The surfactant system in the Nordac 623 is of the biodegradable type.

## **NORDAC CDN-NP**

A non-phosphate formulated cleaner for thorough soak cleaning of steel parts. The surfactants used in this formulation were chemically selected to displace the contaminants from the work rather than emulsify them. The Nordac CDN-NP is of the non-rosin acid and non-fatty acid type.

### **NORDAC EC-95**

Is formulated as an alkaline compound for use as a soak and electrolytic cleaner for various types of base metals, such as steel, copper, and brass.

Nordac EC-95 is an excellent choice for job shops where single tank cleaning of various metals is possible. The cleaner exhibits long life and high soil load tolerance.

### **NORDAC EC-333**

A dustless alkaline powder containing a biodegradable surfactant system that works as a heavy-duty electrocleaner on ferrous metals.

### **NORDAC SC-100-NP**

A mildly alkaline, non-phosphated spray cleaner used for inspection cleaning and in plant corrosion protection of steel surfaces. A dustless powder containing a biodegradable surfactant package.

### **NORDAC 365-L**

Is formulated for use as a liquid inhibitor for hydrochloric acid pickling solution.

Nordac 365-L in conjunction with hydrochloric acid is used for the bright pickling of steel to remove mill scale, rust, and other forms of oxides with minimum attack on the exposed surface.

It is used to overcome the common difficulties encountered in the pickling of steel, such as over pickling, smudge formation, and pitting. The surface of the steel remains bright and uniform when pickled in hydrochloric acid solution containing Nordac 365-L inhibitor.

### **NORHIB 98-L**

An organic type inhibitor formulation for use in sulfuric acid pickling solutions for the preparation of chemically clean steel surfaces prior to metallic coatings.

Norhib can be easily rinsed off the pickled steel surface and therefore, can be used in acid pickling solutions that do not have an alkaline cleaner following the pickling step.

# MAINTENANCE CLEANERS

## NORCLEAN GCSK

A non-hazardous neutral liquid cleaner with excellent degreasing properties designed for the superior penetration and removal of oily/greasy particulate and soils from hard surfaces. NORCLEAN GCSK does an excellent job of removing residual graphite from warm forming dies, graphite spray application nozzles and equipment.

- Non-flammable
- Low toxicity
- High flash point, low vapor pressure
- Low to zero VOC
- Non-hazardous
- Readily Biodegradable
- Water reducible
- Low foaming

## NORCLEAN GMC

A General Maintenance Cleaner for Industrial and Institutional hard surfaces or plant production areas. NORCLEAN GMC is a non-hazardous, neutral pH liquid cleaner that is capable of removing tough shop oils and particulate from machinery and tooling.

- Wets out on surface for better penetration
- Safe on metals and alloys
- Low Dynamic Surface Tension for optimal cleaning
- Low foaming
- No EPA regulated VOC's
- Non-hazardous
- Biodegradable
- Non-flammable
- Non-toxic

# INHIBITED SULFAMIC ACID-BASED SPECIALTY METAL CLEANERS, DESCALERS

## NORDAC 97 AND 97-NF

NORDAC 97 and 97NF are formulated to inhibit the attack of sulfamic acid when used for cleaning and descaling of metals and equipment. NORDAC 97 is a non-foaming type.

## NORDAC DAC

Foaming type for use in cleaning and descaling of metals with the exception of zinc and aluminums, or their alloys.

## NORDAC DAC-CU

A formulated inhibited acid powder descaler for water cooled rectifiers and transformers. Inhibited for minimizing etching of copper and aluminum surfaces.

## NORDAC DAC-RR

Foaming type for use in cleaning and descaling of metals with the exception of zinc and aluminum and their alloys. Formulated specifically for the removal of rust or iron containing scales.

## NORDAC DAC-1

Foaming type for use in cleaning and descaling of metals with the exception of zinc and aluminum, or their alloys. Contains an indicator, which under goes color changes when acid is neutralized and serves as a visual aid in determining when the acid content is spent.

# LIQUID ACID REPLACEMENT PRODUCTS

## **NORDAC 16-AR**

Formulated salts for use as a replacement for liquid acids. Especially effective in acid dips for zinc based die casting cleaning cycles, since choice of surfactants used is completely compatible with all cyanide copper plating processes.

## **NORDAC 16-ARS**

Formulated salts for use as a replacement for liquid acids. Especially effective in acid dips following the cleaning step on copper surfaces prior to nickel electroplating. The choice of surfactants used is completely compatible with all semi-bright and bright nickel plating processes.

## **NORDAC 112**

Formulated for use as a replacement for liquid acids in various applications. NORDAC 112 eliminates the safety and handling problems associated with the use of liquid acids.

NORDAC 112 solutions are perfect for use as activating dips for steel, iron, brass, copper and zinc-base die-castings. The formulation is such as to produce brighter and cleaner surfaces, resulting in better adhesion and more uniform plating deposits. NORDAC 112 can be used effectively as a pickling solution for removal of rust, heat-treating and welding scale. The material can be used on automatic, hoist-operated, and manual installations.

## **NORDAC 365-L**

NORDAC 365-L is formulated for use as a liquid inhibitor for hydrochloric acid pickling solution.

NORDAC 365-L in conjunction with hydrochloric acid is used for the bright pickling of steel to remove mill scale, rust, and other forms of oxides with minimum attack on the exposed surface.

## **NORHIB 98-L**

An organic type inhibitor formulation for use in sulfuric acid pickling solutions for the preparation of chemically clean steel surfaces prior to metallic coatings there on.

Norhib can be easily rinsed off the pickled steel surface and therefore, can be used in acid pickling solutions that do not have an alkaline cleaner following the pickling step.

# MISCELLANEOUS PRODUCTS

## NORSAL APS

A formulated powder mixture for use in the pickling step of cleaning cycles for aluminum and aluminum alloys. The Norsal APS salts are used in combination with nitric acid for removal of smuts developed on high silicone type aluminum alloys, whether sand or machine cast.

## NORLYTE DF

An all-organic, non-silicone liquid formulation. It is designed to suppress foam build up in certain electroplating baths.

Norlyte DF is compatible with most cyanide and non-cyanide alkaline plating processes. However, Norlyte DF should be checked in the laboratory for compatibility before adding to an alkaline or acid type plating bath.

## NORSAL 3028

A liquid concentrate used in bright dipping parts plated with zinc-nickel alloy deposits.

## NORSAL ADO

Formulated for use in removing oxides and smut films from aluminum and aluminum alloys; depending on the type of alkaline cleaner used in the cleaning cycle.

## NORSAL AES

Formulated as a highly alkaline etchant for aluminum and its alloys. Norsal AES salts may be used wherever an etch type cleaner is needed. The etch salts formulation is specific where it is desired to maintain a constant, uniform etching rate.

## RPA-II

RPA-II is used as an additive to the cooling water reservoir to prevent corrosion of the metals that may come in contact with it. The function of RPA-II is to:

- remove the dissolved oxygen from the water
- reduce the hardness of water thus minimizing the rate of scale formation,
- reduce the tendency of galvanic cell formation between dissimilar metals, such as steel and aluminum that may come in contact with water, and to
- minimize the formation of algae and slime on the surface of the equipment that comes in contact with the water

RPA-II can also be added to the last water rinse following the pickling of steel.



### **NORSAL APN**

Formulated for use in a non-flowing neutralizing and passivating rinse for ferrous surfaces, which have been acid pickled. Cleaning cycles prior to electrophoretic painting systems, hot-dip galvanizing, hot-tin dipping and electrodeposition can utilize the Norsal salts.

### **NORSAL MB**

Formulated salts for use in producing black finishes on steel, zinc and cadmium surfaces at relatively low temperatures with a single stage process.

### **NORSAL NA**

Formulated salts for use in activating nickel surfaces prior to chromium plating. Effectively reduces the passivation of electroplated or buffed nickel deposits to improve the covering power of chromium plating. When properly used, satisfactory adhesion of chromium plate over nickel plate can be achieved.

### **NORSOL BWC**

A liquid formulated for use in low-pressure boilers not utilizing water softening, or water de-ionizing system.

### **NORSAL DC**

A liquid product used in a final rinse to prevent the processed parts from redeveloping white products of corrosion.

### **NORWET 18-RM**

A formulated liquid for use in final hot water rinses after pickling, phosphating and plating processes of certain parts exposing bare steel or unplated surfaces to prevent rusting.

### **NORZAL**

A liquid blend of activating salts, which will chemically activate the surface of aluminum to ensure that subsequent electroplated coatings, will be strongly adherent.

### **FERROHONE SALTS**

Formulated salts for use in bright-dipping mild deburring of plain carbon steels. Not recommended for low or high-alloy type steel. Can be used effectively for removal of smut formation on pickled metal surfaces prior to plating. Formulations are also available for bright dipping brass parts.

### **GRIME OFF**

Formulated to be used as a solvent type compound for on-site cleaning of grease and oil contaminated machinery and equipment. Water is used to flush the surface clean.

### **NEROKOTE 1210**

A liquid formulated for use in producing black finishes on steel and iron surfaces at room temperature with single stage process.

**STRIP-AID**

A powder material which when mixed with water and sodium cyanide produces a stripping solution for removing nickel, copper, brass, zinc, cadmium and silver from ferrous based metals by simple immersion.

# WASTE WATER TREATMENT PRODUCTS

These products are used for oily waste effluent, general plant waste, and heavy metal waste effluent.

## AQUATION 350-H

Organic compounds that has some application in alkaline cleaner waste. Very effective at high pH levels.

## AQUATION 1223-P

Powder anionic polyelectrolyte same as CA 700 used for large volume systems.

## AQUATION AC

Inorganic emulsion breaker for lightly oily waste emulsified oils or waste effluent. Compatible with other treatment compounds.

## AQUATION CA-700

Anionic polyelectrolyte used to clarify waste effluent removing suspended solids and compacting sludge.

## AQUATION EB-600

Organic additive used for recovering oil in sludge or oil cooking process. May be used with acid or caustic in the cooking process.

## AQUATION PW-25

A mildly acidic liquid specifically designed for treating alkaline cleaner waste to remove phosphates, silicates, some chelating agents, with accelerated precipitation of suspended solids. Enables the use of caustic soda in place of lime for pH adjustment of plating wastes of nickel, chromium, and others, thereby reducing excessive sludge haul-away.

## AQUATION WT

Organic compound used in both light and medium contaminated oily waste effluent. Used most effectively in conjunction with Aluminum Sulfate.