

**PARKER+AMCHEM: RODINE Acid Inhibitors for Industrial Cleaning:**

RODINE formulations are designed to provide consistent, effective protection to the base metal of equipment during the acid cleaning operation while not retarding the removal of rust, metallic oxides and hard water scale.

**RODINE 31A (Liquid):**

Acid: Acetic, Citric, Formic, Sodium Bisulfate, Hydroxyacetic, Phosphoric, Sulfuric, Sulfamic, Oxalic

Temp.: to 180F

Required Amount of RODINE: 1.0 to 4.0 gallons per 100 gallons of concentrated liquid acid - or per 100 lbs. concentrated powdered acid.

**RODINE 50 (Liquid):**

Acid: Hydrochloric (Muriatic)

Temp.: to 180F

Required Amount of RODINE: 1.0 to 2.0 gallons of concentrated acid

**RODINE 51 (Liquid):**

Acid: Hydrochloric (Muriatic), Sulfuric, Hydrofluoric, Phosphoric, Sodium Bisulfate

Temp.: to 180F

Required Amount of RODINE: 1.0 to 2.0 gallons per 100 gallons of concentrated acid

**RODINE 85/RODINE 95 (Liquids):**

Acid: Sulfuric, Phosphoric, Acetic, Sulfamic, Citric, Oxalic, Sodium Bisulfate, Formic

Temp.: to 180F

Required Amount of RODINE: 1.0 to 4.0 gallons per 100 gallons of concentrated liquid acid - or per 100 lbs. concentrated powdered acid.

**RODINE 100 (Powder):**

Acid: Hydrochloric (Muriatic), Sulfamic

Temp.: to 150F

Required Amount of RODINE: 25 to 50 lbs per 1,000 gal. of diluted acid or 25 to 50 lbs. per 100 lbs. concentrated powdered acid.

**RODINE 103 (Liquid):**

Acid: Acetic, Citric, Hydrochloric, Oxalic, Phosphoric, Sodium Bisulfate, Sulfamic, Sulfuric, Tartaric

Temp.: 100F to 150F

Required Amount of RODINE: 2 gal. per 1,000 gal. of diluted acid

**RODINE 145 (Powder):**

Acid: Sulfamic

Temp.: to 120F

Required Amount of RODINE: 7.5 to 15.0 lbs. per 100 lbs. concentrated powdered acid

**RODINE 213/214/RODINE 52 (Liquids):**

Acid: Hydrochloric (Muriatic)

Temp.: to 180F

Required Amount of RODINE: 1.0 to 3.0 gal. per 1,000 gal. of diluted acid.

**PARKER+AMCHEM: RODINE Inhibitors for Pickling Acids:**

Whether your pickling operation utilizes hydrochloric acid or sulfuric acid, RODINE inhibitors provide a wide range of advantages, including:

- \* Improved finish and appearance
- \* Improved efficiency
- \* Reduced iron build-up and spent acid
- \* Elimination of over-pickling
- \* Minimization of smutting, pitting and burning
- \* Reduced fuming
- \* Minimization of hydrogen embrittlement
- \* Ability to maintain line speed

Acid: Hydrochloric (Muriatic)

Method: Batch Pickling

Temp.: To 140F

RODINE 50: Liquid, non-foaming

RODINE 51: Liquid, semi-foaming

Volume of RODINE Based on Concentrated Acid: 1 to 4 pints per 100 gallons

Medium strength inhibitors for general pickling. Excellent for pickling prior to plating.

Method: Continuous Strip Pickling

Temp.: To 210F

RODINE XL-1090: Liquid, non-foaming

RODINE 1150: Liquid, non-foaming

Volume of RODINE Based on Concentrated Acid: 1 to 3 pints per 100 gallons

Strong inhibitors for continuous pickling. Aids in attaining clean, bright pickled work. Superior performance in high-iron content pickle baths.

Acid: Sulfuric

Method: Batch Pickling

Temp.: To 190F

KLEANRITE 50: Powder, foaming

Volume of RODINE Based on Concentrated Acid: 100 pounds per 100 gallons

Provides an excellent surface for phosphating. Excellent wetting enables rapid, uniform pickling of tubing, coils or wire as well as rod and bundles of bars.

Method: Batch Pickling

Temp.: To 195F

RODINE 85: Liquid, low-foaming

Volume of RODINE Based on Concentrated Acid: 1 to 4 pints per 100 gallons

A very strong general purpose inhibitor. Superior stability at high pickling temperatures.

RODINE 95: Liquid, semi-foaming

Volume of RODINE Based on Concentrated Acid: 1 to 4 pints per 100 gallons

A strong inhibitor containing detergent. Stable at high-pickling temperatures. Improves rinseability; aids in attaining maximum cleanliness on pickled work.

Method: Continuous Strip Pickling

RODINE 95: Liquid, semi-foaming

**PMC SPECIALTIES: COBRATEC TT-50-S Sodium Tolyltriazole  
Solution Corrosion Inhibitor:**

For Copper and Copper Alloys  
Improves Performance of Other Inhibitors for Other Metals

COBRATEC TT-50-S is a corrosion inhibitor for copper and copper-base alloys. It is very similar to COBRATEC TT-100 in performance and mechanism of protection. It differs only in that it is an aqueous solution of the sodium salt of tolyltriazole. This permits faster make-up of treating solutions through simple dilution to the desired concentration.

COBRATEC TT-50-S functions by reacting with copper oxide on the surface of copper or copper alloys forming a strong, insoluble polymeric complex. This complex formation results in a protective layer or film on the copper surface, a few molecules thick, that provides both a mechanical and electrochemical barrier against corrosive attack. This protective layer has a high degree of thermal and oxidative stability and cannot be easily removed. COBRATEC TT-50-S complexes copper in solution, thereby preventing galvanic corrosion of other metals.

**Suggested Uses:**

COBRATEC TT-50-S can be used in most applications where COBRATEC 99 and COBRATEC TT-100 are effective.

Circulating Cooling Systems such as cooling towers, air conditioning systems, cutting and grinding fluids.

Functional Fluids such as hydraulic fluids, specialty lubricants and automotive coolants.

Corrosion Preventive Coatings such as water base lacquers and waxes.

Cleaners such as soaps, detergents and strong alkali or acid cleaners.

**Description:**

Chemical Name: Tolyltriazole, sodium salt  
Molecular Wt.: 155.14  
Formula: C7H6N3Na  
CAS Registry No.: 64665-57-2

**Properties:**

Appearance: Clear, red brown solution  
Lb/gal (24C): 9.85-9.95  
Crystal Point, C: -8.0  
pH (10% solution): 12  
Assay: 50%

**PMC SPECIALTIES: COBRATEC TT-100 Tolyltriazole Corrosion Inhibitor:**

For Copper and Copper Alloys  
Improves Performance of Other Inhibitors for Other Metals

COBRATEC TT-100 is a corrosion inhibitor for copper and copper-base alloys. It is very similar to COBRATEC 99 in performance and mechanism of protection. It differs only in having an inert methyl group attached to the basic chemical structure which enhances its solubility in some organic solvents. COBRATEC TT-100 functions by reacting with copper oxide on the surface of copper or copper alloys forming a strong, insoluble polymeric complex. This complex formation results in a protective layer or film on the copper surface, a few molecules thick, that provides both a mechanical and electrochemical barrier against corrosive attack. This protective layer has a high degree of thermal and oxidative stability and cannot be easily removed. COBRATEC TT-100 complexes copper in solution, thereby preventing galvanic corrosion of other metals.

**Suggested Uses:**

COBRATEC TT-100 can be used in many applications for protecting copper and copper alloys. Functional substitution for COBRATEC 99 is possible. Some specific uses are:

Circulating Cooling Systems such as cooling towers and air conditioning systems.

Functional Fluids such as hydraulic fluids, specialty lubricants, automotive coolants and metal working fluids.

Wrapping Tissue and box board for wrapping, interleaving, shipping and storing mill products or fabricated items.

Corrosion Preventive Coatings such as lacquers and waxes.

Cleaners such as soaps, detergents and strong alkali or acid cleaners.

**Description:**

Chemical Name: Tolyltriazole

Synonyms: 1-H-Benzotriazole, methyl  
Tolutriazole

Molecular Wt.: 133.16

Formula: C7H7N3

CAS Registry No.: 29385-43-1

**Properties:**

Appearance: Tan to light-brown granules

Specific Gravity (100C/25C): 1.13

Assay: 99.5%

Moisture: 0.2%

Ash: 0.1%

Solution Color, Gardner: 7-9

Free Amine: 0.1%

Chloride: 30 ppm

**PMC SPECIALTIES: COBRATEC 99 Benzotriazole Corrosion Inhibitor:**

For Copper and Copper Alloys  
Improves performance of other inhibitors for other metals

COBRATEC 99 is a corrosion inhibitor for copper and copper-base alloys. It functions by reacting with copper oxide on the surface of copper or copper alloys forming a strong, insoluble polymeric complex. This complex formation results in a protective layer or film on the copper surface, 10 to 20 molecules thick, that provides both a mechanical and electrochemical barrier against corrosive attack. This protective layer has a high degree of thermal and oxidative stability and cannot be easily removed. COBRATEC 99 complexes copper ions in solution, thereby preventing galvanic corrosion of other metals.

**Suggested Uses:**

COBRATEC 99 can be used in many applications for protecting copper and copper alloys.

Direct Treatment such as on mill products, fabricated and decorative items, statuary.

Circulating Cooling Systems such as cooling towers and air conditioning systems.

Functional Fluids such as hydraulic fluids, specialty lubricants, automotive coolants and metal working fluids.

Wrapping Tissue and box board for wrapping, interleaving, shipping and storing mill products or fabricated items.

Corrosion Preventive Coatings such as lacquers and waxes.

Cleaners such as soaps, detergents and strong alkali or acid cleaners.

**Description:**

Chemical Name: Benzotriazole

Synonyms: 1,2,3-Benzotriazole/Azimidobenzene/Benzene azimide

Molecular Wt.: 119.12

Formula: C<sub>6</sub>H<sub>5</sub>N<sub>3</sub>

CAS Registry No.: 95-14-7

**Properties:**

Appearance: Off white to light yellow flake

Specific Gravity (100C/25C): 1.19

Assay: 99.5%

Ash: 0.2%

Moisture: 0.1%

Solubility, wt%, 25C:

Water: 1.98

Water (60C): 7.4

**Other Forms Available:**

CO-40-S: 40% Benzotriazole Sodium Salt in Water

CO-20-I: 20% Benzotriazole in Isopropanol

CO-45-I: 45% Benzotriazole in Isopropanol

CO-35-G: 35% Benzotriazole in Propylene Glycol

CO-20-EG: 20% Benzotriazole in Ethylene Glycol

**PPG/MAZER CHEMICALS: MAZON Corrosion Inhibitors:**

The MAZON RI product group is a series of corrosion inhibitors which are applicable in a wide variety of oil and water-soluble lubricants. They are free of nitrites, nitrates, chromates and phenolics and may be used in virtually every proposed application with maximum safety to the formulator and user.

The MAZON RI group of corrosion inhibitors are:

- \* Effective at Low Concentrations
- \* Safe to Workers and Environments
- \* Low to Non-foaming
- \* Free of Undesirable Deposits and Residues

**RI 4:**

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.245  
Viscosity @ 25C in cps: 6000  
pH 1% Aqueous: 9.6  
Protects: Brass/Copper: no  
          Aluminum: no  
          Steel: yes

**RI 4A:**

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.180  
Viscosity @ 25C in cps: 2000  
pH 1% Aqueous: 9.5  
Protects: Brass/Copper: no  
          Aluminum: no  
          Steel: yes

**RI 6:**

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.040  
Viscosity @ 25C in cps: 2500  
pH 1% Aqueous: 7.8  
Protects: Brass/Copper: yes  
          Aluminum: yes  
          Steel: yes

**RI 7A:**

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.095  
Viscosity @ 25C in cps: 200  
pH 1% Aqueous: 8.9  
Protects: Brass/Copper: no  
          Aluminum: no  
          Steel: yes

**PPG/MAZER CHEMICALS: MAZON Corrosion Inhibitors (Continued):**

**RI 8A:**

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.135  
Viscosity @ 25C in cps: 330  
pH 1% Aqueous: 9.4  
Protects: Brass/Copper: no  
          Aluminum: no  
          Steel: yes

**RI-8B:**

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.130  
Viscosity @ 25C in cps: 950  
pH 1% Aqueous: 9.6  
Protects: Brass/Copper: no  
          Aluminum: no  
          Steel: yes

**RI 9:**

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.090  
Viscosity @ 25C in cps: 600  
pH 1% Aqueous: 9.0  
Protects: Brass/Copper: no  
          Aluminum: no  
          Steel: yes

**RI 10:**

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.150  
Viscosity @ 25C in cps: 1800  
pH 1% Aqueous: 9.7  
Protects: Brass/Copper: no  
          Aluminum: no  
          Steel: yes

**RI 14:**

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.050  
Viscosity @ 25C in cps: 1700  
pH 1% Aqueous: 9.0  
Protects: Brass/Copper: no  
          Aluminum: yes  
          Steel: yes

**PPG/MAZER CHEMICALS: MAZON Corrosion Inhibitors (Continued):**

RI 52:

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.080  
Viscosity @ 25C in cps: 600  
pH 1% Aqueous: 7.35  
Protects: Brass/Copper: no  
          Aluminum: yes  
          Steel: yes

RI 110:

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.095  
Viscosity @ 25C in cps: 400  
pH 1% Aqueous: 8.1  
Protects: Brass/Copper: yes  
          Aluminum: yes  
          Steel: yes

RI 325:

Form @ 25C: Liquid  
Specific Gravity @ 25C: 1.130  
Viscosity @ 25C in cps: 50  
pH 1% Aqueous: 8.87  
Protects: Brass/Copper: no  
          Aluminum: yes  
          Steel: yes

**PPG/MAZER CHEMICALS: MAZTREAT Cooling Water Additives:**

Cooling water systems are generally divided into three parts; once through (including potable water systems), open recirculating, and closed systems.

Once through and potable water systems have heat exchangers taking in fresh water at the inlet side and discharging the water into a river or pond at the outlet side.

Open recirculating cooling water systems provide cooling to heat exchangers through the evaporation of water.

Closed systems include water-cooled refrigeration equipment, closed hot water heating systems, high temperature hot water heating systems, and engine jackets (radiators).

Problems that typically offset these systems include scale, corrosion, fouling and microbiological contamination.

**CA Powder:**

Purpose of Treatment: Alkalinity reducer

Recirculating cooling towers: yes/Heavy metals: no

**CC Liquid:**

Purpose of Treatment: Corrosion inhibitor

Closed systems: yes/Heavy metals: no

**CC Powder:**

Purpose of Treatment: Corrosion inhibitor

Closed Systems: yes/Heavy metals: no

**CDS:**

Purpose of Treatment: Antiscalant/Antifoulant

Recirculating Cooling Towers: yes/Once Through Systems: yes/

Heavy metals: no

**COM:**

Purpose of Treatment: Corrosion inhibitor/Antiscalant/Antifoulant

Recirculating Cooling Towers: yes/Heavy Metals: no

**COM CONC:**

Purpose of Treatment: Corrosion inhibitor/Antiscalant

Recirculating Cooling Towers: yes/Heavy Metals: no

**COP:**

Purpose of Treatment: Corrosion inhibitor/Antiscalant

Recirculating Cooling Towers: yes/Heavy metals: yes

**CPP:**

Purpose of Treatment: Corrosion inhibitor/Antiscalant

Once Through Systems: yes/Potable water: yes/Heavy Metals: no

**CPS Liquid:**

Purpose of Treatment: Descaler

Recirculating Cooling Towers: yes/Once Through Systems: yes/

Closed Systems: yes/Heavy Metals: no

**CPS Powder:**

Purpose of Treatment: Descaler

Recirculating Cooling Towers: yes/Once Through Systems: yes/

Closed Systems: yes/Heavy Metals: no

**CPZ:**

Purpose of Treatment: Corrosion inhibitor

Recirculating Cooling Towers: yes/Heavy Metals: yes

**DS2:**

Purpose of Treatment: Antiscalant// Recirculating Cooling

Towers: yes/Once Through Systems: yes/Heavy Metals: no

## **THE PQ CORPORATION: Soluble Silicates:**

### **Protection of Water Systems from Corrosion with PQ Soluble Silicates**

Because of a growing need to eliminate environmental discharges of phosphates, and a desire to reduce the cost of corrosion protection additives, municipalities are switching from glassy phosphates to soluble sodium silicates.

Liquid sodium silicate is used successfully to control corrosion in hot and cold water lines. As the water flows through the pipe, silica from the silicate is adsorbed on the metal surface to form a thin tenacious film along the interior of the pipe. As long as treatment is continued the film is maintained and protects metal from the corrosive attack of water. It is important to recognize that this film does not build on itself to form a scale and therefore does not obstruct the flow of water; neither does it obstruct the transfer of heat. Corrosion control by the silicate method is particularly needed in naturally soft or zeolite-softened water which rapidly attacks metal.

Protection by PQ sodium silicate is not dependent on alkalinity or on the pH value, but rather on the silica content of the silicate. Normally, when small amounts of silicate are added to water the pH is not affected greatly. Protection is obtainable in both acidic waters and in slightly alkaline waters (pH generally not above 8.5).

Several municipalities have replaced phosphate-based corrosion inhibitors with sodium silicate. The silicates do not promote eutrophication and are generally recognized as safe (GRAS) by the U.S. Food and Drug Administration.

### **Materials Protected:**

#### **Metals:**

Silicate treatment is effective with many different metals, including systems made up of several varieties which normally would be quite susceptible to corrosion:

Iron \* Steel \* Galvanized Steel \* Red Brass \* Yellow Brass  
Copper \* Lead \* Bronze \* Nickel Alloys

#### **Non-Metals:**

Cementitious water conduits also are protected from long term deterioration by the addition of sodium silicate. The silicate reacts with available calcium to form insoluble calcium silicates.

### **Universal Applications:**

Industrial Plants \* Textile Mills \* Laundries  
Office Buildings \* Municipalities \* Oil Refineries  
Apartment Houses & Hotels \* Private Residencies

**PRICE-DRISCOLL CORP.: Rust Inhibitor:**

Rust Inhibitor is a corrosion preventive suitable for use on all metals. It will give indefinite indoor protection if the film is not broken.

This product is a corrosion inhibitor suitable for use on all metals. Dispensed as a light penetrating spray, it forms a viscous protective film when dry. As long as the film remains unbroken, Rust Inhibitor will prevent corrosion. It is packaged in an aerosol container holding 18 ounces. As Rust Inhibitor contains a fingerprint neutralizer, it is not necessary to clean off fingerprints prior to application. Because of its water displacing properties, it may be applied to dies that are wet with water or soluble cutting oil emulsions or to parts that have been washed with water such as garden tools.

This product prevents corrosion on battery terminals, out-board motors, marine fittings and washing machines. It will free frozen fastenings and remove moisture from ignition systems.

**PROCESS RESEARCH PRODUCTS: Metalworking Products: Rust Preventatives:**

**MULTIFIX:**

Is a moisture displacing rust preventative and penetrating oil which forms a tough, but completely flexible, rust protective film resistant to removal by pressure, water splashing, high heat and friction. Excellent as a wire rope lubricant and to protect wire cable from moisture damage and friction. MULTIFIX penetrates the smallest crevices.

**ARSK-1:**

Is a water displacing and finger print neutralizing rust preventative. It will remove water film and water droplets from ferrous and non-ferrous metal parts. The displaced water separates from ARSK-1 quickly to form a layer at the bottom of the dip tank. Recommended also for highly polished surfaces such as lapped and polished bearing balls, rollers and race parts.

**A-RUST (RP) SCS-40:**

Is a wax modified, solvent based rust preventative concentrate which will leave a wax-like film. The complex is polar and forms a strong bond with ferrous metals and alloys.

**PROFESSIONAL TECHNICAL CHEMICAL CO. INC.: PRO-TECH Corrosion Inhibitors:**

**22-2L:**

An outstanding water displacing non-staining rust preventive which will rapidly separate water displaced from metal surfaces after machining operations or after cleaning. Good indoor and outdoor protection with lubrication. Medium film, brown in color. Soft tacky film. Will pass 60 days humidity cabinet on polished steel panels.

**22-4L:**

An effective water emulsion rust preventive. Mix with water 10% to 50% depending on amount of protection desired. Heat solution for fast drying time. Film is an oily lubricating indoor protection type.

**22-5L:**

Heavy Duty dark colored resilient product which is used to provide long term protection of metal surfaces. 22-5L is highly resistant to salt spray. Good 3 to 4 years outdoor protection.

**22-9L:**

Solvent base. Cleans surface and leaves a light-oily, soft-tacky, lubricating film. Excellent for start up lubrication and when constant corrosion protection and lubrication is needed. Contains molybdenum type lubrication and water displacing, non-staining rust preventive.

**22-11L:**

Designed to be mixed with water 10% to 30% by volume and used as final rinse before indoor storage on steel parts. Invisible dry film. Easily rinsed off before final finishing operations. Works well and easy to use.

**22-12L:**

Similar to 22-2L but lighter film. Dry, non-tacky, invisible, water displacing features. Provides light lubrication. Ultra-thin, light brown in color but good humidity cabinet protection of 60 days.

**22-14P:**

Powdered version of 22-11L. Highly concentrated powder to be mixed with water at 2 to 4 ounces per gallon. Potent formula allows economy. Good rinsing. 90 to 120 day indoor protection.

**22-15L:**

Good indoor and outdoor protection. Used on rough ferrous castings. Cleans off with solvent wash such as mineral spirits. Soft medium brown film. 6 month outdoor protection even in high heat and humidity. Controls climate contrast conditions.

**PROFESSIONAL TECHNICAL CHEMICAL CO. INC.: PRO-TECH Corrosion Inhibitors (Continued):**

**22-16L:**

Long term outdoor protection. Hard non-tacky, noticeable water displacing, film. Heavy film will give 24 months outdoor protection. Film provides lubrication for light machining and sizing operations.

**22-18L:**

Very similar to 22-16L but lighter film. Approximately 3 months less outdoor storage time. A little harder film than 22-16L with all the same properties.

**22-19L:**

Very similar to 22-12L with a little heavier film to provide 3 to 4 months more protection. All other properties are the same. Formulation increased by 5% for intermediate corrosion protection between 22-2L and 22-12L.

**22-20L:**

Excellent outdoor protection. Same as 22-5L with just a little less protection. Use where 3 to 4 months less protection and more economy is desired.

**22-21L:**

This product was developed to give an oily lubricated residue and control corrosion. Provides medium film for indoor and outdoor protection.

**22-22L:**

Similar to 22-12L but designed for lighter film for indoor use. Use where indoor protection is needed and an invisible film is desired.

**22-23L:**

Water displacing, heavy oily film. Non-emulsifiable, non-staining. Use where oily film is desired. Similar protection as 22-19L except oily finish instead of dry film.

**22-24L:**

Similar to 22-23L but with medium oily film. Slightly less protection. Equal properties as 22-23L for lubrication and corrosion protection.

**22-28L:**

Black, Heavy, Dry, outdoor film. Carbon black added for color for identification and beauty. More protection than 22-18L and less than 22-16L.

**PROFESSIONAL TECHNICAL CHEMICAL CO. INC.: PRO-TECH Corrosion Inhibitors (Continued):**

**22-30L:**

Heaviest film available for outdoor protection. Prevents cracking of film with self healing properties. Excellent outdoor heavy film. Use to protect precious materials like polished die set in outdoor storage for 3 to 4 years.

**22-31L:**

Heavy film like 22-30L but harder. Cracking does happen due to heavy hard film but no loss in protection. Apply by brush, roller or dip.

**22-32L:**

Good corrosion protection and excellent lubrication. Contains Moly lubricants. Semi-dry, waxy, water displacing film for 2 years indoor use. Use where good lubrication and corrosion protection is needed.

**22-33L:**

Light, soft, slightly oily lubricating, water displacing film for indoor or outdoor storage. Use where light oily surface is desired. Easily cleaned for future operations.

**22-34L:**

Heavy, long term protection film with semi-dry oily surface. Especially good on rough castings. Lubricating film for machining and removable.

**22-35L:**

Red oxide base coat for extended corrosion protection. Will serve as primer coat and corrosion inhibitor. Top coat of most any finish can be applied. Hard dry paintable film. Used as base coat or primer on sea going ships. Excellent protection for indoor or outdoor storage. Good humidity barrier.

**22-36L:**

Glossy black finish. Use as top coat over base coat or by itself. Superior protection where moisture is a problem. Hard, dry film with high humidity and salt spray protection. Use as decorative finish for indoor or outdoor use. Available in other colors and gloss preference.

**22-38L:**

Clear, glossy, hard urethane finish. Use as top coat for added protection and glossy finish or use by itself. Use where present film protection is needed or clear glossy finish is desired.

**PROFESSIONAL TECHNICAL CHEMICAL CO., INC.: PRO-TECH Corrosion Inhibitors (Continued):**

**22-40L:**

Similar to 22-35L but in grey finish. Use as base coat when long term protection is needed and a top coat will be applied later. Good for metal window frames or door frames, outdoor furniture or boat bottoms.

**22-43L:**

Flat black, hard finish. Available in other colors and gloss finish. Use as base coat or primer. Use when water base corrosion protection films are desirable.

**22-47L:**

Use on wire rope or cable application where lubrication and corrosion protection is needed. Will not drip off vertical surfaces. Designed to stay where applied. Long term outdoor protection from rust with good lubrication.

**22-48L:**

Use of Top Coat aluminum film is needed for long term outdoor protection. Silver like film designed to dry from bottom to top. Reduces heat to metal surfaces. Use on tanks, roofs or where sun's hot rays should be reflected. Ten year protection outdoor has been experienced on steel fence.

**QUES INDUSTRIES, INC.: Corrosion Inhibitors:**

**Corrosion Inhibitor 4104 for Diesel Engine Cooling Systems:**

A nonchromate liquid blend of inorganic nitrite, silicate and borate combined with organic copper corrosion inhibitors.

Corrosion Inhibitor 4104 is used to provide extensive protection of metals found in cooling systems of diesel engines. When used at the recommended dosage, formula 4104 will minimize system corrosion.

Physical State: Liquid  
Color: Yellow-green  
Density: 9.84#/gallon  
pH: 11.1

Various metals in contact with each other in an aqueous environment will exhibit electrolysis, a corrosion of the least noble metal. Corrosion inhibitors such as formula 4104 will minimize this chemical activity.

Corrosion Inhibitor 4104 should be used at 2 1/2 ounces per gallon of system capacity. The softest water available should be used for system make-up. The system should be monitored periodically using a conductivity meter (4300-5000 ppm) or nitrite test kit. Nitrite concentrations should be between 1300 and 1500 ppm.

**Corrosion Inhibitor 4104 for Closed Heating or Cooling Systems:**

Ques Industries 4104 is a nonchromate liquid blend of inorganic nitrite, silicate and borate combined with organic copper corrosion inhibitors.

Corrosion Inhibitor 4104 is used to provide complete protection to closed water systems containing a variety of dissimilar metals. When used at the recommended dosage, formula 4104 will keep systems free of damaging corrosion. Formula 4104 is compatible with ethylene glycol systems.

Various metals in contact with each other in an aqueous environment will exhibit electrolysis, a corrosion of the least noble metal. Corrosion inhibitors such as formula 4104 will minimize this chemical activity.

Corrosion Inhibitor 4104 should be introduced to the system at 1% of total capacity. Use the softest water available in the system. The system should be monitored periodically using a nitrite test kit. Nitrite concentrations should be between 800 and 1000 ppm.

**QUES INDUSTRIES, INC.: Corrosion Inhibitors (Continued):**

**Iron Sequestrant 4110:**

Ques Industries Iron Sequestrant 4110 is used to reduce or eliminate iron staining due to dissolved iron precipitation in potable water, irrigation systems and other areas where unsightly iron staining is to be prevented. It will sequester hardness thus preventing precipitation of insoluble salts. All ingredients in formula 4110 are listed by the Food and Drug Administration (FDA) as GRAS (Generally Accepted as Safe) materials. Iron Sequestrant 4110 may be used in potable water up to a level of 125 ppm.

Physical State: Liquid  
Color: Colorless  
Density: 9.2#/gallon  
pH: 6.6

Iron Sequestrant 4110 can be fed directly from the drum or diluted to any appropriate level prior to addition to the system. Inject formula 4110 or solutions into the system as close to the water source as possible to allow maximum sequestration of the iron. Feed 4110 at a rate of 20 ppm/ppm of soluble iron. Water containing appreciable iron and high calcium or magnesium ions may require elevated feed levels.

**Corrosion Inhibitor 4111 for Closed Heating or Cooling Systems:**

Ques Industries 4111 is a nonchromate liquid blend of inorganic nitrite, silicate and borate combined with organic copper corrosion inhibitors.

Corrosion Inhibitor 4111 is used to provide complete protection to closed water systems containing a variety of dissimilar metals. When used at the recommended dosage, formula 4111 will keep systems free of damaging corrosion. Formula 4111 is compatible with ethylene glycol systems.

Physical State: Liquid  
Color: Light straw  
Density: 10.34#/gallon  
pH: 12.0

Various metals in contact with each other in an aqueous environment will exhibit electrolysis, a corrosion of the least noble metal. Corrosion inhibitors such as formula 4111 will minimize this chemical activity.

Corrosion Inhibitor 4111 should be introduced to the system at 0.50% total capacity. Use the softest water available in the system. The system should be monitored periodically using a nitrite test kit. Nitrite concentrations should be between 800 and 1000 ppm.

**QUES INDUSTRIES, INC.: Corrosion Inhibitors (Continued):**

**Potable Water Corrosion Control 4114:**

Ques Industries Corrosion Control 4114 is designed to reduce or eliminate corrosion in potable water systems.

Corrosion Control 4114 is used to sequester hardness, thus preventing precipitation of insoluble salts leading to corrosion protection. All ingredients of formula 4114 are listed by the Food and Drug Administration (FDA) as GRAS (Generally Recognized as Safe) materials. Formula 4114 may be used in potable water up to a level of 10 ppm as phosphate.

Physical State: Liquid  
Color: Water white  
Density: 8.8#/gallon  
pH (1% solution): 8.5-9.5

Corrosion Control 4114 should be fed at a rate of 1 pint to 1 quart per 1000 gallons of water. Maximum treatment should not exceed 10 ppm as phosphate from the tap. Dosages higher than 1 quart per 1000 gallons should be monitored regularly to avoid overtreatment. Formula 4114 should be injected at the source of the water supply using a chemical feed pump and metering system.

**Rust Inhibitor 6161:**

Ques Industries Rust Inhibitor 6161 is a liquid concentrate designed for use in the final rinse of multistage parts washer. When used as directed, ferrous parts treated with formula 6161 will remain rust-free during in-plant/in process storage.

Physical State: Liquid  
Color: Light yellow  
Density: 8.91#/gallon  
pH: 10.4

Dilute Rust Inhibitor 6161 to approximately a 2% level in the final stage of the washer. Allow parts removed from the washer to air dry in a low humidity area. Store the parts in a relatively low humidity area away from corrosive fumes. Rust-free in-plant storage of parts for up to six months can be expected.

**RAWN CO., INC.: Rust Preventatives, Lubricants, Moisture Displacers:**

**Penetrating Lubricant:**

RIP-1 is a penetrating lubricant which can be used effectively in many industries and service applications today. RIP-1 penetrates to loosen rust and frozen parts. Loosens rust and scale for easy removal, and penetrates in and around all metal surfaces with a protective lubricant which will not change tolerances.

**Rust Preventative - Moisture Displacer Lubricant RIP-2:**

RIP-2 is a moisture-displacing, corrosion-preventative lubricant, and is truly the most effective product of its type on the market today. Uses are marine, electrical motors, farm equipment, heavy equipment and uses in moisture and corrosion preventative applications. RIP-2 penetrates down under ice and moisture lifting it away from the surface. Dries out wet ignitions, and leaves a film on metal surfaces which prevents corrosion and protects metals outdoors from rust and corrosion up to one year.

Military Specifications: MIL Spec. C-23411A

**Heavy-Duty Rust Preventative and Lubricant RIP-3:**

RIP-3 provides better outdoor rust prevention than RIP-1 and RIP-2, and also gives excellent lubrication. RIP-3 was developed at the request of electrical engineers for a truly long-term rust preventative and lubricant for use in severe climatic conditions for protecting outdoor equipment and marine use.

**Long-Term Outdoor Rust Preventative RIP-4:**

RIP-4 is a heavy waxy coating used in undercoating auto and truck bodies. Will outlast all asphalt-type body undercoatings against salt spray. This coating will give the longest protection for equipment in the severest climatic conditions. Clear to light amber in color and consequently can be used on equipment where asphalt-type coatings would be objectionable. RIP-4 can be easily removed with Rawn's Chloro-Clean or other solvents.

**TREFRAWN Lubricant:**

TREFRAWN Lubricant is a far better metal lubricant than silicone or petroleum lubricants. TREFRAWN is a synthetic lubricant with micron particles of TEFLON. TREFRAWN has penetrating properties, corrosion inhibitors and solvents to remove dirt and corrosion giving super lubrication. This lubricant works long after other lubricants fail.

**E-Z Slip Lubricant:**

This product may be used for metal, wood, glass, rubber, chrome, leather, etc. Stops squeaks, prevents rust and lubricates all at the same time.