

# Enerox Cleaner Concentrate LQ-PR

Enerox Cleaner Concentrate LQ-PR is a mildly alkaline concentrate, combined in specific ratios with liquid caustic soda, as a soak cleaner and electro cleaner. Enerox Cleaner Concentrate LQ-PR is a unique blend of detergents, surfactants, and dispersants. It is formulated in conjunction with liquid caustic soda effectively soak cleans a wide variety of oils and grease from steel and copper parts, and facilitates scale, rust, and smut removal in the electro cleaner. Its formulation prepares the base metal for additional processing in a wide range of finishing cycles.

## Features & Benefits

Rapid, efficient cleaning in standard soak & electro cleaning processes	Controlled displacement of oils for continuous removal
Suitable for barrel, rack, and strip lines	Excellent dispersion and suspension of soils

## Physical Data

Appearance	Straw colored, clear solution
Odor	Slight
Flash point	None
Foaming tendency	Moderate
Maximum solubility	Indefinite at room temperature

## Operating Conditions

Recommended application soak cleaner

	Range	Optimum
Enerox Cleaner Conc. LQ-PR	3 – 7% v/v	5% v/v
50% Liq. Caustic Soda	1.5 – 5% v/v	3% v/v
Ratio LQ-PR: Liq. Caustic	1.4 – 2:1	1.7:1
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
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Recommended application electro cleaner

	Range	Optimum
Enerox Cleaner Conc. LQ-PR	½ – 4% v/v	2% v/v
50% Liquid Caustic Soda	5 – 8% v/v	6.5% v/v
Ratio Liq. Caustic: LQ-PR	2 – 10:1	3.25:1
Current Density (rack)	50 – 120 ASF	As required
Current Density (barrel)	5 – 20 ASF	As required
Temperature	160°F – 190°F (71°C – 88°C)	175°F (79°C)
Time	45 seconds – 3 minutes	As required
Agitation	Solution movement or mild air	As required

**!! Don't premix Enerox Cleaner Concentrate LQ-PR & 50% Liquid Caustic Soda!!** The solution will not be stable. Always store and add both products separately.

The ratio of Enerox Cleaner Concentrate LQ-PR and 50% Liquid Caustic Soda can be modified to provide simultaneous soak and electro cleaning in one process tank.

Note: The high alkalinity of Enerox Cleaner Concentrate LQ-PR & Liquid Caustic Soda solutions will discolor brass parts. Aluminum and zinc parts will be severely etched. Your Hubbard-Hall Sales Representative or the Corporate Technical Center will be pleased to recommend a suitable soak cleaner for these sensitive metals and electrocleaner for brass and zinc.

Equipment

Tank	Mild steel, reinforced polypro, or fiberglass
Heater	Steel Coil, steel immersion type, steam fed, or gas fired
Ventilation	Mechanical to maintain levels below permissible exposure limits
Agitation	Stirrer, pump, work movement, or mild air

Solution make up

**Danger!!** Liquid Caustic Soda is highly corrosive. Consult SDS sheet before handling this material.

Enerox Cleaner Concentrate LQ-PR is noncorrosive. Consult SDS before using this product.

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 – 120°F, 38°C – 49°C). With good solution stirring, gradually add the required amount of Enerox Cleaner Concentrate LQ-PR Mix well.

With good solution stirring, slowly add the required amount of 50% Liquid Caustic Soda. Avoid splashing. Adjust final solution operating volume and temperature.

### Analysis procedure

#### Soak Cleaner:

The surfactants and detergents are consumed in the cleaning process by displacing and emulsifying oils and grease. Alkaline components are used up in the cleaning process, such as by saponifying fatty acids. Drag out of the cleaner bath also depletes these active components. Regular maintenance additions of Enerox Cleaner Concentrate LQ-PR and 50% Liquid Caustic Soda are recommended to replenish the bath. This can be accomplished by observing quality of cleaning and making appropriate additions per requirements of the process. Alternatively, the cleaner bath can be analyzed to determine actual total concentration the required additions of Enerox Cleaner Concentrate LQ-PR and 50% Liquid Caustic Soda will restore the balanced ratio of the soak cleaner additives.

#### Electro cleaner:

Enerox Cleaner Concentrate LQ-PR is depleted similarly to its application in the soak cleaner. Additional active components are consumed to facilitate rust, scale, and smut removal. It also provides a light foam blanket to eliminate corrosive fumes and spray. The concentration of 50% Liquid Caustic Soda is typically consumed during the electrolysis process. Baths drag out and contamination with acid solutions will also reduce the 50% Liquid Caustic Soda concentration.

Monitoring the quality of electro cleaning and voltage may be used to gauge the frequency and additions of Enerox Cleaner Concentrate LQ-PR and 50% Liquid Caustic Soda. In some process applications, the predetermined amounts of Enerox Cleaner Concentrate LQ-PR and 50% Liquid Caustic Soda can be continuously metered into the cleaner bath. Alternatively, the cleaner bath can be analyzed to determine actual total concentration. The required additions of Enerox Cleaner Concentrate LQ-PR and 50% Liquid Caustic Soda will restore the balanced ratio of the electro cleaner additives.

The following titration procedure can be used to analysis the cleaner bath:

### Analysis procedure – titration

1. Pipette a 10-milliliter sample of the cleaner bath into a 250 milliliter Erlenmeyer flask.
2. Add 50-100 milliliters of clean water.
3. Add 2 to 4 drops of Phenolphthalein Indicator to develop a pink solution color.
4. Titrate with Hydrochloric Acid of known normality just until the pink color has been discharged.

**Calculation: (milliliters of titrant) X (0.562) = 50% Liquid Caustic Soda (% v/v)**

The replenishment addition of Enerox Cleaner Concentrate LQ-PR is based on the volume of 50% Liquid Caustic Soda added to maintain the required ratio. Enerox Cleaner Concentrate LQ-PR is mildly alkaline, essentially not affecting the titration for 50% Liquid Caustic Soda concentration.

#### Process suggestions

The soak cleaner bath emulsifies oils while the solution is being agitated. On standing without agitation, a significant portion of the oils will be released. Skimming is recommended to remove these oils. A coalesce, filter tubes, or ultra-filtration may also be used. The tank should contain an overflow side reservoir, for continuous splitting of oils and collection. The soak cleaner's detergency effectively keeps polypro barrels free of oil. At some point during the bath life, the buildup of oil and grease contaminants will effectively saturate it, beyond which maintenance additions or oil removal will not maintain desired performance. When this occurs, the cleaner should be dumped, and a fresh solution prepared. The Technical Center or your Hubbard-Hall sales representative will be glad to help determine optimum bath life.

Solutions of Enerox Cleaner Concentrate LQ-PR and 50% Liquid Caustic Soda are free rinsing. This is beneficial where rinsing is marginal, or no rinse between the soak and electro cleaner.

Hexavalent chromium contamination (only 30 ppm) will also shorten the electro cleaner bath service life. Additions of Enerox Cleaner Concentrate LQ-PR will efficiently reduce chrome to its trivalent state, precipitating it as Cr(III) Hydroxide, thereby extending cleaner life. With proper post rinsing, parts entering the acid should be water break free.

**Product profile**

Caustic	No
Phosphate	No
Silicate	No
Chelates (EDTA, NTA types)	No

**Hazard Classification**

DOT Hazard Class	Not D.O.T. Regulated
DOT Shipping Name	N/A
UN Number	N/A
Packing Group	N/A
Guide Number	N/A

**Waste Disposal**

Working solutions of Enerox Cleaner Concentrate LQ-PR and Liquid Caustic Soda are alkaline. They may be neutralized with acid to meet local POTW or municipal effluent discharge requirements. Sludge and oils should be separated out before discharge. Spent solutions may contain dissolved metals from the cleaning. Therefore, additional treatment of the solution may be required to meet discharge requirements.

**Caution**

Please read and understand the Enerox Cleaner Concentrate LQ-PR and 50% Liquid Caustic Soda Safety Data Sheets before handling and using these products.

Recommended safety procedures for soak and electro cleaner tank make up are described on page 3 of the Technical Data bulletin.

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.

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## Our people. Your problem solvers.

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