



Enerox IP-6

Enerox IP 6 is a concentrated liquid product, formulated to simultaneously clean & iron phosphate steel and aluminum. Its formulation provides for removal of oils and grease, followed by application of a quality iron phosphate coating. Conditioned parts are ready for application of a variety of organic coatings. Enerox IP 6 may be used in soak or spray applications.

Features & Benefits

Multi-metal application	Steel and aluminum
Cleans and phosphates parts	Two steps in one step
Provides primer base	Compatible with powder coat, E-coat, and other organic applications

Operating Conditions

Soak and spray application

	Range	Optimum
Concentration	2.5 – 7.5% v/v	5% v/v
PH	3.5 – 4.5	4.0
Temperature	110°F – 150°F (43 – 66°C)	130°F (54°C)
Time	1 – 2 minutes	As required
Agitation (soak)	Mechanical movement	As required
Agitation (spray)	Standard spray application	As required

Equipment

Tank	Series 300 SS, koroseal lined steel, temp & acid resistant polypro
Heater	SS or Teflon coil
Ventilation	Mechanical to maintain levels below permissible exposure limits
Agitation (soak)	Circulation through filter or mild air
Agitation (spray)	15 – 25 PSI air

Solution make up

Danger!! Enerox IP 6 contains Phosphoric Acid. Consult Enerox IP 6 SDS sheet before handling this product. It should be handled with all the safety precautions associated with Phosphoric Acid.

Be sure the process tank has been drained and cleaned. Fill to within two thirds of final operating volume with clean, warm water (90°F to 100°F, 32°C to 38°C) With good solution stirring, add the required volume of Enerox IP 6.

After the required amount of Enerox IP 6 has been added and mixed, adjust final solution operating volume and temperature.

Titration Method

The surfactants and detergents are consumed in the cleaning process by removing oils and grease. Conditioning agents, acids & accelerators are used up in the iron phosphating process. Drag out of the working solution also depletes these active components. Regular maintenance additions of Enerox IP 6 are recommended to replenish the bath. This can be accomplished by observing quality of cleaning & phosphating, then making appropriate additions per requirements of the process. This may be effectively controlled by monitoring bath pH, adjusting to range by adding an enough volume of Enerox IP 6. Alternatively, the bath can be analyzed to determine actual concentration of Enerox IP 6 and the required addition of product to restore the balanced ratio of all the process components.

EQUIPMENT REQUIRED

10 mL Pipette
50 mL Erlenmeyer Flask
50 mL Burette

CHEMICALS REQUIRED

Phenolphthalein Indicator
0.1 N Sodium Hydroxide Solution

1. Pipette a 10 mL sample of the bath into a 250 mL Erlenmeyer Flask.
2. Add 50 mL water to flask.
3. Add 4 drops Phenolphthalein Indicator to flask and swirl to mix.
4. Titrate with 0.1 N Sodium Hydroxide Solution to a pink endpoint.
5. Record the mL of 0.1 N Sodium Hydroxide Solution used.
6. Calculate the %v/v Enerox IP-6 as follows:

$$\text{Enerox IP-6 (\%v/v)} = \text{mL 0.1 N Sodium Hydroxide Solution} \times 0.4545$$



Process suggestions

Per the recommended operating parameters, a tightly adherent iron phosphate coating is formed. Typically, the coating weight should exceed 30 mg/ft². V jet nozzles provide very good coverage and application when the process solution is sprayed on parts.

Because of its free rinsing characteristics, Enerox IP 6 is particularly suited for systems where rinsing facilities are marginal. Typically, no residues are left on cleaned, iron phosphatized surfaces. Deionized water rinsing is recommended as a final treatment, leaving a cleaned surface. With proper post rinsing, optional sealing, and drying, parts are suitably conditioned for the appropriate organic coating application.

As a routine maintenance, Ultrex CAA or Enerox 0210 can be pumped through the phosphate machine, to dissolve iron phosphate coatings. Ultrex CAA or Enerox 0210 are also recommended to strip the phosphate coating off steel parts that must be reprocessed. Hubbard-Hall Chemical Co. offers a specialty line of effective, environmentally compliant (non-chlorinated, non-phenolic) organic coating immersion strippers.

Waste Disposal

The Aquapure team will be able to recommend the proper disposal method.

Caution

Please read and understand the Enerox IP 6 Safety Data Sheet before handling and using this product.

Recommended safety procedures for Enerox IP 6 tank make up are described on page 2 of the Technical Data bulletin.



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Our People. Your Problem Solvers.

For more information on this process,
please call us at 203.756.5521 or email: techservice@hubbardhall.com

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