



Better Chemistry. **Better Business.**

**Enerox™ Nickel Additive S 11**

**Product Code: 2850009**  
**Revised Date: 02/21/2007**

**Enerox™ Nickel Additive S 11**  
Auxiliary Brightener

**Enerox™ Nickel Additive S 11** is a product used in the Enerox™ nickel systems. Enerox™ Nickel Additive S 11 is an auxiliary brightener. In conjunction with the other addition agents, Enerox™ Nickel Additive S 11 enhances the overall desired nickel deposit characteristics (brightness & leveling). Enerox™ Nickel Additive S 11 is readily used in rack, barrel, reel to reel (continuous strip) nickel plating applications.

**SPECIAL FEATURES**

- Very Effective to Brighten Low Current Densities
- Helps to Extend Throw in Low Current Densities
- Complements the Enerox™ Bright Nickel System Performance
- Economical Consumption Rate
- Carbon Filtration Tolerant
- Compatible With Most Bright Nickel Systems

**RECOMMENDED APPLICATION SOAK CLEANER**

	<b>Range</b>	<b>Optimum</b>
Concentration	1.25 – 2.5% v/v	2% v/v
Nickel Bath Temperature	130 - 150 deg F (54-66 deg C)	140 deg F (60 deg C)
Nickel Bath pH	3.5 – 4.5	4.0
Nickel Bath Agitation	Air or Mechanical	As required

Note: Your Hubbard-Hall Sales Representative or the Corporate Technical Center will be please to recommend the optimum conditions for the particular nickel plating application.



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### ANALYSIS PROCEDURE NICKEL PLATING SOLUTION

The routine procedure should include wet analysis of the plating salts and the Enerox™ Nickel Additive 8-11 concentration, bath pH, and a plating cell test. The Corporate Technical Center can provide the analysis procedures, along with the required solutions, labware, and testing equipment. Hull cell testing is a reliable method for determining overall condition of the nickel deposit. Additions of Enerox™ Nickel Additive 8 11, as required, should be made to the hull cell in 0.1-0.2 % by volume increments. Improved or preferred brightness & leveling characteristics should be achieved, with the bath analysis in range, at the operating parameters.

### PROCESS SUGGESTIONS

Enerox™ Nickel Additive S 11 is a multifunctional additive. It is the auxiliary brightener, operating in conjunction with the other Enerox™ agents. Enerox™ Nickel Additive S 11 is consumed by electrolysis at the rate of one gallon per 8,000 to 12,000 amp hours (11 to 16 fl oz per 1,000 amp hours). Enerox™ Nickel Additive S 11 is removed, to some degree, by batch carbon treatment. Continuous filtration of the nickel bath through a carbon pack removes only a slight amount of Enerox™ Nickel Additive S 11. Additions of Enerox™ Nickel Additive S 11 can be made directly to the nickel bath, as required, or in conjunction with the specific Enerox™ Bright Nickel process additives. Low concentration of Enerox™ Nickel Additive S 11 will result in dull 10 IN current density deposits, In addition, the Enerox maintenance brightener response will not be as effective. High concentration of Enerox™ Nickel Additive S 11 will result in dark low current density swirls. Like wise the Enerox™ maintenance brightener response will be "hotter", or indicate an excess. High brightener levels will affect ductility and reception of additional plating, such as flash chrome.

### PHYSICAL CHARACTERISTICS

Appearance	Clear colorless liquid
Odor	Bland
Foaming Tendency	None
Maximum Solubility	Complete

### HAZARD CLASSIFICATION

DOT Hazard Class	Not applicable
DOT Shipping	Nat applicable
UN Number	Not applicable
Packing Group	Not applicable
Guide Number	Not applicable

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### **WASTE TREATMENT & DISPOSAL**

The nickel plating solution is mildly acidic. Sources for treatment, such as drag out losses and batch purification, should be processed in accordance with appropriate steps, to meet local POTW or municipal effluent discharge requirements. Sludges should be separated out before discharge. Mixed solutions of nickel effluent and other plant waters may require additional treatment to meet discharge requirements.

### **SAFETY INFORMATION**

Please read and understand the Enerox™ Nickel Additive S 11 Material Safety Data Sheet before handling and using this product.

### **WARRANTY**

THE QUALITY OF THIS PRODUCT IS GUARANTEED ON SHIPMENT FROM OUR PLANT. IF THE USE RECOMMENDATIONS ARE FOLLOWED, DESIRED RESULTS WILL BE OBTAINED. SINCE THE USE OF OUR PRODUCTS IS BEYOND OUR CONTROL, NO GUARANTEE EXPRESSED OR IMPLIED IS MADE AS TO THE EFFECTS OF SUCH USE, OR THE RESULTS TO BE OBTAINED.