Ultrex ES-3

Ultrex ES-3 mixed with Metal Guard 850 is a unique system, specially developed for electrolytically stripping bright nickel deposits off steel. The process combines an effective blend of oxidizing agents and buffers. When used per the recommended operating parameters, stripping is rapid and complete, with no etching or pitting of the steel substrate. The working bath, with proper maintenance, provides a relatively long service life.

Features & Benefits

Cyanide free	Safer to handle
Near neutral pH of process bath	Safer to dispense as concentrated liquid additive
Non-chelating	Metallic hydroxide sludges removed by filtration

Physical Data

	Ultrex ES-3	Metal Guard 850
Appearance	Clear, water white	Clear, slight straw color
Odor	None	Slight
Solubility	Complete	Complete
Foaming Tendency	Low	Low

Operating Conditions

	Range	Optimum
Ultrex ES-3	31% – 38% by volume	34% by volume
Metal Guard 850	2.0% – 3.0% by volume	2.5% by volume
Operating pH	7.0 – 9.0	8.0
Temperature	75 – 120 °F (24 – 49 °C)	95 °F (35 °C)
C D anodic	25 – 100 ASF	As required
Voltage	4 – 6	As required
Time	Per deposit thickness	As required
Agitation	Solution movement or mild air	As required

Equipment

Tank	Rubber or plastic lined, reinforced polypro, or fiberglass
Heater	Stainless steel, titanium, or quartz
Ventilation	Mechanical to maintain levels below permissible exposure limits
Cathodes	Steel
Racks	Plastisol coated. Exposed rack tips should be mild steel
Agitation	Stirrer, pump, work movement, or mild air (CPVC or PVC spargers)

Solution Make Up

Be sure the process tank has been drained and cleaned. Fill to within 75% of the final required volume of cold water. With good solution stirring, add the required volume of Metal Guard 850. Next, add the required volume of Ultrex ES-3. Adjust final operating volume with remainder of the required volume of water. Adjust solution temperature to recommended range.

Process Suggestions

Ultrex ES-3 / Metal Guard 850 working solutions provide sufficient conductivity for rapid, efficient action, stripping bright nickel electrodeposits. The bath is buffered to protect steel surfaces from pitting and etching. For optimum results the suggested operating ranges for the Ultrex ES-3 / Metal Guard 850 bath are recommended. Ultrex ES-3 is very effective in stripping applications where packed flight bar loads (high total surface areas) are processed. Plated nickel is readily stripped off items such as tubular parts, large chassis,

frames, furniture components, and brackets.

Nickel & chrome plated parts should first be processed to completely strip off the chrome deposit, with hydrochloric acid and should be followed by thorough rinsing before the parts are ready for the Ultrex ES-3 / Metal Guard 850 bath. Soils, such as oils and grease should be cleaned off in an appropriate soak cleaner (e.g. Ultrex AS-11R), before immersion in the Ultrex ES-3 / Metal Guard 850 bath.

The stripping rate depends on the nickel thickness, stripping current density, and chemical balance of the bath. Mild air agitation, or solution movement is recommended, to provide a fresh, active solution film in contact with the parts. Anodic (reverse current) is applied to the parts during stripping. The cathodes (negatively charged) should be routinely checked for sufficient contact to the cathode bar.

Stripped nickel forms a metallic, hydroxide sludge, which settles to the bottom of the tank. This sludge can be routinely removed by filtration, or by decanting a portion of the solution. Maintenance of the bath will thus result in a significant service, or prolonged periods between replacement. Collected sludges may be assayed for metallic content. Knowing this may allow the finisher to recycle the sludges to an appropriate metal reclamation center or smelter. The depth of the sludge must come in contact with anodically charged parts. Otherwise etching of parts that come in contact with the sludge will occur. pH of the bath can be adjusted downward, by addition of dilute nitric acid. PH of the bath can be increased by addition of dilute potassium hydroxide solution. Do no use sodium hydroxide, as this may result in pitting of parts.

Analysis Procedure

The Ultrex ES-3 and Metal Guard 850 components are typically consumed in the stripping process. Drag out of the stripper bath and replenishment of the bath with water also dilutes the working solution. Regular maintenance additions of Ultrex ES-3 and Metal Guard 850 are recommended to replenish the bath. This can be accomplished by observing quality of stripping & process efficiency and making appropriate additions of the maintenance products. Alternatively, the stripping bath can be analyzed by specific gravity, and the additions of Ultrex ES-3 and Metal Guard 850 made on this basis.

Solution Specific Gravity	%/Vol Addition of Ultrex ES-3	%/Vol Addition of Metal Guard 850
1.165	-----	-----
1.154	1.7	0.01
1.148	3.4	0.20
1.136	6.8	0.40
1.108	13.6	0.80

Before measuring the solution specific gravity, add a few drops of 50% Liquid Caustic Soda, to precipitate metals. Allow the sludges to settle before sampling the clear solution for specific gravity determination.

Waste Disposal

Consult Ultrex ES-3 and Metal Guard 850 SDS sheets before handling these products. The products should be handled with all the safety precautions and required protective clothing. In order be completely informed on those latest waste disposal regulations for your area; please contact the local authorities.

Our people. Your problem solvers.

For more information on this process please call us at
1-800-648-3412
or techservice@hubbardhall.com