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TROUBLE SHOOTING GUIDE

COLLOY NI-Z-POSIT-II

05-30-14

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
Blistering	Poor cleaning	Charge-up or change the soak and electro-cleaner. Install an electro-caustic tank directly in front of the plating tank.
	Chromium Contamination (over 15 ppm)	Treat bath with 0.25 lb. Sodium Bisulfate/1,000 gal (30 grams/1,000 liters) per 15 ppm of chromate.
	Copper brazed parts	Use Pickle Pal or Pickle Pal Plus Inhibitor to eliminate build-up of copper in the pickle and to eliminate immersion copper on parts. Process through electro-cleaner prior to plate. Install an electro-caustic tank directly in front of the plating tank.
	Silicon or Aluminum killed steel parts	Skip electro-cleaner and pickle parts in 10% Hydrochloric Acid so pockets of silicon or aluminum are not opened.
	Over baked parts	Bake 3 to 4 hours at 375° F (190°C).
Overall dullness	Low NI-Z-POSIT-II BRIGHTENER 531	Add 0.05 - 0.1% NI-Z-POSIT-II BRIGHTENER 531.
	Low NI-Z-POSIT-II MAKEUP 510	Add 1.0 - 2.0% NI-Z- POSIT-II MAKEUP 510.
	Low NI-Z-POSIT-II REPLENISHER 520	Maintain nickel metal at 1,200 2,500 ppm.

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
	Low zinc metal	Maintain zinc metal at 1.0 to 2.0 opg (7.5 to 15 g/l).
	Poor filtration	Maintain 1 to 5 micron filtration with a minimum bath turnover rate of twice per hour.
	Old bath containing years soils, oils and breakdown products	<p>Treat bath with 10 gallons Commercial Grade Sodium Hypochlorite (12% Active) /1,000 gallons plating solution (10 liters/1,000 liters).</p> <p>Treat bath with 1 to 2 lbs. Potassium Permanganate/1,000 gal (0.12 to 0.24 kg/1,000 liters).</p> <p>Treat bath with 1 to 2 lbs. Carbon/1,000 gal (0.12 to 0.24 kg/1,000 liters).</p> <p>Treat bath with 1 to 2 gallons hydrogen peroxide (30% Active) / 1,000 gallons plating solution (1 to 2 liters/1,000 liters).</p>
	Organic contamination	<p>Treat bath with 10 gallons Commercial Grade Sodium Hypochlorite (12% Active) /1,000 gallons plating solution (10 liters/1,000 liters).</p> <p>Treat bath with 1 to 2 lbs. Potassium Permanganate/1,000 gal (0.12 to 0.24 kg/1,000 liters).</p> <p>Carbon treat with 1 to 2 lbs./1,000 gal (0.12 to 0.24 kg/1,000 liters).</p> <p>Treat bath with 1 to 2 gallons hydrogen peroxide (30% Active) / 1,000 gallons plating solution (1 to 2 liters/1,000 liters).</p>
High current density dullness/burning	Low zinc metal	Maintain zinc metal at 1.0 to 2.0 opg (7.5 to 15 g/l).
	Low NI-Z-POSIT-II MAKEUP 510	Add 1.0 - 2.0% NI-Z POSIT MAKEUP 510.

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
Poor chromate adhesion	Low NI-Z-POSIT-II REPLENISHER 520	Maintain nickel metal at 1,200 - 2,500 ppm.
	Low bath temperature	Maintain bath temperature at 70° to 95° F (21° to 34° C).
	NI-Z-POSIT-II REPLENISHER 520/NI-Z-POSIT-II MAKEUP 510 Imbalance	Maintain nickel metal at 1,200 - 2,500 ppm.
		Maintain NI-Z-POSIT-II MAKEUP 510 at 10% TO 14% by volume.
	High nickel percentage in alloy deposit	Maintain 10% to 15% nickel in deposit.
Poor corrosion protection	Poor post plate rinsing	Increase the flow rate on rinse tanks to 2 gallons (7.5 liters) per minute.
		Use 0.25 - 0.5% by volume hydrochloric acid pre-dip to remove any residual alkalinity an/or organic contamination.
	Nickel in deposit greater than 16% or less than 10%	Maintain nickel metal at 1,200 - 2,500 ppm.
		Maintain NI-Z-POSIT-II MAKEUP 510 at 10% to 14% by volume.
Low bath efficiency/ slow plating	Low zinc metal	Maintain zinc level at 1.0 - 2.0 opg (7.5 to 15 g/l).
	Low bath temperature	Maintain bath temperature at 70° to 95°F (21° to 34° C).
Little or low current density coverage	High zinc metal	Maintain zinc metal at 1.0 to 2.0 opg (7.5 to 15 g/l).
	High bath temperature	Maintain bath temperature at 70° to 95°F (21° to 34° C).
	Low caustic soda	Maintain caustic soda at 10 to 18 opg (75 to 135 g/l).
Excessive fuming	High bath temperature	Cool bath temperature to 70° to 95°F (21° to 34° C).
	High caustic soda	Maintain caustic soda at 10 to 18 opg (75 to 135 g/l).
	Plating at very high current	Lower the current amperage.

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
Dark staining	Poor ventilation	Ventilate with blowers/fans.
	High caustic soda	Maintain caustic soda at 10 to 18 opg (75 to 135 g/l).
	Organic contamination	Treat bath with 10 gallons Commercial Grade Sodium Hypochlorite (12% Active) /1,000 gallons plating solution (10 liters/1,000 liters). Treat bath with 1 to 2 lbs. Potassium Permanganate/1,000 gal (0.12 to 0.24 kg/1,000 liters). Carbon treat with 1 to 2 lbs./1,000 gal (0.12 to 0.24 kg/1,000 liters).
Smutty or spotted	Poor rinsing	Increase the flow rate on rinse tanks to 2 gallons (7.5 liters) per minute.
	Low NI-Z-POSIT-II REPLENISHER 520	Maintain nickel metal at 1,200 - 2,500.
	Low NI-Z-POSIT-II MAKEUP 510	Add 2.0 - 4.0% by volume NI-Z-POSIT MAKEUP 510.
	Low zinc metal	Maintain zinc metal at 1.0 to 2.0 opg (7.5 to 15 g/l).
Roughness on parts	Poor cleaning	Charge-up or change the soak and Electro-cleaner. Install an electro-caustic directly in front of the plating tank.
	Poor Filtration	Maintain 5 micron filtration with a minimum bath turnover rate of twice per hour.
	Low NI-Z-POSIT-II REPLENISHER 520	Maintain nickel metal at 1,200 - 2,500.
	Low zinc metal	Maintain zinc metal at 1.0 to 2.0 opg (7.5 to 15 g/l).

GLOSSARY OF TERMS

BATH EFFICIENCY	The speed at which zinc is electrodeposited on a part. This is based on a 100% theoretical rate of 1.219 grams per ampere hour. Alkaline non-cyanide zinc/nickel plating baths typically operate at a 45 - 60%.
BLISTERING	Electro-deposit lifts off the surface of the substrate in the form of bubbles.
CARBON	Activated carbon powder.
CAUSTIC SODA	Sodium Hydroxide
CHROMATE	A solution of hexavalent or trivalent chromium used to add additional corrosion protection to the surface of the plated part.
ELECTRO-CAUSTIC	Ambient temperature alkaline cleaner containing 13 to 20 opg (97.5 to 150 g/l) of caustic soda. Anodic current is used on the parts at 30 to 65 amps per square feet (3.25 to 7 amps per square decimeter). The electro-caustic removes scale and conditions the parts prior to electroplating. Parts can directly enter the plating tank without rinsing. The electro-caustic is usually changed once or twice a week.
ELECTRO-CLEANER	Alkaline cleaner used with anodic current on parts for surface agitation. Used at 140° to 190° F (60° to 88° C) after the soak cleaner.
G/L	Grams per liter. Multiply by 0.134 to convert to ounces per gallon (opg).
HCD	High current density. The highest current density on a part is generally on the edge of the part or the area of the part closest to the anode. In a rack plating bath it is at the bottom edge and ends of the rack.
HCD BURNING	Coarse, dark deposit in the high current density area.
LCD	Low current density. The lowest current density is generally in the recessed area of the part or the area of the part that is farthest from the anode. In a rack plating bath it is at the top and middle area of the rack.
LCD BAND	Dull electro-deposit in the low current density area.
OPG	Ounces per gallon. Multiply by 7.5 to convert to grams per liter (g/l).
PICKLE	The acid dip tank after the alkaline cleaners that is used to dissolve rust and oxide scale. It is usually a 20 - 50% solution of Hydrochloric Acid.
POLARIZED ANODES	Anodes that have a non-conductive film on the surface.
SOAK CLEANER	Alkaline cleaner used to remove oils prior to electro-cleaning, pickling and electroplating. Soak cleaners are operated at 150° to 200°F (65° to 93°C).