

Troubleshooting Ultra Chlor “AP” and “NA”

Possible cause	Correction
Overall Dullness:	
1. High or Low Brightener	Run Hull cell test (1 amp – 15 min) to determine proper amount.
2. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
3. Poor cleaning	Evaluate cleaners.
4. High temperature	Reduce temperature to 80 F or add brightener to compensate (if cooler is not available).
5. Inadequate agitation	Adjust agitation.
6. High pH	Lower the pH with hydrochloric acid.
7. Low buffering agent (Boric acid for “NA” or Ammonium chloride for “AP”)	Perform analysis to determine proper addition (rapid increase in pH indicates low buffering agent concentration)
8. Organic or metallic contamination	Carbon treat with 1 to 2 lb/1000 gal or Carbon + 1 quart Hydrogen Peroxide/1000 gallons Zinc dust treatment. Treat bath with 1 to 2 lb Potassium Permanganate/1000 gal
9. Low chloride content	Perform analysis to determine proper addition.
HCD burning:	
1. Excessive current	Lower the amperage in plating tank.
2. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
3. Low Zinc metal concentration	Maintain Zinc metal concentration in an optimum range by addition of zinc chloride.
4. Low temperature	Raise temperature to 85 F.
5. Low buffering agent (Boric acid for “NA” or Ammonium chloride for “AP”)	Perform analysis to determine proper addition (rapid increase in pH indicates low buffering agent concentration)
6. High pH	Lower the pH with hydrochloric acid.
7. Low pH	Increase pH with Ammonium hydroxide for “AP” bath and potassium hydroxide for “NA” bath.
8. Anode and cathode too close	Increase distance between anode and cathode.
9. Iron contamination	Perform HCD dummy plating. Zinc dust treatment.
10. Current is too high in electrocleaner	Lower the amperage in cleaner tank.
11. Inadequate agitation	Adjust agitation.
12. High chloride content	Perform analysis and decant the solution.
13. High Cl/Zn ratio	Reduce chloride additions.
HCD dullness:	
1. High temperature	Reduce temperature to 80 F or add brightener to compensate (if cooler is not available).
2. Low chloride content	Perform analysis to determine proper addition.
3. High or Low Brightener	Run Hull cell test (1 amp – 15 min) to determine proper amount.
4. High or Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
5. Low current	Increase current.
6. Metallic contamination (Pb, Cd, Cu)	Isolate the source of the contamination from the plating solution. Perform HCD dummy plating. Zinc dust treatment.
7. High Zinc metal concentration.	Maintain Zinc metal concentration in an optimum range by decreasing

	chloride content, increasing pH or decanting the solution.
8. High pH	Lower the pH with hydrochloric acid.
9. Poor cleaning	Evaluate cleaners.
10. Organic contamination	Carbon filter the solution or Carbon +1 quart Hydrogen Peroxide /1000 gallons Treat bath with 1 to 2 lb Potassium Permanganate/1000 gal.
LCD dullness:	
1. High or Low Brightener	Run Hull cell test (1 amp – 15 min) to determine proper amount.
2. Current too low	Increase current.
3. Low chloride content	Perform analysis to determine proper addition.
4. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
5. Metallic contamination	Isolate the source of the contamination from the plating solution. Perform LCD dummy plating. Zinc dust treatment.
6. High pH	Lower the pH with hydrochloric acid.
Reduced throwing power:	
1. Low chloride content	Perform analysis to determine proper addition.
2. High Zinc metal concentration.	Maintain Zinc metal concentration in an optimum range by decreasing chloride level or increasing pH. Or decant the solution.
3. Low pH	Increase pH with ammonium hydroxide for “AP” bath and potassium hydroxide for “NA” bath.
4. High pH	Lower the pH with hydrochloric acid.
5. High Brightener	Increase temperature.
6. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
7. Low current	Increase current.
8. Low temperature	Raise temperature to 85 F.
9. Metallic contamination (Pb)	Isolate the source of the contamination from the plating solution. Perform dummy plating. Zinc dust treatment.
10 Chromium contamination (over 10 ppm)	Treat bath with 0.25 lb Sodium bisulfite/1000 gal.
11. Organic contamination	Carbon filter the solution or Carbon + 1 quart Hydrogen Peroxide /1000 gallons Treat bath with 1 to 2 lb Potassium Permanganate/1000 gal.
12. Low anode area	Add anodes.
13. Too much peroxide added	Solution was peroxide treated too aggressively. Run Hull cell test (1 amp – 15 min) to determine proper amount of Ultra Chlor “CR” and Ultra Chlor “B” .
Blistering:	
1. Poor cleaning	Evaluate cleaners.
2. High Brightener	Dummy plate. Treat bath with 1 to 2 lb Potassium Permanganate/1000 gal. Increase bath temperature to 110 F. Carbon treat with 1 to 2 lb/1000 gal or Carbon + 1 quart Hydrogen Peroxide/1000 gallons
3. High pH	Lower the pH with hydrochloric acid.
4. Quality of substrate	Find appropriate cleaning process for this substrate.
5. Low buffering agent (Boric acid for “NA” or Ammonium chloride for “AP”)	Perform analysis to determine proper addition (rapid increase in pH indicates low buffering agent concentration)
6. Organic or metallic contamination	Carbon treat with 1 to 2 lb/1000 gal or Carbon + 1 quart Hydrogen Peroxide/1000 gallons

	Zinc dust treat. Treat bath with 1 to 2 lb Potassium Permanganate/1000 gal.
7. Chromium contamination (over 10 ppm).	Treat bath with 0.25 lb Sodium bisulfite/1000 gal.
8. Copper in pickle	Change Pickle solution.
9. Electrical problems	Check electric contacts.
10. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
Roughness:	
1. Poor filtration	Use 1 to 5 micron filter.
2. High pH	Lower the pH with hydrochloric acid.
3. Low anode area	Add anodes.
4. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
5. Poor cleaning	Evaluate cleaners.
6. Magnetized particles	Collect them with magnet and filter the solution.
7. Copper in pickle	Change Pickle solution.
Brittle deposit:	
1. High Brightener	Dummy plate. Treat bath with 1 to 2 lb Potassium Permanganate/1000 gal. Increase bath temperature to 110 F. Carbon treat with 1 to 2 lb/1000 gal or Carbon + 1 quart Hydrogen Peroxide/1000 gallons
2. Excessive thickness of the zinc deposit	Decrease plating time.
3. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
4. High pH	Lower the pH with hydrochloric acid.
Pitting:	
1. High Brightener	Dummy plate. Treat bath with 1 to 2 lb Potassium Permanganate/1000 gal. Increase bath temperature to 110 F. Carbon treat with 1 to 2 lb/1000 gal or Carbon + 1 quart Hydrogen Peroxide/1000 gallons
2. High temperature	Reduce temperature to 80 F or add brightener to compensate (if cooler is not available)
3. Organic contamination	Carbon filter the solution. Treat bath with 1 to 2 lb Potassium Permanganate/1000 gal.
4. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
5. Low chloride content	Perform analysis to determine proper addition.
Skip plating:	
1. Low temperature	Raise temperature to 85 F.
2. High Brightener	Dummy plate. Treat bath with 1 to 2 lb Potassium Permanganate/1000 gal. Increase bath temperature to 110 F. Carbon treat with 1 to 2 lb/1000 gal or Carbon + 1 quart Hydrogen Peroxide/1000 gallons
3. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
4. Chromium contamination	Treat bath with 0.25 lb Sodium bisulfite/1000 gal.
5. Quality of substrate	Find appropriate cleaning process for this substrate.
6. Too much peroxide added	Solution was peroxide treated too aggressively. Run Hull cell test (1 amp – 15 min) to determine proper amount of Ultra Chlor “CR” and Ultra Chlor “B” .
7. Electrical problems	Check electric contacts.

8. Metallic contamination	Isolate the source of the contamination from the plating solution. Perform LCD dummy plating. Zinc dust treatment.
Poor efficiency:	
1. Low anode area	Add anodes.
2. Low chloride content	Perform analysis to determine proper addition.
3. Electrical problems	Check electric contacts.
4. Low current	Increase current.
5. Low temperature	Raise temperature to 85 F.
6. Low Zinc metal concentration	Maintain Zinc metal concentration in an optimum range by addition of zinc chloride.
7. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
8. High or Low Brightener	Run Hull cell test (1 amp – 15 min) to determine proper amount.
9. Low pH	Increase pH with ammonium hydroxide for “AP” bath and potassium hydroxide for “NA” bath.
Falling Zinc metal concentration:	
1. Anode area out of balance	Adjust anode area.
2. High pH	Lower the pH with hydrochloric acid.
3. Electrical problems	Check electric contacts.
4. High drag-in and drag-out	Review rack and barrel operations and equipment.
Rising Zinc metal concentration:	
Low pH	Increase pH with ammonium hydroxide for “AP” bath and potassium hydroxide for “NA” bath.
Excessive Additives Use:	
1. High temperature	Reduce temperature to 80 F or add brightener to compensate (if cooler is not available).
2. High pH	Lower the pH with hydrochloric acid.
3. Low Carrier	Run Hull cell test (1 amp – 15 min) to determine proper amount.
4. Organic contamination	Carbon filter the solution or Carbon + 1 quart Hydrogen Peroxide /1000 gallons Treat bath with 1 to 2 lb Potassium Permanganate/1000 gal.
5. Too much peroxide added	Solution was peroxide treated too aggressively. Run Hull cell test (1 amp – 15 min) to determine proper amount of Ultra Chlor “CR” and Ultra Chlor “B” .
6. Drag-in of low pH rinse water	
Rising solution pH:	
Low buffering agent	Perform analysis to determine proper addition (rapid increase in pH indicates low buffering agent concentration).
Post-plate staining:	
1. Poor rinsing	Increase flow rate of water.
2. Excessive time between plating and rinsing	Reduce transfer time.
3. Nitric dip is too weak	Change the nitric dip solution.
4. Rinse water temperature is cold	Increase temperature or rinse time.
5. Contamination in rinse water	Change water in a rinse tank.
6. Metallic contamination	Isolate the source of the contamination from the plating solution. Perform LCD dummy plating. Zinc dust treatment.

Blackening in HCD after bright dipping	
Iron contamination	Isolate the source of the contamination from the plating solution. Perform LCD dummy plating. Zinc dust treatment.

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