



TROUBLE SHOOTING GUIDE

COLLOY A-Z-N 300

09-21-18

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PROBLEM

CAUSE

SOLUTION

Pitting

High potassium chloride concentration (> 250 g/L)

Maintain potassium chloride concentration at 200 g/L

High COLLOY A-Z-N BRIGHTENER 340 concentration (> 0.25% v/v)

Maintain COLLOY A-Z-N BRIGHTENER 340 concentration at 0.1% by volume

Low COLLOY A-Z-N BUFFER 310 concentration (> 54 g/L)

Maintain COLLOY A-Z-N BUFFER 310 concentration at 36 g/L

Low COLLOY A-Z-N WETTER 330 concentration (< 0.1875% v/v)

Maintain COLLOY A-Z-N WETTER 330 concentration above 0.375% by volume

High temperature (> 110 °F)

Maintain temperature at 95 °F

High current density burning (below 80 ASF)

Low zinc concentration (< 20 g/L)

Maintain zinc concentration above 20 g/L

High nickel concentration (> 40 g/L)

Maintain nickel concentration below 40 g/L

Low potassium chloride (< 125 g/L)

Maintain potassium chloride at 200 g/L

Low COLLOY A-Z-N BUFFER 310 concentration (< 18 g/L)

Maintain COLLOY A-Z-N BUFFER 310 concentration at 36 g/L

Low COLLOY A-Z-N COMPLEXER 320 concentration (< 0.5% v/v)

Maintain COLLOY A-Z-N COMPLEXER 320 concentration at 1% by volume

Low temperature (< 80°F)

Maintain solution temperature at 95 °F

<u>PROBLEM</u>	<u>CAUSE</u>	<u>SOLUTION</u>
Dullness/haze	High nickel concentration (> 40 g/L)	Maintain nickel concentration at 30 g/L
	High potassium chloride (> 250 g/L)	Maintain potassium chloride concentration at 200 g/L
	High COLLOY A-Z-N BUFFER 310 concentration (> 90 g/L)	Maintain concentration of COLLOY A-Z-N BUFFER 310 at 36 g/L
	Low COLLOY A-Z-N COMPLEXER 320 concentration (< 0.5% by volume)	Maintain COLLOY A-Z-N COMPLEXER 320 concentration at 1% by volume
	High COLLOY A-Z-N COMPLEXER 320 concentration (> 1.5% by volume)	Maintain COLLOY A-Z-N COMPLEXER 320 concentration at 1% by volume
	Low COLLOY A-Z-N BRIGHTENER 340 concentration (< 0.05% by volume)	Maintain COLLOY A-Z-N BRIGHTENER 340 concentration at 0.1% by volume
	High temperature (> 110 °F)	Maintain temperature at 95 °F
LCD Dullness	High COLLOY A-Z-N WETTER 330 concentration (> % 0.5 by volume)	Make additions of COLLOY A-Z-N COMPLEXER 320 in 0.5% increments until appearance improves
High Foam Levels	High concentration of COLLOY A-Z-N WETTER 330 (> 1% by volume)	Maintain COLLOY A-Z-N WETTER 330 at 0.375%
Blistering/Flaking	High concentration of COLLOY A-Z-N BRIGHTENER 340 (> 0.25% by volume)	Maintain COLLOY A-Z-N BRIGHTENER 340 at 0.1% by volume
	High concentration of Potassium Chloride (> 250 g/L)	Maintain potassium chloride at 200 g/L

The following table summarizes the effects of increasing each additive. Adding more zinc will decrease the nickel in the deposit, enhance the ductility, lower the stress, have no large impact on efficiency, etc.

	Ni%	Ductility	Tensile Stress	Efficiency	Nickel Uniformity
Zinc ↑	↓	↑	↓	↔	↑
Nickel ↑	↑	↓	↑	↓	↑
Potassium Chloride ↑	↑	↓	↑	↓	↑
Buffer 310 ↑	↑	↓	↑	↓	↑
Complexer 320 ↑	↑	↑	↓	↓	↑
Wetter 330 ↑	↑	↓	↑	↓	↑
Brightener 340 ↑	↓	↓	↓	↓	↓
Solution pH ↑	↓	↑	↓	↑	↓
Solution Temp. ↑	↑	↓	↑	↔	↑