Zincalloy AZN

ACID ZINC\NICKEL

INTRODUCTION

Zincalloy AZN produces a level, mirror bright alloy at 12-15 %nickel. It offers very high corrosion resistance. The product gives excellent distribution and very high covering power. The deposit obtained show low internal stress and good ductility. It is suitable for both rack and barrel application.

BENEFITS

- High corrosion resistance
- Mirror, bright ductile deposit
- Readily plates cast irons and hardened steels
- Single rectifier
- No ammonia or boric acid

SOLUTION MAKE -UP

Zinc chloride	52 g/l
Nickel chloride	81 g/l
Potassium chloride	200 g/l
Zincalloy AZN buffer	36 g/l
Zincalloy AZN complexer	10 ml/l
Zincalloy AZN wetter	3.75 m/l
Zincalloy AZN brightener	1 ml/l

It is essential that the tanks to be used for Zincalloy AZN are thoroughly cleaned and leached before any chemistry is introduced. If in any doubt as the cleaning procedure please contact PMD Chemicals technical department.

1. Fill tank approximately half full with DI water
2. Heat to 40°C
3. Add Zinc chloride and Nickle chloride with stirring
4. Add Potassium chloride with stirring
5. Add Zincalloy AZN Buffer and Complexer
6. Add Zincalloy AZN Wetter and Brightener
7. Make up volume with DI water
8. Check pH and adjust to optimum

OPERATING DATA

	Range	Optimum
Zinc	15 - 30 g/l	25 g/l
Nickel	15 - 30 g/l	20 g/l
Zinc nickel ratio	1.6:1 – 0.6:1	1.25:1
Total chloride	125 - 175 g/l	146 g/l
Zincalloy AZN buffer	27 - 45 g/l	36 g/l
Zincalloy AZN complexer	5 - 15 ml/l	10 ml/l
Zincalloy AZN wetter	2 - 7.5 ml/l	3.75 ml/l
Zincalloy AZN brightener	0.75 - 2 ml/l	1 ml/l
PH	5.0 - 5.6	5.3
Temperature	32 - 37°C	35°C

EQUIPMENT

Tanks	Polyethylene or rubber coated tank
Heating	Teflon coated
Filtration	Filtration 10-15 µm cartridges
Anode	Zinc slabs or domes in titanium basket with bags Nickle square in titanium basket ratio at zinc to nickel ratio 2:1. alternatively liquid nickel chloride to be used to maintain the nickel

MAINTENANCE AND CONTROL

The solution should be analysed regularly and replenished as necessary. (See analysis method)

The addition rates for the additives will vary depending on drag out etc but the following can be used as a guide.

ADDITIVE	ml/ KAhr
Zincalloy AZN complexer	150 - 200
Zincalloy AZN wetter	37 - 50
Zincalloy AZN Brightener	300 - 450

Zincalloy AZN buffer is lost through drag out. It prevents high current destiny burning and increase of nickel within the deposit.

Zincalloy AZN complexer enhance the brightness and uniformity of the plated alloy as well as preventing high current destiny burn. It is lost through drag out.

Zinc anode must be removed during idle periods to prevent zinc build up.

ANALYSIS METHODS

Zinc and nickel are analysed by absorption (AAS)

1.Chloride

Reagents

0.1 N silver nitrate (standard volumetric solution)
Sodium chromate indicator (20 g/l sodium chromate)

Method

1. Pipette 10 ml of the bath into a 250 ml volumetric flask and make up in the mark with DI water.
2. Pipette 10 ml of the diluted sample into a 250 ml conical flask and add 100 ml DI water
3. Add 2 ml sodium chromate solution and titrate with 0.1 N silver nitrate to a reddish-brown end point.
4. Record titre = t mls.

Calculation

t x 8.875= g/l chloride

Replenishment

For every 1 g/l low add 2.1 g/l potassium chloride.

2. Zincalloy AZN buffer

Reagents

Methyl orange indicator
0.1N Hydrochloric acid (standard volumetric solution)

Method

1. Pipette 2 ml of the bath into a 250 ml conical flask.
2. Add 100 ml DI water and 2-3 ml methyl orange indicator.
3. Titrate with 0.1 N Hydrochloric acid to an orange/red colour.
4. Record litre = t mls.

Calculation

t x 4.09= g/l Zincalloy AZN Buffer

DISPOSAL

Dispose of in accordance with local authority requirements.

PRODUCT FAMILIES

The following products are referred to in this data sheet.

PRODUCT NAME	PRODUCT NUMBER
Zincalloy AZN buffer	582001
Zincalloy AZN complex	582002
Zincalloy AZN wetter	582003
Zincalloy AZN brightener	582004

Whilst every endeavour has been made to ensure that the information given in this data sheet is correct, PMD Chemicals Limited gives no warranty, express or implied, relating to the use or performance of this product.