Environmental protection alkaline barrel galvanizing brightener

Product Numbers: BZ-513

Description and characteristics

This process is a new type of alkaline barrel plating process without cyanide and chelating agent. It can provide users with many advantages, including flat coating, better zinc usage, easy handling, and tolerance to scorching of the coating.

characteristic

Good throwing power
Simple wastewater treatment operation
Wide operating range
Good coating dispersion
Can operate in a wide current range
Single component operation

Table of Contents

Operating standards

	Range	Best
Zinc	8-15g/l	10g/l
Sodium hydroxide	130-150g/l	135g/l
BZ-513C adjuster	20-30ml/l	25ml/l
BZ-513B brightener	150-250ml/KAH	base on needs
temperature	20-30℃	25℃
Cathode current	0.5-2.0A/dm^2	

Anode current	0.5-4.0A/dm^2

Preparation of plating solution

Preparation of plating tank

The tank used must be thoroughly cleaned with any pre-prepared solution. In addition, if you are using a new plating tank, you need to soak it with hot 10% sodium hydroxide solution.

The quantity of materials needed to prepare the plating solution

	Rang	Best
Zinc	8-15g/l	10g/l
Sodium hydroxide	130-150g/l	135g/l
BZ-513C adjuster	20-30ml/l	25ml/l
BZ-513A cylinder opening agent	12-16ml/l	13.5ml/l
BZ-513B brightener	1.5-2.5ml/l	2ml/l
BZ-513D wetting agent	0.1-0.3ml/l	0.2ml/l

Method I:

Minimal cost, more time consumption

Build a bath with zinc and sodium hydroxide:

1. Ventilate the tank
2. Add cold water about half of the working tank volume
3. Add high-quality sodium hydroxide to the tank. According to the operating volume of the tank, use about 120g/L of sodium hydroxide. The tank will become very hot and if no ventilation equipment is provided, it will be choked by alkaline gas.

Note: Sodium hydroxide releases heat when it dissolves. On a large area of liquid surface, while stirring well, slowly add sodium hydroxide to avoid boiling or splashing of the solution.

4. Put as many steel baskets with zinc balls as possible into the tank.
5. Keep the temperature of the tank above 32°C. In cold solutions, the dissolution step is very slow. Allow the tank to work for 16-24 hours, or until the zinc concentration reaches the required concentration (according to the working volume of the tank).
6. Determine the amount of starter and maintenance brightener based on the amount of the above added substances and the 2.5% volume ratio adjuster. Use the Hastelloy cell test to determine the amount of ARP purifier or other adjustments required.
7. Add the solution to the working volume and adjust the temperature to the range of 21-35°C.

Method II

More cost but easier, safer and faster

Use zinc concentrate

1. Fill 1/2 tank volume with water. From Table 1, determine the amount of sodium hydroxide required. Under stirring, slowly add high-purity sodium hydroxide to the tank.
Note: When sodium hydroxide dissolves, it releases heat. On a large area of liquid surface, while stirring well, slowly add sodium hydroxide to avoid boiling or splashing of the solution.
2. Under good stirring, add 10-20% by volume of zinc concentrate (depending on the required zinc concentration).
3. Add water to the operating level and mix well
4. Determine the amount of starter agent and maintenance brightener based on the amount of the above added substances and the 2.5% volume ratio adjuster. Determine the amount of ARP scavenger or other adjustments required according to the Hastelloy cell test.
5. Add the solution to the working volume and adjust the temperature to the range of 21-35°C.

Maintain ingredients

Zinc Titration

Reagent

Wool chrome black T indicator

0.1M EDTA

Zinc buffer solution (50 g/L ammonium chloride+130ml/l ammonia)

1L water

method

1. Pipette 2ml working sample solution into a 250ml conical flask
2. Add 50ml pure water
3. Add 10ml zinc buffer solution
4. Add about 1g wool chrome black "T" indicator, the solution turns purple.
5. Use 0.1M EDTA to quickly titrate to the blue end point.

Calculation

Zinc metal (oz/gal) = (mls 0.1M EDTA) × 0.434

Zinc metal (g/l)=(mls 0.1M EDTA)× 3.255

The zinc concentration can be controlled by increasing or decreasing the area of the zinc anode, and chemical dissolution is used to increase or reduce the zinc concentration.

Bath analysis: sodium hydroxide

There are two methods for reporting sodium hydroxide. Free, related to the above sodium hydroxide concentration, need to know the amount of dissolved zinc, and in total, this involves the total amount of sodium hydroxide in the solution. Usually the total alkali concentration will be mentioned in the operating parameters section and can be used for analysis wherever possible. Moreover, this process requires the use of cyanide, which should not be feasible. In these cases, the free alkali method can be used instead. Both analysis steps are listed below.

Total sodium hydroxide (a more feasible method)

Reagent

10% b.v sodium cyanide

Azo purple indicator (t-nitrobenzene "resorcinol)-Dissolve 10 grams in 100mls of absolute alcohol.

1.0 N hydrochloric acid

method

1. Take 5ml sample
2. Add 10mls sodium cyanide solution
3. Add 10 drops of Azo purple indicator
4. Titrate with 1.0N hydrochloric acid. The end point can change from dark yellow to purple.

Calculation:

mls 1.0 HCL × 1.07 = total sodium cyanide (opg)

Free sodium hydroxide analysis:

Reagent

Sulfo Orange, Golden Lotus Orange O, or Azo Purple Indicator

0.5N hydrochloric acid

method

1. Pipette 5ml sample into a 250ml conical flask
2. Add 8 drops of indicator

(Range 11.0-12.6) indicator, solution color is yellow, blue/purple

3. Titrate with 0.5N hydrochloric acid to the yellow end point

Calculation

Free sodium hydroxide (oz/gal) = mls 0.5N hydrochloric acid × 0.535

The total sodium hydroxide concentration can be estimated by combining the free sodium hydroxide concentration and the zinc metal concentration.

Brightener supplement

The adding rate of BZ-513B brightener is: 150-250ml/KAH

Tank fluid maintenance

There are two options:

1. Hang the traditional medium-carbon steel "anode" basket (containing ordinary zinc balls) in the tank. For convenience, these should be hung on the anode rod, but must be insulated. The number of baskets required should be carefully adjusted to keep the zinc concentration within an acceptable range.

These baskets should be removed during a longer downtime. This system works well on small devices, but if applicable

For large equipment, it becomes more difficult.

2. For large equipment, it is recommended to use a separate zinc "dissolution tank". It should be installed, it comes from the return weir of the plating tank

The solution will flow into the "dissolving tank", which should contain a steel basket with ordinary zinc balls (should ensure that there is enough zinc solution

Contact with steel). Then pump the solution out, preferably through a filter device, and then into the plating tank. The area of zinc should be adjusted,

Until the concentration remains the same. Only when zinc is electroplated, the solution circulation operation is performed. During the shutdown period, generally not

The zinc needs to be removed.

Safety warning

For health and safety reasons, Bigley recommends that customers/users refer to Bigley's material safety data sheet before use.

Material safety information can be obtained from Bigley.

skin contact

If any liquid or solid comes into contact with the skin, it should be rinsed immediately with plenty of water or running, clean, cold water. Any contamination caused by clothing should be completely rinsed with water and then quickly treated.

eye contact

Use sterile saline or clean water to wash your eyes for at least 20 minutes. Use a spray-type eye wash bottle and at least 1L of liquid. Please contact the doctor immediately.

Swallow

Try to avoid vomiting. Keep the patient quiet, take a large amount of water acidified with lemon juice or vinegar (5% acetic acid) and seek medical attention immediately.

Wastewater treatment

Before treating wastewater in accordance with Bigley's recommendations for wastewater treatment, users must understand the local laws and regulations on wastewater treatment inside and outside the factory.
Relevant provisions of management methods. If our suggestions conflict with laws and regulations, the local laws and regulations shall prevail.

Ordering Information

Product	Product number	Package
Environmental protection alkaline zinc plating regulator	BZ-513C	25kg/drum
Environmentally friendly alkaline galvanizing opener	BZ-513A	25kg/drum
Environmental protection alkaline zinc plating brightener	BZ-513B	25kg/drum
Environmental protection alkaline zinc plating wetting agent	BZ-513D	25kg/drum

Statement:

Any safety/health regulations given in this TDS are general recommendations. Anyone who uses it should ask for the relevant MSDS from the technicians of Bigley. The MSDS has more detailed safety regulations.
All the contents specified in this TDS are for reference/guidance, and users must adjust them according to their actual operating conditions.