White Rhodium-Bath

Instruction manual

Product description

The rhodium bath is used for the electrodeposition of rhodium and is characterized by its ultra-white and high-gloss rhodium layers as well as its excellent depth scattering. It produces extremely tarnish resistant, active surfaces with high hardness.

Coating properties

Coating: rhodium
Color: silver white
Max. Layer thickness: 0.3 µm
Hardness: approx. 800-900 HV
Density: 12.5 g/cm³

Article overview

Rhodium bath (2 g Rh/l)
Rhodium bath (2 g Rh/l)
Rhodium concentrate (10 g Rh/l)
Rhodium concentrate 200 ml (2 g Rh/200 ml)
Rhodium concentrate (10 g Rh/l)
Rhodium concentrate (10 g Rh/l)
Regenerating concentrate (40 g Rh/l)
Regenerating concentrate 100 ml (4 g Rh/100 ml)
Additive WS

Equipment

Anode material: platinized titanium
Anode/cathode area: 2:1
Tub material: PPH
Bath filtration: required (no permanent filtration with activated carbon)
Fabric movement: required
Suction: recommended

Bath preparation chemicals Bath chemicals for 1 l rhodium bath
- 200 ml rhodium concentrate
- 800 ml deionized water (< 10 µS)
or
- 200 ml rhodium concentrate
- 25 ml sulfuric acid 96%, chemically pure
- 775 ml Deionized water (< 10 µS)

Procedure

The amount of deionized water required for the desired bath volume is filled into a carefully cleaned container. Now the required amount of rhodium concentrate is slowly added to the water. The solution should be stirred until all the preparation chemicals are completely mixed together. For the preparation using rhodium concentrate, proceed accordingly. After the concentrate has mixed with the water, the required amount of chemically pure sulfuric acid 96% is carefully added in small steps. Each addition generates intense heat. Therefore, cooling periods must always be allowed afterwards before the next addition. After the addition is complete, the solution should be stirred until all the batch chemicals are completely mixed together.

Process overview

The prerequisite for adhesive rhodium plating is an intensive pretreatment of the surface. This should be done in an ultrasonic bath with the ultrasonic cleaning agent , the electrolytic degreasing bath and a final decapitation in 10% sulfuric acid. After the respective process baths, a multi-stage rinsing in water is necessary. The final rinsing step before rhodium plating should be in deionized water. Normal bath agitation is not sufficient in most cases, since hydrogen bubbles adhere to the fabric during rhodium plating and must be removed. We therefore recommend a fabric agitation with beating device. In the case of a smaller bath volume, repeated tapping on the fabric carrier is also sufficient.

Working parameters Bath temperature: 20-40 °C
Exposure time: 2-3 min
Voltage: 1.7-2.2 V
Current density: 0.5-1.5 A/dm²
Deposition weight: approx. 8 mg/Amin

The final rinsing step after electroplating with the rhodium bath should be carried out for 10-20 s in 60-80 °C hot deionized water. This intensifies the color of the deposit. Bath control and regeneration. Bath control involves keeping the rhodium content constant.

For every 1 g of rhodium worked out, the following must be added to the bath for regeneration:

- 25 ml of regeneration concentrate.

In case of a larger bath volume, we recommend to carry out the regeneration according to ampere minutes by using an ampere minute counter.

Dark bath discoloration
The bath discolors dark to black during use. This discoloration has no effect on the deposited layers and, if necessary, can be removed by activated carbon treatment followed by addition of 2 ml/l of additive. Addition of additive should not exceed 2 ml/l.

Impurities Organic impurities can be removed by activated carbon treatment. After treatment with activated carbon, 2 ml/l of additive for must be added to the bath. The addition should not exceed 2 ml/l. A metallic

Contamination can no longer be removed from the bath. In this case, it must be completely renewed.

Bath parameters

Rhodium content: 2 g/l pH value: < 1

On request, we can carry out regular analyses in our application technology laboratory and provide individual regeneration recommendations. For this purpose, we require 100 ml of the bath as a sample for a standard analysis. In case of functional disturbances or problems, we require 1 l of the bath as a sample.

Hazard information/Storage/Disposal

The bath contains sulfuric acid and must not be exposed to cyanides or cyanide solutions. The industrial safety measures and regulations mentioned in the safety data sheet must be observed. Bath chemicals must be sealed and stored separately from food in suitable and labeled containers. Waste baths and economy rinses must not be discharged untreated into wastewater. They contain precious metals, which we will be happy to recycle for you.

Precious metal recovery can be profitable for these solutions from as little as 20 l