RIAG Oberflächentechnik AG · Postfach 169 · CH-9545 Wängi TG

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RIAG NiZn 170

Black nickel process

RIAG NiZn 170 is an electroplating process for the deposition of deep black layers. It is a fast process with uniform looking layers and low thickness. For glossy layers polished surfaces are needed, otherwise the use of non reflecting surfaces (sandblasted, pickled or **Nickel-Satin-Elektrolyt**) is recommended. The layers are well qualified for indoor applications, when used for outdoor applications an additional protection is required.

Properties

- Deep black layers
- Uniform appearance
- Glossy or dull depending on the base material
- Free of boric acid

Make up

	range	optimum
RIAG NiZn 170 Elektrolyt	997 – 1000 mL/L	998 mL/L
RIAG Ni 138 Tenside M * (mechanical agitation)	0 – 3 mL/L	*2 mL/L
pH-value	5.5 – 6.0	5.7

* depending on plating line

The **RIAG Ni Black Elektrolyt** is filled in the plating tank. Normally **RIAG Ni 138 Tenside M** is added.

Operating values

	range	optimum
Nickel (Ni^{2+})	20 – 23 g/L	21 g/L
Zink (Zn^{2+})	7 – 9 g/L	8 g/L

Operating Parameters

Temperature	43 °C (40 – 45 °C)
pH-value	5.7 (5.5 – 6.0)
Cathodic current density	0.4 – 0.8 A/dm² (0.5 A/dm²)
Anodes	Minimum purity 99.7 % Ni. We recommend polypropylene anode bags to prevent the contamination of the electrolyte with sludge from anodes. The anode basket should be made out of titanium. During interruptions it is recommended to remove the anodes.
Agitation	Recommended, filter pump and/ or cathode movement Barrel rotation: 6 – 12 R/min. Cathode movement: 1 – 2 m/min.
Tanks	Plastic or lined steel
Filtration	It is important to use continuous filtration
Heating	Immersion heaters, but thermostatic control is essential
Cooling	not required
Fume extraction	Recommended
pH-value setup	To lower the pH chem. pure sulphuric acid (10 %) is added. To raise the pH ammonia must be used.
Maintenance	Nickel and zinc should be analysed with ICP or AAS and corrected regularly by adding:

5.1 g/L **RIAG NiZn 170 Salt 1**
To increase the content of nickel for 1 g/L

4.4 g/L **RIAG NiZn 170 Salt 2**
To increase the content of zinc for 1 g/L

2 – 3 g/L **RIAG NiZn 170 Salt 3** If the operating values are correct, but the colour of the deposit is not black enough

Additive consumption: The consumption of **RIAG Ni 138 Tenside M** may vary due to electrolytic reactions as well as drag-out losses.

RIAG Ni 138 Tenside M 0.1 – 0.3 L/10 kAh

Topcoats

Ask for technical advice.

Environmental considerations and product safety

All concentrates, rinse waters and waste solution must be treated and discharged in accordance with local effluent control regulations. Information can be gleaned from the material safety data sheets. Chemicals shall not be stored below 10 °C.

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