

# RIAG Strip 892

## High speed electrolytic rack-stripper

The high speed electrolytic rack-stripper **RIAG Strip 892** is used to remove Cu, Ni (single duplex, triplex,...), and Cr deposits in a single operation step from racks with stainless steel tips without attacking it. It also removes other metals such as Zn, Ag, Sn. Due to the simple maintenance, it is easy to operate while achieving optimum performance. Running the electrolyte is simple and the electrolyte life extremely long as metals stripped precipitate as oxides that are easily to remove.

### Make up data\*:

	optimum	range
Tap water	720 mL/L	
<b>RIAG Strip 892 Additive 1</b>	200 mL/L	
<b>RIAG Strip 892 Additive 2</b>	30 mL/L	
<b>RIAG Strip 892 Additive 3</b>	50 mL/L	
<b>Acetic acid or Ammonia for pH</b>	7,2 pH	7,0 - 7,5 pH

(\*) Please take note that this process cannot be converted from other processes, nor into other processes. A new make up is mandatory.

### Make up procedure:

- 1) Into a separate and clean tank, water is filled up to approximately 50 % tank volume.
- 2) While stirring, add slowly and carefully the required quantity of **RIAG Strip 892** additives in the above given sequence.
- 3) Top tank with water to reach final volume.
- 4) Check pH and make correction with Acetic acid or Ammonia if necessary.
- 5) Adjust temperature to operation range (40 to 60 °C).
- 6) Solution is ready for start up.

## Tank and equipment

Tanks:	Steel tanks with rubber lining or rigid PVC, PP tanks are suitable.
Rectifier:	Minimum 12 volts and capable of at least 18 A/dm <sup>2</sup>
Heaters:	Stainless steel or ceramic electrical heaters are suitable.
Cathode panels:	Stainless steel panels, best fixed with fasteners to busbar for good contact. Panels should be in a size that can be lifted from the tank for cleaning purpose (removal of metal oxides).
Busbars:	Made of copper, size large enough to pass the required current.

## Operation conditions:

Agitation	Recommended, mechanical only!!
Filtration	Not necessary, decant the tank once every 2 weeks.
Anodic current density	15 to 25 A/dm <sup>2</sup>
pH range	7.0 to 7.5 (do not allow outside of this range)
Solution gravity	3 Baume when new
Temperature	40 °C to 60 °C
Tank ventilation	recommended

Attention: **This is not a stripper for plated parts but only for racks. Stainless steel contact tips will not be attacked as long as the solution is well maintained.**

Racks that have damaged rack coating and being of a substrate other than stainless steel will be attacked underneath the rack coating.

**Operation:** After stripping, the racks need to be rinsed well before using again.

**Warning:** **Do not strip tin-lead or lead deposits!** Lead (Pb) will form very aggressive substances that will attack immediately the substrate. Do not use hydrochloric acid (HCl) or sulphuric acid (H<sub>2</sub>SO<sub>4</sub>) for pH correction. **Strippers contaminated with lead, chlorides and sulphates must be discharged and a new make up becomes necessary.**

## Maintenance:

From time to time decant the solution and remove the precipitated metal oxides (metal oxides attach to the cathode panels and fall to the tank bottom) from the cathode panels and from the tank bottom.

Regular addition of **RIAG Strip 892 Additive 1** and **Additive 3** are **not** needed for maintenance! **RIAG Strip 892 Additive 1** and **Additive 3** are only needed for new make up. **RIAG Strip 892 Additive 2** is used for regular replenishment according to beaker test results.

Under standard production conditions the pH value increases and needs adjustment using **Acetic acid**. Maintain the pH between 7 and 7.5 pH. In case stripping rather thin deposits only, it may happen that the pH drops down and needs adjustment using **Ammonia**.

It is absolutely necessary to test the stripper solution once per day to make the proper adjustments. The necessary tests are:

### 1. Content of RIAG Strip 892 Additive 2:

Equipment needed: Laboratory rectifier, 400 mL glass beaker, Pure nickel wire 20 cm long, SUS cathode panels.

Method: 400 mL of the working solution is poured into the glass beaker. SUS cathode (minus current) and the Nickel wire (anode, plus current) are placed into the beaker and contacted with the rectifier. Use approximately 20 A/dm<sup>2</sup> anodic current density.

Result: No gassing should happen !!!.

In case gas is formed at the anode, the content of **RIAG Strip 892 Additive 2** is too low and reducing the current efficiency.

In this case, add 10 mL/L **RIAG Strip 892 Additive 2** into the beaker and repeat the test if needed several times with further additions of **RIAG Strip 892 Additive 2** until the gas formation is stopped. The total amount of **RIAG Strip 892 Additive 2** found necessary to replenish is dosed at once into the operation tank.

### 2. Measuring and adjusting the pH:

Materials needed: pH Paper , acetic acid 60 % , Ammonia 20%.

If above 7.5 pH, add acetic acid; If below 7.0 add Ammonia.

### 3. Controlling the Nitrate content:

Equipment needed: Laboratory rectifier, 400 mL glass beaker, **Stainless Steel wire** 20 cm long, SUS cathode panels, hot plate.

Method: 400 mL of the working solution is poured into the glass beaker and heated to 40 °C. SUS cathode (minus current) and approx. half the **Stainless Steel wire** (anode, plus current) are placed into the beaker and contacted with the rectifier. Use 2.5 ampere anodic current density and operate for 15 minutes. After the 15 minutes stripping time is over, the wire should not have changed its surface appearance.

In case the stainless steel wire became brownish and attacked, the stripper solution has not enough nitrate. To adjust the nitrate content, add 20 mL/L concentrated nitric acid (HNO<sub>3</sub>) and after that adjust the pH with ammonia if necessary.

Attention: too low nitrate content will destabilize the stripper solution and will attack and etch the rack tips made of stainless steel!

### Trouble-shooting:

- Deposits are not stripped completely from the racktips and brownish metal oxides adhere to the racktips. This indicates a lack of nitrates. Test for nitrates and add HNO<sub>3</sub> for compensation followed by pH adjustment as described in maintenance.
- Strong attack of racks and substrate is an indication that the stripping solution is contaminated with lead (Pb). There is no cure!! New make up is needed.
- Attack on racks and or rack-tips indicates that racks are made of the wrong material or that the rack coating is damaged. Use only fully coated racks with rack-tips that are made of stainless steel.

## **Effluent treatment:**

Rinsing waters and concentrates contain weak chelating agents and a very small quantity of heavy metal ions. All rinsing waters and concentrates have to be treated according to local regulations.

## **Liability**

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