

RIAG Pass 448

Trivalent thick layer passivation with high corrosion resistance

The **RIAG Pass 448** is a new trivalent chromate process that produces glossy light iridescent green colour finish on zinc and zinc alloy plated surfaces . The coating has a high stability while tempered at 200 °C/ 1 hour in terms of loss of brightness or colour. The coating obtained provides corrosion resistance **without the presence of hexavalent Chrome**.

The **RIAG Pass 448** is supplied in easy to use liquid concentrates.

Make up

	Barrel	Rack
RIAG Pass 448 Additive (density = 1.42 g/mL)	12 – 15 Vol %	14 – 16 Vol %
pH	1.5 – 1.8	1.6 – 1.8
Temperature	35 – 60 °C	35 – 55 °C
Time	45 – 120 s	45 – 60 s

The higher the concentration and temperature of the solution, the lower will be the immersion time.

Procedure for a make up of 100 litres

Take 50 L DI water in the process tank. Add the **RIAG Pass 448 Additive** and adjust the volume to 100 litres. Mix well. Adjust the pH with diluted nitric acid (or increase with a 10 % solution of sodium bicarbonate) and temperature of the operating bath to specified values. Now the bath is ready for operation.

Safety considerations

Protective gear such as face shields and gloves should be worn during bath make up and operation. Chemicals shall not be stored below 10 °C.

Operating conditions

Temperature:	35 – 60 °C
Time:	45 – 120 s
pH-Value:	1.5 – 1.8 (optimum 1.6). Frequent control is recommended. pH ≤ 1.3: decrease of the corrosion protection pH ≥ 1.8: yellowish appearance, decrease of the corrosion protection
Agitation:	Air or parts movement Do not use lead as weight for air blowing tubes!
Fume extraction:	Recommended
Equipment:	Mild steel tank with polypropylene lining
Heating:	Not required or Teflon tube heaters
Pre dip activation:	This will improve the RIAG Pass 448 bath life as well as the adhesion and corrosion resistance. The tank make up is 0.3 – 1.0 % nitric acid. Frequent tank changes are necessary for uniform production quality.
Hints:	We recommend a hot DI water rinse (50 °C, 3 – 5 min.), after treating with RIAG Pass 448 and after a drag out rinse and a DI water rinse. The content of Iron must not exceed 100 mg/L, the content of Zinc 10 g/L.

Effluent control

The **RIAG Pass 448** chromate conversion coating solution is acidic and contains trivalent chromium salts. Spent solution has to be treated and discharged according to local waste water laws.

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Analysis

Sample preparation

Take the sample at a homogeneously mixed position and let it cool down to room temperature. If turbid, allow to settle and decant or filter.

Chromium (III)

Reagents	10 % Sodium hydroxide 30 % Hydrogen peroxide (H ₂ O ₂) Hydrochloric acid conc. Potassium iodide 0.1 mol/L sodium thiosulphate 1 % starch solution (freshly prepared)
Process	<p>Pipette</p> <p>2 mL passivation bath into a</p> <p>250 mL Erlenmeyer flask, add</p> <p>50 mL DI water and sodium hydroxide to a pH-value of about 10 (colour change), then add</p> <p>0.5 mL Hydrogen peroxide and boil the solution for 30 – 40 min. It is very important to evaporate excessive H₂O₂ (boil and reduce until shortly before crystallisation)</p> <p>100 mL Cool the solution, add DI water up to and acidify with hydrochloric acid (colour change from yellow to orange), add</p> <p>1 g potassium iodide, titrate with 0.1 mol/L sodium thiosulphate until the solution is only slightly yellowish, then add</p> <p>Some mL starch solution and titrate on until the blue colour disappears.</p>
Calculation	Vol % RIAG Pass 448 Additive = Consumption in mL x 1.083