

## Technical Data Sheet

### LANTHANE TR 175

Trivalent Chromium Passivation  
For Electrolytic Zinc and Zinc Iron deposits

|             |           |              |            |              |
|-------------|-----------|--------------|------------|--------------|
|             |           |              |            |              |
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| Creation    | Approval  | Alpha. Index | Date       | Observations |

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| 1. Process and Deposit Description             |  |                         |   |  |   |                         |   |
|--|--|-------------------------|---|--|---|-------------------------|---|
| <b>General description</b>                     | <p>LANTHANE 175 has been developed as a passivation treatment for electroplated zinc deposits and to guarantee high corrosion protection.</p> <p>LANTHANE TR 175 forms a bright, semi-bright, even film of pale iridescence including nano particles through a simple immersion.</p> <p>A sealer or top-coat can be applied to control the coefficient of friction or to increase the corrosion resistance.</p> <p>Applicable to barrel, rack and continuous plating.</p>  |                         |   |  |   |                         |   |
| <b>Product features</b>                        | <ul style="list-style-type: none"> <li>➤ LANTHANE TR 175 passivation films are free from hexavalent chromium, thus fulfilling the requirements of 20001/53/EC Standard on “End of Life of Vehicle”.</li> <li>➤ LANTHANE TR 175 shows remarkable results in salt-spray testing, the layers are resistant to 200 hours salt spray before white rust ever after thermal shock at 150°C on alkaline zinc.</li> <li>➤ LANTHANE TR 175 offers easy effluent treatment, because it does not contain any organic acid.</li> <li>➤ LANTHANE TR 175 layer contains 0,6 ÷ 1,0 mg/dm<sup>2</sup> of Chromium, 0,08 mg/dm<sup>2</sup> of Cobalt maximum, and 1,0 ÷ 2,0 mg/dm<sup>2</sup> of Silica.</li> </ul> <p><u>Material Specifications:</u></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 40%;">LANTHANE TR 175 Part A:</td> <td>dark green solution containing Cr III<br/>density: 1.23 at 25°C<br/>make-up solution only</td> </tr> <tr> <td>LANTHANE TR 175 Part B:<br/>(store it at &gt;15°C)</td> <td>light transparent solution<br/>density: 1.10 at 25°C<br/>make-up and replenishment solution</td> </tr> <tr> <td>LANTHANE TR 175 Part C:</td> <td>dark green solution contains Cr III<br/>density: 1.16 at 25°C<br/>maintenance solution only</td> </tr> </table> | LANTHANE TR 175 Part A: | dark green solution containing Cr III<br>density: 1.23 at 25°C<br>make-up solution only | LANTHANE TR 175 Part B:<br>(store it at >15°C) | light transparent solution<br>density: 1.10 at 25°C<br>make-up and replenishment solution | LANTHANE TR 175 Part C: | dark green solution contains Cr III<br>density: 1.16 at 25°C<br>maintenance solution only |
| LANTHANE TR 175 Part A:                        | dark green solution containing Cr III<br>density: 1.23 at 25°C<br>make-up solution only  |                         |   |  |   |                         |   |
| LANTHANE TR 175 Part B:<br>(store it at >15°C) | light transparent solution<br>density: 1.10 at 25°C<br>make-up and replenishment solution  |                         |   |  |   |                         |   |
| LANTHANE TR 175 Part C:                        | dark green solution contains Cr III<br>density: 1.16 at 25°C<br>maintenance solution only  |                         |   |  |   |                         |   |

## 2. Make-up and Maintenance of the Plating Bath

### Make-up

The bath make-up will be performed with demineralised water. Hard water may lead to unsatisfying deposits (white hazes).

- Fill the bath tank 1/2 with demineralised water;
- Add the quantity of LANTHANE TR 175 Part A under agitation;
- Add slowly the quantity of LANTHANE TR 175 Part B under continuous agitation;
- Add the remainder of demi – water to final volume;
- Check the pH and adjust it with nitric acid.

### Equipment

The passivation LANTHANE TR 175 is made of acid substances, we advise to use resistant materials:- PVC, PPH, ebonized or plastified steel. The use of a thermostat and of blowers for the air bubbling is advised. Filtration must be done on propylene bag filter 80 µm size

### Operating conditions

#### Passivation LANTHANE TR 175

According to the application and to achieve the best corrosion resistance, with or without thermal shock, some operating conditions like make-up concentration and immersion time can be selected.

Important: the best corrosion resistance, after thermal shock at 1 h – 120/150 °C or 24 h – 120 °C, will be obtained with higher quantities of Part A and B for the make up and the maintenance.

**LANTHANE TR 175 Operating Conditions (Without Thermal Shock Test)**

| Parameter              |      | Barrel               |           | Rack                 |           | Continuous |           |
|------------------------|------|----------------------|-----------|----------------------|-----------|------------|-----------|
|                        |      | Optimum              | Range     | Optimum              |           | Optimum    | Range     |
| LANTHANE TR 175 PART A | ml/l | 100                  | 90 ÷ 110  | 100                  | 90 ÷ 110  | 150        | 130 ÷ 180 |
| LANTHANE TR 175 Part B | ml/l | 80                   | 70 ÷ 100  | 80                   | 70 ÷ 100  | 90         | 70 ÷ 110  |
| pH                     |      | 2.0                  | 1.8 ÷ 2.2 | 2.0                  | 1.8 ÷ 2.2 | 2.0        | 1.8 ÷ 2.2 |
| Temperature            | °C   | 30                   | 25 ÷ 35   | 30                   | 25 ÷ 35   | 30         | 25 ÷ 35   |
| Immersion time         | Sec. | 60                   | 40 ÷ 90   | 60                   | 40 ÷ 90   | 15         | 10 ÷ 30   |
| Agitation              |      | Barrel/basket slowly |           | Moderate Air or Pump |           | Pump       |           |

**LANTHANE TR 175 Operating Conditions (With Thermal Shock Test)**

| Parameter              |      | Barrel               |           | Rack                 |           | Continuous |           |
|------------------------|------|----------------------|-----------|----------------------|-----------|------------|-----------|
|                        |      | Optimum              | Range     | Optimum              |           | Optimum    | Range     |
| Lanthane TR 175 Part A | ml/l | 150                  | 130 ÷ 180 | 150                  | 130 ÷ 180 | 150        | 130 ÷ 180 |
| Lanthane TR 175 Part B | ml/l | 90                   | 70 ÷ 110  | 90                   | 70 ÷ 110  | 90         | 70 ÷ 110  |
| pH                     |      | 2.0                  | 1.8 ÷ 2.2 | 2.0                  | 1.8 ÷ 2.2 | 2.0        | 1.8 ÷ 2.2 |
| Temperature            | °C   | 30                   | 25 ÷ 35   | 30                   | 25 ÷ 35   | 30         | 25 ÷ 35   |
| Immersion time         | Sec. | 75                   | 60 ÷ 90   | 75                   | 60 ÷ 90   | 15         | 10 ÷ 30   |
| Agitation              |      | Barrel/basket slowly |           | Moderate Air or Pump |           | Pump       |           |

### Concentration

We advise to operate within the indicated range.

A high concentration cannot compensate the low temperature (eg. 15°C) that slows down the passivating effect.

It's fundamental to always and constantly maintain the minimum level at:

- 100 ml/l of Part A
- 80 ml/l of Part B

### Temperature

With temperatures below 20 °C the passivating process is slow and does not guarantee an efficient protection.

### pH

In the make-up phase, the first nitric acid addition has to bring the pH around 2,0. pH correction must be made with:

- nitric acid 65% to decrease
- sodium hydroxide at 30% to increase

### Immersion time

We recommend a minimum contact time of 60 seconds.

### Agitation

The air agitation must be moderate and uniform.

Alternately, the mechanic agitation with the support of a centrifugal pump can be used.

If the parts or the solution are still the dipping time will be longer.

### Sealers

The organo – mineral FINIGARD Sealers could be applied over the passivate film to adjust the friction coefficient or also increase the corrosion resistance.

The inorganic sealers, containing silicates, are not convenient because they do not increase the corrosion resistance.

For details on how to apply the above-mentioned sealers, please see the relevant Operating Instructions sheet.

### Analytical control

The analytical methods are available, if required, at our customer service laboratories or our Technical Department.

**Replenishment and maintenance**

**Temperature:** 30 °C the right value for achieving the chromium quantity into the layer and the solubility of the solution.

The passivation solution must always be maintained, also during the week-end or holidays, at > 20 °C, not less than 15 °C, to avoid the coagulation of Part B (silica).

**pH:** frequently check the pH at least every 4 working hours.

pH corrections must be made with:

- nitric acid to decrease, the consumption depends on the drag-out.
- sodium hydroxide solution at 30% to increase

**Consumption:** approximate per **100 m<sup>2</sup>** of treated surface:

➤ **0,25 - 0,35 l. of LANTHANE TR 175 PART B (d = 1,10 g./cc)**

➤ **0,25 - 0,35 l. of LANTHANE TR 175 PART C (d = 1,16 g./cc.)**

Values derived only from the chrome quantity plated on the film without calculating the passivation drag-out.

The drag-out influence is important for the products consumption and the industrial costs calculation.

With average drag-outs in the operating phase of:

Rack systems 0.20 l / m<sup>2</sup>

Barrel systems 0.25 l / m<sup>2</sup>

A total real consumption has been calculated for **100 m<sup>2</sup>** of treated surface of:

➤ **2,5 - 3,0 l. of LANTHANE TR 175 PARTE B (d = 1,10 g./cc)**

➤ **2,5 - 3,0 l. of LANTHANE TR 175 PARTE C (d = 1,16 g./cc.)**

With higher drag-outs, consumptions will increase more.

The analytical control of the passivation concentration can be made through the trivalent chromium concentration analysis.

The passivation film aspect and tonality depend on the different operating parameters combination: concentration, pH, dipping time, temperature, iron and zinc pollution level, drying temperature.

It is useful to remember that the passivation film colour and intensity variation can be adjusted by changing the dipping and concentration time.

The passivating solution can have until:

- Zinc: 10 - 15 g/l
- Iron: 100 - 150 mg/l (ppm)

Iron causes the appearance of yellow spots especially in the drying and dripping on holes points.

- Fluorides: dangerous contaminants because they limit the stability of Part B and the growth of the passivation layer. For this reason we recommend not to use the blue decorative trivalent passivation instead of nitric acidic activation in the process sequence.

**Filtration:** continuous filtration is usually not recommended but necessary for high drag-in.

The system must be done on polypropylene bag filter 80 µm. size and to turn the solution once per hour.

### 3. Plating Sequence

After zinc plating treatment and proper rinses, we advise:

- \* Activation:
  - with Nitric acid 65% (0,2 ÷ 0,5%) for alkaline zinc and zinc - iron
  - no activation for acid zinc
- \* Rinsing in running water
- \* LANTHANE TR 175 passivation
- \* Rinsing in running water (not too long max. 60 seconds)
- \* Drying

In processes in which a sealer is used, follow the specific use instructions provided in the product technical data sheet.

### 4. Waste Water Treatment

The solution LANTHANE TR 175 does NOT contain chromates, they must however be treated for the heavy metals (zinc, iron and chromium III) precipitation.

| 5. H & S             |   |
|----------------------|---|
| <b>Safe handling</b> | <p>The passivations LANTHANE TR 175 Part A and C are acid products while LANTHANE TR 175 Part B is an alkaline product.</p> <p>Take proper precautions wearing protective glasses, gloves, etc.</p> <p>Rinse with water in case of solution or products spreading.</p> <p>Carefully read and follow the instructions for the handling of the products that are on the package labels and safety datasheets.</p> <p>Properly inform the operating staff.</p> |
| <b>Storage</b>       | <p>We recommend checking the use-by date on the label and on the Certificate of Conformity.</p> <p>We recommend to always storing the products in closed packages, away from heat sources, protected from rain and light.</p> <p>Contact Coventya for additional information.</p>   |

| 6. Warranty                         |  |
|-------------------------------------|--|
| <b>Disclaimer of responsibility</b> | <p>The data set forth in this bulletin is believed by COVENTYA to be true, accurate, and complete, but is not guaranteed. Our sole warranty is as stated in our Standard Terms and Conditions of Sale. We cannot warrant that our customers will achieve the same results from any process, chemical or product described in this bulletin because we do not have control over the conditions of use; nor can we assume any responsibility for our customer's use of any of our products in a manner which infringes the patents of third parties.</p> |
| <b>IMDS number</b>                  | <b>17346714</b>  |