



PLATING SHEEN CHEM (INDIA) PVT. LTD.

EXCELLENCE IN METAL FINISHING

www.pcichemicals.com

www.trivalentpassivation.com

TRICOLITE 201 Process

TRICOLITE 201 process is a single component concentrated liquid passivation based upon Trivalent Chromium which provides a thick yellowish – greenish red iridescent colour on zinc and zinc alloy platings which achieves excellent corrosion resistance, resembling the colour achieved by hexavalent chromium . This process is completely Free of Hexavalent Chromium and confirms to End-of-Life (ELV); RoHS and WEEE when following the recommended process sequence norms of the European Union.

The coatings with this process exceeds the requirements for yellow chromates according to DIN 50 021 SS standards.

TRICOLITE 201 contains special additives which controls the concentrations of zinc and iron in the bath thereby extending the life of the bath nearly twice than any other process. TRICLOITE 201 is very easy to operate and control. The passivation layer can also be dyed with TRICOLITE WG 52.

Tricolite 201 film can be further enhanced with the application of a post applied sealer, which improves functional properties such as corrosion resistance.

WORKING CONDITIONS

TRICOLITE 201	: 125 – 150 ml ./ ltr.
pH	: 1.8 – 2.0
Temperature	: 30°C – 70°C
Immersion Time	: 30 – 90 seconds
Solution Movement	: Mild Air / Mechanical Movement.

TRICOLITE 201

MAINTENANCE :

Maintenance of the process may be accomplished through regular addition of TRICOLITE 108. The Approx consumption of Tricolite 108 would be 20 - 25 ml/Sq. m. Addition may be based on drag out losses and observation of the work. The pH should be checked regularly using a pH meter. The bath should be maintained closely for the following -pH, temperature, immersion time etc. For desired corrosion resistance of the passivated film it is necessary to maintain the level of metallic impurities within the specific limits. As a reference, the limits of inorganic impurities are given below :

Sr. No	Metalic Impurities	Maximum Tolerance	Remedies
1	Iron	50 ppm	By selective ion exchange system (TRICOLITE 109 IEM) and / or high pH (up to 3.7) treatment
2	Zinc	15 g/l	By precipitation using Tricolite 110 ZP and followed by filtration.

EQUIPMENT : Steel with heat resistant and acid resistant PVC or polypropylene coating.

SOLUTION PREPARATION :

1. Fill the Tank three quarter full with distilled water.
2. Add required quantity of **TRICOLITE 201** while stirring.
3. Fill the tank to the operating level with water.
4. Check the pH and adjust accordingly.

pH : After addition of the **TRICOLITE 201**, the solution pH must be checked and adjusted as required with NaHCO_3 or HNO_3 .

GUIDELINES :

- Typically the high working temperatures achieves the highest corrosion resistance.
- Higher temperatures and a lower pH need shorter immersion times.
- Lower temperatures and a higher pH need longer immersion times.
- Zinc build-up would induce 'patchy' or 'dull' deposit. This can be removed by incorporating **TRICOLITE 110 ZP** and followed by filtration.

TYPICAL PLATING PROCESS SEQUENCE:

1. Electroplate zinc, zinc iron or zinc nickel electroplate.
2. Water rinse 2x
3. Activation dip Nitric acid 0.3% v/v
4. Water rinse
5. **TRICOLITE 201** passivation treatment
6. Drain
7. Water rinse
8. Hot Water rinse (40 – 50 ° C) ; with 2%vol TRICOLITE 112 S
9. Optional sealing in Poroseal G1
10. Oven dry/ Hot Air dry (70-85°C)

TITRATION & ANALYSIS :

1. Pipette out 2 ml of the operating solution in a 250 ml of Erlenmeyer flask and add 50 ml of DM water.
2. Raise the pH to 10.0 with diluted caustic soda solution. Colour changes can be observed.
3. Add 5 ml of hydrogen peroxide (30%) and boil the solution for 30 - 40 min.
Note : It is very much essential to boil of completely the residual hydrogen peroxide ~ may be the mixture should be boiled continuously and stop heating just before crystallization.
4. Cool down to room temp. and add 10 ml of concentrated hydrochloric acid ~ colour changes from yellow to orange.
5. Add 1 gm of potassium iodide, colour changes to reddish brown.
6. Titrate with 0.1 N sodium thiosulphate solution till straw yellow colour and then add starch indicator and continue titration to green end point. Note down the value.

CALCULATION :

Conc. of **TRICOLITE 201** in ml/lit. = reading x normality x 103.5



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TREATMENT OF WASTE WATER :

TRICOLITE 201 should not be sent directly to the general circulation of rinse water. Waste water must be handled and treated separately.

Rinse water and concentrates

Rinse water as well as spent concentrates of TRICOLITE 201 can be treated by an neutralization with calcium hydroxide at a pH 12. A reaction time of at least 2 hours must be allowed. Concentrates must be diluted at a ratio of at least 1 : 3 before sending them to the waste water treatment plant. For better flocculation we recommend to add a flocculant . The solution is then stirred and the precipitation is allowed to settle for better filtration. After filtration the filtrate must no longer be mixed with metal ions.

GENERAL SAFETY PRECAUTIONS :

Avoid direct contact with this material. Do not inhale associated mist, vapors, and/or dust. As applicable, keep exposure below the limits recommended by OSHA, ACGIH, the manufacturer, and others. Wash contaminated clothing before reuse. Emergency showers and eyewashes must be readily available.

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Manufactured by :

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