

PLATING PRODUCTS IND PVT LTD

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CIN No.: U24303MH2021PTC371241

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Technical Data Sheet

Trivalent White Chromium (Type of Sulfuric Acid)

I. Characteristics

1. Environmentally friendly, different with the electroplating process of hexavalent chromium.
2. The beautiful blue-white appearance is comparable to the hexavalent chrome plating.
3. With the OPASS anode specially designed for the trivalent chrome plating process, it can be used easily and stably.
4. Even and excellent coverage.
5. Rate: 0.2-0.4 μ m / 5 minutes.

II. Composition and Appearance

No.	Composition	Appearance
1	Conductive salt-S	White powder
2	Chromium solution-A	Dark blue purple
3	Maintenance additive-B	Colorless to light yellow
4	Maintenance additive-C	Colorless clarifier
5	Bath opening additive-M	Colorless to amber
6	Wetter - W	Colorless clarifier

III. Bath Opening Value

Item	Optimal Value	Range
Conductive salt-S	280g/l	260-330g/l
Chromium solution-A	150ml/l	100-200ml/l
Maintenance additive-B	50ml/l	30-60ml/l
Maintenance additive-C	1ml/l	0.5-3ml/l
Bath opening additive-M	15ml/l	10-30ml/l
Wetter-W	1.0ml/l	0.5-2.0ml/l

IV. Analysis value

Item	Optimal Value	Range
Trivalent chromium	10g/l	8-12g/l
Conductive salt-S	280g/l	260-330g/l
Bath opening additive-M	15ml/l	10-30ml/l
Wetter-W		To be added when the surface tension is more than 45 mN/m

V. Bath opening

1. Add about 50% volume of deionized water to the bath.
2. Heat to 60-70°C.
3. Add the measured S and stir thoroughly (S must be completely dissolved before proceeding to the next step).
4. Add the measured A and B.
5. Stir thoroughly and heat to the working temperature of 53°C.
6. Maintain working temperature, keep warm and stir for at least 12 hours.
7. Adjust the PH value to 3.2 with 45-50% sodium hydroxide solvent while stirring (very slowly), this process requires strong air stirring.
8. Add the required M, C and W, stir thoroughly.
9. Install the anode if it is not already installed.
10. Add deionized water to the final volume.
11. Adjust the PH value again to 3.2.
12. In the preliminary work, the PH value must be controlled and adjusted with 45-50% sodium hydroxide solvent, the PH value will stabilize after a few days.

Item	Optimal Value	Range
Temperature	53°C	50-57°C
PH value	3.2	3.0-3.7
Electroplating time	4 min	3-8 min
Current density	5A/dm ²	4-7A/dm ²
Voltage		8-12 V

Adjust with 45-50% sodium hydroxide solvent or 10% sulfuric acid.

Higher PH value is harmful to solvents, so when the additive is added, it must be added slowly with sufficient stirring. Never let the PH value go higher than 4.0 to avoid loss of efficiency.

Stirring: Cathode movement is recommended.

Bath body material: Acid resistant and fluorine liner (PVC, PP). New plastic lined bath and piping must be thoroughly cleaned with diluted sulfuric acid solvent before using.

Filtration: Regular filtering is required. To remove the organic impurities brought in, activated carbon filtration is required.

Heating: Acid-resistant materials (such as silicon, titanium ring or titanium plating, etc.) outside the constant temperature heating equipment must be temperature controlled to maintain a constant temperature.

Venting: Good ventilation and exhaust system.

Reminder: When the bath needs to be reused again after a long period of downtime, heat the bath to the operating temperature and maintain it for 2-3 days to ensure that the precipitate is completely dissolved. Analyze and adjust the individual components in the bath and control the PH value within the range.

Recommended process:

Bright nickel, washing→Decorative chrome plating→Washing→ Passivating→Washing→Washing with hot water→Drying. (Remarks: The washing must be thorough).

VI. Maintenance

Regularly check the PH value, regularly analyze the concentrations of S, M and trivalent chromium and adjust them to the standard range.

For the best effect, we recommend to use an automatic dosing system that can be refilled in ampere-hours.

During electroplating, the surface tension of the solvent increases. When the surface tension rises to above 45 mN/m, W of 0.5-1.0 ml/L can be added to adjust.

Although solvents are resistant to impurities, they must be washed thoroughly after nickel plating before decorative chrome plating, especially when plating tubular or workpieces which are difficult to drain. Insufficient washing will lead to nickel contamination and reduced efficiency. This contamination can only be removed by ion exchange resins.

VII. Hull cell test

Performed by using a standard 250ml hull cell.

Heat the bath additive to 53°C, adjust the PH value to 3.5 with 45-50% sodium hydroxide or 50% sulfuric acid, add into the Hull bath.

The brass sheet used for testing must be well pretreated and nickel-plated. The nickel-plated specimen is placed in a Hall cell filled with the sample additives and then make it under the conditions of 4 amps, 5 minutes, 53°C, without air agitation. After completion, the test piece is washed with water and dried with hot air or compressed air.

The ideal chrome plating layer covers 75%(approx.) of the area.

Before adding any additives to the plating bath, it must be verified by a Hall bath test.

VII. Consumption(estimated consumption per 1000 Ah)

Chromium solution-A	1-1.5L
Maintenance additive-B	0.5-1L
Maintenance additive-C	0.3-0.7L
Bath opening additive-M	0.3-0.5L
Wetter-W	50-100ML

We strongly recommend frequent small dosing (e.g., 100-150mL/100 Ah) to prevent parameter disturbances in the solvent.