

PMD (UK) LTD PROCESS DATA

HECu-06/02

ISSUE 2

PREV 1

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HE CYANIDE COPPER

INTRODUCTION

HE Cyanide Copper is a high efficiency copper suitable for heavy copper deposits and as a strike on tin-lead, zinc based die castings and ferrous metals before plating in bright copper or nickel.

SOLUTION MAKE-UP

HE Cyanide Copper Salts	140g/L
Potassium cyanide	21g/L

OPERATING DATA

Copper	30-40g/L
Free potassium cyanide	25-35g/L
Temperature	50-60 deg C
pH	9.5-10.5
Current density	1.5-2.5 A/dm ²
Agitation	Solution or work movement
Extraction	Essential

EQUIPMENT

Tanks	Mild steel, polypropylene or PVC
Heaters	Mild steel or PTFE immersion heaters with thermostatic control.
Filtration	Continuous filtration recommended.

INSTALLATION

It is essential that the tanks to be used for HE Cyanide Copper are thoroughly cleaned and leached before any product is introduced.

If in any doubt as to the cleaning procedure please contact PMD (UK) Limited Technical Department.

1. $\frac{3}{4}$ fill tank with DI water and heat to 55°C.
2. Add the required amount of potassium cyanide and stir to dissolve.
3. Add the required amount of HE Cyanide Copper Salts and stir to dissolve.
4. Fill to operating level with DI water.
5. Heat to operating temperature.

MAINTENANCE AND CONTROL

The solution should be analysed regularly and replenished as necessary. (See analysis methods).

Copper can be raised by the addition of HE Cyanide Copper Salts. 1g/L of HE Cyanide Copper Salts will raise the copper by 0.25g/L and the free cyanide by 0.15g/L.

ANALYSIS METHODS

1. Copper

Reagents

Conc sulphuric acid
Hydrogen peroxide
50% v/v ammonium hydroxide
0.2N EDTA (standard volumetric solution)
PAR indicator

Method

1. Pipette a 2.0ml aliquot of the cooled solution into a 250ml conical flask.
2. In a fume cupboard add 5ml conc sulphuric acid.
3. Cover flask with a watch glass and place on a hot plate in the fume cupboard. Heat until solution turns black.
4. Add hydrogen peroxide drop wise until solution clears.
5. Allow to cool.
6. Add 100ml DI water.
7. Add 50% ammonium hydroxide drop wise until the solution just turns pale blue.
8. Add 5-6 drops PAR indicator and titrate to a green end point with 0.2N EDTA.
9. Record titre = t mls.

Calculation

$t \times 3.17 = \text{g/L copper}$

Replenishment

For every 1g/L copper required add 4g/L HE Cyanide Copper Salts. Note this will also raise the free potassium cyanide by 0.6g/L.

2. Free Potassium Cyanide

Reagents

0.1N silver nitrate (standard volumetric solution)
10% w/v potassium iodide solution

Method

1. Pipette a 10.0ml aliquot of the cooled solution into a 250ml conical flask.
2. Add 100ml DI water and 2ml of 10% potassium iodide solution.
3. Titrate with 0.1N silver nitrate until the solution just turns turbid.
4. Record titre = t mls.

Calculation

$t \times 1.3 = \text{g/L free potassium cyanide}$

Replenishment

For every 1g/L required add 1g/L potassium cyanide unless replenishment of copper has accounted for this.

DISPOSAL

Dispose of in accordance with local authority requirements.

PRODUCT FAMILIES

The following products are referred to in this data sheet.

<u>Product Name</u>	<u>Product Number</u>
HE Cyanide Copper Salts	569001

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