KADIZID
For Industrial Finishing Applications

DESCRIPTION
The Kadizid process produces bright cadmium electrodeposits directly from an acid bath. The brightness of the deposit is comparable to that obtained from the most widely used cyanide cadmium baths.

The solution can be used for barrel and rack plating and is easy to operate and control. Throwing power is good and plating speed is comparable to cyanide baths.

BATH MAKE-UP

<table>
<thead>
<tr>
<th>Chemicals Required</th>
<th>Metric</th>
<th>(U.S)</th>
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</thead>
<tbody>
<tr>
<td>Cadmium Oxide</td>
<td>45 g/l</td>
<td>(6 oz./gal.)</td>
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<tr>
<td>Sulfuric Acid (SG 1.84)</td>
<td>115.2 g/l</td>
<td>(15.36 oz./gal.)</td>
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<tr>
<td>Kadizid Starter K</td>
<td>50 ml/l</td>
<td>(5% v/v)</td>
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<tr>
<td>Kadizid Stabilizer</td>
<td>7.5 ml/l</td>
<td>(0.75% v/v)</td>
</tr>
<tr>
<td>Kadizid Brightener KR</td>
<td>20 ml/l</td>
<td>(2% v/v)</td>
</tr>
<tr>
<td>Kadizid K13</td>
<td>10 ml/l</td>
<td>(1% v/v)</td>
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</tbody>
</table>

MAKE-UP PROCEDURE
1. Fill the tank 2/3 full with DI water.
2. Add cadmium oxide to the tank and mix thoroughly.
3. Slowly add sulfuric acid and stir; make sure all the cadmium sulfate is dissolved.
4. Add Kadizid Starter K to the tank and mix thoroughly.
5. Add Kadizid Stabilizer to the tank and mix thoroughly.
6. Add Kadizid K13 to the tank and mix thoroughly.
7. Add Kadizid KR to the tank and mix thoroughly.
8. Bring the bath to final volume with DI water.

BATH MAINTENANCE

Cadmium
Cadmium metal is furnished by the cadmium oxide. It should be maintained within the recommended range by analysis. Cadmium metal concentration can be determined by the following analytical procedure.

I. Equipment
   a) 250 ml Erlenmeyer flask
   b) 50 ml burette
   c) 2 ml graduated pipette
   d) 100 ml graduated cylinder
II. Reagents
   a) Eriochrome Black T Indicator: dissolve 0.2g of eriochrome black T indicator in a solution of 500 ml ethyl alcohol and 500 ml of triethanolamine
   b) Formaldehyde, 10% v/v
   c) Buffer Solution: add 270g ammonium chloride to 2,280 ml of concentrated ammonium hydroxide; dilute to one gallon

III. Titrant
   EDTA solution, 0.2N standardized

IV. Procedure
   a) Pipette 2 ml of plating solution into a 250 ml Erlenmeyer flask.
   b) Add approximately 100 ml of DI water.
   c) Add 5 drops of eriochrome black T indicator.
   d) Add approximately 10 ml of buffer solution and approximately 5 ml of 10% formaldehyde solution.
   e) Titrate with 0.2N EDTA solution to a green-blue endpoint.

V. Calculation
   Cadmium Metal (g/l) = ml titrant x N titrant x 28.125
   Cadmium Metal (oz./gal.) = ml titrant x N titrant x 3.75

BATH REPLENISHMENT

Kadizid Starter K
The Kadizid Starter K helps provide the deposit brightness. It is replenished only to replace the Kadizid Starter K that has been lost from solution due to dragout.

Kadizid Stabilizer
The Kadizid Stabilizer increases the bright plating range of the bath. It is replenished only to replace dragout losses.

Kadizid Brightener KR
The brightness of the bath is maintained using Kadizid Brightener KR. It is replenished at a rate of one gallon per 10,000 ampere-hours.
KADIZID

PRODUCT DATA

Kadizid Starter K
Appearance: Clear, yellow liquid
pH: 7.0
Specific Gravity: 1.020

Kadizid Stabilizer
Appearance: Clear, colorless to yellow liquid
pH: 7.0
Specific Gravity: 0.903

Kadizid Brightner KR
Appearance: Clear, yellow liquid
pH: 7.0
Specific Gravity: 0.89

Kadizid K13
Appearance: Clear, colorless liquid
pH: 6.5
Specific Gravity: 1.008

EQUIPMENT

Tanks: Acid resistant, such as polypropylene
Heaters: Acid resistant, such as polypropylene
Filtration: Polypropylene filters
Agitation: None for barrel plating; cathode rod movement at 10 ft./min. for rack plating
Anodes: Pure cadmium

HANDLING PRECAUTIONS

CAUTION! Consult product Material Safety Data Sheets for details on product hazards, recommended handling precautions before using.

CAUTION! When using electric immersion heaters, failure to maintain proper solution levels can expose tank and solution to excessive heat resulting in a possible combustion hazard, particularly when plastic tanks are used.

STORAGE


WASTE TREATMENT

It is the users responsibility to verify that treatment procedures comply with federal, state and local regulations. Contact your Rohm and Haas Electronic Materials Technical Representative for more information.

Due to the nature of Kadizid products, disposal of them, or residues therefrom, should be made in compliance with federal, state and local environmental laws.
For locations and information please visit: http://electronicmaterials.rohmhaas.com

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