



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

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

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 OPERATION—Metric

Parameter	Range	Recommended
Cadmium Metal	30–45 g/l	39.4 g/l
Free Sulfuric Acid	60–90 g/l	78 g/l
Temperature	15–32°C	24°C
Cathode Current Density	1–3 ASD	1.5 ASD
Cathode Efficiency	90–94%	

BATH OPERATION—U.S.

Parameter	Range	Recommended
Cadmium Metal	4–6 oz./gal.	5.25 oz./gal.
Free Sulfuric Acid	8–12 oz./gal.	10.4 oz./gal.
Temperature	60–90°F	75°F
Cathode Current Density	10–30 ASF	15 ASF
Cathode Efficiency	90–94%	

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

KADIZID

II. Reagents

- Eriochrome Black T Indicator: dissolve 0.2g of eriochrome black T indicator in a solution of 500 ml ethyl alcohol and 500 ml of tri-ethanolamine
- Formaldehyde, 10% v/v
- 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

- Pipette 2 ml of plating solution into a 250 ml Erlenmeyer flask.
- Add approximately 100 ml of DI water.
- Add 5 drops of eriochrome black T indicator.
- Add approximately 10 ml of buffer solution and approximately 5 ml of 10% formaldehyde solution.
- 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

Sulfuric Acid

Sulfuric Acid should be maintained within the recommended range by analysis. Acid concentration can be determined by the following analytical procedure.

I. Equipment

- 250 ml Erlenmeyer flask
- 50 ml burette
- 10 ml graduated pipette

II. Reagents

- Methyl Orange Indicator

III. Titrant

Sodium Hydroxide Solution, 1.0N

IV. Procedure

- Pipette 10ml of plating solution into a 250 ml Erlenmeyer flask.
- Add 5 drops of methyl orange indicator.
- Titrate with 1.0N sodium hydroxide solution to a yellow endpoint.

V. Calculation

Sulfuric Acid (g/l) =

ml titrant x N titrant x 4.905

Sulfuric Acid (oz./gal.) =

ml titrant x N titrant x 0.654

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

Store Kadizid Starter K, Stabilizer, Brightener KR, and K13 only in upright, original containers in a dry area at 10–32°C (50–90°F). Store Kadizid products away from strong oxidants. Do not store in sunlight. Store away from heat and sources of ignition. Keep containers sealed when not in use.

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.


KADIZID



ELECTRONIC MATERIALS


Circuit Board Technologies


CMP Technologies


Microelectronic Technologies


Packaging and Finishing Technologies

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