



PALLADEP BP

For Electronic Finishing Applications

Regional Product Availability			
N.America	Japan/Korea	Asia	Europe
✓	✓	✓	✓

DESCRIPTION

For use in the electroless palladium plating process.

ADVANTAGES

- Autocatalytic process allows high deposit thickness to be achieved
- Low-temperature operation minimizes attack of solder mask
- Excellent wire bondability
- Excellent solderability

BATH MAKE-UP

Chemicals Required	Metric	(U.S.)
Palladep BP-M	500 ml/l	(50% v/v)
Palladep BP-K	10 ml/l	(1% v/v)
Palladep BP-S	10 ml/l	(1% v/v)
Palladep BP-Reducer	75 ml/l	(7.5% v/v)
Palladep BP PD Conc. (100 g/l)	10 ml/l	(1% v/v)

MAKE-UP PROCEDURE

1. Add 300 ml/l (30% v/v) deionized water to tank.
2. Add Palladep BP-M and mix thoroughly.
3. Add Palladep BP-K and mix thoroughly.
4. Add Palladep BP-S and mix thoroughly.
5. Add Palladep BP PD Conc. (100 g/l) and mix thoroughly.
6. Add Palladep BP-Reducer and mix thoroughly.
7. Dilute to final volume with deionized water and mix thoroughly.
8. Heat solution to 60°C (140°F).
9. Adjust pH to 6.8–7.8 with reagent-grade ammonium hydroxide (to raise pH) or reagent-grade 50% v/v hydrochloric acid (to lower pH) and mix thoroughly.

Operating Parameters—Metric		
Parameter	Range	Recommended
Palladium Metal	0.7–1.3 g/l	1.0 g/l
Palladep BP-Reducer	60–90 ml/l	75 ml/l
pH	6.8–7.8	7.3
Temperature	57–63°C	60°C
Agitation	Mild mechanical or air agitation	

Operating Parameters—U.S.		
Parameter	Range	Recommended
Palladium Metal	0.09–0.17 oz./gal.	0.13 oz./gal.
Palladep BP-Reducer	8–12 oz./gal.	10 oz./gal.
pH	6.8–7.8	7.3
Temperature	135–145°F	140°F
Agitation	Mild mechanical or air agitation	

BATH MAINTENANCE

Palladep BP PD Conc. (100 g/l)

Palladium metal is replenished by additions Palladep BP PD Conc. (100 g/l) Replenishment is carried out on the basis of atomic absorption analysis or throughput checked by analysis. Palladep BP PD Conc. (100 g/l) contains 100 g/l palladium metal. To raise palladium metal concentration by 1 g/l, add 10 ml/l Palladep BP PD Conc. (100 g/l).

Palladep BP-Replenisher

Palladep BP-Replenisher is required to maintain the basic constituents. Add 15 ml Palladep BP-Replenisher for every 1g palladium metal deposited.

Palladep BP-Reducer

Palladep BP-Reducer is required to maintain the reducing agent concentration. Add 12 ml Palladep BP-Reducer for every 1g palladium metal deposited.

PALLADEP BP

Palladep BP-K

Palladep BP-K is required to maintain the bath stabilizer concentration. Add 8 ml Palladep BP-K for every 1g palladium metal deposited.

Palladep BP-S

Palladep BP-S is required to maintain the bath stabilizer concentration. Add 25–30 ml Palladep BP-S for every 1g palladium metal deposited.

Note: After lowering bath temperature, when bath temperature is raised again, add 3–5 ml/l Palladep BP-S.

pH

pH should be measured twice daily and maintained in the recommended range by additions of reagent grade ammonium hydroxide or reagent grade hydrochloric acid.

ANALYTICAL PROCEDURE FOR PALLADEP BP-REDUCER IN PALLADEP BP WORKING SOLUTION

I. Equipment

- a) 250 ml Glass-stoppered iodine flask
- b) 25 ml Graduated cylinder
- c) 50 ml Transfer pipette
- d) 5 ml Transfer pipette
- e) 50 ml Burette

II. Reagents

- a) 0.1M Sodium thiosulfate solution
- b) 0.05M Iodine solution
- c) 50% v/v reagent-grade hydrochloric acid solution
- d) Starch indicator solution

III. Procedure

- a) Pipette 5.0 mL Palladep BP working solution into a 250 mL iodine flask.
- b) Add 25 mL hydrochloric acid solution and mix thoroughly.
- c) Pipette 50.0 mL iodine solution into the flask. Immediately stopper flask and mix thoroughly. Place flask in cool dark place for 30 minutes.
- d) Remove stopper and titrate with sodium thiosulfate solution until a pale yellow color is observed.
- e) Add starch indicator solution to flask. The solution color will change to blue-purple.
- f) Continue to carefully titrate with sodium thiosulfate solution until the color change from blue-purple to a yellow endpoint.

IV. Calculation

$$\text{Palladep BP-Reducer (ml/l)} = (5 \times f_1 - a \times 0.1 \times f_2) \times 52.9$$

a = Titer of 0.1M Sodium Thiosulfate Solution

f_1 = Factor of 0.05M Iodine Solution

f_2 = Factor of 0.1M Sodium Thiosulfate Solution

EQUIPMENT

Tanks: PVDC, Polypropylene PTFE

Heaters: Indirect heat supplied through the use of a jacketed tank ensures the most uniform heat and minimizes the possibility of localized over-heating; if a jacketed tank is unavailable, immersion quartz or Teflon coated immersion heaters can be used

Filter: 5 micron or under filters are recommended

Pump: Sufficient capacity for four solution turnovers per hour

PALLADEP BP

PRODUCT DATA

Palladep BP-M

Appearance:	Colorless liquid
pH:	8.5
Specific Gravity:	1.02

Palladep BP-K

Appearance:	Colorless liquid
pH:	7
Specific Gravity:	1.01

Palladep BP-Reducer

Appearance:	Colorless liquid
pH:	6.0
Specific Gravity:	1.10

Palladep BP-S

Appearance:	Colorless to pale-yellow liquid
pH:	9.2
Specific Gravity:	1.005

Palladep BP-PD Conc. (100 g/l)

Appearance:	Amber liquid
pH:	8.25
Specific Gravity:	1.12

HANDLING PRECAUTIONS

Before using this product, consult the Material Safety Data Sheet (MSDS)/Safety Data Sheet (SDS) for details on product hazards, recommended handling precautions and product storage.

CAUTION! Keep combustible and/or flammable products and their vapors away from heat, sparks, flames and other sources of ignition including static discharge. Processing or operating at temperatures near or above product flashpoint may pose a fire hazard. Use appropriate grounding and bonding techniques to manage static discharge hazards.

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

STORAGE

Store products in tightly closed original containers at temperatures recommended on the product label.

DISPOSAL CONSIDERATIONS


Dispose in accordance with all local, state (provincial) and federal regulations. Empty containers may contain hazardous residues. This material and its container must be disposed in a safe and legal manner.

It is the user's responsibility to verify that treatment and disposal procedures comply with local, state (provincial) and federal regulations. Contact your Rohm and Haas Electronic Materials Technical Representative for more information.

PALLADEP BP**ELECTRONIC MATERIALS**


Circuit Board Technologies


CMP Technologies


Microelectronic Technologies


Packaging and Finishing Technologies

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