Florida CirTech
LEADERS IN PCB TECHNOLOGY

Product Data Sheet

DV200 Developer

DESCRIPTION

DV200 is a 40% by weight (560 g/L) potassium carbonate solution designed to develop fully aqueous photo-resist. **DV200** is a liquid of consistent purity and concentration that is well suited for feed and bleed systems. In addition, **DV200** contains a cleaner that minimizes scale in a conveyorized developer and reduces machine downtime due to cleaning.

Aqueous photo-resists can be developed by horizontal spray methods. Maximum process latitude is obtained by adjusting the conveyor speed to permit clean development of the un-polymerized resist at approximately 50% of the distance through the development chamber. A thorough, warm water rinse should follow development.

Add a suitable de-foamer such as BB200 at makeup and during use as needed. Add ~5 ml of de-foamer for each gallon of developer solution. Semi-Aqueous resists will require DV100B used in conjunction with **DV200**.

OPERATING PARAMETERS

Make-Up	1.9% **DV200** by volume, diluted soft water (1% by weight potassium carbonate concentration in working solution)
Temperature	80 to 90°F (27 to 32°C)
Conveyor Speed	Set to achieve 50% breakpoint
Process	Horizontal
Agitation	Not Applicable
Ventilation	Advised
Tanks	Polypropylene, CPVC, Stainless Steel
Racks/Baskets	Not Applicable
Heaters	Stainless Steel or quartz heater. Stainless steel cooling coil recommended.

Developer Makeup				
Sump Size (gal)	**DV-200 (gal)**	**Water (gal)**	**Defoamer (Oz)**	**Defoamer (ml)**
20	0.38	19.62	4	120
40	0.76	39.24	8	240
50	0.95	49.05	10	300
100	1.90	98.10	20	600
Gallons of **DV-200** = Sump Size (gal.) x (0.019)				

PHYSICAL PROPERTIES

Specific gravity	1.40 - 1.42
Appearance	Clear liquid
pH	>12
Odor	None
Flash Point	>200F

CONTROL PROCEDURES

Replenishment can be done by pH control and/or loading of dissolved photo-resist. The pH should be controlled between 10.6 and 10.8 and the resist loading controlled at 4 - 6 mil ft2/gallon.

ANALYSIS

Determination of Total Potassium Carbonate by weight. (Recommended)

Reagents and equipment
5.0 ml pipet
50 ml buret
275 ml Erlenmeyer flask
0.1N HCl
Methyl orange indicator (0.1g dissolved in 100mL of water)

Procedure:

1. Pipet 10.0 ml of developer solution into a 275 ml Erlenmeyer flask and add ~75 ml of de-ionized water.

2. Add 3-5 drops of Methyl Orange indicator.

3. Titrate with 0.1N HCl to a pink-orange end point.

Calculation:

% Total Potassium Carbonate by weight = (mls of HCl) x (N of HCl) x 0.69

Maintain the total potassium carbonate concentration between 0.9% and 1.1% w/w. We recommend using the total potassium carbonate analysis as the main method of control.

If desired, the active potassium carbonate concentration can be determined using the analysis procedure below. This is an optional analysis procedure to be used only to get extra information about the bath.

(OPTIONAL) Determination of Active Potassium Carbonate by weight.

Reagents and equipment

10.0 ml pipet
50 ml buret
275 ml Erlenmeyer flask
0.1N HCl Phenolphthalein indicator (1.0 g dissolved in 100mL of isopropyl alcohol)

Procedure:

1. Pipet 10.0 ml of developer solution into a 275 ml Erlenmeyer flask and add ~75 ml of de-ionized water.

2. Add 1-2 drops of phenolphthalein indicator.

3. Titrate with 0.1N HCl from dark pink to the light (faint) pink end point.

Calculation:

% Active Potassium Carbonate by weight = (mls of HCl) x (N of HCl) x 1.38

Maintain the active potassium carbonate concentration between 0.6% and 1.1% w/w through pH control. Control the pH of the working developer between 10.60 and 10.80. An addition of 0.2% by volume of DV200 will increase the potassium carbonate concentration by 0.1% by wt.

SAFETY AND STORAGE

DV200 is alkaline and should be handled with care. Please refer to MSDS sheet for details. Avoid open flames. Do not store in direct sunlight, high temperature or below freezing.

WASTE TREATMENT

DV200 solutions are basic and should first be pH adjusted to 2-3 with sulfuric acid and disposed in accordance with local, state and federal regulations. Please ask a Florida CirTech technical sales rep. for more information regarding waste treatment of this chemistry and our complete line of waste treatment line if additional help or information is desired.

MISCELLANEOUS

Available in 5-gallon pails and 55 gallon drums. Consult MSDS sheet for additional information.