



DV-205 Developer

DESCRIPTION

DV205 is a 40% by weight (560 g/L) potassium carbonate solution designed to provide extended development for fully aqueous photo-resist. **DV-205** is a liquid of consistent purity and concentration that is well suited for bleed and feed systems. In addition, **DV-205** has a cleaner that minimizes scale in the horizontal developer and reduces machine downtime due to cleaning.

DV-205 also contains a pH booster to used to regenerate unusable bicarbonate ions into active carbonate ions. This extends the developer bath life, and reduces usage of developer concentrate. Use of **DV-205** can generate a chemistry savings of up to 35%, over developers without pH boosters. For example, if the process normally consumes 55 gallons of DV200 concentrate, the consumption of **DV-205** could be as low as 35 gallons.

OPERATING PARAMETERS

Make-Up	1.9% by volume diluted with water (1% by weight potassium carbonate concentration in working solution)
Temperature	80 to 90°F (27 to 32°C)
Immersion Time	Not Applicable
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.



PHYSICAL PROPERTIES

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

CONTROL PROCEDURES

Aqueous photo-resists can be developed by horizontal spray methods. Maximum 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.

Addition of a suitable de-foamer, such as BB200 or BB300, may be necessary to control foam. Add ~5 ml of de-foamer for each gallon of developer solution.

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-205** = Sump Size (gal.) x (0.019)

Replenishment should be done by pH control. Maintain pH of the working strength developer between 10.60 - 10.80. When the pH is controlled in the working range, the potassium carbonate concentration will be maintained between 0.9 – 1.1 % by wt, through the use of DV205 replenisher.

ANALYSIS

Determination of Total Potassium Carbonate

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 5.0 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.

4. Calculation:

$$\text{Total Potassium Carbonate (\% wt)} = (\text{mls of HCl}) \times (\text{N of HCl}) \times 1.38$$

Maintain the total potassium carbonate concentration between 0.9% and 1.1% w/w. An addition of 0.2% by volume of **DV-205** will increase the potassium carbonate concentration by 0.1% by wt.

SAFETY AND STORAGE

DV205 is alkaline and should be handled with care. Please refer to MSDS sheet for details. Do not store in direct sunlight, high temperature or below freezing.

WASTE TREATMENT

DV205 solutions are basic and should be pH 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.