

PRODUCT INFORMATION DATA SHEET

CC-95 DEVELOPER CONCENTRATE

PRODUCT DESCRIPTION

CC-95 Developer Concentrate is a concentrated liquid used to make up and replenish aqueous developing solutions. CC-95 Developer Concentrate also contains a proprietary stabilizer which acts to maintain a specific pH for extended bath life and an equipment cleaner which continuously cleans the inner surfaces of the developer unit.

Ease of use – CC-95 Developer Concentrate can be made up quickly, eliminating in-house inconsistencies in potassium carbonate concentration and difficulties in completely dissolving solid material.

Economical - CC-95 Developer Concentrate will out perform standard potassium carbonate solutions and require less frequent additions in feed and bleed systems due to its high concentration.

Ease of replenishment - CC-95 Developer Concentrate is ideally suited to operate with pH controlled feed and bleed replenishment systems to achieve steady state processing. CC-95 will require less overall replenishment and give more consistent pH values than non-stabilized systems.

SOLUTION MAKE-UP

CC-95	1.4 % by volume
Water	98.6% by volume

Mixing Instructions:

1. Fill tank to 50% of total volume with water.
2. Add the required amount of CC-95 and mix.
3. Fill to volume with water.
4. Mix thoroughly prior to processing.

For spray applications OMG Electronic Chemicals' Defoamer AQ should be added at 0.26 mL per liter of solution(1 mL/gal).

OPERATING CONDITIONS

	<u>Nominal</u>	<u>Range</u>
Total Carbonate*	0.90%	0.75 - 1.05% wt./vol.
Temperature*	wt./vol.	21°C - 32°C (70 -
pH*	27°C (80°F)	90°F)
	10.6	10.5 - 10.8
Time*	50% break point is typical	
Filtration	25 micron polypropylene filters are recommended	

*See the specific photoresist technical data sheet for recommended parameters.

BATH OPERATION AND MAINTENANCE

A procedure for analyzing total carbonate is included in this data sheet. 1.4% v/v of CC-95 is equivalent to 0.97 % wt./v. of total carbonate.

In feed and bleed systems, typically a pH range of 10.6 - 10.8 is suitable for photoresist developing. (Consultation with your dry film supplier is recommended.) The pH is maintained in a steady state system using an automatic replenishment system. If monitored manually, the solution should be discarded when the pH drops to below 10.5. Typical bath life is 4-6 mil sq.ft. per gallon of made up solution(2.5-3.7 micron sq. meter per liter) or 290-430 mil sq.ft. per gallon of CC-95 (180-260 micron sq. meter per liter).

A typical automatic pH control system start-up procedure for aqueous films is outlined below:

1. Prepare a 1.4% by volume solution of CC-95 in the operating sump of the developer to be used. Analyze the solution for total carbonate.
2. Monitor the pH of the solution and the developing results for line speed and quality. Select a pH slightly higher to begin the automatic replenishment. This may be between 10.6 -10.8. The replenishment should start at 10.6 and stop at 10.8 (Consultation with your dry film supplier is recommended.) Your controller should maintain the solution for a consistent line speed and break point. (A lower pH will result in higher resist loadings, but slower line speeds).
3. After several replenishment cycles, analyze the solution for total carbonate. This should be maintained between 0.75 and 1.05% wt./v. If the solution is too strong or weak, adjust either the CC-95 or water. A 0.14% v/v addition of CC-95 is equivalent to 0.10 % wt./v. of total carbonate.

EQUIPMENT

Polyethylene, polypropylene, PVC, quartz, stainless steel and titanium materials are compatible with CC-95.

WASTE TREATMENT

Spent solutions should be pH adjusted with dilute hydrochloric acid to a pH of 9, then disposed of in accordance with state, federal and local regulations.

SAFETY

CC-95 Developer Concentrate is an alkaline solution and should be handled accordingly. Proper safety equipment including face and eye protection, gloves, boots, and aprons should be used when handling this material. In case of exposure, flush the affected area with clean water and **CONTACT A PHYSICIAN**. Proper ventilation should be provided to avoid exposure to mists and vapors.

Consult the Material Safety Data Sheet for safety, health and environmental information.

ANALYTICAL

PROCEDURE NUMBER: AP.0703.02

I. PROCEDURE DESCRIPTION: Titrimetric procedure to determine the percent weight per volume total potassium carbonate for Developer solutions.

II. EQUIPMENT & SETTINGS

- A. pH meter
- B. 250 mL breaker
- C. 50.0 mL burette
- D. 10.0 mL class "A" pipette
- E. Stir plate
- F. Magnetic stir bar

III. REAGENTS

- A. pH 4 buffer
- B. pH 7 buffer
- C. 0.1 N Hydrochloric Acid (HCl): Slowly, with mixing, add 8.3 mL of hydrochloric acid, reagent grade to 750 mL of deionized water. Dilute to 1 liter with deionized water.

IV. PROCEDURE

- A. Calibrate the pH meter with the pH 4 and 7 buffers.
- B. Pipette 10.0 mL of sample into a 250 mL beaker.

- C. Add about 100 mL of DI water.
- D. With stirring, titrate with 0.1 N HCl to a pH of 4.0.
- E. Record the amount of titrant used.

V. CALCULATIONS

A. % wt. per volume Total Potassium Carbonate = $\frac{\text{mL HCl} \times \text{N HCl} \times 6.91}{10 \text{ mL sample}}$