

Product Data Sheet

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PRODUCT #: N8695

DX-45

Developer Replenisher Concentrate

DESCRIPTION: A one-part concentrate (45% potassium carbonate) formulated to develop fully aqueous dry film photoresists and photoimageable solder masks. ***DX-45's*** highly concentrated formula is ideally suited for use in feed and bleed systems, resulting in less frequent additions than with more dilute carbonate solutions. Proprietary ingredients enhance loading, help keep equipment clean, and ensure straighter sidewalls, cleaning the "foot" of underdeveloped resist. These features result in greater productivity and less down time.

BENEFITS:

- **Highly concentrated for less frequent additions**
- **Buffering agents to maintain pH**
- **Ideally suited for feed and bleed systems**
- **Cleaning agent to reduce maintenance time**
- **Develops the "foot" completely to ensure straight side walls**

SPECIFICATIONS:

Density: 1.51 gm/ml, 12.6 lbs./gal.
Flash Point (TCC): None
Shelf life: Indefinite

INSTRUCTIONS:

DX-45 is intended for use as replenisher for developer solutions. Make up the initial working solution with ***ADC-40*** or ***DX-40***, and use ***DX-45*** for replenishment in a feed and bleed system. Replenishment can be controlled by pH or by panel count. The set point for pH replenishment is typically between pH 10.6-10.7, or as specified by the photoresist manufacturer. Monitor the break point, and adjust the conveyer speed to permit clean development at approximately 50% of the distance through the developing chamber. If the break point is past 50% of the chamber, reduce conveyor speed or raise the pH set point of controller, increase the volume of replenishment solution added. If supply water is extremely hard (>120 ppm Ca), the use of DI or RO water is recommended. To use ***DX-45*** for make-up, use at 0.8-1.0% by volume.

Follow the photoresists manufacturer's recommendation for carbonate concentration of the developer solution, usually 0.83-1% carbonate by weight, and temperature, normally 75°-90°F. Analyze new solution for concentration according to analysis on reverse side. Add 4 - 7 ml of ***ANTIFOAM BB*** per gallon of developer solution at makeup a again as needed. For automatic antifoam addition systems, use ***ANTIFOAM DES*** or ***ANTIFOAM LC***.

Thorough rinsing is essential to the quality of the developed circuit. A warm water rinse will help remove developer and resist residues. The length of the rinse chamber should be at least half as long as the developing chamber to allow for sufficient rinsing. Follow the photoresists manufacturer's recommendations for using hard or acidified rinse water.

CAUTIONS: Use good chemical handling practices when handling this product. In case of contact with eyes, flush immediately with water and obtain medical attention. In case of contact with skin, wash with soap and water. Refer to Material Safety Data Sheet for further information.

DISPOSAL: Neutralize and dispose of in accordance with all local, state and federal regulations.

ANALYSIS:

Equipment required: 10 ml pipette
50 ml burette
400 ml beaker
pH meter (optional)

Reagents required: 0.1N Hydrochloric acid
Methyl Orange indicator, 1.0%

Procedure:

1. Pipette 10 ml of developer solution into a 400 ml beaker and add 150 ml of distilled water.
2. Add 1 ml of Methyl Orange indicator.
3. Titrate with 0.1N Hydrochloric acid to pink-orange end point. The end point is reached when one drop of titrant no longer contributes any pink coloration.

OR

Titrate with 0.1N Hydrochloric acid, using a pH meter, to a pH end point of 4.

Calculation: $\text{mls of HCl} \times \text{N of HCl} \times 0.74 = \% \text{ Potassium Carbonate}$

The above analysis is valid for new working solutions only. An analysis for the concentrated product is available upon request.

This product should be used only for its intended purpose. The information stated above is based on our laboratory tests and experience, and is accurate to the best of our knowledge. Since actual use is beyond our control, the recommendations or suggestions are made without warranty, expressed or implied.