



Product Data Sheet

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PRODUCT #: N2518

DX-32

Stabilized, Hard Water Inhibited Developer Concentrate

DESCRIPTION:

A one-part carbonate based liquid developer concentrate formulated to develop fully aqueous dry films and LPI solder masks. **DX-32** is economical to use and easy to handle, eliminating the need to weigh and dissolve powdered materials. It contains a unique blend of ingredients to enhance the loading capacity of the solution and help keep the equipment clean. Stabilizers in the **DX-32** significantly increase the pH of the solution producing 15-20% more throughput through the same volume of chemistry.

BENEFITS:

- **Produces finer lines and spaces than generic potassium carbonate developers**
- **Hard water scale inhibitor**
- **Buffering agents to maintain pH**
- **Effective on all photoresists and solder masks**

SPECIFICATIONS:

Density: 1.32 gm/ml
Flash Point: None
Shelf life: Indefinite

INSTRUCTIONS:

DX-32 should be diluted to 2.2 – 2.7% by volume for fully aqueous dry film and LPI solder mask respectively. Follow the manufacturer's recommendation for carbonate concentration of the developer solution, typically 0.85 – 1.10% by weight and temperature, typically 85°-110°F. Analyze new solution for concentration according to analysis on reverse side.

Developer Makeup

For fully aqueous dry film: Volume of **DX-32** = Sump Size (gal) X 0.022
For LPI solder mask: Volume of **DX-32** = Sump Size (gal) X 0.027

Replenishment can be controlled by pH or by panel count. The set point for pH replenishment is typically between pH 10.7-10.75, 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, increase the pH set point of controller, or increase the volume of replenishment solution added.

Add 4-7 ml of RBP **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:

Lower pH using sulfuric acid. Filter off liquid and neutralize with caustic. Discard precipitate in landfill.

ANALYSIS:

Equipment required: 10 ml pipette
50 ml burette
250 ml Erlenmeyer flask

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

Procedure:

1. Pipette 10 ml of developer solution into a 250 ml Erlenmeyer flask and add 50 ml of DI or distilled water.
2. Add 10 drops of Methyl Orange indicator.
3. Titrate with 0.1N Hydrochloric acid from orange to red end point. The end point is reached when one drop of titrant no longer contributes any red coloration.

OR

Titrate with 0.1N hydrochloric acid using a pH meter to a pH of 4.0.

Calculation:
$$\frac{\text{mls of HCl} \times \text{N of HCl} \times 13.82}{20} = \% \text{ potassium carbonate}$$

* The above analysis is valid for 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.