SHIPLEY

MICROPOSIT® DEVELOPER

MICROPOSIT DEVELOPER is an aqueous alkaline solution specifically formulated for use with MICROPOSIT S1300™ and S1400® SERIES PHOTO RESIST systems. It is recommended for wafer fabrication and other microelectronic applications.

Automation

- Immersion
- Inline track
- Batch spray

High Process Reliability

- Tight product specifications
- Stringent quality control
- Complete systems functional testing

Excellent Resolution

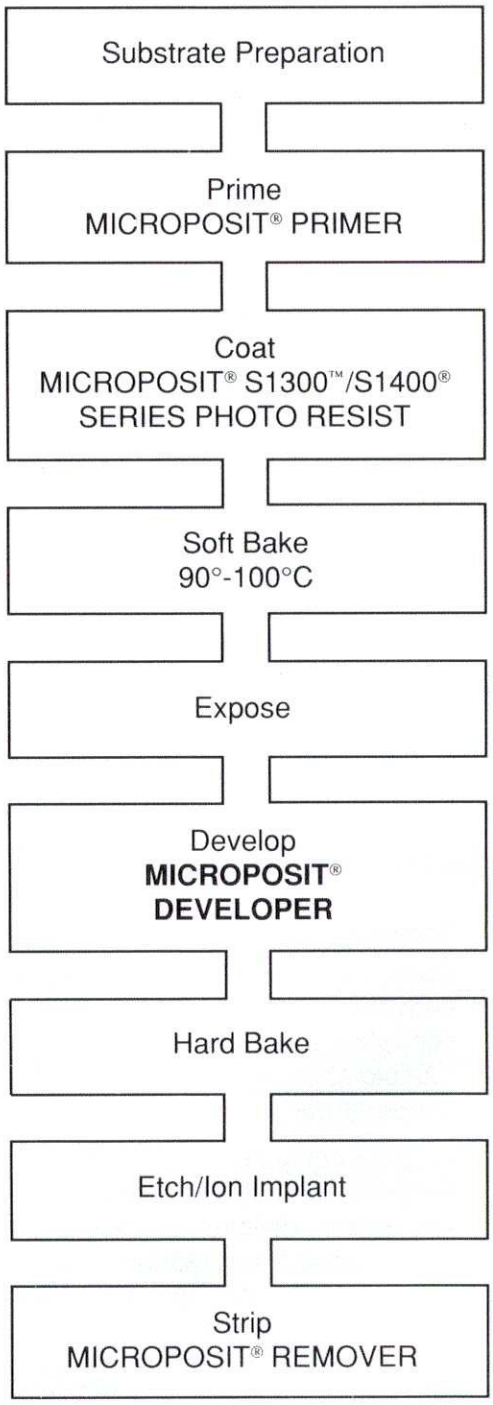
- High differential solubility
- Excellent development tolerance
- No swelling of photoresist

High Inspection Yields

- Clean, residue-free development
- Wide process latitude

Cost Efficient

- Excellent exposure throughput



MDD-C
0790

MICROPOSIT DEVELOPER

Instructions For Use

I. Bath Make-up

Dilute MICROPOSIT DEVELOPER for use as follows:

	High Speed Make-up (neat)	High Resolution Make-up (50% solution)
MICROPOSIT DEVELOPER	undiluted	1 part by volume
Deionized water	none	1 part by volume

Mix thoroughly. Proper dilution can be verified by analysis for normality. See Section VII.

Photoresist dissolution rate increases with increasing developer concentration. Maximum resolution is obtained at the lower developer concentration where unexposed resist loss is minimized. Shorter exposure times are possible when the higher developer concentration is used.

Production line downtime and potential dilution errors can be avoided with ready to use custom solutions of MICROPOSIT DEVELOPER. The CD number represents the developer normality x 100.

CD-30 is recommended for high resolution (equivalent to 1:1 make-up above).

CD-24 through CD-60 are available for special applications.

II. Temperature

Operate MICROPOSIT DEVELOPER bath between 20° and 25°C, with the temperature controlled ±1°C. The photoresist dissolution rate increases with increasing developer temperature.

In spray equipment, the spray action causes a temperature drop in the developer solution. For this reason, developer temperature should be monitored at the substrate surface.

III. Time

Immersion: 40-60 seconds.

Spin/spray: Varies with equipment. Consult your Shipley Technical Sales Representative.

Longer development times permit the use of shorter exposure times. Shorter development times minimize developer attack on the unexposed photoresist. The range recommended is optimum. We recommend keeping the development time constant and adjusting the exposure time as necessary to meet critical requirements.

IV. Agitation

Immersion: Mild, consistent agitation is recommended.

Spin/spray: Contact your Shipley Technical Sales Representative.

V. Rinse

Immersion: Cascade rinse with deionized water to resistivity specification immediately after developing.

Spin/spray: Overlap deionized water rinse with developer cycle to prevent developer drying on substrate surface. Provide adequate rinsing of back side of substrates.

VI. Bath Control

Immersion: For maximum process control, replace bath with fresh developer solution at least once per shift. Keep bath covered when not in use.

Spin/spray: Not applicable.

Batch spray: As recommended by equipment manufacturer.

VII. Determination of Total Alkaline Normality

A. Reagents

1. Hydrochloric acid (HCl), 0.1 N, standardized
2. Methyl red indicator solution

B. Procedure

1. Pipette 5 mls aliquot MICROPOSIT DEVELOPER bath into a 250 ml Erlenmeyer flask.
2. Add approximately 100 mls deionized water.
3. Add 3 to 5 drops methyl red indicator.
4. Titrate with 0.1 N HCl from yellow to red color change.

C. Calculations

$$\frac{\text{ml HCl titrated} \times \text{N HCl}}{5 \text{ mls}} = \text{Normality of MICROPOSIT DEVELOPER bath}$$

D. Results

The normality of a freshly made-up MICROPOSIT DEVELOPER bath should be:

1:1 make-up	0.30±0.02 N

Note: MICROPOSIT DEVELOPER CD solutions are delivered to ±0.01 N.

Equipment

Use polypropylene, polyethylene, polytetrafluoroethylene, or equivalent materials.

Storage

Store MICROPOSIT DEVELOPER only in upright, original containers in a dry area at 50°-90°F. Store away from acids. Do not store in sunlight. Store away from heat and sources of ignition. Keep container sealed when not in use. MICROPOSIT DEVELOPER has a limited shelf life.

Waste Treatment

MICROPOSIT DEVELOPER should be treated according to Shipley Waste Treatment Procedure WT77-1. Contact your Shipley Technical Representative for more information. It is your responsibility to verify that this procedure complies with federal, state and local laws and regulations for wastewater discharge.

Due to the nature of MICROPOSIT DEVELOPER, disposal of it, or residues therefrom, should be made in compliance with federal, state and local environmental laws.

Properties As Delivered

MICROPOSIT DEVELOPER is manufactured to the highest quality standards and is subjected to state of the art testing for physical, chemical and functional properties to assure the user of maximum lot to lot reproducibility.

MICROPOSIT DEVELOPER is filtered to 0.2µm absolute directly into clean containers.

Certificates of Analysis will be supplied with each shipment upon request. Quality Assurance Material Specifications and Analytical Testing Procedures may be obtained upon request from your Shipley Technical Sales Representative.

MICROPOSIT DEVELOPER, as delivered, will conform to the following specifications:

Specific gravity at 20/20°C	1.035-1.065
Color	Water white solution
Turbidity	Nonturbid to slightly turbid
Total Alkaline Normality	0.580-0.620

Custom solutions of MICROPOSIT DEVELOPER have similar specifications corresponding to the developer concentrations, with a normality specification range of ±0.01.

Handling Precautions

CAUTION! MICROPOSIT DEVELOPER is an alkaline solution. Contact with eyes, skin and mucous membranes may cause irritation. Handle with care. Do not get in eyes, on skin or on clothing. Avoid breathing vapors or mists. Use with adequate ventilation. Wash thoroughly after handling.

Wear chemical goggles, chemical gloves and suitable protective clothing when handling MICROPOSIT DEVELOPER.

In case of eye or skin contact, flush affected areas with plenty of water for at least 15 minutes. Then contact a physician at once.

Consult product Material Safety Data Sheet before using.

FLUSH EMPTY CONTAINERS THOROUGHLY WITH WATER BEFORE DISCARDING.

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Australia, China, India, Israel, Mexico, Singapore, South Africa, South Korea, Spain, Taiwan, Western Canada.

Manufacturing Locations

Marlborough, MA; Coventry, United Kingdom; Sasagami, Japan.

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