

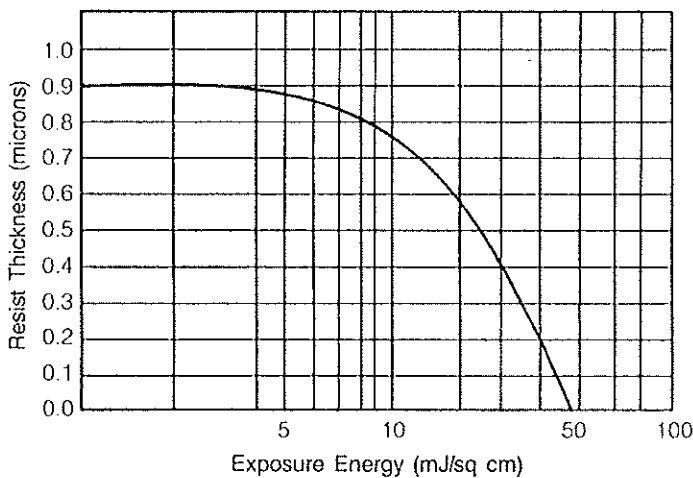
# SHIPLEY

## MICROPOSIT® MF® CD-26 DEVELOPER

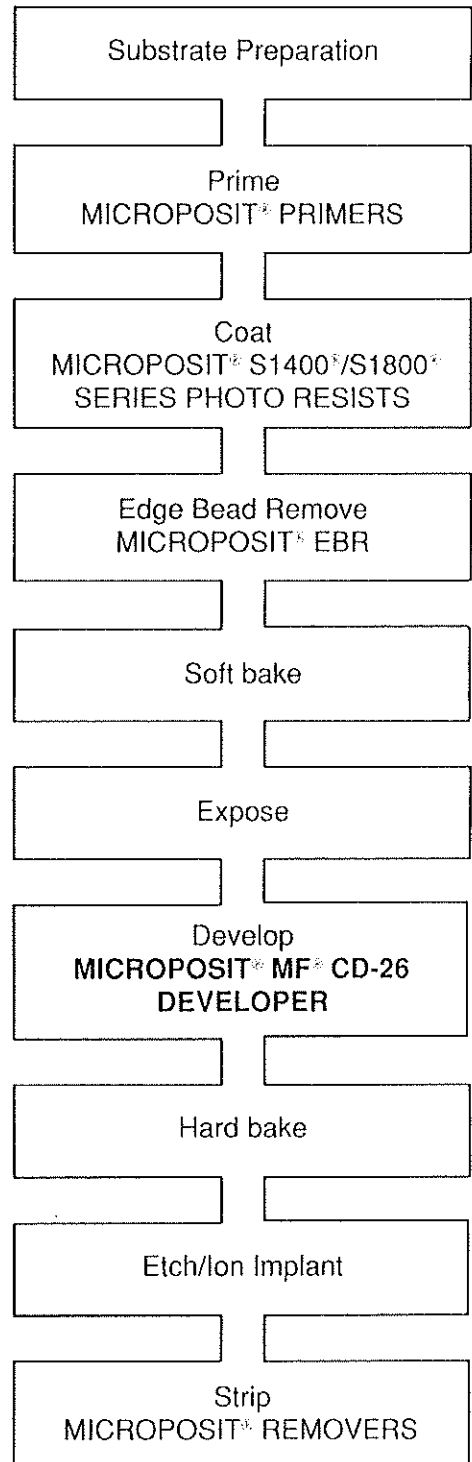
MICROPOSIT MF CD-26 DEVELOPER is a metal ion free developer specifically formulated for use with MICROPOSIT S1400® and S1800® SERIES PHOTO RESIST systems. It is recommended for use in wafer fabrication where it is desirable to avoid a potential source of metal ion contamination. Specifically, it is formulated for high resolution immersion developing applications. The unique functional properties of MICROPOSIT MF CD-26 DEVELOPER give high process reliability to integrated circuit fabrication.

- Surfactant free
- Low chloride

### CHARACTERISTIC CURVE



### MICROPOSIT® MF® CD-26 DEVELOPER AND COMPETITIVE RESIST



## Handling Precautions

**DANGER!** MICROPOSIT MF CD-26 DEVELOPER is an alkaline corrosive liquid containing tetramethyl ammonium hydroxide. Contact with eyes, skin and mucous membranes causes irritation and burns. 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 MF CD-26 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.**

**CAUTION!** When using immersion heaters, failure to maintain proper volume level can expose tank and solution to excessive heat, resulting in a possible combustion hazard, particularly when plastic tanks are used.

## Storage

Store MICROPOSIT MF CD-26 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.

## Waste Treatment

A used bath may be treated according to Shipley Waste Treatment Procedure WT 77-1. 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 MF CD-26 DEVELOPER, disposal of it, or residues therefrom, should be made in compliance with federal, state and local environmental laws.



### Worldwide Operations

Shipley Company  
455 Forest Street  
Marlborough, MA 01752-3001  
TEL: (508) 481-7950  
FAX: (508) 485-9113

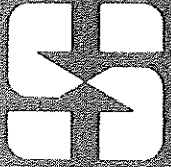
### European Operations

Shipley Europe Ltd.  
Herald Way  
Coventry CV3 2RQ  
United Kingdom  
TELEX: 851 311316  
TEL: 441 203 457 203

### Far East Operations

Shipley Far East Ltd.  
Nishidai-NC Bldg.  
1-83-1, Takashimadaira  
Itabashi-ku, Tokyo 175  
Japan  
TELEX: 781 28875  
TEL: 81 35 920 5300

**For Industrial Use Only** This information is based on our experience and is, to the best of our knowledge, true and accurate. However, since the conditions for use and handling of products are beyond our control, we make no guarantee or warranty, expressed or implied, regarding the information, the use, handling, storage or possession of the products, or the application of any process described herein or the results sought to be obtained. Nothing herein shall be construed as a recommendation to use any product in violation of any patent rights.



# SHIPLEY

## MICROPOSIT® 354 DEVELOPER

MICROPOSIT 354 DEVELOPER is an aqueous alkaline solution for commercially available positive resists such as 1300 and specifically formulated for use with MICROPOSIT S1400® and S1800® SERIES PHOTO RESIST systems. It has been optimized for wafer fabrication and other microelectronic applications for which high speed and resolution are required.

### Automation

- Immersion
- Inline track
- Batch spray

### High Process Reliability

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

### Excellent Resolution

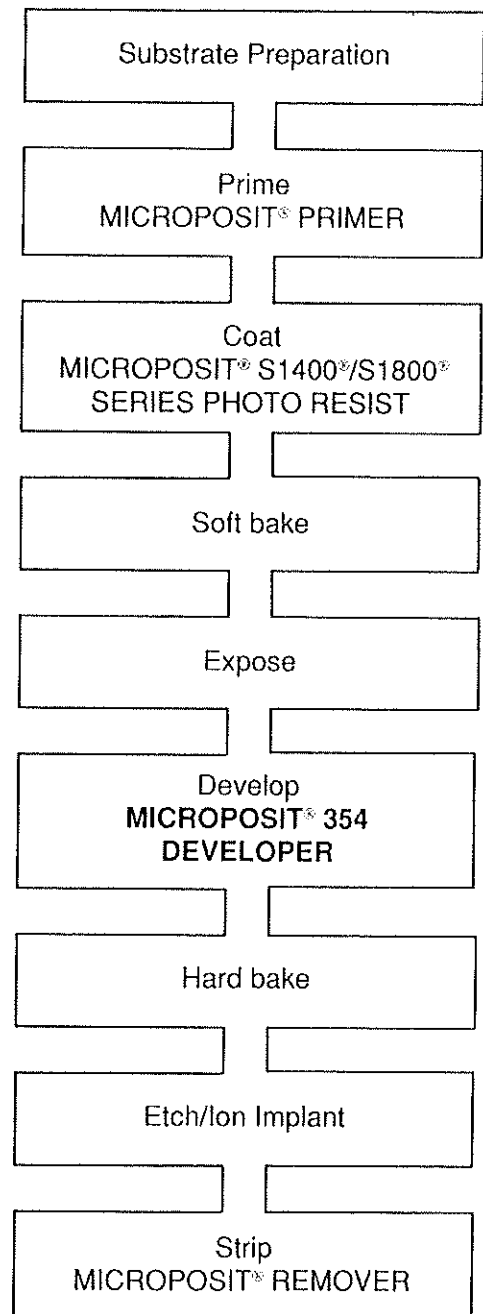
- High differential solubility
- Excellent development tolerance
- No swelling of photoresist

### High Inspection Yields

- Clean, residue-free development
- Wide process latitude

### Cost Efficient

- Excellent exposure throughput



# MICROPOSIT 354 DEVELOPER

## Instructions For Use

### I. Bath Make-up

MICROPOSIT 354 DEVELOPER is supplied as a ready to use solution.

### II. Temperature

Operate MICROPOSIT 354 DEVELOPER between 20° and 25°C, with the temperature controlled  $\pm 1^\circ\text{C}$ . 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 dimension 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.

Specific gravity

at 20/20°C

Color

Approximately 1.0

Water white to very

pale yellow solution

Nonturbid

Turbidity

Total Alkaline Normality

0.30-0.32

## 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 354 DEVELOPER 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

$$\frac{\text{ml HCl titrated} \times \text{N HCl}}{5 \text{ mls}} = \text{Normality of MICROPOSIT 354 DEVELOPER}$$

### D. Results

The normality of fresh MICROPOSIT 354 DEVELOPER should be approximately 0.31.

## Equipment

Use polypropylene, polyethylene, polytetrafluoroethylene, or equivalent materials.

## Properties As Delivered

MICROPOSIT 354 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 354 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 354 DEVELOPER, as delivered, will conform to the following specifications:

## Handling Precautions

**DANGER!** MICROPOSIT 354 DEVELOPER is an alkaline corrosive liquid containing sodium hydroxide. Contact with eyes, skin and mucous membranes causes irritation and burns. 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 354 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.**

**CAUTION!** When using immersion heaters, failure to maintain proper volume level can expose tank and solution to excessive heat, resulting in a possible combustion hazard, particularly when plastic tanks are used.

## Storage

Store MICROPOSIT 354 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.

## Waste Treatment

A used bath may be treated according to Shipley Waste Treatment Procedure WT 77-1. 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 354 DEVELOPER, disposal of it, or residues therefrom, should be made in compliance with federal, state and local environmental laws.