ELECTRONIC MATERIALS
MICROELECTRONIC TECHNOLOGIES

MICROPOSIT™ MF™ CD-26 DEVELOPER

Metal Ion Free - Non-Surfactant Developer

DESCRIPTION

MICROPOSIT MF CD-26 Developer is a 0.26N Surfactant Free product that offers high Photospeed and improved processing latitude for Conventional and Advanced Photoresists.

MF CD-26 is effective across various resist technologies including g/h/i line, KrF and ArF. MF CD-26 is a TMAH based Developer designed to be Metal Ion Free to avoid potential sources of Metal Ion Contamination.

MF CD-26 works well in Spray, Spray-Puddle, and Immersion processes.

FEATURES

- Low-foaming formulation
- Industry standard 0.26 Normality, surfactant free
- Improved contrast for optimal lithographic performance
- Uniform resist development with minimal bubble and residue related defects
- Effective across various resist technologies (g, g/h, i-Line, KrF, ArF

Low Unexposed Resist Loss (URL, or Dark Field Loss)

- Outstanding edge acuity
- High differential solubility
- Improved resist profiles

Clean Efficient Development

- No scumming
- Good resolution
- Wide process latitude
- Excellent exposure throughput

Lot to Lot Consistency

- Tight product specifications
- Total systems functional testing
- Statistical quality control

MANUFACTURING PROCESS CONTROL

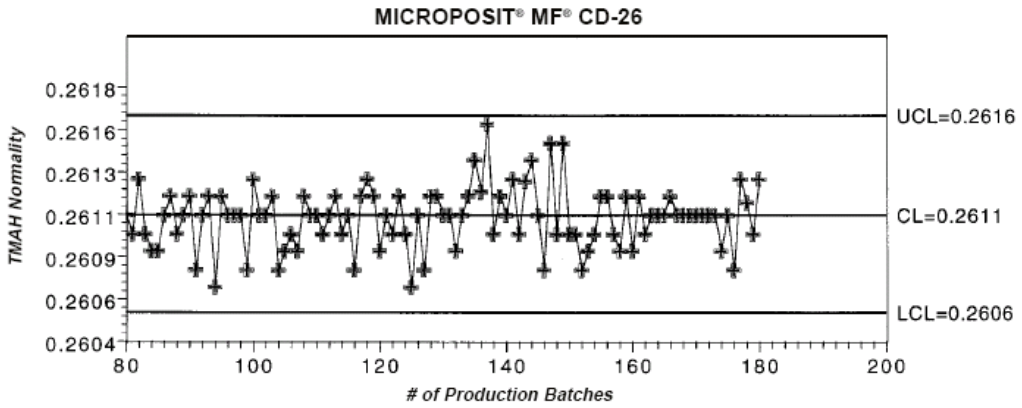
Multiple Step In-process Testing

First In-process Test	TMAH Normality
	Carbonate
Second In-process Test	TMAH Normality
	Carbonate
	Surface Tension
Packaging Approval*	TMAH Normality
	Carbonate
	Particles
C of A**	Metals
	Chloride
	Colour/Turbidity
	TMAH Normality

*Normality Controlled +/- 0.0002N

**Control to +/- 0.0018 TMAH

Figure 2. Normality Control Chart MF CD-26



Instructions for Use

1) Bath Make-up
MICROPOSIT MF CD-26 Developer is supplied ready to use and no bath make-up is required (there is no surfactant is the packaged product).

2) Temperature
The recommended operation is between 15°C and 20°C +/- 1°C Photospeed does decrease as temperature increases although contrast and unexposed resist loss remains basically constant.

3) Time
Immersion: 40-60 seconds
Spray & Puddle: Varies with equipment and application, Spray is typically 20-30 secs, Puddle process is 40-60 secs.
Longer development times permit use of shorter exposure times. Shorter development times minimize Developer attack of the unexposed resist. Keeping the development constant and adjusting the exposure time as necessary to meet critical dimension requirements is recommended.

4) Agitation
Immersion: Keep agitation mild and consistent.
Spray & Puddle: Agitation is not normally required for this application, some slight rotation at slow speed for a puddle process can be applied to help the development process especially dense features.

5) Rinse
Immersion: A deionized water rinse is recommended using a cascade/overflow setup with rinsing continuing until desired resistivity is reached.
Spray & Puddle: An overlap deionized water rinse in conjunction with the developer cycle is recommended to prevent drying on the substrate surface.

6) Bath Control
Immersion: For maximum process control, replace with a fresh bath at least once per shift (24 hours, also depends on wafer count), cover when not in use.
Spray & Puddle: Not Applicable
Batch Spray: As recommended by equipment manufacturer.

Figure 3. i-Line Lithographic Performance

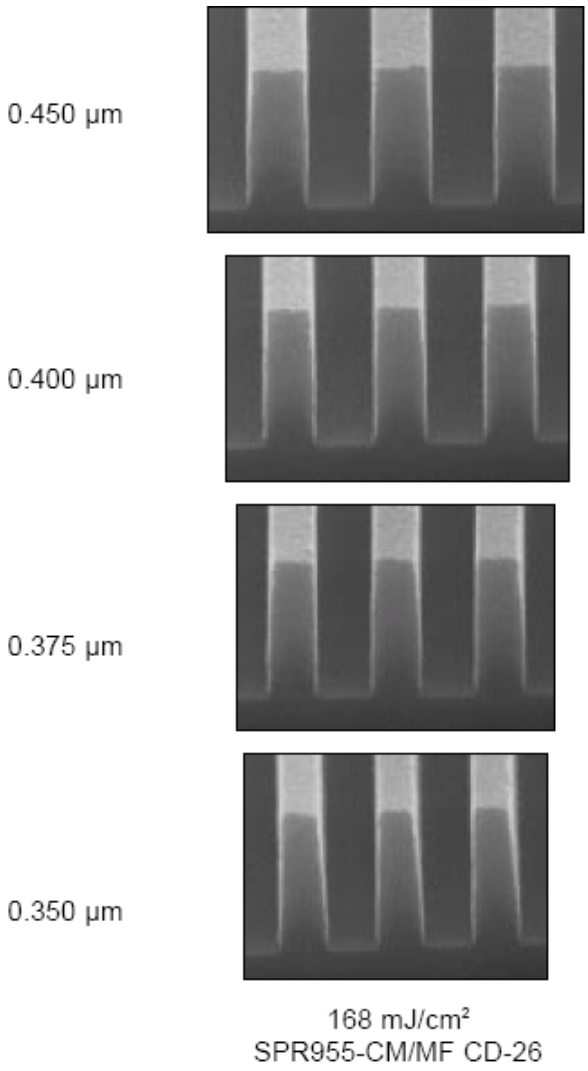
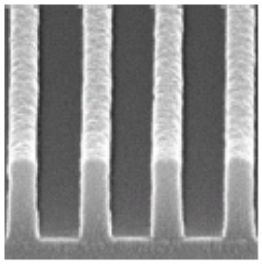
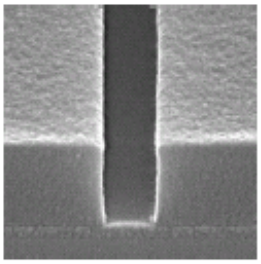


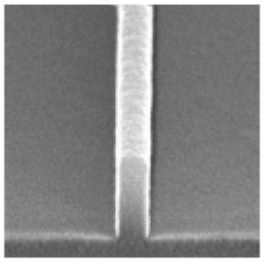
Figure 4. KrF Lithographic Performance



140 nm 1:1 Trench



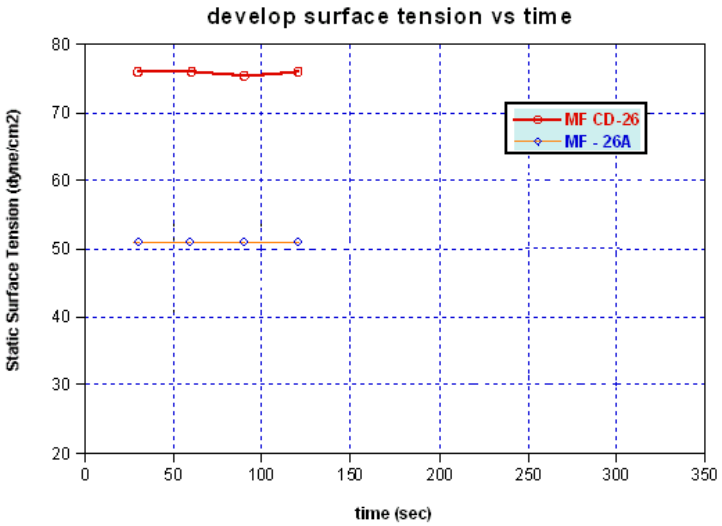
160 nm Isolated Trench



160 nm Isolated Line

Recommended Process Conditions	
ARL	600Å AR3 (205°C/60 sec.)
Film Thickness	3,550Å
Softbake	130°C/60 sec.
Post-exposure Bake	115°C/60 sec.
Develop	MF™ CD-26 (0.26N), 45 sec. Single Puddle

Figure 5. Surface Tension Comparison (with/without Surfactant)



HANDLING PRECAUTIONS CAUTION!

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 vapours or mists. Use with adequate ventilation, wash thoroughly after handling. Wear suitable PPE 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 seek first aid help.

Please consult the Materials Safety Data Sheet prior to use.

STORAGE

Store MICROPOSIT MF CD-26 Developer only in upright, original containers in a dry area at 10-25°c. Store away from acids, do not store in sunlight. Store away from heat and sources of ignition. Keep containers sealed when not in use, MF CD-26 Developer has a 24 month shelf life at recommended storage conditions.

WASTE TREATMENT

It is the end users responsibility to verify that the disposal of MICROPOSIT MF CD-26 Developer is in accordance with federal, state, and local law. The disposal of MICROPOSIT MF CD-26 Developer should also comply with all federal, state, and local environmental laws.

ELECTRONIC MATERIALS

Circuit Board Technologies

CMP Technologies

Microelectronic Technologies

Packaging and Finishing Technologies

For locations and information please visit; **http://electronicmaterials.rohmhaas.com**

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