High Concentration
Ozonated Water Supply System

Removes Photoresist and Organic Contamination without using any chemicals

SHARP provides innovative solutions for the cleaning process in the production of LSI, MEMS, LED and FDP with Ozonated Water Supply System

In the field of device production of such as semiconductor, SPM (mixture of sulfuric acid and hydrogen peroxide) has been mainly used for removing organic contaminants including photoresist.

However, recently there have been a keen requirement of cleaning with little environmental load for global environmental protection.

Sharp has developed an innovative cleaning system that employs high temperature and high concentration ozonated water generator; Concentration: 150mg/L at 70°C (standard guaranteed)

The ozonated water generated shows dark ozone blue reflecting its high concentration.

Features of Sharp’s Ozonated Water

- **Running Cost (Sharp’s factory data)**
  Compared with conventional dip cleaning with SPM:
  - Spin Cleaning: Reduced to 1/13
  - Dip Cleaning: Reduced to 1/16

- **Cleaning Time**
  - Spin Cleaning: In about 1 minute
  - Dip Cleaning: In about 10 minutes

Sample: 8” wafer, resist thickness: 1μm

The pictures in this brochure may be different from the actual.
Dissolution and Removal of Resist with Ozonated Water

Test sample surface (top view) observed with a light microscope

Before Cleaning | During Cleaning | After Cleaning
---|---|---
![Resist Pattern](x 50) | ![Resist Pattern](x 50) | ![Resist Pattern](x 50)

Even high dose ion implanted resist can be removed (Recommended to do half ashing as a pretreatment)

Test sample surface (slightly obliquely-top view) observed with a scanning electron microscope

Before Cleaning | During Cleaning | After Cleaning
---|---|---
![Resist Pattern](x 50) | ![Resist Pattern](x 50) | ![Resist Pattern](x 50)

Ion implant conditions
\( ^{31} \text{P}^+, 5 \times 10^{15} \text{ions/cm}^2, 50 \text{keV} \)

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### Specifications

**O\textsubscript{3} Water Supply Capability**
- **Concentration**: Minimum 150 mg/L
- **Temperature**: Room to 70°C
- **Flow Rate**: 8 L/min

**Dimensions and Weight**
- **Main Unit**: W 1,200 x D 700 x H 2,000 mm (excluding duct height)
  - Approx. 600 kg
- **\textsubscript{O3} Heating Unit**: W 900 x D 700 x H 1,500 mm (excluding duct height)
  - Approx. 400 kg

**Required Utilities** (Total of Main and Heating Units)
- **Power Supply**: 3 phase, 200V, 65kVA
- **Deionized Water**: Min. 10 L/min, 0.2-0.3 MPa(G)
- **City Water**: Min. 10 L/min, 0.2-0.3 MPa(G)
- **\textsubscript{O3} Gas**: Min. 15 L/min (20°C, 0.1 MPa equivalent), 0.5-0.7 MPa(G)
- **\textsubscript{N2} Gas**: Min. 0.2 L/min (20°C, 0.1 MPa equivalent), 0.5-0.7 MPa(G)
- **\textsubscript{CO2} Gas**: Min. 2 L/min (0°C, 0.1 MPa equivalent), 0.65-0.7 MPa(G)
- **Cooling Water**: Min. 15 L/min, 0.25-0.3 MPa(G)
- **Clean Dry Air**: Min. 760 L/min (20°C, 0.1 MPa equivalent), 0.6-0.7 MPa(G)
- **Drain**: Min. 10 L/min
- **Exhaust**: Min. 8 Nm\textsubscript{3}/min, -200 Pa(G)

The specifications may be subject to change without notice.

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### To operate the device safely

- Please read instruction manuals well before using and operate the device correctly.
- For the use with different power supply voltage, please consult our dealer.

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