



CHEMICAL MECHANICAL POLISHING (CMP) SLURRY: CONSIDERATIONS FOR LIQUID FLOW CONTROL TECHNOLOGIES

Introduction

One of the most demanding liquid flow applications for the semiconductor industry is chemical mechanical polishing (CMP) slurry. CMP slurry is typically composed of 5-10% silica solids suspended by means of chemical dispersants, surfactants, pH extremes and physical agitation.

Flow Measurement Technologies

Some flow measurement and control technologies are not desirable for use with CMP slurries. It is important to use devices which offer compatible materials of construction, no contamination and non-intrusive designs.

Considerations for Liquid Flow Technologies

- High purity nonmetallic wetted parts
- Splash proof exteriors
- Immune to bubbles
- No moving parts
- No dead ends, flow-through interior

High purity nonmetallic wetted parts

CMP slurry liquids are often highly corrosive and should only be in contact with compatible materials such as high purity fluoropolymers. Other materials risk system contamination from solid or ionic contaminants.

Splash proof exterior

Flow measurement devices for slurry applications are often installed in cabinets where corrosive chemical spills are expected. Therefore, resistant splash proof NEMA enclosures are necessary.

Immune to bubbles

Rotameters, paddle wheels, coriolis meters, ultrasonic and vortex flowmeters are susceptible to flow errors and intermittent operation when used with liquids containing bubbles. Many CMP slurries contain hydrogen peroxide, ammonium hydroxide and other chemicals that generate bubbles.

No moving parts

Moving parts can generate contamination particles and should be avoided. Moving parts may also provide interior cavities for slurry agglomeration to occur, sometimes to the extent of clogging the device.

No dead ends, flow-through interior

It is important that all devices in the slurry flow path are flow-through designs and have no dead ends. Dead ends and eddies cause slurry to settle and agglomerate into larger particles.

Entegris Liquid Flow Control Technologies

Entegris flow measurement and control instruments offer high purity fluoropolymer wetted surfaces, dual containment protection, NEMA 5 exterior enclosures, electronic outputs, no fill fluids, no contamination, non-intrusive designs and are immune to bubbles.

Entegris designs and manufactures measurement instruments for the high purity and corrosive chemical environments of the semiconductor industry. Our products measure flow, pressure and level for the various acids, caustics, solvents and slurries used in the industry.

For More Information

For more information on Entegris instruments that provide diagnostics, alarms, quick response time, 1% accuracy and no calibration, contact your local Entegris distributor or Entegris, Inc.

To review our complete line of sensing and control product solutions visit Entegris' Web site at www.entegrisfluidhandling.com or contact Entegris Customer Service.

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