1. Entegris News

Entegris Special Materials Division Introduces High Temperature Plates for Fuel Cell and Energy Storage

In 2009 – Entegris, Inc. has released a new High Temperature Plate to help manufacturers improve fuel cell performance. With more than 40 years of polymer material science and manufacturing experience, Entegris is a leading provider of advanced fuel cell materials, components, sub-assemblies and services used by fuel cell system developers to control contamination, improve reliability and lower costs.

The High Temperature Plate helps meet the industry's increasing demand for higher performance and uniform compression-molded bipolar plates used in portable, stationary and transportation fuel cell stacks. Manufacturers using Entegris products benefit from improved plate consistency and conductivity when compared to traditional bipolar plates. Product testing shows that Entegris Plate products have the unique ability to be sealed with less than a 50 µm discrepancy, while still maintaining the product-exclusive flow fields many OEMs require. The High Temperature Plate is manufactured by Entegris using a highly conductive carbon-loaded composite which aims to help manufacturers increase stack reliability and decrease development costs. For more details regarding fuel cell and energy storage, click www.enterisfuelcells/default.aspx

New Analytical Method Helps Control Hard-to-Measure Contamination

Entegris introduced a new solution for accurately measuring and controlling volatile organic compounds that cause contamination in advanced semiconductor lithography processes. If left uncontrolled, these low molecular weight, silicon-containing, organic compounds (such as TMS) have been shown to impact 248 nm and 193 nm exposure tools, and can lead to permanent damage of sensitive and costly optical components.

Entegris is one of a few companies worldwide with analytical service capabilities to accurately sample and analyze these contaminants in the fab environment. Manufacturers of scanner tools have already mandated the measurement of high molecular weight contaminants, but until now, there has been no means for fabs to reliably identify and quantify the presence of the low molecular weight variety. Together with this lab's ISO 17025 accredited analytical services, Entegris' advanced filtration and purification products provide solutions that identify, measure, and then control airborne molecular contamination.

"We are now able to accurately and reliably see and control low molecular weight silicon contamination as well as some high molecular weight compounds such as HMDSO and D3, which have been difficult to measure" said Jürgen Lobert, Director of Entegris Analytical Services. "As the preferred partner for OEM compliance and product validation measurements for ASML and Nikon, which require users of their tools to measure low and high molecular weight silicon compounds, we now offer a powerful solution for fabs. This will allow OEMs to further reduce lithography process contamination that can impact yields and shorten the lives of critical manufacturing components."

The full article can be viewed on this website http://www.enterisfuelcells/default.aspx

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ABOUT ENTEGRIS

Entegris is a leading provider of a wide range of products for purifying, protecting and transporting critical materials used in processing and manufacturing in the semiconductor and other high-tech industries. Entegris is ISO 9001 certified and has manufacturing, customer service and research globally.
Enabling Solutions for Advanced Photochemical Filtration – 5 nm Asymmetric UHMWPE (UPE) and new 10 nm Asymmetric Nylon Filters

Entegris sets a new standard in semiconductor photochemical filtration with the introduction of the first nylon filter to optimize both retention and flow. At twice the flow and thickness of comparable nylon filters, the new 10 nanometer asymmetric nylon membrane enables improved gel retention and industry-leading flow performance to reduce wafer defects in the most advanced photolithography applications. The new nylon membrane, which is available in the Impact point-of-use filter and the Microgard™ product for bulk applications, expands Entegris’ solution set for a wide range of chemistries and applications. Entegris’ unique solution that marries its IntelliGen® Mini pump with advanced filtration solutions, provides the industry with standard setting performance in the delivery and filtration of photochemicals and coating in 45 nanometer and below processes. Entegris filtration offers customers a wide variety to suit different applications and specifications requirements For more details of our filtration product offerings, click http://www.entegris.com/ProductCategory_divFiltration_catLiquidFilter.aspx to go to the filtration page.

High Flow Valves, Fittings and Tubing

Entegris now offers high flow PFA valves, fittings and tubing in line sizes up to 2”. Our new high flow valves incorporate Cv’s up to 60. These products allow our customers to significantly increase the flow rates of their chemical distribution systems, which ultimately reduces their delivered cost of chemicals. The PFA and PTFE materials of construction offer ultrapure performance and are capable of handling the harshest semiconductor grade chemicals. Entegris is also introducing a line of PVDF valves and fittings designed for ultrapure water applications. Line sizes available from ¾”-2” and valve Cv’s from 9.6 – 49. For more information on Entegris high flow PFA and PVDF valves, fittings and tubing, please visit Entegris website at www.entegrisfluidhandling.com

Rapid elimination of microbubbles for photochemical filter setup featured in Solid State Technology Article

In photochemical purification applications, bubble elimination is as important as particle removal. Removal of bubbles by filtration is more complicated, especially at the filter startup stage. Entegris has developed a technique using the unique features of two-stage dispense pumps to rapidly eliminate microbubbles during filter changeout. Read the full paper @ http://www.solid-state.com/display_article/351908/5/none/none/TCHNE/Rapid-elimination-of-microbubbles-for-photochemical-filter-startu
2. Applications Note

Chemical Filtration in Outgassing Applications
by Ariel Frometa

Executive overview

Non-dewetting chemical filters provide several benefits when used in chemistries that are common in semiconductor chip fabrication. For example, many chemicals used in the microelectronic's industry contain hydrogen peroxide, ammonium hydroxide and hydrochloric acid. These are just a few examples of "outgassing chemistries" which result in significant bubble formation. When filtering these chemistries it is important to appropriately use and vent the chemical filter and housing assemblies so as to not negatively impact wafer processing.

The purpose of this application note is to provide a practical guide and understanding to customers using the newly developed Torrento® and Quickchange® ATE product families.

Content Outlines as follows:-
Definition & Considerations of Wettability, Dewettability & Gas Locking
Venting Efficiency Experiments
  ➢ Methology of Bowl Up vs. Bowl down in terms of Standard Vent vs 90-Degree Style Vent
  ➢ High vs. Low resistance filter
Upstream Vent Flow Experiment on Quickchange® 30nm ATE, ATE & Torrento® 20nm ATE filters


Summary & Recommendations of above experiments were as follows:-
1. It is important to vent the housing for out-gassing applications. This eliminates a pressure drop due to gas-locking that can lead to flow restriction.
2. The flow rate in the bath will be dependent on the filter fitting size and venting efficiency as well as pump size.
3. If the chemistry is outgassing such as SPM/SC1, then very efficient venting is required.
4. In order to achieve maximum venting efficiency, do the following:-
   i. Consult with Entegris and OEM tool maker
   ii. Bowl-up configuration does not gas lock as severely as bowl-down standard venting. For bowl-down configuration:
      ✓ 90-degree style venting is much more efficient as bubble clearance.
Improve Process Stability using Entegris Corrosion Resistant Valves
by Claude Karsten – Field Application Engineer and Claus Kleilein – Global Product Support, Entegris Europe

Semiconductors processed via wet etch & clean continue to become more and more complex. New technologies and new chemistries must be developed in order to increase cleanliness. New chemistries mean more aggressive and challenging chemicals; the challenge is to build equipment and delivery systems capable of handling these chemicals with process stability and continuous yield improvement.

Use of a corrosive chemical or high purity application during wet, etch & clean steps requires advanced design of parts such as valves, fittings or filters. With proven experience in semiconductor applications, Entegris has developed a new style of valve especially for these critical steps. This new design results in improved process stability and as well an improved equipment efficiency over time.

New Design of the CR4 Corrosion Resistant Valve
➢ Source of Inspiration
The design of our CR4 corrosion resistant valve is based on the existing design of our small size Galtek® series (SG4) released to the market in 1999. The SG4 valves are differentiated from the existing ¼” valve by offering one of the smallest valves with an improved and flow coefficient. This valve has been qualified to meet the Semi® F57 purity standards.

➢ Goal of the new design
The current SG4 series were originally designed for DI water and slurry applications (non-corrosive). They have standard exposed metal fasteners. The objective for the new CR4 series has been to extend the temperature range of the SG4 series and to improve the ease of field reparable of the discrete valves and manifolds.

Originally designed in a 2 way valve style, the design now offers many different styles and options: 3 ways, toggle, restricted open/close, manual, with or without adjustable suckback.

Features and benefits
Entegris’ CR4 is another option to its successful line of small size Galtek series (SG4). The CR4 is designed to withstand temperature to 160°C in very corrosive environments for wet, etch and clean applications. At this temperature, the CR4 is rated up to 2.76bars on the inlet.

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<td>All wetted materials in PFA</td>
<td>No metal contact with media</td>
<td>No contamination – High Purity</td>
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<td>Self contained actuator for added reliability and ease of maintenance</td>
<td>More Robust</td>
<td>Filed Serviceable – Reduced Downtime</td>
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<td>Qualified cycle life to 2.1 million cycles at 160°C 40 PSIG</td>
<td>Meet OEM requirement for equipment extended lifetime</td>
<td>Overall Equipment Efficiency improved</td>
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<td>Same Design than the Small Size Valve SG4</td>
<td>Can be included on the Entegris Dymension® Manifolds</td>
<td>Extended possibility to develop Dymension® Corrosion resistant manifold</td>
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The new CR4 valve is available in ¼” and 3/8” connection sizes.

Entegris offers the most complete line of high purity valve products available. No matter what your fluid control needs, Entegris can provide a fully characterized, reliable valve that meets your temperature, pressure, flow, size, configuration and installation specifications.
**Intercept® HSM 20nm: The most advanced filter for DHF & BOE Applications**

Intercept offers the highest retention, flow rate and cleanliness of any low cost (non-Teflon®) product on the market.

- Optimized for all critical DHF and BOE/BHF applications and weak acid based process chemicals

20 nm filtration at a similar pressure drop to most 50nm filters

- High flow rates – even with 20nm filtration
- Fast bath cleanup for fastest particle removal
- Protects process performance
- Easy Upgrade from 50 and 30 nm filtration

Dual Particle Capture Technology = Process Protection

- In addition to the sieving rated true 20 nm membrane, in DHF, additional particle retention mechanisms are active, retaining even smaller particles for total process protection
4. Asia Updates & Notifications

**Entegris Activities in Q1 & Q2 2009**

The semiconductor industry took a nosedive coupled with the global economic downturn in Q4 2008 and into Q1 2009. Many companies implemented cost cutting measures to weather the storm. Shutdowns were inevitable to lower overhead and to deplete inventory. Trade shows suffered drastically from low participation and attendance.

However, Entegris expanded our materials science capabilities and diversification into new markets, including energy, medical and aerospace. The reason is simple: Entegris is committed to bringing you the most advanced solutions that will enable you to succeed when the recovery occurs. We view this time as an opportunity to come with new and innovative solutions to your next technological advancement and business diversification. Besides our presence at Semicon Korea 09, Diskcon Asia Pacific 09 in Singapore and Semicon China 09, we strengthened and collaborated with our peers and customers at Semicon Singapore 2009 and the Photonics Festival in Taiwan recently. The experience of customer engagement is valuable. Thank you for your support. In the first quarter of 2009, many new products were previewed in Asia. Watch for more of Entegris activities and products in the near future. **Entegris Technology Show 2009 Taiwan will be held on Sep 30 to Oct 2, 2009 on the ground floor of Residence II & III at Grand Hyatt Hotel in Taipei.**

**Milestones of Semicon China 2009**
- New Analytical Method Helps Control Hard to Measure Contamination--Press Release
- Comprehensive Solar exhibits comprised of Microenvironment & Contamination Control Solutions
- Flat Panel Display Liquid Filtration Solutions Launch
- Poster Presentation of Measurement of Sub-30nm Particles in Liquid by Fluorescence Spectrometry, by Mr. Bob Shie @ ISTC/CSTIC Conference
- Photolithography Focus at Semicon China 2009 Hall 5- includes sponsorship and providing exhibits

**Milestones of Diskcon Asia Pacific 2009**
- EVO2 Microenvironment introduction
- Liquid Filtration and Purification Launch
- Low cost gas purification launch
- Golf Sponsorship and networking

**Silicon Connection & Entegris @ Semicon Singapore 2009 May 21-23**
- Microenvironment Solutions
- Fluid Handling Solutions
- Solar Solutions

**Challentech & Entegris @ Photonics Festival Taipei Taiwan June 2009**
- Gas Microcontamination Control Solutions
Technical & Product Improvement Notice: Integra Manual® Valves 1” & ¾”

Entegris continuously evaluates and improves the long term reliability, performance and quality of our products. In March 2009, notices were sent out to customers who purchased the above valves and advised to contact their sales representative or call Entegris Customer Service at 952-556-8022 to learn about the improvements.

New!!! e-mail alerts in Realtime about Entegris

Sign up to receive e-mail alerts whenever Entegris posts new information on its website. Subscribe and e-mail to the Zero Defects Asia contact persons nearest to you. The e-mail addresses are listed at the end of this page. Please indicate in the e-mail subject title: Subscribe e-mail alerts. We will reply to confirm subscription for you to start receiving the next alert in your mailbox as follows (example):-

Entegris, Inc. has added a news release to its Investor Relations website.

Title: Entegris Reports Second Quarter Results

Date: 7/22/2009 7:00:20 AM

For a complete listing of our news releases, please click here

If you are unable to click on the link above, please copy and paste the URL below into a web browser:


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If you would like more information regarding new Entegris products, please visit our website at http://www.entegris.com.

Zero Defects Asia

Semiconductor Applications Newsletter by Entegris

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