

April 2012

*Thin Film
Deposition
Materials
&
Electronic
Packaging
Products*

5-9's Gold - Ultra High Purity Material

Gold is used extensively in technology intensive industries such as MEMS, medical and compound semiconductor wafer fabrication because of its high electrical conductivity, thermal conductivity, reflectance and its relative chemical inertness. Gold is commonly deposited as thin film using an electron-beam evaporation process. To ensure the desired properties are present in the deposited thin films it is imperative that the source material used is very pure. Furthermore, gold is prone to spitting during evaporation, which can lead to defects in the deposited film. The purer gold source material provided by Materion will reduce the extent of spitting and defect formation and ensure the end product is of the highest quality.

[Read more...](#)

Selectively Plated Lid Reduces Gold Content

The rise in gold prices has meant a constant struggle in the supply chain to maintain profit lines. With the aim of reducing gold content on hermetic lids, Materion Advanced Materials Technologies and Services has developed the patented Selectively Plated Lid. In an effort to provide smarter, simplified solutions to their customers, Materion's Selectively Plated Lid will deliver superior performance while providing flexibility to customers in selecting the right configuration for their specific applications. Materion is already a leading choice for hermetically sealing electronic packages and is well-known for its fully plated lid and Combo-Lid™.

[Read more...](#)

Technology Roadmaps - From Vision to Value



In today's fast paced business environment understanding your vision is essential to success. Technology roadmaps are effective tools to provide the path to take a concept or idea to market: from vision to value. The idea has existed for some time, with the basic principles being applied to foundational science to strategic business and to foreign policy. Essential elements include goals, scope and a firm concept of what constitutes success.

At Materion, technology roadmaps have been effectively developed and deployed in new product development for years. Valuable inputs from the sales and marketing teams on product trends, market trajectory and customer sentiment help Materion's development team define the vision necessary to start, maintain and complete these roadmaps.

[Read More...](#)

Precious Metals Life Cycle Management for LED Applications

The LED industry has grown substantially over the last decade and has recently been impacted by the tremendous penetration of LED backlight TVs and laptops. The latest LEDs, lasting on average 20 times longer than incandescent bulbs and operating with five times greater efficiency, have been well adopted into office buildings, shopping malls and large public areas. One major hurdle left for full adoption of LEDs into residential spaces is reducing the cost of the LED replacement bulb. Costs must be improved throughout the supply chain, including a focus on automation and standards, implementation to new packaging technologies and direct materials. LED manufacturers must be aggressive in achieving lower cost targets as energy prices are predicted to climb to an estimated \$2 per kilolumen by 2020, as highlighted in the R&D roadmap by the US Department of Energy (DOE). Materion provides a simplified solution to help reduce these direct materials costs.



[Read more...](#)

Advantages of Precision Parts Cleaning and Aluminum Twin Wire Arc Spray (TWAS) Coatings



Materion's Precision Parts Cleaning services, coupled with their precious metal recovery and refining service, offers a vertically integrated solution that is unmatched in the industry. With the addition of its in-house aluminum twin arc spray (TWAS) coatings, Materion offers customers a 'one-stop' solution for thin film deposition materials, refining, recycling, precision parts cleaning and surface treatment.

[Read More...](#)

Upgraded Jewelry Grade Sterling Sheet Offers More Industry Choices

During the past few years, Materion's team in Albuquerque, NM has been working diligently to improve the quality of its 6"x36" jewelry grade sterling sheet. To accomplish this goal, the R&D staff headed by George Wityak began with a clean slate and the objective of offering the best product in the jewelry industry.

During this process, Materion developed a smarter solution and is now able to offer several different surface finish qualities that address separate industry segments. While using virtually the same process, the final step determines which product is delivered. The team also created a significantly simpler process to improve sheet quality at a lower cost.

[Read more...](#)

In This Issue

[High Purity Gold](#)
[Selective Plated Lids](#)
[Vision to Value](#)
[Life Cycle Management for LED](#)
[TWAS Coatings](#)
[A Success Story](#)
[C-San Units](#)
[X-Tended Life Targets](#)
[Crucible Cleaning](#)
[Glow Discharge Mass Spectrometry](#)
[Epoxy-Coated Lids](#)
[Skyworks Award](#)



[Contact Us](#)

www.materion.com/microelectronics

Materion to Present Graduate Student Award

Materion Microelectronics and Services will be presenting its annual Graduate Student Award at the International Precious Metals Institute (IPMI) 36th Conference in June. The recipient will be honored for their excellence in the field of precious metals research and receive an award of \$5,000 and an internship.

Materion VP, Michael O'Neill, will present this year's award and commented: "Materion is proud to support IPMI's endeavors to encourage the next generation of scientists in our industry. The recipient of this Award demonstrates not only academic excellence but the research capacity to execute ideas in the precious metals industry that we haven't even dreamed of yet. These are qualities Materion values in its employees and is pleased to honor today."

[Read More](#)

Evaporation Material Purity

Physical Vapor Deposition (PVD) processes allow users to deposit thin films using a variety of flexible techniques, including evaporation. The evaporation processes include thermal, resistive and electron-beam evaporation. Materion produces high-performance elemental and composite evaporation materials in a variety of forms and purities, specializing in high-purity materials for the microelectronics market.

[Read More...](#)

C-Scan Units

Materion continues to produce high reliability thin film deposition materials for several markets in the microelectronics industry. In most cases, PVD sputtering targets are metallurgically bonded (usually with indium) to a copper backing plate. The integrity of the metallic bond is vital to performance of the target in the sputtering chamber. To ensure that PVD bonded sputtering targets produced in its facilities have the industry-best bond coverage, Materion has placed several C-Scan units in each of its PVD bond labs across the world. Materion's use of immersion C-Scanning provides the most effective analytical technique for measuring target bond integrity.

[Read more...](#)

X-Tended™ Life Targets for Magnetron Sputtering Applications



Over the past year, with gold and platinum prices reaching the \$1600 - \$2000/tz. range, it has become crucial to make as efficient use of sputtering target materials as possible. In general, thicker target designs allow for longer time period between preventative maintenance cycles, thereby increasing system uptime and improving cost of ownership. Typically, magnetron designers define the specific target thickness that can be used, which is based on the strength of the magnets employed, the magnet array design, deposition parameters and required thin film properties. Looking to reduce total overall costs for their customers, Materion has created improved target designs for these applications, called X-Tended™ Life Targets

[Read more...](#)

Improved Cleaning Method of Crucible Liners Reduces Costs

Materion continues to focus on improvements and value added services that directly reduce costs and improve performance for its customers. A development effort focusing on improving evaporation products has resulted in an improved method of cleaning new crucible liners to remove any surface contamination. Utilizing this cleaning approach as the "final clean" of new crucibles has demonstrated a reduction in particles during the evaporation process.

[Read more...](#)



Glow Discharge Mass Spectrometry

Materion is pleased to offer Glow Discharge Mass Spectrometry (GDMS) analytical services to its customers. Materion offers this value-added service for some of its own products as well as for customers whose materials require the most accurate level of analysis but do not own the necessary equipment in-house. Materion's experience dealing with sensitive or "difficult" materials guarantees that the analysis will be completed with the utmost care and precision. Our expertise in analyzing the results ensures consistent quality of high performance materials.

[Read more...](#)

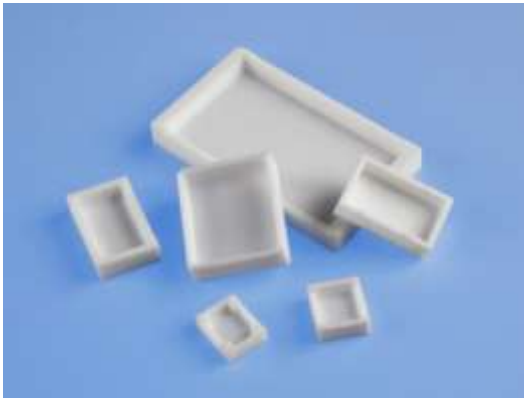
Epoxy-Coated Lids

Materion Microelectronics and Services recently launched a new product line of epoxy-coated lids called **Epo-Lids™**.

The launch of the Epo-Lid™ product line enables Materion to offer customers both package and matching lid in one easy step. Epoxy-coated lids are used to seal ceramic air cavity packages. A layer of B-staged epoxy, 9 mils (0.23 mm) thick, is applied to the lip of the lid. When the epoxy is cured, the package is sealed to a bubble-leak-tight specification. The epoxy is a dielectric so that the electrical

leads it rests upon are not electrically shorted together. Nearly all RF power transistors intended for commercial applications, including cellular phone base station amplifiers, are sealed in packages with an epoxy-sealed ceramic lid.

[Read more...](#)



Materion Honored with Skyworks Supplier of the Year Award



Materion Microelectronics and Services was recognized as "Supplier of the Year" by industry leader Skyworks Solutions, Inc., for its winning combination of excellent quality, outstanding customer service and solid alignment with Skyworks' technical roadmap. Throughout 2011, Materion delivered high quality thin film deposition materials for use in Skyworks high reliability semiconductor devices, as well as providing total metals management service. The result of the partnership was a reduction in overall costs

[Read More...](#)

MATERION MICROELECTRONICS & SERVICES
2978 Main Street
Buffalo, NY 14214
Phone: +1 716.837.1000
www.materion.com/microelectronics

USA: +1 716.837.1000

Europe: +44 0 488.686056

Asia: +65 6559.4450

PVD Magnetron Sputtering Parameters - Effect on the Composition of AuSn Solder



80Au20Sn wt% eutectic solder is frequently used in the semiconductor packaging process due to its high strength, creep resistance, and electrical and thermal conductivities. With new applications in back-side metallization, and particularly products such as LEDs, there is an increasing demand for thin (several microns) physical vapor deposited (PVD) solder layers. For these applications, the composition of the solder is critical for proper flow and strength. Materion, and one of their customers, NEXX Systems, partnered to optimize the manufacturing methods for producing AuSn sputtering targets and PVD magnetron sputtering parameters, to control the composition of the sputtered solder.

[Read More...](#)

Materion welcomes Sean Shepard to the Refining and Recycling Group

Sean's focus will be on providing sales support and leading the coordination of new business development for the silver refining facility in Albuquerque, NM. He will also be the focal point for quote and pricing development, inbound technical inquiries, and ongoing development of the value proposition for Materion's silver refining capabilities. Sean will leverage his comprehensive background in sales and business management to provide customers with smarter solutions and simpler support for Materion's refining business.



Come Visit Us!

[CS Mantech](#)

April 23-26

Boston, MA

[Intermag 2012](#)

May 7-11

Vancouver, Canada

[IPMI](#)

June 9-11

Las Vegas, NV

[IMS 2012](#)

June 17-22

Montreal, Canada

