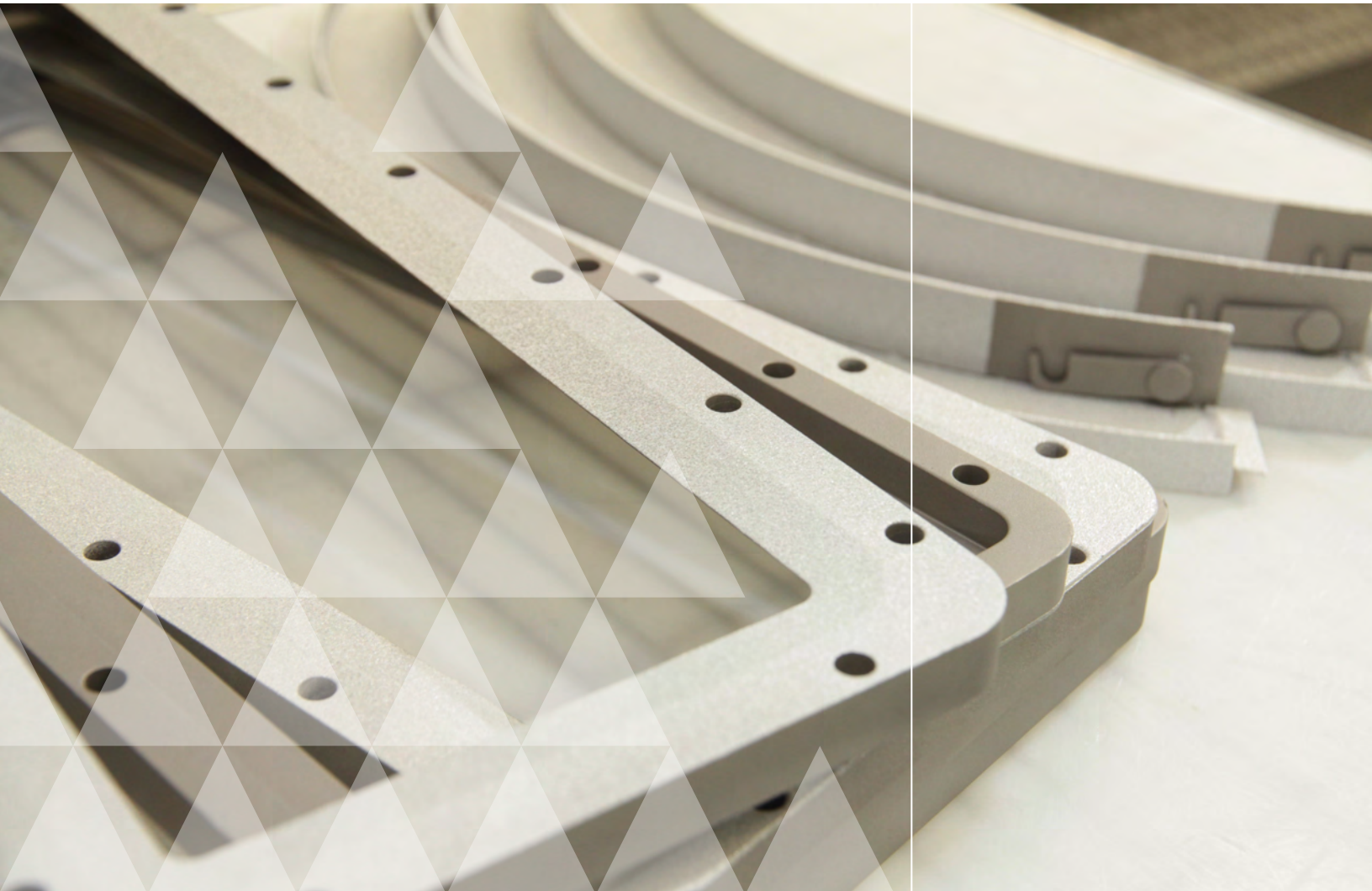




MATERION



ADVANCED MATERIALS

Shield Kits &
Precision Parts
Cleaning

Shield Kits & Precision Parts Cleaning

The Challenge

Precious metals are often lost as a result of internal manufacturing processes as metals can adhere to chamber shields or become by-products or scrap. The challenge is to recover the greatest amount of precious metal feasible from shields in order to decrease total cost-of-production. This requires a trusted service partner with the technical capabilities to provide high-value metal recovery services while minimizing manufacturing downtime.

The Solution

Materion employs advanced and cost-effective methods of shield cleaning and precious metal removal. Our industry-leading process includes innovative chemical cleaning, advanced surface treatments, clean room conditions for cleaning, final conditioning and testing, and onsite logistical support.

- Widest range of precious metals processes, including gold, platinum, palladium, silver and others to meet all your chamber service needs
- Chemical removal of depositions without aggressive mechanical procedures reduces cleaning times and extends cleaning intervals
- High metal returns and fast settlements
- Specialized experts in precious metals materials management oversee the cleaning procedures for improved results and efficiency
- Full life-cycle precious metals management lowers the total-cost-of-ownership

SHIELD KIT CLEANING

Non-abrasive cleaning and surface coatings extend shield life and reduce replacement costs to help reach lower cost-of-ownership for sputtering and evaporation chamber operation.

- Chemical removal of depositions with minimal mechanical procedures to reduce cleaning times and increase component life
- Final cleaning and conditioning to prepare parts for immediate installation upon return
- Comprehensive parts validation to minimize premature failures or assembly problems

COPPER PARTS CLEANING

Materion's unique chemical cleaning process removes deposition materials from copper and other specialized chamber parts without the use of aggressive mechanical methods.

- Cleans with greatly reduced or no damage to parts
- Process can be customized per deposition and/or substrate material



Materion ... Materials to Advance the World's Technologies



MATERION

- Cleaning services for turrets, hearths, top plates, V-plates & other copper parts
- Convenience in combining copper parts with standard parts in a single shipment
- CMM inspection available to ensure compliance with customer specs
- Customized surface treatments and texturization available

CUSTOM PARTS CLEANING

Cleaning process and solutions are customizable depending upon deposition material and substrate materials. Materion has the ability to clean non-traditional parts such as:

- Aluminum & titanium parts
- Medical parts
- Molybdenum liners
- Silicon test wafers

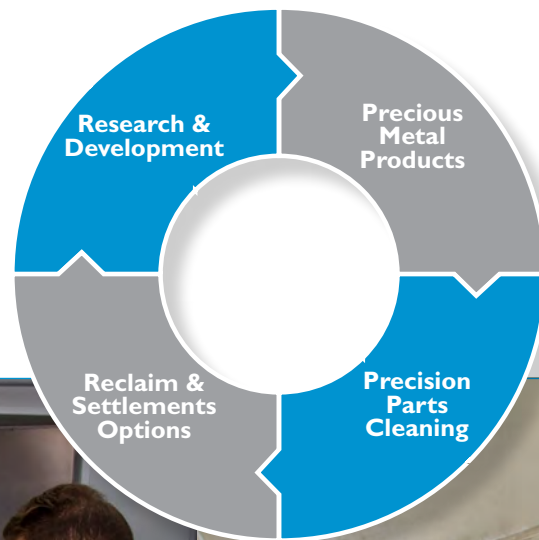
CLEAN ROOM FACILITY & ANALYTICAL SERVICES

- Certified 10,000 and 1,000 class clean rooms
- Each part is inspected, packaged, vacuum-sealed & labeled
- Critical parts are measured & inspected to ensure parts meet customer specifications
- Dimension certification available upon request
- Parts tracking to ensure robust traceability throughout the entire service process
- Inventory management including full time, on-site representative
- Full analytical capabilities including ICP, GDMS, XRF, LECO & Fire Assay

SURFACE FINISHES & CUSTOMIZED COATINGS

Materion offers a variety of surface treatments from polished to rough surface finish, and customized coatings such as aluminum twin wire arc spray (TWAS). Materion's robotic TWAS process uses inert gas to spray molten metals onto the surface of the shield to create a protective layer to ease deposit removal and extend useful shield life.

- Minimizes chamber particulate generation
- Allows thicker depositions on shields and other precision parts
- Minimizes deposition peeling & flaking
- Reduces shield cleaning time
- Reduces downtime during manufacturing
- Improves precious metal returns
- Lowers replacement shield costs



TYPES OF METALS RECOVERED

- Gold
- Silver
- Platinum
- Palladium
- Rhodium
- Ruthenium
- Iridium

EXCEEDING QUALITY EXPECTATIONS

All of our disposal procedures comply or exceed State & Federal regulations.

Certifications include:

- ISO 9001:2008 Quality Systems
- ISO 17025:2005 Analytical Laboratory
- ISO 14001:2004 Environmental Safety & Management Systems
- LeanSigma
- Conflict-free

KEY INDUSTRIES

Reclamation programs for precious metals and other valuable materials from thin film deposition processes originating in a variety of industries:

- Wireless
- LED
- Photovoltaic
- Data Storage
- Semiconductor
- Optics
- Medical
- Solar
- MEMS

BENEFITS

One-stop solution for precious metals management offers these advantages:

- Technical expertise based on 100+ years of experience in refining, recycling and recovery
- In-house reclaim & refining services offering a variety of settlement options
- Strategically located cleaning sites in the US and Europe
- R&D team continuously exploring new methods to increase recovered value
- Full line of precious and non-precious metal products
- Broad range of analytical & mechanical technologies



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2978 Main Street
Buffalo, NY 14214 USA
Phone: +1 800.327.1355
advancedmaterials@materion.com
www.materion.com/advancedmaterials
www.materionsemiconductor.com

Europe: +44 1635.223838
Germany: +49 60.23.91.82.0
Asia: +65 6559.4450

MATERION CORPORATION
www.materion.com

MATERION ADVANCED MATERIALS is a global advanced materials and services company, dedicated to providing solutions that enable our customers' technologies and drive their growth. Our products include precious and non-precious specialty metals, precision optical filters, inorganic chemicals and powders, specialty coatings, specialty-engineered beryllium alloys, beryllium and beryllium composites, and engineered clad and plated metal systems. The Materion business is structured to enhance our ability to provide customers with innovative, best total-cost solutions.