EXPLORE, INSPIRE,
DELIVER. REPEAT.™

MATERION

Inorganic Chemicals

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For additional product data and ordering information, visit our website materion.com/InorganicChemicalsCatalog.

MATERION OFFERS THREE CONVENIENT WAYS TO PLACE AN ORDER:

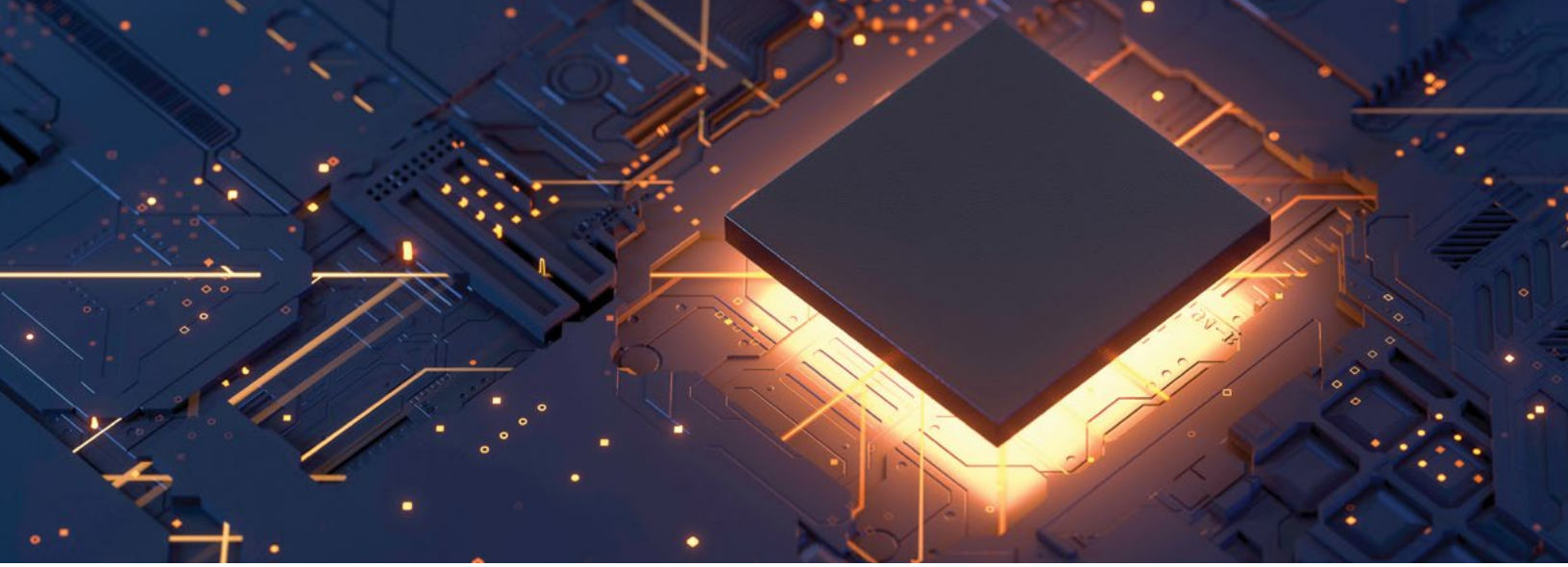
1. Call inside sales at 414.289.9800.
2. Submit your order via email: OrderChemicals@Materion.com
3. Send your order via fax to 414.289.9805.

Please provide the following information with your order.

- Company name, contact name, telephone number and e-mail address.
- Item number along with chemical name and formula, size, purity, quantity, unit of measure and any additional product or packaging specifications, billing and shipping addresses.
- Your Materion customer number.
- Your purchase order number or indication of preferred method of payment.

We currently accept Discover, Visa and MasterCard.

FOR MORE INFORMATION REGARDING PRICES, SHIPPING, TERMS, SDS, WARRANTY AND RETURNS, PLEASE CONTACT US OR VISIT OUR WEBSITE AT MATERION.COM/INORGANICCHEMICALSCATALOG



Inorganic Chemicals

The importance of finding the exact inorganic chemical compound and form has become a crucial part of today's technologies. The rapidly changing electronic, energy and medical markets are always looking for ways to improve performance. Advances in technology require change. This change might be a chemical property of an existing material or the need for a whole new material. Availability, reliability and a willingness to advance through customization are critical in the markets we serve.

From research and development to full production, Materion is your single reliable source for the quality materials you require, custom made to your exact specifications, or selected from our comprehensive inventory of ready-to-ship items.

As your material needs change, contact us. Our technical experts are available to answer your questions and help solve your material challenges.

Since our founding, we have strived to be more than a materials supplier. We offer our customers a wealth of knowledge and expertise in synthesizing new compounds. Our manufacturing facility contains the latest processing equipment and our ISO certified labs thoroughly analyze our materials to ensure desired composition, particle size measurements and purity designations. We are your partner for materials that advance the world's technologies.

MATERIAL FORMS*

- Powders
- Pellets
- Slugs
- Grain
- Shot
- Pieces
- Rods
- Wire
- Premelts
- Starter Sources

RELATED PRODUCTS & SERVICES*

- New Product Development
- Custom Testing
- Custom Alloys
- Custom Size & Forms
- Sputtering Targets
- Backing Plates
- Target Bonding
- Recycle Spent Targets
- Vacuum Chamber Shield Cleaning
- Reclaim & Recycle
- Metals Management

*Related products, services, and material forms may be sourced out of an alternative Materion facility.

MORE THAN A SUPPLIER, WE ARE YOUR R&D PARTNER

Materion's primary mission is to assist you in the successful development of your materials and meet your most challenging requirements. To accomplish this, we offer a broad range of chemistries and technical capabilities. Our industry experts will determine the best manufacturing and analytical processes, and select the appropriate chemistry to produce optimal results. Our choice will depend on the combination of material, particle size, final form and specific characteristics to produce your unique product.

Our R&D department has the expertise to develop a new product, and when you're ready for market, can manufacture and deliver the production quantities you need – when you need them. You can count on your material to be manufactured consistently to your exact specifications, whether for a small or high volume run. With our strong network of technical support, we pride ourselves on being your quality-driven supplier for the life of your product.

SPECIALTY MATERIALS

- Thin Film Coating Materials
- Optical Coating Materials
- Wear-Resistant Coating Materials
- High Purity PVD
- Materials for Thin Film Solar
- Specialty Battery Materials
- Heavy Metals
- Radioactive Materials
- Phosphor Precursors

NEW PRODUCT DEVELOPMENT SMALL SCALE BENCH CHEMISTRY

Will partner with research facilities. Bench-to-full scale production

- Full R&D Department
- Custom Development
- Custom Alloys & Features

CHEMICAL PROCESSES

Our expert chemists and engineers use numerous methods, including Wet Chemical Synthesis, Solid State Synthesis, and Reactive Gas Processing to develop new materials and produce established ones.

WET CHEMISTRY

- Precipitation Reactions
- Bottom-up Chemistry
- Oxidation/Reduction Reactions
- Purification Processes
- Doping Reactions

REACTIVE GAS PROCESSES

- Halides, Nitrides, Oxides
- Sublimation
- Anion Exchange
- Solid/Gas Phase Reactions

HIGH TEMPERATURE SYNTHESIS

- Binary & Ternary Compounds
- Heavy Metal Capabilities (As, Pb, Sb, Se)
- Sulfide, Selenide, Telluride Compounds
- Borides, Carbides, Oxides, Silicides, Fluorides
- Calcinations
- Combustion Synthesis
- Arc Fusion

MATERIAL EXPERTISE

Materion offers customers expertise in synthesizing new compounds, managing chemicals in controlled atmosphere environments, and meeting their complex particle characteristic requirements.

Air & Moisture Sensitive Materials	Specialty Chemistries	Hazardous Materials
• Controlled Atmospheres	• Phosphor Precursors	• Heavy Metals
• Inert Atmosphere Manufacturing	• High Purity	• Radioactive Materials – Thorium Based
• Specialty & Custom Packaging	• Stoichiometic & Non-Stoichiometic	• Cadmium, Arsenic, Lead
• Rigorously Monitored Controls	• Multi Elemental Mixtures	• Comprehensive Safety Controls
• Analysis of Sensitive Materials	• Challenging Chemistry & Phases	• Responsible Environmental Partner

50+ YEARS EXPERIENCE IN INORGANIC CHEMICALS

85+ YEARS EXPERIENCE WITH PRECIOUS METALS

TECHNICAL SUPPORT

We provide easy access to our technical experts (PhD scientists, chemists and engineers) who encompass a variety of competencies in R&D and prototype production. Vertical integration allows us to meet the accelerated pace of technical innovation in the industries we serve. Our full range of leading edge capabilities within a one-stop shop include:

- Technical Assistance
- Product Improvement
- Process Improvement
- Cycle Time Reduction
- Partnering with customers to assess specific needs

ANALYTICAL CAPABILITIES

Access a broad range of analytical and testing facilities, as well as state-of-the-art ISO-accredited labs. If a test is not available in-house, we will partner with organizations that can provide it. We rigorously monitor vital characteristics such as purity, density and homogeneity. The Certificate of Analysis provided with each shipment ensures that the final product meets or exceeds our customer's exact specifications.

IN-HOUSE COMPETENCIES

- Powder X-Ray Diffraction
- Elemental Analysis
- ICP-MS, ICP-OES, DC Arc & Atomic Absorption
- Classic Quantitative Wet Analytical Techniques
- Combustion Analysis
- TGA/DTA
- Specific Surface Area (BET)
- Particle Size
- Laser Diffraction, Mesh Size Analysis

ANALYZE FOR:

- Element/compound concentration in a material
- Trace metal impurities (ppm)
- Oxygen/nitrogen/carbon/sulfur content
- Average particle size, particle size distribution, and mesh size
- Density
- Crystal structure
- Other characteristic tests upon request

QUALITY CONTROLS

- ISO 9001
- ISO 17025 Lab Accreditation

MATERIAL CUSTOMIZATION AND MANUFACTURING

We combine our extensive manufacturing technology and our employees' expansive knowledge to provide the optimal inorganic chemical product for your application. Materials are available in a wide variety of compositions and forms specialized for our customers' processes. Particle size distributions can be custom tailored to improve material performance for specific applications.

STANDARD FORMS

- Ingots
- Rods
- Chunks
- Pellets
- Pieces
- Powders

PARTICLE SIZE

- Large Materials to Small Materials
- Small Materials to Larger Materials
- Consolidation – hot press or cold press
- Crushing – jaw & roll
- Grinding/Milling – ball mills, grinding vibroenergy mills, mortar & pestle
- Blending – V-Blender, cone blender, stir blender, ball mills, turbula blender, fluid medium blender
- Sieving – hand screens, vibratory screeners, air classifier

SPUTTERING TARGETS & EVAPORATION MATERIALS*

Inorganic Chemicals, Precious Metals, and Non-Precious Metals available in Custom Compounds, Shapes & Sizes.

- Vacuum Melting
- Various Powder Pressing
- Pelletization
- Various Ceramic Technologies
- Air & Vacuum Sinter
- Continuous Casting

*Related products, services, and material forms may be sourced out of an alternative Materion facility.

Fluorides

Materion offers high quality fluorides manufactured to your precise specifications. Our integrated technologies allow us to deliver exact compositions, in the exact form you require, exactly where and when you need it!

BENEFITS

We offer the broadest range of fluoride coating materials.

- Complete reproducibility assures consistent performance
- Various high purity levels
- Variety of forms including granules, pellets & powders
- Pre-melted Fluoride starter sources
- Supporting various optical wavelength ranges from UV to Far IR

GLOBAL MANUFACTURING PROCESSES

Custom fluoride compositions manufactured to your exact specifications provide high yield and less down time.

- Fluoride Synthesis
- Controlled Atmosphere Handling
- Chemical Analysis
- Custom Particle Sizing
- Specialized Packaging

FLUORIDE MATERIALS FOR OPTICAL COATING DEPOSITION*

- Barium Fluoride, BaF_2
- Calcium Fluoride, CaF_2
- Cerium Fluoride, CeF_2
- Dysprosium Fluoride, DyF_3
- Erbium Fluoride, ErF_3
- Europium Fluoride, EuF_3
- Gadolinium Fluoride, GdF_3
- Hafnium Fluoride, HfF4
- Lanthanum Fluoride, LaF_3
- Lead Fluoride, PbF_2
- Lithium Fluoride, LiF
- Magnesium Fluoride, MgF_2
- Neodymium Fluoride, NdF_3
- Potassium Fluoride, KF
- Praseodymium Fluoride, PrF_3
- Sodium Aluminum Fluoride (Cryolite), Na_3AlF_6
- Sodium Fluoride, NaF
- Thorium Fluoride, ThF_4
- Ytterbium Fluoride, YbF_3
- Yttrium Fluoride, YF_3

*Additional fluoride compositions are available upon request.

MATERION ENABLES WHAT'S NEXT™

Oxides

Materion offers complete reproducibility to ensure consistent high performance of all oxide compounds. Our integrated technologies and manufacturing capabilities allow us to provide the materials you need, when you need them. Our team of chemical experts is ready to help identify the appropriate oxide compound for your application.

BENEFITS

We offer a full range of inorganic oxide optical coating materials suited for a variety of applications.

- Available forms include granules, pellets and powders
- Various high purity levels
- Supporting various optical wavelength ranges from UV to Far IR

GLOBAL MANUFACTURING PROCESSES

Custom oxide compositions manufactured to your exact specifications provide high yield and less down time.

- Oxide Synthesis
- Controlled Atmosphere Handling
- Chemical Analysis
- Custom Particle Sizing

OXIDE MATERIALS FOR OPTICAL COATING DEPOSITION*

- Aluminum Oxide, Al_2O_3
- Antimony Oxide, Sb_2O_3
- Barium Titanate, $BaTiO_3$
- Bismuth Oxide, Bi_2O_3
- Boron Oxide, B_2O_3
- Calcium Oxide, CaO
- Cerium Oxide, CeO_2
- Chromium Oxide, Cr_2O_3
- Dysprosium Oxide, Dy_2O_3
- Europium Oxide, Eu_2O_3
- Gadolinium Oxide, Gd_2O_3
- Gallium Oxide, Ga_2O_3
- Germanium Oxide, GeO_2
- Hafnium Oxide, HfO_2
- Indium Oxide, In_2O_3
- Indium-Tin Oxide, $90In_2O_3$-$10SnO_2$ (wt%)
- Iron Oxide, Fe_2O_3
- Lanthanum Oxide, La_2O_3
- Lead Titanate, $PbTiO_3$
- Lutetium Oxide, Lu_2O_3
- Lithium Manganese Oxide, $LiMn_2O_4$
- Magnesium-Aluminum Oxide (spinel)
- Magnesium-Aluminum-Zirconium Oxide (spinel)
- Magnesium Oxide, MgO
- Molybdenum Oxide, MoO_3
- Neodymium Oxide, Nd_2O_3
- Niobium Oxide, Nb_2O_5
- Praseodymium Oxide, Pr_2O_3
- Scandium Oxide, Sc_2O_3
- Silicon Dioxide, SiO_2
- Silicon Monoxide, SiO
- Strontium Oxide, SrO
- Tantalum Oxide, Ta_2O_5
- Terbium Oxide, Tb_4O_7
- Tin Oxide, SnO_2
- Titanium Dioxide, TiO_2
- Titanium Monoxide, TiO
- Tungsten Oxide, WO_3
- Ytterbium Oxide, Yb_2O_3
- Yttrium Oxide, Y_2O_3
- Zinc Oxide, ZnO
- Zirconium Oxide, ZrO_2
- Zirconium Oxide-Magnesium Oxide, ZrO_2-xMgO
- Zirconium Oxide-Titanium Oxide, ZrO_2-xTiO_2

*Additional custom oxide compositions are available upon request.

Aerospace Materials

In the world of Aerospace, there is an omnipresent demand for innovation in the field of protective coatings. Advancements in airframes, requirements to reach higher speeds, greater altitudes and to persevere over multiple re-entries necessitate materials and chemicals that support the exact demands of new technologies and applications. Platforms for terrestrial and deep space exploration also require sourcing high-reliability materials that perform in extreme environments, such as tremendously high temperatures. Finding a reliable, ITAR compliant supplier capable of partnering on commercial development in the ever-growing and expanding aerospace market can prove to be a challenge for many.

With a presence originating from early innovation for the Space Shuttle Program, Materion continues to produce complex Boride, Carbide, Silicide, and Nitride compounds for a host of terrestrial, subterranean, and exoearth technologies. With more than 50 years of experience, a strong supply chain, and the ability to customize complex materials and characteristics, Materion is an accessible partner for those venturing into the new era of space exploration and flight.

PROTECTING METAL

Structural metal interacts and reacts with the environment around it. Temperature, pressure and contents of an environment strongly influence the rate and form of a reaction. Such reactions can eventually threaten the airframe, platform and contents of a vessel. Materion produces a range of Boride, Nitride, Silicide and Carbide powders that are key in specially applied protective coatings for the most complex challenges, including high shock, velocity and temperature. Where direct formation of the protective coatings is not possible, these compounds can be specially applied to reduce friction and shock and to form an engineered protective skin custom to the needs of the airframe or vessel.

PROTECTING CERAMICS AND COMPOSITES

In the late 1950s, extensive work was being initiated in the notable mission of landing humans on the moon. The critical first step towards vehicle survivability, beyond the role of shock and shape during re-entry, was improving the craft's ability to dissipate and ride out the intense heat generated by friction and interaction of the craft with the outer atmosphere. Where bare metal would certainly melt, the early PTFE containing heat shields lead the way to lighter weight nylon phenolic and other ablator technologies to protect human astronauts. Custom blends of Borides, Carbides and Silicides could also be specially deposited onto lower temperature surrounding parts of the missiles and re-entry vehicles or applied to new ceramic tiles or textiles to facilitate multiple atmosphere re-entries at extreme velocities. Visionaries at Materion, formerly known as CERAC, developed a set of silicides to work with other compounds, crucial to the success of the Space Shuttle Program. When appropriately incorporated within the overall system design, these silicides enable superior radiative properties, enhance thermal stability and remain central to Materion's Thermal Protection System material offerings.

LEADING EDGE, NOSE AND PORTHOLES

As horizontal landing has matured, the challenge continues at the hottest, most complex locations, where some are essential for navigation and exo-vehicle operation. Thermal failure during re-entry or hypersonic flight at these critical points can endanger the entire vehicle. These specific locations include the landing gear, the leading edges of the wings or flaps and the windows or apertures of the vessel. For many years, NASA sponsored work with Carbide, Nitride, Silicide and Boride mixtures to create new, innovative applications for re-entry into the atmosphere and safe landing.

BENEFITS

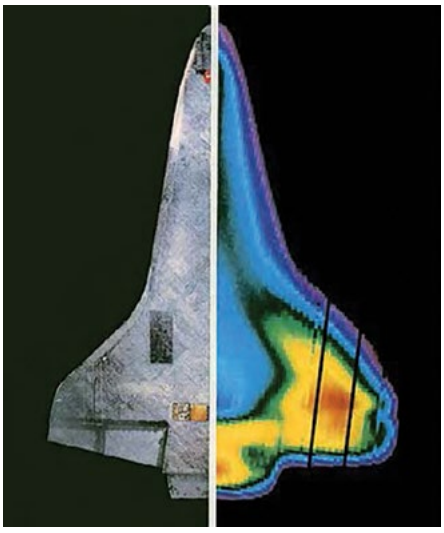
- Decades of full-scale production of key powders.
- Vertically integrated chemical synthesis and characterization.
- Ability to leverage capabilities and partner on combinational approaches for aerospace and defense.

TECHNICAL CAPABILITIES

- Specialists in handling hazardous and difficult materials.
- Material customization and manufacturing.
- Custom particle sizing for optimal material performance.
- Controlled atmosphere handling.
- Specialty and custom packaging.

QUALITY CERTIFICATIONS

- ISO 9001:2015
- ISO 17025 Lab Accreditation
- ISO 14001 Environmental



Vehicle thermal load image taken during actual atmosphere re-entry. Even in-flight, thermal load at Mach 14+ is a strain.

AVAILABLE MATERIALS

Materion has continued to leverage its ability to create reproducible powder compounds, blends and mixtures at scale and economy for research and production in thermal protection systems, and specialty coatings for aerospace applications.

Compound	Mesh Size	Purity
Silicides		
B_6Si	-200 mesh	98%
$TaSi_2$	-100 mesh	99.99%
$MoSi_2$	-325 mesh	99.5%
$CrSi_2$	-325 mesh	99.5%
Mg_2Si	-20 mesh	99.5%
Carbides		
HfC	-325 mesh	99.5%
Mo_2C	-325 mesh	99.5%
NbC	-325 mesh	99.5%
SiC	7 mic or less	99.5%
B4C	-280 mesh	99.5%
WC	<1 micron average	99.5%
TiC	<2 micron average	99.5%
TaC	-325 mesh	99.5%
Borides		
CrB_2	-325 mesh	99.5%
HfB_2	-325 mesh	99.5%
TiB_2	-325 mesh	99.5%
W_2B	-325 mesh	99.5%
ZrB_2	-325 mesh	99.5%
Nitrides		
HfN	-325 mesh	99.5%
Ca_3N_2	-200 mesh	99%
TaN	-325 mesh	99.5%
TiN	-325 mesh	99.5%
ZrN	-325 mesh	98%

Battery Materials

As diverse technologies continue to emerge, pushing the boundaries of energy storage, a wide range of specialized battery chemistries are needed to meet today's challenges. Few companies have the capabilities to develop, customize and produce the materials necessary for a variety of battery anode, cathode and electrolyte applications. It can also prove difficult to partner with a firm that has the ability to scale laboratory sample sizes to full production quantities.

Materion provides a range of materials and key production capabilities to meet these challenges, and to help you bring the next breakthrough in inorganic battery materials to market.

- Customized manufacturing: synthesis, processing and analysis
- Expertise to produce challenging, custom materials
- Particle size, purity and packaging to meet most stringent requirements
- Reactive gas processing
- Ceramic manufacturing capabilities for PVD materials
- Air and moisture sensitive material manufacturing & processing
- Scaling processes from R&D samples to full production quantities
- Comprehensive chemical & physical characterization
  - Xray Diffraction
  - ICP-OES/ICP-MS/AA/GDMS spectroscopies
  - O, N, C, S Combustion Analysis
  - BET Surface Area
  - Laser Diffraction Particle Size Analysis
  - Ion Selective Electrode
  - TGA/DTA
  - Wet Chemical Analysis

BENEFITS

- Customized materials & particle size
- Batch to batch consistency
- Highly reliable products
- Specialized packaging
- Manufactured to the most stringent material requirements

MATERIAL OFFERINGS

HIGH PURITY METALS

- Ag, Be, Cu, Co, Fe, Li, etc.

OXIDES

- Silver Oxide, Ag_2O
- Aluminum Oxide gamma, Al_2O_3-g
- Lanthanum Oxide, La_2O_3
- Lanthanum Carbonate, $La_2(CO_3)_3$
- Lithium Oxide, Li_2O
- Lithium Carbonate, Li_2CO_3
- Lithium Cobalt Oxide, $LiCoO_2$
- Lithium Manganese Oxide, $LiMn_2O_4$
- Lithium Phosphate, Li_3PO_4
- Manganese Oxide, MnO_2
- Vanadium Oxide, V_2O_5
- Zirconium Oxide, ZrO_2

FLUORIDES

- Copper Fluoride, CuF_2
- Iron Fluoride, FeF_2 and FeF_3
- Lithium Fluoride, LiF
- Nickel Fluoride, NiF_2

SULFIDES*

- Cobalt Sulfide, CoS_2
- Copper Sulfide, CuS and Cu_2S
- Iron Sulfide, FeS_2
- Lithium Sulfide Boron Sulfide, $Li_2S\ B_2S_3$
- Lithium Sulfide Phosphorus Sulfide, $Li_2S\ P_2S_5$
- Nickel Sulfide, NiS_2
- Silicon Sulfide, SiS_2
- Titanium Sulfide, TiS_2

MARKETS/APPLICATIONS

- High reliability medical batteries
- Military/defense
- Aerospace
- Large capacity storage
- Primary / Secondary lithium ion
- Conversion
- Solid state electrolytes

*Not limited to the listed compositions

Particle Size

Proper particle characteristics are critical for optimum performance. We have developed numerous manufacturing, screening and measurement processes to guarantee the proper sizes and shapes of our powdered materials. Our fully capable sizing departments' equipment includes crushers, grinders, ball mills, jet mills and air classifiers. Measurement capability includes screen analysis, laser diffraction, Fisher sub-sieve sizer (FSSS), Scott flow test, bulk and tap density, and surface area.

The chart below shows our mesh size and equivalent standard measurements for your reference.

PARTICLE SIZE CAN BE CUSTOMIZED TO OPTIMIZE MATERIAL PERFORMANCE FOR SPECIFIC APPLICATIONS

Mesh Size	Inches	Microns	Millimeters
3	0.2650	6730	6.730
4	0.1870	4760	4.760
5	0.1570	4000	4.000
6	0.1320	3360	3.360
7	0.1110	2830	2.830
8	0.0937	2380	2.380
10	0.0787	2000	2.000
12	0.0661	1680	1.680
14	0.0555	1410	1.410
16	0.0469	1190	1.190
18	0.0394	1000	1.000
20	0.0331	841	0.841
25	0.0280	707	0.707

Mesh Size	Inches	Microns	Millimeters
30	0.0232	595	0.595
35	0.0197	500	0.500
40	0.0165	400	0.400
45	0.0138	354	0.354
50	0.0117	297	0.297
60	0.0098	250	0.250
70	0.0083	210	0.210
80	0.0070	177	0.177
100	0.0059	149	0.149
120	0.0049	125	0.125
140	0.0041	105	0.105
170	0.0035	88	0.088

Purity

The following information represents typical manufacturing capabilities and tolerances for Materion products. All items will be inspected to the tolerances listed below unless further tolerances have been agreed to during the quotation process, or prior to order placement.

PURITY DESIGNATION AND TOLERANCES

TYPICAL PURITY – METALS BASIS

All of Materion's products (with the exception of the rare earths as noted, or in some cases their precursors) are analyzed using one or more of the following Spectroscopic techniques: DCArc Emission, Laser Ablation ICP-MS, ICP-OES or AAS. The typical purities listed are obtained by subtracting from 100% the sum of all trace metals which are detected. Carbon, gaseous elements, other nonmetallic elements (e.g. sulfur, phosphorus, etc.) and elements specifically disclaimed in the product listing are not considered in arriving at the typical purity value.

TYPICAL PURITY – RARE EARTH OXIDE BASIS

For all rare earth metals and some oxides, the typical purities listed are based on total rare earth oxide (REO) impurities and are so indicated in the product listing by the notation "(REO basis)".

PHASE PURITY

Every substance we produce, with the exception of metals and liquids, is characterized by X-ray powder diffraction. The resultant diffraction pattern is compared with the standard patterns established by the JCPDS (Joint Committee for Powder Diffraction Standards) of the International Centre for Diffraction Data. We strive to produce 100% phase pure compounds wherever practical. The formulas listed represent the major resulting phase; there is no guarantee that traces of other phases will not be observed with other methods of analysis. When repeated syntheses indicate that more than a single major phase results, or that lesser amounts of additional phases may be consistently observed. Please inquire before ordering if phase purity is critical to your needs.

ELEMENTAL COMPOSITION AND TRACE IMPURITY ANALYSES

The elemental composition of our products is determined by appropriate, established methods which may include classical gravimetric or titrimetric procedures, Atomic Absorption Spectroscopy (AAS), and Inductively Coupled Plasma (ICP) Spectroscopy. Trace impurities are determined, or their emission spectrographic results more precisely quantified, by the AAS or ICP spectroscopic techniques. Where relevant, the carbon, sulfur, nitrogen and oxygen content of our products are determined by established ignition procedures.

Measurement	Standard
Purity	Typical (not minimum) based on metallic impurities
Particle Size for Powders	Minimum 90% within stated mesh size
Dimensional Target Tolerances	+/- 0.020" all dimensions
Compositional Tolerance	+/- 1.00 wt%
Bond Gaps	0.010"
Multi-section Targets	Butt joints
Joints	90 degree butt joints
Density Range	<5%, Reported as a % - actual vs. theoretical g/cc density
Chip Specification	Depth of 25% target thickness, none >1/4" in any direction
Target Analysis	Based on starting material unless otherwise stated

Inorganic Chemicals List

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Aluminum						
A-1111	123870	Aluminum chloride	$AlCl_3$	Powder	-10 mesh	99.9%
A-1185	125563	Aluminum chloride	$AlCl_3$	Powder	-10 mesh	99.999%
A-2005	122750	Aluminum metal	Al	Granules	2-10 mm	99.9%
A-2001	122747	Aluminum metal	Al	Granules	2-12 mm	99.99%
A-2049	122757	Aluminum metal	Al	Pellets	6 mm dia. x 6 mm thick (melted)	99.99%
A-1011	122691	Aluminum metal	Al	Pellets	1.6 mm dia. x 0.5 mm thick	99.999%
A-1181	122714	Aluminum metal	Al	Pellets	3.9 mm dia. x 2.5 mm thick	99.999%
A-2010	122751	Aluminum metal	Al	Pellets	6 mm dia. x 6 mm thick	99.999%
A-1000	122687	Aluminum metal	Al	Pellets	9.5 mm dia x 3.2 mm thick	99.999%
A-1189	123829	Aluminum metal	Al	Powder	-325 mesh	99.97%
A-1182	123825	Aluminum metal	Al	Powder	-325 mesh (ave. 10-20 microns)	99.5%
A-2002	122749	Aluminum metal	Al	Powder	ave. <5 microns	99%
A-1119	123859	Aluminum nitride	AlN	Powder	-200 mesh (ave. 10 microns or less)	99% (C = 0.1% max)
A-1120	122696	Aluminum nitride	AlN	Powder	-200 mesh (ave. 10 microns or less)	99.8% (C = 0.08% max)
A-1187	122717	Aluminum oxide	Al_2O_3 (low temp. phase, mix. of gamma, kappa & chino alpha)	Granules	~1 micron (calcined)	99.9%
A-1220	122741	Aluminum oxide	Al_2O_3 (mostly alpha phase)	Pieces	1-5 mm (clear, single-crystal sapphire)	99.99%
A-1124	-	Aluminum oxide	Al_2O_3 (mostly alpha phase)	Powder	-325 mesh (calcined, ave. <5 microns)	99.99%
A-1143	122707	Aluminum sulfide	Al_2S_3	Pieces	6 mm and smaller	98%
A-1135	122704	Aluminum telluride	Al_2Te_3	Pieces	6 mm and smaller	99.5%
Antimony						
A-1190	122718	Antimony metal	Sb	Pieces	1 - 4 mm	99.9999%
A-1224	122744	Antimony metal	Sb	Pieces	3 - 12 mm	99.5%
A-1142	122706	Antimony metal	Sb	Powder	-200 mesh	99.995%
A-1193	122429	Antimony oxide	Sb_2O_3	Powder	-100 mesh	99.999%
A-1151	122425	Antimony oxide	Sb_2O_3	Powder	-325 mesh (ave. 10 microns or less)	99.9%
A-1221	122743	Antimony sulfide	Sb_2S_3	Pieces	3 - 12 mm (sintered)	99.9%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Arsenic						
A-1163	122712	Arsenic acid	X-ray matches $H_5As_3O_{10}$ [~3(As_2O_5) - 5H_2O]	Pieces	12 mm and smaller	99.9%
A-2014	122430	Arsenic metal	As	Pieces	4 - 20 mm	99.9999%
A-1202	122727	Arsenic metal	As	Powder	-20 mesh	99%
A-1169	122426	Arsenic oxide	As_2O_3	Powder		99.99% (Sb typ. 100 ppm)
Barium						
B-1012	123845	Barium carbonate	$BaCO_3$	Powder	-325 mesh (ave. 10 microns or less)	99.9% (Sr <300 ppm)
B-1105	122798	Barium fluoride	BaF_2	Pieces	3 - 6 mm (melted)	99.9% (Sr <400 ppm)
B-1017	122769	Barium fluoride	BaF_2	Powder	-325 mesh (ave. 10 microns or less)	99% (Sr <1.5%)
B-1019	125642	Barium hydride	BaH_2	Powder	-60 mesh	99.7% (Sr <0.8%)
B-1024	125732	Barium nitride	Ba_3N_2 (X-ray pat. very similar to Mg_3N_2)	Powder	-20 mesh	99.7% (Sr <0.8%)
B-1025	122777	Barium oxide	BaO	Powder	-100 mesh	99.5% (Sr <400 ppm)
B-1029	122778	Barium selenide	BaSe	Powder	-20 mesh	99.5%(Sr <300 ppm)
B-1033	122779	Barium sulfide	BaS	Powder	-200 mesh	99.9% (Sr <600 ppm)
B-1039	132932	Barium tungstate	$BaWO_4$	Powder	-200 mesh	99.9% (Sr <200 ppm)
Bismuth						
B-1122	122805	Bismuth metal	Bi	Pieces	1 - 12 mm	99.999%
B-1125	140820	Bismuth oxide	Bi_2O_3	Pieces	3 - 12 mm (sintered)	99.9%
B-1067	122781	Bismuth oxide	Bi_2O_3	Powder	-325 mesh (ave. 10 microns or less)	99.9%
B-1068	122782	Bismuth selenide	Bi_2Se_3	Pieces	1 - 6 mm (melted)	99.999%
B-1071	-	Bismuth telluride	Bi_2Te_3	Pieces	1 - 6 mm (melted)	99.999%
B-1118	122802	Bismuth telluride	Bi_2Te_3	Powder	-325 mesh (ave. 10 microns or less)	99.99%
Boron						
B-1082	122448	Boron carbide	B_4C	Powder	-270 mesh	99.5%
B-1078	122786	Boron metal	B	Pieces	3 - 8 mm (crystalline)	99.5%
B-1121	122803	Boron metal	B	Powder	-325 mesh (ave. 15 microns or less, crystalline)	99%
B-1076	122446	Boron metal	B	Powder	ave. 5 microns or less (essentially amorphous)	90-92% (Mg = 5-8%, bal. oxygen)
B-1077	122447	Boron metal	B	Powder	ave. 5 microns or less (essentially amorphous)	94-96%(Mg = 1% max, bal. oxygen)
B-1084	122449	Boron nitride	BN (hexagonal form)	Powder	ave. 1 micron or less	99.5%
SP-108	123324	Boron nitride	BN	Spray	12 oz. aerosol can (12 cans/case)	
B-1086	122788	Boron oxide	B_2O_3	Powder	-40 mesh	99.9%
B-1089	122792	Boron silicide	B_6Si (+ possible traces of Si & other B-Si phases)	Powder	-200 mesh	98%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Cadmium						
C-1014	122811	Cadmium phosphide	Cd_3P_2 (+ possible traces of other Cd-P phases)	Powder	-100 mesh	99.5%
Calcium						
C-1213	123875	Calcium carbonate	$CaCO_3$	Powder	-325 mesh (ave. 10 microns or less)	99.95% (Mg <400 ppm)
C-1193	122863	Calcium fluoride	CaF_2	Pieces	3 - 6 mm (melted)	99.95% (Mg <500 ppm)
C-1033	122813	Calcium fluoride	CaF_2	Powder	-325 mesh (ave. 10 microns or less)	99.95% (Mg <500 ppm)
C-1037	122815	Calcium nitride	Ca_3N_2	Pieces	12 mm and smaller	99% (Mg <0.5%)
C-1271	-	Calcium nitride	Ca_3N_2	Powder	-200 mesh	99% (Mg <0.5%)
C-1247	122877	Calcium silicate	$CaSiO_3$	Powder	-200 mesh	99% (Mg <0.5%)
C-1044	-	Calcium silicide	$CaSi_2$	Pieces	3 mm and smaller	99.5% (C <1%, Mg <0.25%)
C-1047	122818	Calcium sulfide	CaS	Powder	-325 mesh (ave. 10 microns or less)	99.99% (Sr <500 ppm, Mg <150 ppm)
Cerium						
C-1056	122821	Cerium boride	CeB_6	Powder	-325 mesh (ave. 10 microns or less)	99.5%
C-2105	122909	Cerium fluoride	CeF_3	Pieces	3 - 6 mm	99.9%
C-1250	-	Cerium fluoride	CeF_3	Powder	-325 mesh	99.9%
C-1055	122820	Cerium metal	Ce	Pieces	12 mm and smaller (under oil)	99.9 (REO basis)% pure
C-1065	122823	Cerium oxide	CeO_2	Pieces	3 - 6 mm (fused)	99.9%
C-1066	122824	Cerium oxide	Ce_2O_3	Powder	-100 mesh (gold-green color)	99.9% (+ possible 0.5% W for stability)
C-1217	122868	Cerium oxide	CeO_2	Powder	-325 mesh (ave. 10 microns or less, fused)	99.5%
C-1064	122469	Cerium oxide	CeO_2	Powder	-325 mesh (ave. 5 microns or less, calcined)	99.9 (REO basis)% pure
C-1069	122825	Cerium silicide	$CeSi_2$	Pieces	6 mm and smaller	99.9%
Cesium						
C-1165	122860	Cesium carbonate	Cs_2CO_3	Powder	-20 mesh	99.9%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Chromium						
C-1089	122836	Chromium boride	CrB_2	Powder	-325 mesh (ave. 10 microns or less)	99.5%
C-1092	122839	Chromium carbide	Cr_3C_2	Powder	-325 mesh	99.5%
C-1079	122829	Chromium metal	Cr	Pieces	0.8 - 3 mm	99.2%
C-1079-5	122830	Chromium metal	Cr	Pieces	1.5 - 3 mm	99.2%
C-1231	122871	Chromium metal	Cr	Pieces	2 - 4.7 mm	99.99%
C-1232	122874	Chromium metal	Cr	Pieces	3 - 12 mm	99.2%
C-1082	122835	Chromium metal	Cr	Powder	-200 mesh (ave. 25 microns or less)	99.95%
C-1081	122470	Chromium metal	Cr	Powder	-325 mesh (ave. 10 microns or less)	99.6%
C-1223	122869	Chromium oxide	Cr_2O_3	Powder	ave. 5 microns or less (precipitated)	99.5%
C-1105	122844	Chromium silicide	$CrSi_2$	Powder	-325 mesh (ave. 10 microns or less)	99.5%
Cirom-IRX™						
I-3000	123032	Cirom - irx™	CeF_3 - $xBaF_2$	Pieces	1 - 3 mm (melted)	99.9%
I-3001	123034	Cirom - irx™	CeF_3 - $xBaF_2$	Pieces	3 - 6 mm (melted)	99.9%
Cobalt						
C-1264	122884	Cobalt carbonate	$CoCO_3$	Powder	-325 mesh (ave. 10 microns or less)	99.5% (Ni <2000 ppm)
C-2046	122898	Cobalt metal	Co	Pellets	6 mm dia. x 6 mm thick (melted)	99.95% (Ni <400 ppm)
C-1111	122471	Cobalt metal	Co	Powder	-325 mesh (ave. 10 microns or less)	99.8% (Ni <1500 ppm)
C-1227	122870	Cobalt metal	Co	Powder	ave. 3 microns or less	99.8% (Ni <1000 ppm)
C-1124	122849	Cobalt silicide	$CoSi_2$	Powder	-325 mesh (ave. 10 microns or less)	99% (Ni <800 ppm)
C-1126	131040	Cobalt sulfide	CoS_2 (+ possible traces of other Co-S phases)	Powder	-200 mesh	99.5% (Ni <2000 ppm)
Copper						
C-2035	-	Copper aluminate	$CuAl_2O_4$	Powder	-325 mesh (ave. 10 microns or less)	99.5%
C-2073	122903	Copper metal	Cu	Pellets	3 mm dia. x 3 mm thick (melted)	99.99%
C-2033	122895	Copper metal	Cu	Pellets	6 mm dia. x 6 mm thick (melted)	99.99%
C-1133	-	Copper metal	Cu	Powder	-325 mesh (ave. 10 microns or less, irregular shape)	99.5%
C-1132	122851	Copper metal	Cu	Shot	2 - 6 mm	99.9%
C-1131	122850	Copper metal	Cu	Shot	2 - 6 mm	99.999%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Copper cont.						
C-1207	-	Copper oxide	CuO	Powder	-20 mesh	99.999%
C-1144	122853	Copper oxide	Cu_2O	Powder	-200 mesh	99%
C-1152	122856	Copper sulfide	Cu_2S (may be $Cu_{1.8}$ - 2S)	Powder	-200 mesh	99.5%
C-1153	122858	Copper sulfide	CuS	Powder	-200 mesh	99.5%
C-2001	123863	Copper sulfide	CuS	Powder	-325 mesh	99.5%
C-1156	-	Copper telluride	Cu_2Te	Pieces	6 mm and smaller	99.5%
C-1155	122859	Copper telluride	CuTe (generally $Cu_{1.4}Te$)	Powder	-60 mesh	99.5%
C-1159	131511	Copper tungstate	$CuWO_4$	Powder	-200 mesh	99.5%
Dysprosium						
D-1024	122929	Dysprosium fluoride	DyF_3	Pieces	3 - 12 mm (melted)	99.9%
Europium						
E-1049	122942	Europium fluoride	EuF_3	Powder	-325 mesh (precipitated)	99.9%
E-1031	122933	Europium fluoride	EuF_3	Powder	-60 mesh (melted)	99.9%
E-1035	126009	Europium nitride	EuN	Powder	-60 mesh	99.9%
E-1051	122943	Europium oxide	Eu_2O_3	Pieces	3 - 12 mm (sintered)	99.9%
E-1036	122937	Europium oxide	Eu_2O_3	Powder	-325 mesh (ave. 5 - 10 microns)	99.9 (REO basis)% pure
E-1040	122938	Europium sulfide	EuS	Powder	-200 mesh	99.9%
Gadolinium						
G-1072	122958	Gadolinium fluoride	GdF_3	Pieces	3 - 6 mm (melted)	99.9%
G-1075	122960	Gadolinium fluoride	GdF_3	Powder	-325 mesh (precipitated)	99.9%
G-1000	122950	Gadolinium metal	Gd	Powder	~-40 mesh	99.9 (REO basis)% pure
Gallium						
G-1022	122952	Gallium metal	Ga	Shot	3 mm	99.999%
G-1031	122510	Gallium oxide	Ga_2O_3	Powder	-325 mesh (ave. 5 - 10 microns)	99.995%
Geranium						
G-1038	122954	Germanium metal	Ge	Pieces	3 - 6 mm	>99.999%
Gold						
G-1065	37894	Gold metal	Au	Pieces	ave. 2 - 8 mm	99.999%
Graphite						
G-1060	122957	Graphite	C	Powder	-200 mesh	Typ. 99.999% pure (spectro grade)
G-1059	122956	Graphite	C	Powder	-325 mesh (ave. 10 microns or less)	99.5%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Hafnium						
H-1002	122963	Hafnium boride	HfB_2	Powder	-325 mesh (ave. 10 microns or less)	99.5% (Zr <2%)
H-1004	122965	Hafnium carbide	HfC	Powder	-325 mesh (ave. 10 microns or less)	99.5% (Zr <2%)
H-1060	122981	Hafnium metal	Hf	Pieces	3 - 12 mm	99.9% (Zr <2%)
H-1001	122962	Hafnium metal	Hf	Powder	-325 mesh (ave. 10 microns or less)	99.8% (Zr <3%)
H-1048-2	122972	Hafnium oxide	HfO_2	Pieces	1 - 3 mm (white, sintered)	99.9% (Zr <0.5%)
H-1048	122971	Hafnium oxide	HfO_3	Pieces	3 - 12 mm (white, sintered)	99.9% (Zr <0.5%)
H-1011	122514	Hafnium oxide	HfO_4	Powder	-325 mesh (ave. 10 microns or less)	"99.95% (Zr <0.5%)"
H-1059	122980	Hafnium oxide	HfO_5	Tablets	~10-12 mm dia. x 4-5 mm thick (~3g each, white, sintered)	99.9% (Zr <0.5%)
H-2002-1	122983	Hafnium oxide	HfO_6	Tablets	~17-18 mm dia. x 5-6 mm thick (~10g each, white, sintered)	99.9% (Zr <0.5%)
H-1055	122979	Hafnium oxide-yttria stabilized	HfO_2 - 10-15 wt% Y_2O_3	Powder	-325 mesh, +10 microns	99% (Zr <2%)
Indium						
I-1000	122992	Indium metal	In	Shot	3 mm	99.999%
I-1075	123011	Indium metal	In	Shot	3 mm	99.99%
I-1010	122993	Indium nitride	InN	Powder	-100 mesh	99.9%
I-1076	123012	Indium oxide	In_2O_3	Powder	-325 mesh (ave. 10 microns or less)	99.99%
I-2039	123025	Indium-tin oxide	90 wt% In_2O_3 - 10 wt% SnO_2	Pieces	1 - 3 mm	99.99%
I-2009	123018	Indium-tin oxide	90 wt% In_2O_3 - 10 wt% SnO_2	Pieces	3 - 12 mm (sintered)	99.99%
I-2019	123020	Indium-tin oxide	91 mol% In_2O_3 - 9 mol% SnO_2	Pieces	3 - 12 mm (sintered)	99.99%
Iron						
I-1027	122997	Iron arsenide	$FeAs_2$	Pieces	6 mm and smaller	99.5%
I-1029	123000	Iron boride	Fe_2B	Powder	-35 mesh	99%
I-2027	123022	Iron metal	Fe	Pellets	3 mm dia. x 3 mm thick (melted)	99.95%
I-1078	123014	Iron metal	Fe	Pieces	3 - 12 mm	99.95%
I-1020-1	122994	Iron metal	Fe	Powder	-100 mesh	99.9%
I-1021	122995	Iron metal	Fe	Powder	-325 mesh (ave. <15 microns)	99.9%
I-1068	123009	Iron metal	Fe	Powder	ave. 5 microns or less (carbonyl)	99.9%
I-1038	123001	Iron nitride	FexN (x = 2 - 4)	Powder	-325 mesh (ave. 10 microns or less)	99.9%
I-1074	123010	Iron oxide	Fe_2O_3	Pieces	3 - 12 mm (sintered)	99.9%
I- 1060	123006	Iron oxide	FeO (+possible traces of other Fe-O phases)	Powder	-10 mesh	99.50%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Iron cont.						
I-1042	-	Iron phosphide	FeP	Powder	-200 mesh	99.5%
I-1040	123002	Iron phosphide	Fe_2P	Powder	-40 mesh	99.5%
I-1041	123003	Iron phosphide	Fe_3P	Powder	-40 mesh	99.5%
Lanthanum						
L-1128	123883	Lanthanum boride	LaB_6	Powder	-325 mesh (ave. 5 - 10 microns)	99.5% (hot- pressing grade)
L-1114	123054	Lanthanum fluoride	LaF_3	Pieces	3 - 6 mm (melted)	99.9%
L-1152	-	Lanthanum fluoride	LaF_3	Powder	-325 mesh (precipitated)	99.9%
L-1132	123064	Lanthanum nickel	$LaNi_5$	Powder	-100 mesh	99.5%
L-1014	123039	Lanthanum nitride	LaN	Powder	-60 mesh	99.9%
L-1129	123062	Lanthanum oxide	La_2O_3	Pieces	3 - 12 mm (sintered)	99.9%
L-1015	123040	Lanthanum oxide	La_2O_3	Powder	-200 mesh (ave. 10 microns or less)	99.99 (REO basis)% pure
L-1019	123041	Lanthanum sulfide	La_2S_3	Powder	-200 mesh	99.9%
Lead						
L-1122	123059	Lead chloride	$PbCl_2$	Pieces	0.8 - 3.4 mm (melted)	99.999%
L-1157	123072	Lead chloride	$PbCl_2$	Powder	-80 mesh (precipitated agglomerates)	99.999%
L-1028	123042	Lead fluoride	PbF_2	Pieces	1 - 3 mm (melted, clear to white)	99.9%
L-1115	123056	Lead fluoride	PbF_2	Pieces	3 - 6 mm (melted, clear to white)	99.9%
L-1029	123044	Lead fluoride	PbF_2	Powder	-325 mesh (ave. 10 microns or less)	99.9%
L-1034	123865	Lead oxide	PbO	Powder	-325 mesh (ave. 10 microns or less)	99.9%
L-1052	123046	Lead zirconate	$PbZrO_3$	Powder	-325 mesh (ave. 10 microns or less)	99.7%
Lithium						
L-1065	122535	Lithium fluoride	LiF	Powder	-325 mesh (ave. 10 microns or less)	99.9%
L-2010	123075	Lithium manganese oxide	$LiMn_2O_4$	Powder	-325 mesh (ave. 10 microns or less)	99.5%
L-1073	123048	Lithium nitride	Li_3N	Powder	-60 mesh	99.5%
L-1074	123050	Lithium oxide	Li_2O	Powder	-1/4, +100 mesh (0.15 - 6 mm)	99.5% (typ. 95% Li_2O_2 by titration)
L-1143	123066	Lithium oxide	Li_2O	Powder	-100 mesh	99.5% (typ. 95% Li_2O_2 by titration)
L-1110	123053	Lithium peroxide	Li_2O_2	Powder	-100 mesh	99.5% (typ. 95% Li_2O_2 by titration)
L-1088	123051	Lithium zirconate	Li_2ZrO_3	Powder	-80 mesh	99%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Magnesium						
M-1128	123119	Magnesium fluoride	MgF_2	Pieces	0.8 - 3 mm (melted)	99.9%(Ca & Na <1% combined)
M-2010	123134	Magnesium fluoride	MgF_2	Pieces	1-4 mm (melted)	99.999% (Ca <100ppm)
M-1113	123113	Magnesium fluoride	MgF_2	Pieces	3 - 6 mm (melted)	99.9% (Ca & Na <1% combined)
M-1010	123088	Magnesium fluoride	MgF_2	Powder	-200 mesh (precipitated)	99.5% (optical grade, Ca & Na <1% combined)
M-1001	123085	Magnesium metal	Mg	Powder	-100, +200 mesh	99.6% (Ca <50 ppm)
M-1002	123087	Magnesium metal	Mg	Powder	-325 mesh	99.6% (Ca <50 ppm)
M-1013	123089	Magnesium niobate	$MgNb_2O_6$	Powder	-200 mesh	99.9% (Ca <10 ppm)
M-1014	125981	Magnesium nitride	$Mg3N_2$	Powder	-325 mesh (ave. 10 microns or less)	99.6% (Ca <200 ppm)
M-1131	123122	Magnesium oxide	MgO	Pieces	1 - 3 mm (fused)	99.95% (Ca <750 ppm)
M-1121	123116	Magnesium oxide	MgO	Pieces	3 - 12 mm (fused)	99.95% (Ca <750 ppm)
M-2013	123135	Magnesium oxide	MgO	Pieces	3 - 6 mm (fused)	99.95% (Ca <750 ppm)
M-1138	123125	Magnesium oxide	MgO	Powder	-140, +325 mesh (fused)	95% (for plasma spraying, Ca <1%)
M-1016	123871	Magnesium oxide	MgO	Powder	-325 mesh (ave. 10 microns or less, calcined)	99.5% (Ca <1%)
M-1017	123093	Magnesium oxide	MgO	Powder	-325 mesh (ave. 10 microns or less, calcined)	99.95% (Ca <50 ppm)
M-1021	123094	Magnesium silicide	Mg_2Si	Powder	-20 mesh	99.5% (C <1%,Ca <100 ppm)
Manganese						
M-1132	123123	Manganese metal	Mn	Pieces	0.8 - 3 mm	99.95%
M-1034	123095	Manganese metal	Mn	Pieces	3 - 12 mm	99.95%
M-1122	123117	Manganese metal	Mn	Powder	-325 mesh	99.6%
M-1036	123096	Manganese metal	Mn	Powder	-325 mesh	99.95%
M-2016	123137	Manganese oxide	MnO_2	Powder	-325 mesh	99.9%
M-2017	123804	Manganese oxide	Mn_2O_3	Powder	-325 mesh (ave. 10 microns or less)	99.9%
M-1058	123097	Manganese phosphide	Mn_3P_2 (mixture of MnP and Mn_2P)	Powder	-100 mesh	99%
M-1062	123098	Manganese silicide	$MnSi_2$ (x-ray may show$Mn1_5Si_{26}$)	Powder	-325 mesh (ave. 10 microns or less)	99.5%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Molybdenum						
M-2036	123142	Molybdenum metal	Mo	Pellets	3 mm dia. x 3 mm thick (melted)	99.95%
M-2035	123141	Molybdenum metal	Mo	Pellets	6 mm dia. x 6 mm thick (melted)	99.95%
M-1099	123102	Molybdenum oxide	MoO_3	Powder	-100 mesh	99.95%
M-1114	123114	Molybdenum oxide	MoO_2	Powder	-200 mesh (brown)	99.9%
M-1102	123104	Molybdenum selenide	$MoSe_2$	Powder	-325 mesh (ave. 10 microns or less)	99.9%
M-1103	123105	Molybdenum silicide	$MoSi_2$	Powder	-325 mesh (ave. 10 microns or less)	99.5%
M-2014	123136	Molybdenum silicide	$Mo5Si_3$	Powder	-325 mesh (ave. 10 microns or less)	99.5%
M-1104	-	Molybdenum sulfide	MoS_2	Granules	~1 micron average	99%
Neodymium						
N-1098	123171	Neodymium fluoride	NdF_3	Powder	-325 mesh (precipitated)	99.9%
N-1010	-	Neodymium fluoride	NdF_3	Powder	-60 mesh (melted)	99.9%
N-1120	123182	Neodymium fluoride	NdF_3	Tablets	~8-9 mm dia. x 5-6 mm thick (~2g each, sintered)	99.9%
N-1015	123150	Neodymium oxide	Nd_2O_2	Powder	-325 mesh (ave. 5 - 10 microns)	99.9 (REO basis)% pure
Nickel						
N-1108	123181	Nickel aluminide	$NiAl_3$	Powder	-20 mesh	99.9% (Co <600 ppm)
N-1031	123152	Nickel boride	Ni_2B	Powder	-35 mesh	99% (Co <1500 ppm)
N-1089	123168	Nickel metal	Ni	Granules	~5 microns ave.	99.9% (Co <100 ppm)
N-2023	123191	Nickel metal	Ni	Pellets	3 mm dia. x 3 mm thick (melted)	99.995% (Co <1 ppm)
N-2002	123184	Nickel metal	Ni	Pellets	6 mm dia. x 6 mm thick (melted)	99.97% (Co <15 ppm)
N-2009	123185	Nickel metal	Ni	Pellets	6 mm dia. x 6 mm thick (melted)	99.995% (Co <1 ppm)
N-1023	122564	Nickel metal	Ni	Powder	-325 mesh	99.9% (Co <1200 ppm)
N-1043	123154	Nickel oxide	NiO	Powder	-100 mesh (green)	99.995% (Co <5 ppm)
N-1044	123155	Nickel phosphide	Ni_2P	Powder	-100 mesh	99.5% (Co <800 ppm)
N-1046	123156	Nickel selenide	NiSe	Pieces	6 mm and smaller	99.9% (Co <500 ppm)
N-1050	123157	Nickel sulfide	NiS (approx. $NI_{-1.5}S$)	Powder	-200 mesh	99.9% (Co <1000 ppm)
N-1105	123178	Nickel-chromium	60 wt% Ni - 40 wt% Cr	Pieces	3 - 12 mm (sintered)	99.9% (Co <600 ppm)
N-1103	123177	Nickel-chromium	80 wt% Ni - 20 wt% Cr	Pieces	3 - 12 mm (sintered)	99.9% (Co <800 ppm)

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Niobium						
N-1102	123176	Niobium metal	Nb	Pellets	6 mm dia. x 6 mm thick (melted)	99.9%
N-1060	123158	Niobium metal	Nb	Powder	-325 mesh (ave. 25 microns or less)	99.8%
N-2001	123183	Niobium oxide	Nb_2O_5	Granules	<10 microns ave.	99.998% (optical grade, Ta <100 ppm)
N-1100	123173	Niobium oxide	Nb_2O_5	Pieces	3 - 12 mm (sintered)	99.95% (optical grade)
N-1073	123884	Niobium oxide	Nb_2O_5	Powder	-325 mesh (ave. 10 microns or less)	99.95% (optical grade)
N-1075	123165	Niobium selenide	$NbSe_2$	Powder	ave. 5 microns or less	99.8%
Phosphorus						
P-1089	122583	Phosphorus	P	Pieces	6 mm and smaller (red)	99.999%
P-1000	-	Phosphorus	P	Powder	-100 mesh (red)	99.5%
Potassium						
P-1052	-	Potassium fluoride	KF	Powder	-60 mesh	99.9%
P-1054	123200	Potassium molybdate	K_2MoO_4	Powder	-200 mesh	99.9%
Praseodymium						
P-1074	123202	Praseodymium fluoride	PrF_3	Pieces	3 - 6 mm (melted)	99.9%
P-1088	123206	Praseodymium oxide	Pr_2O_3	Pieces	3 - 12 mm (sintered, green)	99.9%
P-1030	122582	Praseodymium oxide	Pr_6O_{11}	Powder	-325 mesh (ave. 5 microns or less, brown)	99.9 (REO basis)% pure
Rhenium						
R-1007	123213	Rhenium chloride	$ReCl_5$	Powder	-40 mesh	99.9%
R-1000	122590	Rhenium metal	Re	Powder	-325 mesh (ave. 5 - 10 microns)	99.99%
Ruthenium						
R-2002	-	Ruthenium oxide	RuO_2	Powder	-100 mesh	99.9%
Selenium						
S-2000	122597	Selenium metal	Se	Powder	-20 mesh	99.6%
S-1167	122595	Selenium metal	Se	Powder	-200 mesh	99.6%
S-1037	123220	Selenium metal	Se	Shot	3 mm	99.999%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Silicon						
S-2022	123291	Silicon carbide	SiC	Granules	<1 micron ave. (black)	99.9%
S-1169	123269	Silicon carbide	SiC	Powder	-325 mesh (black)	99%
S-1058	122592	Silicon carbide	SiC	Powder	ave. 7 microns or less (green)	99.5%
S-2032	123853	Silicon dioxide	SiO_2	Pieces	1 - 3 mm	99.97%
S-2081	123795	Silicon dioxide	SiO_2	Pieces	1 - 3 mm (fused)	99.99%
S-1196	123852	Silicon dioxide	SiO_2	Pieces	1 - 5 mm pieces (fused)	99.97%
S-1060	-	Silicon dioxide	SiO_2	Pieces	3 - 12 mm (fused)	99.97%
S-1161	123267	Silicon dioxide	SiO_2	Pieces	3 - 12 mm (fused)	99.99%
S-1124	123253	Silicon dioxide	SiO_2	Pieces	3 - 12 mm (fused)	99.99% (<5 ppm OH)
S-1061	123823	Silicon dioxide	SiO_2	Powder	-325 mesh (ave. 2 microns or less)	99.5%
S-1046	123222	Silicon dioxide	SiO_2	Tablets	~20 mm dia. x 8 mm thick (~6g each, fused)	99.99%
S-1050	123228	Silicon metal	Si	Pieces	3 - 6 mm	99.96%
S-1047	123223	Silicon metal	Si	Pieces	3 - 6 mm	99.999%
S-2020	123290	Silicon metal	Si	Powder	-20 mesh	99.999%
S-1168	123874	Silicon metal	Si	Powder	-200 mesh	98%
S-1053	123232	Silicon metal	Si	Powder	-325 mesh (ave. 10 microns or less)	99.5%
S-1052	123231	Silicon metal	Si	Powder	-325 mesh (ave. 10 microns or less)	99.96%
S-1049	123225	Silicon metal	Si	Powder	-325 mesh (ave. 10 microns or less)	99.999%
S-2077	123886	Silicon monoxide	SiO	Pieces	2 -4 mm	99.9%
S-2075	123810	Silicon monoxide	SiO	Pieces	3 - 6 mm	99.9%
S-1064	123239	Silicon monoxide	SiO	Powder	-325 mesh (ave. 10 microns or less)	99.9%
S-1068	122593	Silicon nitride	Si_3N_4 (essen. 90% alpha form)	Powder	-325 mesh (ave. 2 microns or less)	99.9%
Silver						
S-1071	72989	Silver metal	Ag	Shot	3 mm	99.99%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Sodium						
S-2023	123292	Sodium aluminum fluoride	$Na_5Al_3F_{14}$ (chiolite)	Pieces	1-4 mm (melted)	99.5%
S-1175	123271	Sodium aluminum fluoride	Na_3AlF_6 (cryolite)	Pieces	3 - 12 mm (melted)	99.5%
S-2030	122599	Sodium fluoride	NaF	Powder	-200 mesh (precipitated)	99.9%
S-1092	123245	Sodium metal	Na	Pieces	3 - 12 mm (in oil)	99.95%
S-1104	123246	Sodium selenide	Na_2Se	Powder	-60 mesh	99.9%
S-1110	123248	Sodium telluride	Na_2Te	Powder	-60 mesh	99.9%
S-1111	123249	Sodium tellurite	Na_2TeO_3	Powder	-100 mesh	99.5%
Strontium						
S-1119	123252	Strontium aluminate	$SrAl_2O_4$	Powder	-100 mesh	99.5% (Ba <500 ppm)
S-1129	123807	Strontium carbonate	$SrCO_3$	Powder	-100 mesh	99.5% (Ba <500 ppm)
S-1136	125587	Strontium hydride	SrH_2	Powder	-60 mesh	99.5% (Ba <1%)
S-2119	125619	Strontium nitride	Sr_3N_2	Powder	-60 mesh	99.5% (Ba <1%)
S-1142	125477	Strontium nitride	Sr2N	Powder	-60 mesh	99.5% (Ba <1%)
S-1149	123263	Strontium stannate	$SrSnO_3$	Powder	-200 mesh	99.5% (Ba <300 ppm)
S-1150	123264	Strontium sulfide	SrS	Powder	-200 mesh	99.9% (Ba <700 ppm)
Sulfur						
S-1159	123265	Sulfur	S	Pieces	6 mm and smaller (soft lumps)	99.999%
Tantalum						
T-1006	123590	Tantalum carbide	TaC	Powder	-325 mesh (ave. 10 microns or less)	99.5%
T-1239	123631	Tantalum metal	Ta	Pellets	6 mm dia. x 6 mm thick (melted)	99.95%
T-1000	123589	Tantalum metal	Ta	Powder	-325 mesh (ave. 10 microns or less)	99.9%
T-2017	123639	Tantalum metal	Ta	Powder	-325 mesh (ave. 10 microns or less)	99.995% (Nb <25 ppm)
T-1012	123591	Tantalum nitride	TaN	Powder	-325 mesh (ave. 10 microns or less)	99.5%
T-1202	123622	Tantalum oxide	Ta_2O_5	Pieces	3 - 12 mm (sintered)	99.95%
T-1013	123592	Tantalum oxide	Ta_2O_5	Powder	-325 mesh	99.99% (optical grade)
T-1186	123620	Tantalum oxide	Ta_2O_5	Tablets	~8-9 mm dia. x 4-5 mm thick (~3g each, sintered)	99.95%
T-2001	123635	Tantalum silicide	$TaSi_2$	Powder	-100 mesh	99.99% (Nb <10 ppm)
Tellurium						
T-1024	123595	Tellurium chloride	$TeCl_4$	Powder	-8 mesh	99.9%
T-1020	123593	Tellurium metal	Te	Shot		99.999%
T-1026	123596	Tellurium oxide	TeO_2	Powder	-100 mesh	99.99% (Na 5 ppm)

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Thorium						
T-2117	123655	Thorium fluoride	ThF_4	Pieces	1.7 - 3 mm (melted)	99.99% (for high energy lasers)
T-2116	123654	Thorium fluoride	ThF_4	Pieces	3 - 6 mm (melted)	99.99% (for high energy lasers)
T-2119	123657	Thorium nitratex	$Th(NO_3)_4$ - xH_2O	Granules		99.8%
Tin						
T-1120	123600	Tin metal	Sn	Powder	-325 mesh	99.8%
T-1212	123625	Tin metal	Sn	Shot	3 mm	99.9%
T-1118	123599	Tin metal	Sn	Shot	3 mm	99.99%
T-1137	122635	Tin oxide	SnO_2	Granules	<1 micron ave.	99.9%
T-1218	123629	Tin oxide	SnO_2	Pieces	3 - 12 mm (sintered)	99.9%
T-1141	123602	Tin sulfide	SnS	Powder	-8 mesh	99.5%
Titanium						
T-1148	123605	Titanium aluminide	$TiAl_3$	Pieces	6 mm and smaller	99.5%
T-2031	123641	Titanium aluminide	$TiAl_3$	Powder	-325 mesh	99.5%
T-1150	123606	Titanium boride	TiB_2	Powder	-325 mesh (ave. 10 microns or less)	99.5%
T-1222	-	Titanium carbide	TiC	Powder	-140, +325 mesh	99.5%
T-1227	123630	Titanium carbide	TiC	Powder	ave. 2 microns or less	99.5% (cutting tool grade)
T-1156	123840	Titanium dioxide	TiO_2 (anatase form)	Powder	-325 mesh (ave. 5 - 10 microns)	99.9%
T-1101	123598	Titanium hydride	TiH_2	Powder	-325 mesh (ave. 10 microns or less)	99% (Na < 20ppm)
T-2070	123652	Titanium metal	Ti	Pellets	3 mm dia. x 3 mm thick (melted)	99.995%
T-1145	123603	Titanium metal	Ti	Pellets	6 mm dia. x 6 mm thick (melted)	99.8%
T-2003	123636	Titanium metal	Ti	Pellets	6 mm dia. x 6 mm thick (melted)	99.995%
T-1146	123604	Titanium metal	Ti	Powder	-200 mesh	99.5%
T-1147	122637	Titanium metal	Ti	Powder	-325 mesh	99.5%
T-2022	123640	Titanium metal	Ti	Powder	-325 mesh	99.98%
T-1153	123607	Titanium nitride	TiN	Powder	-325 mesh (ave. 10 microns or less)	99.5%
T-2100	123653	Titanium oxide	Ti_3O_5	Pieces	1 - 4 mm	99.9%
T-1192	123621	Titanium oxide	TiO_2 (rutile form)	Pieces	3 - 6 mm (sintered)	99.9%
T-1215	123626	Titanium oxide	TiO_2 (rutile form)	Powder	-100 mesh (calcined)	99.998%
T-1155	123608	Titanium oxide	TiO	Powder	-325 mesh (ave. 10 microns or less)	99.5%
T-1158	123611	Titanium oxide	Ti_2O_3	Powder	-325 mesh (ave. 10 microns or less)	99.8%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Titanium cont.						
T-2041	123645	Titanium oxide	TiO_2 (rutile form)	Powder	-325 mesh (ave. 10 microns or less, sintered)	99.5%
T-2051	123648	Titanium oxide	TiO_2 (rutile form)	Tablets	~10-12 mm dia. X 4-5 mm thick (~1.6g each, black, O_2)	99.9%
T-1257	123633	Titanium oxide	Ti_2O_3	Tablets	~8-9 mm dia. x 6-7 mm thick (~1.2g each, violet, sintered)	99.9%
T-2038	123643	Titanium oxide	TiO	Tablets	~8-9 mm dia. x 6-7 mm thick (~1.5g each, gold color)	99.9%
T-2039	123644	Titanium oxide	Ti_3O_5	Tablets	~8-9 mm dia. x 7-9 mm thick (1.2g each, black, sintered)	99.9%
T-1159-1	123613	Titanium phosphide	TiP	Granules	<4 microns fisher	Min. 97% (Al <1% , Si <2%)
T-1159	123612	Titanium phosphide	TiP	Powder	-100 mesh	Min. 97% (Al <1% , Si <2%)
T-1163	123614	Titanium sulfide	TiS_2	Powder	-200 mesh	99.8% (Cl <0.3%)
Tungsten						
T-2023	122642	Tungsten metal	W	Granules	~5 microns ave.	99.999% (Mo <1 ppm)
T-2049	123647	Tungsten metal	W	Granules	<10 microns ave.	99.995% (Mo <5 ppm)
T-1216	123627	Tungsten metal	W	Pieces	1 - 3 mm (crystalline, crushed ingot)	99.95%
T-1168	122639	Tungsten metal	W	Powder	ave. 1-2 microns (from H_2 reduced oxide)	99.95%
T-2065	123651	Tungsten oxide	WO_3	Granules	<5 microns ave.	99.9%
T-1179	122640	Tungsten oxide	WO_3	Powder	-325 mesh (ave. 10-20 microns, yellow- green)	99.99%
T-1181	123617	Tungsten selenide	WSe_2	Powder	ave. 5 microns or less	99.8%
Vanadium						
V-2002	123681	Vanadium oxide	V_2O_5	Powder	-200 mesh	99.9%
Ytterbium						
Y-1051	123703	Ytterbium fluoride	YbF_3	Pieces	3 - 12 mm (melted)	99.9%
Y-1052	123706	Ytterbium fluoride	YbF_3	Powder	-60 mesh (melted)	99.9%
Y-1053	123707	Ytterbium oxide	Yb_2O_3	Pieces	3 - 12 mm (sintered)	99.9%
Y-1015	122665	Ytterbium oxide	Yb_2O_3	Powder	-325 mesh (ave. 5 - 10 microns)	99.9 (REO basis)% pure

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Yttrium						
Y-1049	123698	Yttrium fluoride	YF_3	Pieces	3 - 12 mm (melted)	99.9%
Y-1050	-	Yttrium fluoride	YF_3	Powder	-325 mesh (precipitated)	99.9%
Y-1045	123693	Yttrium metal	Y	Pieces	12 mm and smaller	99.9 (REO basis)% pure (all rare earths <0.1% total, Ta <0.5%)
Y-1036	123688	Yttrium nitride	YN	Powder	-60 mesh	99.9% (Ta <0.9%)
Y-1046	123694	Yttrium oxide	Y_2O_3	Pieces	3 - 12 mm (sintered)	99.9%
Y-1037	123689	Yttrium oxide	Y_2O_3	Powder	-325 mesh (ave. 5 microns or less, calcined)	99.9 (REO basis)% pure
Y-1043	123691	Yttrium oxide	Y_2O_3	Tablets	~10-12 mm dia. x 4-5 mm thick (~1.5g each, sintered)	99.9%
Y-1041	123690	Yttrium sulfide	Y_2S_3	Powder	-200 mesh	99.9%
Y-2005	123709	Yttrium-barium fluoride	90 wt% YF_3 - 10 wt% BaF_2	Pieces	3 - 6 mm	99.9%
Y-2010-1	123711	Yttrium-calcium fluoride	95 wt% YF_3 -5 wt% CaF_2	Pieces	1 - 3 mm	99.9%
Zinc						
Z-1053	123736	Zinc arsenide	$ZnAs_2$	Pieces	6 mm and smaller	99.9999% (electronic doping grade)
Z-1069	123744	Zinc arsenide	Zn_3As_2	Pieces	6 mm and smaller	99.9999% (electronic doping grade)
Z-1080	123841	Zinc metal	Zn	Pieces	1 - 5 mm pieces	99.99%
Z-1003	122672	Zinc metal	Zn	Powder	-325 mesh	99.9% (thin oxide coating)
Z-1059	123738	Zinc metal	Zn	Powder	-325 mesh (ave. 4-6 microns)	99.9% (thin oxide coating)
Z-1000	123714	Zinc metal	Zn	Shot	1 - 3 mm	99.999%
Z-1051	122675	Zinc metal	Zn	Shot	3 - 6 mm	99.999%
Z-1011	123716	Zinc nitride	Zn_3N_2 (N typ. 10.5%)	Powder	-200 mesh	99.9%
Z-1012	123717	Zinc oxide	ZnO	Powder	-200 mesh	99.9%
Z-1081	123750	Zinc phosphide	Zn_3P_2	Pieces	ave. 3 mm and smaller (agglomerates)	99.9% (electronic doping grade)
Z-2000	123754	Zinc selenide	ZnSe	Pieces	1 - 3 mm (CVD grade)	99.999%
Z-1014	123718	Zinc selenide	ZnSe	Pieces	3 - 6 mm (CVD grade)	99.999%
Z-1016	123722	Zinc selenide	ZnSe	Powder	-325 mesh (ave. 10 microns or less)	99.99%
Z-2076	123768	Zinc sulfide	ZnS	Pellets	10mm x 5mm	99.99%
Z-2001	123756	Zinc sulfide	ZnS	Pieces	1 - 3 mm (CVD grade)	99.99%
Z-1017	123814	Zinc sulfide	ZnS	Pieces	3 - 12 mm (CVD grade)	99.99%

Legacy Item #	New Item #	Name	Compound	Form	Size	Purity
Zinc cont.						
Z-1018	123808	Zinc sulfide	ZnS	Powder	-325 mesh (ave. 10 microns or less)	99.99%
Z-1021	123732	Zinc telluride	ZnTe	Powder	-325 mesh (ave. 10 microns or less)	99.99%
Zirconium						
Z-1094	123753	Zirconium hydride	ZrH_2	Powder	-325 mesh (ave. 10 microns or less)	99.7% (Hf <200 ppm)
Z-2059	123766	Zirconium metal	Zr	Pellets	3 mm dia. x 3 mm thick (melted)	99.8% (Hf <4.5%)
Z-1024	-	Zirconium metal	Zr	Pieces	3 - 6 mm	99.8% (Hf <200 ppm)
Z-1088	123752	Zirconium metal	Zr	Powder	-140, +325 mesh	99.8% (Hf <3000 ppm)
Z-1026	-	Zirconium metal	Zr	Powder	-325 mesh (ave. 20 microns or less, under argon)	99.7% (Hf <200 ppm)
Z-1040	-	Zirconium nitride	ZrN	Powder	-325 mesh (ave. 10 microns or less)	99.5% (Hf <3%)
Z-2002	123757	Zirconium oxide	ZrO_2 (monoclinic)	Granules	<3 microns (precipitated)	99.95% (sintering grade, Hf <3%)
Z-1074	123747	Zirconium oxide	ZrO_2 (monoclinic)	Pieces	3 - 12 mm (sintered, white)	99.7% (Hf <75 ppm)
Z-1041	123735	Zirconium oxide	ZrO_2	Powder	-325 mesh (ave. 10 microns or less)	99% (Hf <3%)
Z-1042	123860	Zirconium oxide	ZrO_2 (monoclinic)	Powder	-325 mesh (ave. 10 microns or less)	99.7% (Hf <75 ppm, reactor grade)

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Periodic Table of Elements

1 IA 1A	2 IIA 2A	3 IIIB 3B	4 IVB 4B	5 VB 5B	6 VIB 6B	7 VIIB 7B	8	9 VIII 8	10	11 IB 1B	12 IIB 2B	13 IIIA 3A	14 IVA 4A	15 VA 5A	16 VIA 6A	17 VIIA 7A	18 VIIIA 8A
1 H Hydrogen 1.008																	2 He Helium 4.003
3 Li Lithium 6.941	4 Be Beryllium 9.012											5 B Boron 10.811	6 C Carbon 12.011	7 N Nitrogen 14.007	8 O Oxygen 15.999	9 F Fluorine 18.998	10 Ne Neon 20.180
11 Na Sodium 22.990	12 Mg Magnesium 24.305											13 Al Aluminum 26.982	14 Si Silicon 28.086	15 P Phosphorus 30.974	16 S Sulfur 32.066	17 Cl Chlorine 35.453	18 Ar Argon 39.948
19 K Potassium 39.098	20 Ca Calcium 40.078	21 Sc Scandium 44.956	22 Ti Titanium 47.88	23 V Vanadium 50.942	24 Cr Ununoctium unknown	25 Mn Manganese 54.938	26 Fe Iron 55.933	27 Co Cobalt 58.933	28 Ni Nickel 58.693	29 Cu Copper 63.546	30 Zn Zinc 65.39	31 Ga Gallium 69.732	32 Ge Germanium 72.61	33 As Arsenic 74.922	34 Se Selenium 78.09	35 Br Bromine 79.904	36 Kr Krypton 84.80
37 Rb Rubidium 84.468	38 Sr Strontium 87.62	39 Y Yttrium 88.906	40 Zr Zirconium 91.224	41 Nb Niobium 92.906	42 Mo Molybdenum 95.94	43 Tc Technetium 98.907	44 Ru Ruthenium 101.07	45 Rh Rhodium 102.906	46 Pd Palladium 106.42	47 Ag Silver 107.868	48 Cd Cadmium 112.411	49 In Indium 114.818	50 Sn Tin 118.71	51 Sb Antimony 121.760	52 Te Tellurium 127.6	53 I Iodine 126.904	54 Xe Xenon 131.29
55 Cs Cesium 132.905	56 Ba Barium 137.327	57 – 71	72 Hf Hafnium 178.49	73 Ta Tantalum 180.948	74 W Tungsten 183.85	75 Re Rhenium 186.207	76 Os Osmium 190.23	77 Ir Iridium 192.22	78 Pt Platinum 195.08	79 Au Gold 196.967	80 Hg Mercury 200.59	81 Tl Thallium 204.383	82 Pb Lead 207.2	83 Bi Bismuth 208.980	84 Po Polonium [208.982]	85 At Astatine 209.987	86 Rn Radon 222.018
87 Fr Francium 223.020	88 Ra Radium 226.025	89 – 103	104 Rf Rutherfordium [261]	105 Db Tantalum 180.948	106 Sg Seaborgium [266]	107 Bh Bohrium [264]	108 Hs Hassium [269]	109 Mt Meitnerium [268]	110 Ds Darmstadtium [269]	111 Rg Roentgenium [272]	112 Cn Copernicium [277]	113 Uut Ununtrium unknown	114 Fl Flerovium [289]	115 Uup Ununpentium unknown	116 Lv Livermorium [298]	117 Uus Ununseptium unknown	118 Uuo Ununoctium unknown

Lanthanide Series	57 La Lanthanum 138.906	58 Ce Cerium 140.115	59 Pr Praseodymium 140.908	60 Nd Neodymium 144.24	61 Pm Promethium 144.913	62 Sm Samarium 150.36	63 Eu Europium 151.966	64 Gd Gadolinium 157.25	65 Tb Terbium 158.925	66 Dy Dysprosium 162.50	67 Ho Holmium 164.930	68 Er Erbium 167.26	69 Tm Thulium 168.934	70 Yb Ytterbium 173.04	71 Lu Lutetium 174.967
Actinide Series	89 Ac Actinium 227.028	90 Th Thorium 232.038	91 Pa Protactinium 231.036	92 U Uranium 238.029	93 Np Neptunium 237.048	94 Pu Plutonium 244.064	95 Am Americium 243.061	96 Cm Curium 247.070	97 Bk Berkelium 247.070	98 Cf Californium 251.080	99 Es Einsteinium [254]	100 Fm Fermium 257.095	101 Md Mendelevium 258.1	102 No Nobelium 259.101	103 Lr Lawrencium [262]

MARKETS SERVED

Advances in technology require change. This change might be a chemical property of an existing material or the need for a whole new material. Materion has the resources and technologies to produce newly realized material, which is critical to the markets we serve.

- Optical Coating Materials
- Semiconductor Coating Materials
- Alternative Energy
- Specialty Battery
- Large Area Glass
- LED Lighting
- Medical
- Other Chemical Markets

Material Forms	Products & Services	Material Families	
• Powders	• Evaporation Materials	• Arsenides	• Hydrides
• Pieces	• Sputtering Targets	• Precious Metals	• Silicides
• Pellets	• Powders	• Borides	• Nitrides
• Evaporation Cones	• New Product Development	• Phosphides	• Sulfides
• Billets/Ingots	• Custom Alloys, Size & Forms	• Carbides	• Oxides
• Rods	• On-site Assistance	• Phosphor Precursors	• Tellurides
• Chunks	• Backing Plates	• Fluorides	• And More
• Planar Targets	• Target Bonding	• Selenides	
• Special Shapes	• Chemical Testing		
• Starter Sources			

*Related products, services, and material forms may be sourced out of an alternative Materion facility.

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