Special Metals produces nickel alloys in all significant mill forms, from large ingots and billets to flat and tubular products, bar and wire, and welding products. These alloys are classified into unique families recognized worldwide. They encompass many trademarks, including Inconel, Incoloy, Nimonic, Udimet, Monel, Brightray, Nilo, and Incoweld.
Allegheny Technologies Incorporated has the capacity to manage the specialty metals value chain from extraction/reduction, through advanced melting technologies, to fabrication and precision finishing. Over the past four years, it has added unsurpassed manufacturing capabilities to these resources while maintaining and expanding product breadth and technical depth. To serve customers even more effectively, ATI recently created four market sector teams: Aerospace, Defense, Oil & Gas, and Nuclear Energy.

The purpose of these teams is to focus the resources of ATI’s four operating companies on the needs of each market. This means that the most knowledgeable experts in each business unit, ATI Allegheny Ludlum, ATI Allvac, ATI Wah Chang, and ATI Engineered Products, will be brought together to provide the best possible materials and manufacturing solutions.

**ATI Aerospace:** This team offers the range of proven metallic and manufacturing resources required to help ATI’s aerospace customers design, engineer, and manufacture commercial and military aircraft and the jet engines that power them. ATI has the capacity to manage the specialty metals supply chain to help reduce volatility, handle risk, deliver quality, and provide stability and credibility.

ATI’s proprietary aerospace products include:
- High-performance titanium and titanium alloys
- Nickel- and cobalt-base alloys and superalloys
- Stainless and specialty alloys
- Zirconium, hafnium, and niobium
- Tungsten
- Metalworking, turning, and cutting tools and systems

ATI’s 718 Plus alloy is a new nickel-base superalloy that elevates temperature resistance beyond current alloys for next-generation jet engines. Applications range from fan cases, disks and blades, to structural castings, sheet applications, and fasteners.

In a major development, ATI has fabricated thin foils of orthorhombic titanium aluminides that maintain structural strength up to 1200°F. These materials also offer high ductility and compatibility with silicon fibers.

**ATI Defense:** This team signifies ATI’s strong and rapidly expanding commitment to U.S. Armed Forces and to America’s allies. ATI Defense offers a secure supply of a wide-range of military-grade titanium, superalloys, and stainless steels for air, sea, and land-based vehicles.

ATI Defense is currently developing and delivering advanced metallic armor solutions to improve the safety, performance, weight, and fuel efficiency of advanced combat vehicles, including the Mine-Resistant/Ambush Protected Vehicle, and the Joint Light Tactical Vehicle. The team offers armor-grade titanium, such as ATI 64-MIL and ATI 425-MIL, as well as a new high-hard steel armor plate, ATI 500-MIL.

**ATI Oil & Gas:** The world’s quest for new energy resources is taking place miles below the earth’s surface, in ultra-deep, high-pressure subsea environments, on ocean-going production platforms, and in unconventional, hydrocarbon recovery projects in oil sands and shales. To help with these efforts, ATI Oil & Gas delivers the widest range of high-performance, cost-effective titanium, nickel-base, and specialty alloys, stainless steel, and tungsten solutions in the specialty metals industry.

ATI’s austenitic stainless steels deliver more strength and corrosion-resistance. AL6XN plate, sheet, pipe, and tube are used in subsea control lines, valves, flow lines and LNG vaporizers. Our lean duplex stainless steels, such as ATI 2003, are ideal for subsea, flexible flow lines and umbilical tubing, and for offshore platform topside applications. ATI’s 925 alloy is a proprietary, corrosion-resistant alloy developed for downhole, sour well production.

ATI’s Oil & Gas products meet the certification standards of NORSOK, NACE, API, ASME and ASTM.

**ATI Nuclear Energy:** The company’s broad range of products is used for applications from the core of a nuclear reactor to spent-fuel storage. ATI’s titanium, stainless, and specialty alloys, as well as nickel-base, zirconium, tungsten heavy alloys, hafnium, and niobium deliver excellent strength and corrosion resistance. ATI’s tungsten heavy alloys provide radiation shielding.

These products enhance the performance of reactors and reactor vessels, steam generators, turbines, cooling towers, wet- and dry-pool storage, transport vessels, and repositories.

Our nuclear-grade Zircaloy zirconium alloy is the choice for fuel cladding, end pins, fuel bundle components, and core pressure tubes. These alloys deliver excellent corrosion resistance in high-temperature steam and water environments. ATI’s titanium, superferritic and superaustenitic stainless alloys are used for tubing, piping, condensers, and other applications for which corrosion resistance is a must.

ATI’s metallic products meet the certification stan-
dards of NIAC, NACE, ASME, ASTM, and NQA.

**Team support:** To support all of these teams, ATI is focused on maintaining and advancing the significant strengths of the company.

- **Extraction and reduction:** ATI has modernized its titanium and zirconium sponge production in Oregon, and is expanding its capacity by building a greenfield, premium-grade titanium sponge production plant in Utah. It is the first U.S.-based titanium sponge facility built in the past 50 years.

- **Melting:** A new plasma arc melting (PAM) system in North Carolina is being matched with new vacuum arc remelting (VAR) capabilities. These advanced melting technologies will complement the company’s existing PAM, VAR, and electron beam processes for titanium and zirconium alloys. Melting technologies for nickel-base, stainless, and specialty alloys include VAR, electric arc furnaces, argon-oxygen decarburization, vacuum induction melting, and electroslag remelting.

- **Product forms:** Ingot, bar, rod, wire, billet, extrusions, plate, sheet, forgings, castings, coil, precision-rolled strip, and foil are produced in a range of alloys. They are available in titanium, zirconium, niobium, and hafnium, as well as nickel-base and cobalt-base alloys and superalloys, stainless and specialty steels, and tungsten products.

In addition to its titanium sponge production expansion, ATI has installed a state-of-the-art facility expanding the size and dimensional capabilities of its titanium and specialty plate products. A superalloy manufacturing facility in North Carolina features unsurpassed forging, rotary forging, and finishing capabilities.

The company also recently expanded its product offerings to include titanium plate for the aerospace industry. This was done to help aerospace customers meet the demands of next-generation aircraft for more titanium, which has a unique capacity to work in unison with composites.


**ATI manufactures nuclear grade zirconium sheet for spacer grids that separate fuel rods in assemblies for pressurized water reactors.**

### Specialty Steel Industry of North America

The Specialty Steel Industry of North America (SSINA) is a voluntary trade association representing virtually all the producers of specialty steel in North America. Its members produce a variety of products including bar, rod, wire, angles, plate, sheet and strip, in stainless steel and other specialty steels. www.ssina.com

### Members of the Specialty Steel Industry of North America

- **ATI Allegheny Ludlum**
  - An Allegheny Technologies Company
  - 1000 Six PPG Place
  - Pittsburgh, PA 15222-5479
  - (412) 394-2800
  - www.alleghenytechnologies.com

- **Carpenter Technology Corporation**
  - P.O. Box 14662
  - Reading, PA 19612-4662
  - (610) 208-2000
  - www.cartech.com

- **Haynes International Inc.**
  - 1020 W Park Avenue
  - P.O. Box 9013
  - Kokomo, IN 46904
  - 765-456-6000
  - www.haynesintl.com

- **ThyssenKrupp VDM USA, Inc.**
  - 306 Columbia Turnpike
  - Florham Park, NJ 07932
  - 973-236-1664
  - www.thyssenkropp.com

- **ATI Allvac**
  - An Allegheny Technologies Company
  - 2020 Ashcraft Avenue
  - P.O. Box 5030
  - Monroe, NC 28111
  - (704) 289-4511
  - www.allvac.com

- **Latrobe Specialty Steel Company**
  - P.O. Box 31
  - Latrobe, PA 15650
  - www.latrobesteel.com

- **Talley Metals Technology, Inc.**
  - A Carpenter Company
  - P.O. Box 2498
  - Hartsville, SC 29551
  - (843) 335-7540

- **Carpenter Technology Corporation**
  - P.O. Box 14662
  - Reading, PA 19612-4662
  - (610) 208-2000
  - www.cartech.com

- **Mexiton S.A. de C.V.**
  - Av. Industrias 4100
  - Zona Industrial C.P. 78395
  - San Luis Potosi, S.L.P., Mexico
  - 011-52-48-24-040
  - http://www.mexiton.com

- **Universal Stainless & Alloy Products, Inc.**
  - 600 Mayer Street
  - Bridgeville PA 15017
  - 412-257-7600
  - www.univstainless.com

- **Crucible Specialty Metals**
  - P.O. Box 977
  - 575 State Fair Boulevard
  - Syracuse NY 13201
  - 800-365-1180
  - www.crucible.com

- **North American Stainless**
  - 6870 Highway 42
  - East Ghent, KY 41045
  - (800) 449-7833
  - www.northamericanstainless.com

- **Valbruna Slater Stainless Inc.**
  - A subsidiary of Valbruna Italy
  - 2400 Taylor Street West
  - Fort Wayne, IN 46801
  - Tel: (260) 434-2800
  - www.valbruna.com

- **Electralloy**
  - 175 Main Street
  - Oil City, PA 16301
  - (814) 678-4100
  - www.electralloy.com

- **Outokumpu Stainless, Inc.**
  - 425 N. Martingale Road, Suite 2000
  - Schaumburg, IL 60173-2218
  - Tel: (800) 833-8703
  - www.outokumpu.com
Carpenter Technology Corporation

Carpenter is a leading manufacturer and distributor of wrought and powder-metallurgy specialty alloys, as well as titanium alloys. The company serves the aerospace, automotive, medical, consumer products, energy, defense, and industrial markets with materials that offer high strength and toughness, excellent corrosion resistance, and outstanding high-temperature performance.

Carpenter’s customers range from global corporations to machine shops, forgers, and parts makers. Its materials can be found in everything from structural fasteners in aircraft to electronic equipment, medical devices and implants, industrial fittings, fuel injection systems, and sporting goods.

- Special alloys: Recognized for its technical expertise and innovation, Carpenter has more than a century of experience as a manufacturer of specialty alloys. Today the company’s product catalog includes stainless steels, high-strength alloys, high-temperature alloys, magnetic and controlled-expansion alloys, medical alloys, and superalloys. Product forms include gas-atomized powders, billet, bar, wire, fine wire, precision strip, plate, and custom-shaped bar and wire.
- Titanium: Dynamet, a Carpenter subsidiary, is a leading domestic and international supplier of titanium alloy products for the aerospace, medical, consumer products, motorsports, and recreation equipment industries. Its coil, bar, fine wire, strip, and shaped products have been designed for applications requiring corrosion-resistance, light weight, high strength, and biocompatibility.

The Nickel Institute

The Nickel Institute is a nonprofit organization that represents the interests of 24 companies, which together produce more than 90% of the world’s annual nickel output. The Institute was established on January 1, 2004, through the merger of the Nickel Development Institute (NiDI) and the Nickel Producers Environmental Research Association (NiPERA). www.nickelinstitute.org

Nickel producer members of the Nickel Institute

Anglo American Brasil
Sao Paulo-SP, Brazil
www.angloamericana.com.br/

European Nickel PLC
London, England
tel: 44 (0) 207 495 5085
fax: 44 (0) 207 629 9370
www.enickel.co.uk

Sumitomo Metal Mining Co. Ltd.
Tokyo, Japan
tel: 81 33 436 7891
fax: 81 33 436 7850
www.smm.co.jp

Anglo Platinum
Johannesburg, South Africa
tel: 27 11 373 6111
fax: 27 11 373 8011
www.angloplatinum.com

JFE Mineral Company Ltd.
Tokyo, Japan
tel: 81 3 4455 2217
fax: 81 3 4455 266
www.jfe-mineral.co.jp

Umicore
Brussels, Belgium
tel: 32 2 227 74 47
fax: 32 2 227 79 00
www.umicore.com

BHP Billiton
Brisbane, Australia
tel: 61 7 3224 3400
fax: 61 7 3229 2398
www.bhpbilliton.com

JSC MMC Norilsk Nickel
Moscow, Russia
tel: 7 995 787 7641
fax: 7 995 797 8617
www.normik.ru

Vale Inco
Toronto, Ontario, Canada
www.inco.com

Consolidated Minerals Limited
West Perth, Australia
tel: 61 8 9321 3633
fax: 61 8 9321 3644
www.consmine.com.au

Nippon Yakin Kogyo Co., Ltd.
Tokyo, Japan
tel: 81 3 3722 2121
fax: 81 3 3722 1800
www.nyk.co.jp

Xstrata Nickel
Toronto, Ontario, Canada
tel: 1 416 956 5700
fax: 1 416 956 5757
www.xstrata.com

Eramet
Paris, France
tel: 33 45 38 42 02
fax: 33 45 38 41 14
www.aramet.fr

Sherritt Intl. Corp.
Fort Saskatchewan, Alberta, Canada.
tel: 780 992 7880
fax: 780 992 7070
www.sherritt.com

- Special alloys: Recognized for its technical expertise and innovation, Carpenter has more than a century of experience as a manufacturer of specialty alloys. Today the company’s product catalog includes stainless steels, high-strength alloys, high-temperature alloys, magnetic and controlled-expansion alloys, medical alloys, and superalloys. Product forms include gas-atomized powders, billet, bar, wire, fine wire, precision strip, plate, and custom-shaped bar and wire.
- Titanium: Dynamet, a Carpenter subsidiary, is a leading domestic and international supplier of titanium alloy products for the aerospace, medical, consumer products, motorsports, and recreation equipment industries. Its coil, bar, fine wire, strip, and shaped products have been designed for applications requiring corrosion-resistance, light weight, high strength, and biocompatibility.

Carpenter is well represented in the technical community. The company provides expert commercial mechanical, metallographic, and chemical testing at its R&D facility, Carpenter Power Products, which specializes in a variety of products and processes, including hot isostatic pressing and a powder metallurgy forging process known as Dynaforge.

Carpenter’s strong commitment to product innovation is evidenced by its Research and Development Center, where teams work in such areas as physical metallurgy, analytical chemistry, material characterization, and process and systems development. Over the years, Carpenter has been issued more than 140 patents. One of them, AerMet 100 alloy, a super-strong alloy developed as a candidate for naval aircraft landing gear in 1992, was named one of the top material advances of the decade by the National Association for Science, Technology and Society. Dynamet also operates R&D facilities.

- Other Services: Carpenter also provides expert commercial mechanical, metallographic, and chemical testing at the Dynamic Materials Lab, conversion services at Shalmet, and supply solutions such as specialized packaging.

In addition to facilities in the United States, Carpenter also has operations in Canada, Japan, the United Kingdom, Brazil, and South Africa.

Carpenter also provides technical assistance and support to its customers through its Technical Services Department. This department includes material characterization, materials testing, and product design services. Carpenter’s technical team is dedicated to helping its customers select the right materials for their applications.

Carpenter Powder Products

Carpenter Powder Products is a leading domestic and international supplier of titanium alloy products for the aerospace, medical, consumer products, motorsports, and recreation equipment industries. Its coil, bar, fine wire, strip, and shaped products have been designed for applications requiring corrosion-resistance, light weight, high strength, and biocompatibility.

- Titanium: Dynamet, a Carpenter subsidiary, is a leading domestic and international supplier of titanium alloy products for the aerospace, medical, consumer products, motorsports, and recreation equipment industries. Its coil, bar, fine wire, strip, and shaped products have been designed for applications requiring corrosion-resistance, light weight, high strength, and biocompatibility.

Carpenter’s strong commitment to product innovation is evidenced by its Research and Development Center, where teams work in such areas as physical metallurgy, analytical chemistry, material characterization, and process and systems development. Over the years, Carpenter has been issued more than 140 patents. One of them, AerMet 100 alloy, a super-strong alloy developed as a candidate for naval aircraft landing gear in 1992, was named one of the top material advances of the decade by the National Association for Science, Technology and Society. Dynamet also operates R&D facilities.

- Other Services: Carpenter also provides expert commercial mechanical, metallographic, and chemical testing at the Dynamic Materials Lab, conversion services at Shalmet, and supply solutions such as specialized packaging.

In addition to facilities in the United States, Carpenter also has operations in Canada, Japan, the United Kingdom, Brazil, and South Africa.

Carpenter also provides technical assistance and support to its customers through its Technical Services Department. This department includes material characterization, materials testing, and product design services. Carpenter’s technical team is dedicated to helping its customers select the right materials for their applications.

Carpenter Powder Products is one of the world’s most versatile producers of specialty alloys in the form of loose powders, consolidated powder metallurgy products, and conventional tool steels. With a state-of-the-art R&D facility, Carpenter Powder Products leads the way as a powder supplier for metal injection molding and hot isostatic pressing processes. CIPP specializes in a variety of products and processes, including hot isostatic pressing and a powder metallurgy forging process known as Dynaforge.

- Research and Development: Carpenter’s strong commitment to product innovation is evidenced by its Research and Development Center, where teams work in such areas as physical metallurgy, analytical chemistry, material characterization, and process and systems development. Over the years, Carpenter has been issued more than 140 patents. One of them, AerMet 100 alloy, a super-strong alloy developed as a candidate for naval aircraft landing gear in 1992, was named one of the top material advances of the decade by the National Association for Science, Technology and Society. Dynamet also operates R&D facilities.

- Other Services: Carpenter also provides expert commercial mechanical, metallographic, and chemical testing at the Dynamic Materials Lab, conversion services at Shalmet, and supply solutions such as specialized packaging.

In addition to facilities in the United States, Carpenter also has operations in Canada, Japan, the United Kingdom, Brazil, and South Africa.

Carpenter also provides technical assistance and support to its customers through its Technical Services Department. This department includes material characterization, materials testing, and product design services. Carpenter’s technical team is dedicated to helping its customers select the right materials for their applications.
States, Carpenter has manufacturing operations, service centers, warehouses, and sales offices in Europe, Asia, Mexico, and Canada. This network offers the most comprehensive technical and sales assistance in the industry, enabling the company to collaborate closely with customers for solutions to their most demanding design challenges.

For more information: Carpenter Technology Corp., Reading, PA 19601; tel: 800/654-6543; www.cartech.com.

Carpenter Technology products include stainless steels, high-strength alloys, high-temperature alloys, magnetic and controlled-expansion alloys, medical alloys, and superalloys. Product forms include gas-atomized powders, billet, bar, wire, fine wire, precision strip, plate and custom-shaped bar and wire.

Crucible Compaction Metals

Crucible Materials Corporation has a history of technical innovation and advancement. This approach is embodied in the culture of Crucible Compaction Metals, an advanced powder metallurgy production facility located in western Pennsylvania. On-site facilities include an 8000-pound vacuum-induction-melt inert-gas atomizer, powder handling clean rooms, advanced vacuum loading systems, and one of the world’s largest HIP (hot isostatic press) vessels.

Compaction Metals manufacturing process yields high-performance powder metallurgy materials characterized by 100% theoretical density. They surpass the specifications and properties of their conventionally produced counterparts, offering significant benefits to industries such as aerospace, power generation, marine systems, petrochemical, plastics, and food processing. Core competencies include:

- Production of nickel-base superalloys and other exotic materials for high-temperature service and applications requiring excellent corrosion resistance.
- Manufacture of near-net shape components that minimize material and machining costs.
- HIP-cladding of specialized tooling utilizing our unique CRU-CLAD process, which entails depositing high performance CPM grades onto low-cost substrates for an unrivaled combination of performance and price.

Crucible’s goal is to deliver unmatched quality, price, delivery, and customer service, and nothing short of excellence in all aspects of our operations is accepted. Crucible is ISO 9001:2000 and AS9100 certified.

Crucible Compaction Metals produces high-performance powder metallurgy materials characterized by 100% theoretical density. They surpass the specifications and properties of their conventionally produced counterparts, offering significant benefits to industries such as aerospace, power generation, marine systems, petrochemical, plastics, and food processing.

For more information: Brian McTiernan, Crucible Compaction Metals, 1001 Robb Hill Road, Oakdale, PA 15071-3200; tel: 888/923-2670; brian.mctiernan@crucible.com; www.crucible.com.
**SPECIALTY ALLOYS**

**Haynes International Inc.**

Haynes is an industry leader in the development and manufacture of high-temperature and corrosion-resistant high-performance wrought alloys. Haynes primarily produces nickel-and cobalt-base alloys that address technically demanding end-markets such as aerospace, chemical processing, and land-based gas turbines, as well as emerging markets such as fuel cells, solar power, and ultra-supercritical boilers.

The entrepreneurial spirit of our research and development group continues to position the company for the future with new products targeted at solving specific customer performance issues. We invented five alloys in the 1980s, seven alloys in the 1990s, and six alloys since 2000. These new high-performance alloys include:

- **Hastelloy C-22HS** is a versatile C-type alloy with excellent resistance to both oxidizing and reducing acids. It can be aged to achieve a strength higher than the other C-type alloys. This alloy is aimed at applications in the oil and gas and chemical processing industries.
- **Hastelloy G-35** is a Ni-Cr-Mo corrosion-resistant alloy for service in “wet process” phosphoric acid, which is widely used in the production of fertilizers.
- **Haynes 282** alloy combines exceptional high-temperature properties with good weldability and fabricability. It is a leading candidate for hot-section components of aircraft and land-based gas turbines, as well as automotive turbochargers.
- **Hastelloy Hybrid-BC1** alloy offers improved resistance to the most aggressive corrosion environments found in the chemical processing industry, including hydrochloric and sulfuric acids. It can also withstand oxidizing acids and mixtures to moderate temperatures. It possesses remarkable resistance to chloride-induced pitting, crevice attack, and stress-corrosion cracking.
- **Haynes NS-163** is a cobalt-base developmental alloy designed to bring a new level of performance at temperatures up to 2200°F (1204°C). It is fully fabricable and weldable, and has an extraordinarily high level of stress-rupture strength. Expected applications for this alloy are in aircraft and land-based gas turbines, and automotive components.
- **Haynes HR-224** alloy is a developmental Ni-Fe-Cr-Al alloy designed to achieve superior oxidation resistance and provide excellent ductility and formability. Potential markets include automotive, thermal processing, and gas turbines.

Our worldwide technical and commercial salespeople work closely with our customers to understand their business, the markets they serve, and their products. We provide one-on-one consultation in selecting the proper alloy for the application, and we provide testing samples and failure analysis. We operate our own service centers and sales offices in China, England, France, India, Italy, Singapore, Switzerland, and the United States. Our service center capabilities extend from specialized cutting, such as laser, plasma, and waterjet, to just-in-time delivery. Value-added services such as near-net shape and laser-cut parts, QC inspection, and kitting, reduce labor time and material waste.

Dedication to safely manufacturing the highest quality products is extended to all of our facilities, including our production facility in Kokomo, Indiana; the Louisiana tubular facility; and Haynes Wire Company in North Carolina.

---

**International Stainless Steel Forum**

The International Stainless Steel Forum (ISSF) is a non-profit research organization that serves as the world forum on various aspects of the international stainless steel industry. Founded in 1996, ISSF has two categories of membership: company members and affiliated members. Company members are producers of stainless steel (integrated mills and rerollers). Affiliated Members are national or regional stainless steel industry associations. ISSF now comprises 72 company and affiliated members in 26 countries. Jointly they produced 75 to 80% of all stainless steel manufactured in 2007. www.worldstainless.org

**National Members of the International Stainless Steel Forum**

- British Stainless Steel Association (BSSA), www.bssa.org.uk
- Institut de Développement de l’Inox (ID Inox), www.idinox.com
- CEDINOX, www.cedinox.es
- Japan Stainless Steel Association (JSSA), www.jssa.gr.jp
- CENDI, www.cendi.org.mx
- Nucleo Inox, www.nucleoinox.org.br
- Centro Inox, www.centroinox.it
- Southern Africa Stainless Steel Development Association (SASSSDA), www.sassdda.co.za
- Edelstahl-Vereinigung e.V., www.evstahl.de
- Special Steel and Alloys Consumers and Suppliers Association (USSA), www.ussa.su
- Euro Inox, www.euro-inox.org
- Specialty Steel Industry of North America (SSINA), www.sssina.com
- Indian Stainless Steel Development Association (ISSDA), www.stainlessindia.org
- Stainless Steel Council of China Special Steel Enterprises Association (CSSC), www.cssc.org.cn
- Informationstelle Edelstahl Rostfrei (ISER), www.edelstahl-rostfrei.de
- Thai Stainless Steel Development Association, www.bssda.org

---

**DIRECTORY**

44
product forms include sheet, plate, strip, pipe and tubing, bar, billet, wire and welding products, and fittings and flanges. Haynes is ISO 14001 and OHSAS 18001 certified.

For more information: Lee Flower, 1020 West Park Avenue, Kokomo, IN 46904; tel: 800/354-0806; lflower@haynesintl.com; www.haynesintl.com.

HAYNES 230 alloy is used for its exceptional high-temperature properties by Infinia Corporation in their Sterling engines, which are the heart of their solar power generators.

SPECIALTY ALLOYS

Special Metals Corporation

Special Metals is the world’s leading producer of high-performance nickel-base alloys. Through its ten U.S. and European production facilities and a global distribution network, including a joint venture in Japan, Special Metals supplies over 5000 customers and every major world market for high-performance nickel-base alloys.

The Special Metals group of companies was created in the latter part of 1998 when Special Metals Corporation of New Hartford, New York, acquired Inco Alloys International. Today Special Metals includes manufacturing and research facilities in the United States and Europe, sales offices in North America, Europe, and Asia, and a distribution network that spans most of the industrialized countries of the world.

With principal manufacturing units in the United States, Great Britain, and France, Special Metals is a leader in the creation, production, and supply of the high-nickel, high-performance alloys needed for “the difficult jobs in engineering.” In 2006, Special Metals became a member of the Precision Castparts Corp. family of companies.

Special Metals is the world’s leading inventor and producer of nickel-base superalloys, and developed most of the nickel alloys in service today. Approximately 85% of all alloys currently manufactured by the company were invented in the laboratories of Special Metals or its predecessor companies.

The company produces nickel alloys in all significant mill forms, from large ingots and billets to flat and tubular products, bar and wire, and welding products. These alloys are classified into unique families recognized worldwide. They encompass many trademarks, including Inconel, Incoloy, Nimonic, Udimet, Monel, Brightray, Nilo, and Incoweld.

The high-performance nickel-based alloys manufactured by Special Metals are engineered to offer a superior combination of corrosion and heat resistance, strength, toughness, and ease of fabrication. The company’s specialty metal products are used in the world’s most technically demanding industries and applications.

Alloy development has been a primary function of Special Metals since the 1920s. In the 1950s, it pioneered the vacuum induction melting (VIM) technology that led to the practical development of superalloys that are the materials for fabrication of the critical components in the hot sections of jet engines, including turbine blades, vanes, disks, rings, seals and shafts.

Today, Special Metals offers the most-complete family of high-performance nickel alloys and stainless steel products in a complete cross section of product forms and sizes for high-technology industrial markets worldwide. Aerospace, power generation, chemical and petrochemical processing, oil and gas exploration, extraction and refining, pollution control, and automotive are among the many consumers of Special Metals products.

For more information: Stanton Kirk, Special Metals Corp., 3200 Riverside Drive, Huntington, WV 25705; tel: 304/526-5100; skirk@smcwv.com; www.smcwv.com.

Special Metals produces nickel alloys in all significant mill forms, from large ingots and billets to flat and tubular products, bar and wire, and welding products. These alloys are classified into unique families recognized worldwide. They encompass many trademarks, including Inconel, Incoloy, Nimonic, Udimet, Monel, Brightray, Nilo, and Incoweld.
SPECIALTY ALLOYS

Ulbrich Stainless Steels and Special Metals Inc.

Ulbrich Stainless Steels and Special Metals is an international company that produces stainless steels and special metals in strip and foil as well as flat, fine, and shaped wire. We serve markets as diverse as aerospace, aircraft, and automotive, nuclear and solar energy, medical and surgical equipment, chemical processing, electronics, and many others. Ulbrich has a worldwide service center network, extensive sales and technical support, abundant inventory, and several quality certifications in place.

At Ulbrich, we believe in giving you as many options as possible. Here you’ll find a full range of grades and alloys, along with specialized equipment to process your custom order. Our revolving inventory of over 140 alloys is on a fast track retrieval system to get your order processed quickly and efficiently. Your choices include all of the more common stainless steels, nickel and nickel alloys, titanium and titanium alloys, and a range of other special grades. We meet requirements of strip that must be truly flat (0.005 piw) with the latest in stretch bend leveling technology and rugged tension bridles, along with a nest of small diameter bending rolls. We honor challenges to customize any difficult-to-produce dimensions, specifications, and tolerances; we produce everything from average to extremely tight tolerances.

- **Specialty Wire Group** produces rounds, complex shapes, flat and fine wire, and plated products in stainless steels, special metals, carbon, copper, and aluminum alloys. The ability of our shaped wire facility to produce customized cross sections saves important manufacturing costs in many applications. The versatility of our shaped wire process allows us to produce net or near-net custom cross-

International Stainless Steel Forum

Peg: I need an intro for this directory [www.worldstainless.org](http://www.worldstainless.org)

**International Stainless Steel Forum company members**

- **Acerinox S.A.**
  www.acxgroup.com

- **Nippon Kinzoku Co., Ltd.**
  www.nipponkinzoku.co.jp

- **Takasago Tekko K.K.**
  www.takasago-t.co.jp

- **Acesita S.A.**
  www.acesita.com.br

- **Nippon Metal Industry Co., Ltd.**
  www.nikkinko.co.jp

- **Tang Eng Iron Works Co., Ltd.**
  www.tangeng.com.tw

- **Aichi Steel Corporation**
  www.aichi-steel.co.jp

- **Nippon Steel and Sumikin Stainless**
  www.rs-sc.co.jp

- **Thainox Stainless Public Company Ltd.**
  www.thainox.co.th

- **Arcelor Mittal Stainless**
  www.arcelormittal.com

- **Nippon Yakin Kogyo Co., Ltd.**
  www.nyk.co.jp

- **ThysenKrupp Acciai Speciali Terni S.p.A.**
  www.acciaitermi.it

- **Baoshan Iron and Steel Co. (Stainless Steel Branch).**
  www.shnolsteel.com

- **Nisshin Steel Co., Ltd.**
  www.nisshin-steel.co.jp

- **ThysenKrupp Mexinox S.A. de C.V.**
  www.mexinox.com.mx

- **Cogne Acciai Speciali S.p.A.**
  www.cogne.com

- **North American Stainless**
  www.northamericanstainless.com

- **ThysenKrupp Nirosta GmbH**
  www.stainless.thyssenkrupp.com

- **Columbus Stainless (Pty) Ltd.**
  www.columbus.co.za

- **Outokumpu Oy**
  www.outokumpu.com

- **Ugine & ALZ**
  www.ugine-alz.com

- **Daido Steel Co. Ltd.**
  www.daido.co.jp

- **Panchmahal Steel Limited (PSL)**
  www.panchmahal-steel.com

- **Ugetech S.A.**
  www.ugetech.com

- **Deutsche Edelstahlwerke GmbH**
  www.deewahl.com

- **POSCO Specialty Steel Co., Ltd.**
  www.poscoss.co.kr

- **Hyundai Steel Company**
  www.hyundais.steel.com

- **Shanghai Krupp Stainless (SKS)**
  www.skchina.com

- **Walsin Lihwa Corporation**
  www.walsin.com

- **JFE Steel Corporation**
  www.jfe-steel.co.jp/en

- **Steel Authority of India Ltd. (SAIL)**
  www.sail.co.in

- **Yieh United Steel Corporation (YUSCO)**
  www.yusco.com.tw

- **JSC Dneprotsvetstal**
  www.dss.com.ua

- **Sumitomo Metal Industries, Ltd.**
  www.sumitomometals.co.jp

- **Zhangjiagang Pohang Stainless Steel Co. Ltd. (ZPSS)**
  www.posco.co.kr

- **Ningbo Baoxin Stainless Steel Co., Ltd.**
  www.custeel.com/gb23

- **Taiyuan Iron and Steel Group (TISCO)**
  www.tgbx.com/tisco
Cobalt Development Institute

The Cobalt Development Institute has existed in some form since 1957. The current Institute was established in 1982, and is an international nonprofit association of producers, users, and traders of cobalt. www.thecdi.com

Members of the Cobalt Development Institute

Borchers France S.A.
Castres, France
tel: 33 5 63 72 65 70
fax: 33 5 63 72 65 89
www.borchers.fr

Formation Capital Corporation
Vancouver, BC, Canada
tel: 1 604 682 6229
fax: 1 604 682 6205
www.formcap.com

QNI Pty Ltd.
Brisbane, Australia
tel: 61 7 3224 3400
fax: 61 7 3229 2986
www.billiton.com

Caledonia Mining Corporation
Mississauga, Ontario, Canada
tel: 1 905 607 7543
fax: 1 905 607 9806
www.caledonia mining.com

Gipronickel Institute
Petersburg, Russia
17 812 534 2828
fax: 7 812 535 8333
www.nickel.spb.ru

Sandvik AB
Stockholm, Sweden
tel: 46 8 726 6300
fax: 46 8 726 9069
www.sandvik.com

Cannon-Muskegon Corporation
Muskegon, Michigan
tel: 616-755-1681
fax: 1-616-755-4975
www.cmggroup.com

Glencore International AG
Zug, Switzerland
tel: 41 41 709 2000
fax: 41 41 709 3000
www.glencore.com

Seco Tools AB
Fagersta, Sweden
tel: 46 223 40 000
fax: 46 223 40 700
www.secotools.com

Cemented Carbide Producers Association
Cleveland, Ohio
tel: 1 440 899 4000
fax: 1 440 892 1404
www.ccpa.org

H.C. Starck GmbH & Co. KG
Goslar, Germany
149321751473
fax: 49 5321 751870
www.hcstarck.com

The Shepherd Chemical Co.
Cincinnati, Ohio
151531 1110
fax: 151531 1532
www.shepchem.com

Chempco
Lausanne, Switzerland
tel: 41 21 601 3000
fax: 41 21 345 2577
www.chempro.qc.ca

Hoşgânis Belgium S.A.
Ath, Belgium
32 68 26 89 89
fax: 31 68 28 57 75
www.hoganas.com

Sumitomo Metal Mining Co. Ltd., Tokyo, Japan
tel: 81 3 5436 7873
fax: 81 3 5436 1238
www.sumitomo.com

Compass Resources NL
Roseville, Australia
tel: 61 2 9417 3588
fax: 61 2 9417 8750
www.compassnl.com.au

Kennametal Inc.
Latrobe, Pa.
tel: 1 724 539 5000
fax: 1 724 539 5744
www.kennametal.com

Todini and Co. SpA
Monza, Italy
39 039 230 2495
www.todiniandco.com

CTT
Casablanca, Morocco
tel: 212 22 95 63 38
fax: 212 22 95 64 38
www.cpmn.orq

Less Common Metals
Birkenhead, England
tel: 44 151 652 9747
fax: 44 151 652 9748
www.lesscommonmetals.com

Umicore
Olen, Belgium
32 14 24 54 79
fax: 32 14 21 35 74
www.umicore.com

Darton Commodities Ltd.
Guildford, England
tel: 44 1483 579825
fax: 44 1483 514177
www.dartoncommodities.co.uk

Mitsui & Co. Ltd., Tokyo, Japan
tel: 81 3 3285 3322
fax: 81 3 3285 9800
www.mitsui.co.jp

Western Mining Corp. Ltd.
Toronto, Ontario, Canada
tel: 1 416 366 0132
fax: 1 416 366 6444
www.wmc.com

Deloro Stellite Inc.
Swindon, England
44 (0)1793 498500
fax: 44 (0)1793 498501
www.tellstellite.com

Norilsk Nickel
Moscow, Russia
7 095 785 7667
fax: 7 095 785 5808
www.norilsknickel.ru

Wogen Resources Ltd.
London, England
44 20 7222 4321
fax: 44 20 7222 5862
www.wogen.com

OM Group Inc.
Cleveland, Ohio
tel: 1 216 781 0083
fax: 1 216 781 1582
www.omg.com

Xstrata Nickel
Toronto, Ontario, Canada
M5J 2T3
1 416 982 7111
www.xstrata.com

ADVANCED MATERIALS & PROCESSES/MARCH 2009

47