

Cristal Metals was formed in 1997 as International Titanium Powder (ITP) to develop and commercialize Armstrong Process® patented and proprietary technology to produce high quality metal and alloy powders for production.

We are passionate about pursuing perfection in our work, transforming the titanium metals industry, and providing for our family of employees. Cristal Metals strives to be a model and leading corporate citizen by changing the way titanium materials are produced, growing the titanium industry, protecting the environment, and giving back to the communities where we work.

Strategic Ownership

In 2008, Cristal Metals (formerly ITP) was acquired by Cristal US, Inc. Cristal has extensive experience in titanium. At seven plants around the world, Cristal takes titanium ore through either the sulfate or chloride process and extracts the titanium for the production of titanium intermediates, pigments and catalyst products.

Cristal has over 20 years' experience in the supply of titanium tetrachloride (TiCl₄) to titanium sponge producers. Together, Cristal and Cristal Metals are bringing the science of chemistry to traditional metallurgical processes.

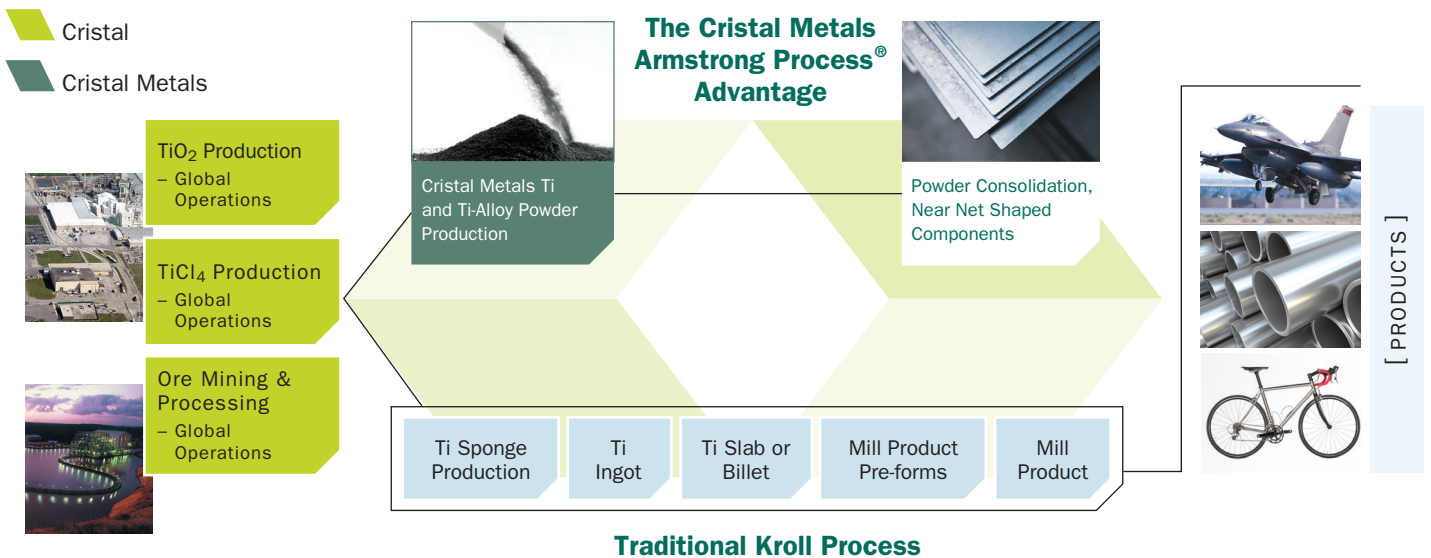
Armstrong Process® Technology

Armstrong Process® technology has been developed to provide powders for efficient powder metallurgy processes to facilitate the production and to reduce the environmental impact of titanium production.

The process begins with titanium tetrachloride that is reacted to form solid titanium powder and sodium chloride (common table salt). The unique properties resulting from the Armstrong Process® will enable the production of lower-cost titanium components via direct powder consolidation. Cristal Metals owns all rights to the Armstrong Process® technology, which can be used for production of a wide range of metals, alloys, composites, and ceramics.

The Armstrong Process® technology eliminates the need to process sponge and to undergo the numerous steps required to produce finished articles. The Armstrong Process® thereby reduces supply chain cycle time, energy consumption, manufacturing costs and environmental impact.

TITANIUM METAL VALUE CHAIN



Production Capability

Cristal Metals' production facility is in Ottawa, Illinois.

Our Products

Cristal Metals is the exclusive producer of high quality Armstrong Process® titanium metal and alloy powders

PRODUCT TYPES/FORMS

- Commercially Pure Titanium Powder
- Ti 6Al-4V Powders

PRODUCT BENEFITS

- Higher purity, chemical-based process
- Highly compactible powder
- High green strength
- Enables low-cost part manufacture
- Uniform grain structure
- Reduced value chain waste and recycle
- Consistent end product properties

APPLICATIONS

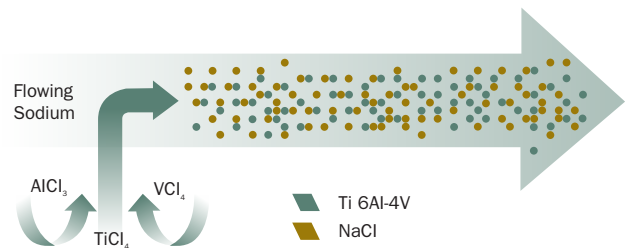
- Aerospace
- Defense
- Automotive
- Electronics
- Medical
- Chemicals and corrosives containment
- Desalination
- Marine hardware
- Oil and gas production
- Power generation
- Extractive metallurgy
- Electroplating equipment
- Architecture

Our Commitment to Safety, Health and the Environment

Our commitment as a socially responsible company means that we operate our facilities in a manner that protects people and the environment and preserves our world for future generations. We are committed to continuous improvement in safety, security, environmental performance, reliability and open communication.

Cristal Metals is continuously assessing our environmental footprint in every facet of our production—from acquiring and shipping raw materials all the way through to delivery, product life cycle and package disposal. Employing the Armstrong Process® with traditional powder metallurgy, we are dramatically reducing the amount of waste typically associated with the manufacture of titanium-based products.

The Armstrong Process® Technology



- Reaction efficiency 100%
- Low temperature
- Direct alloy production

815-834-2112

www.cristalmetals.com

Cristal Metals

PRODUCTION PLANT

1501 Titanium Drive
Ottawa, Illinois 61350