

**ReadingAlloys**  
advanced engineered materials®

An **AMETEK** Company

## A Premier Producer of High-Purity Titanium Specialty Powders

Reading Alloys, Inc. is a global leader in producing master alloys, specialty alloys and high-purity metal and fine powders. Our high-purity alloys are manufactured in accordance with ISO 9001:2000 and AS 9100 certified and supported by an analytical laboratory that is Nadcap approved.

Our manufacturing processes include Hydride-Dehydride, Electron Beam Melting and Refining, Induction Melting, Vacuum Sintering, Aluminothermic Smelting and Cold Isostatic Pressing. Specialized equipment is used to customize particle size distribution, morphology, agglomeration and sizing of powder products.

### Powder Products

Medical and custom grades available in CP Ti and Ti-6Al-4V (low Oxygen) powders, Al-V, Mo-Ti and Nb. Also available as hydride powders.

### Powder Characteristics

Typical particle size distributions (PSD) range from 45 to 150 microns with an angular morphology. Medical grade powders are certified to ASTM F1580-01 chemistry.

### Markets Served

Powder Metallurgy processes such as Hot Isostatic Pressing, Cold Isostatic Pressing/Sintering, Metal Injection Moulding and Plasma Spraying.

### Powder Applications

Porous Coatings on titanium alloy implants, near net shape, sputtering targets, electronics and feedstock.

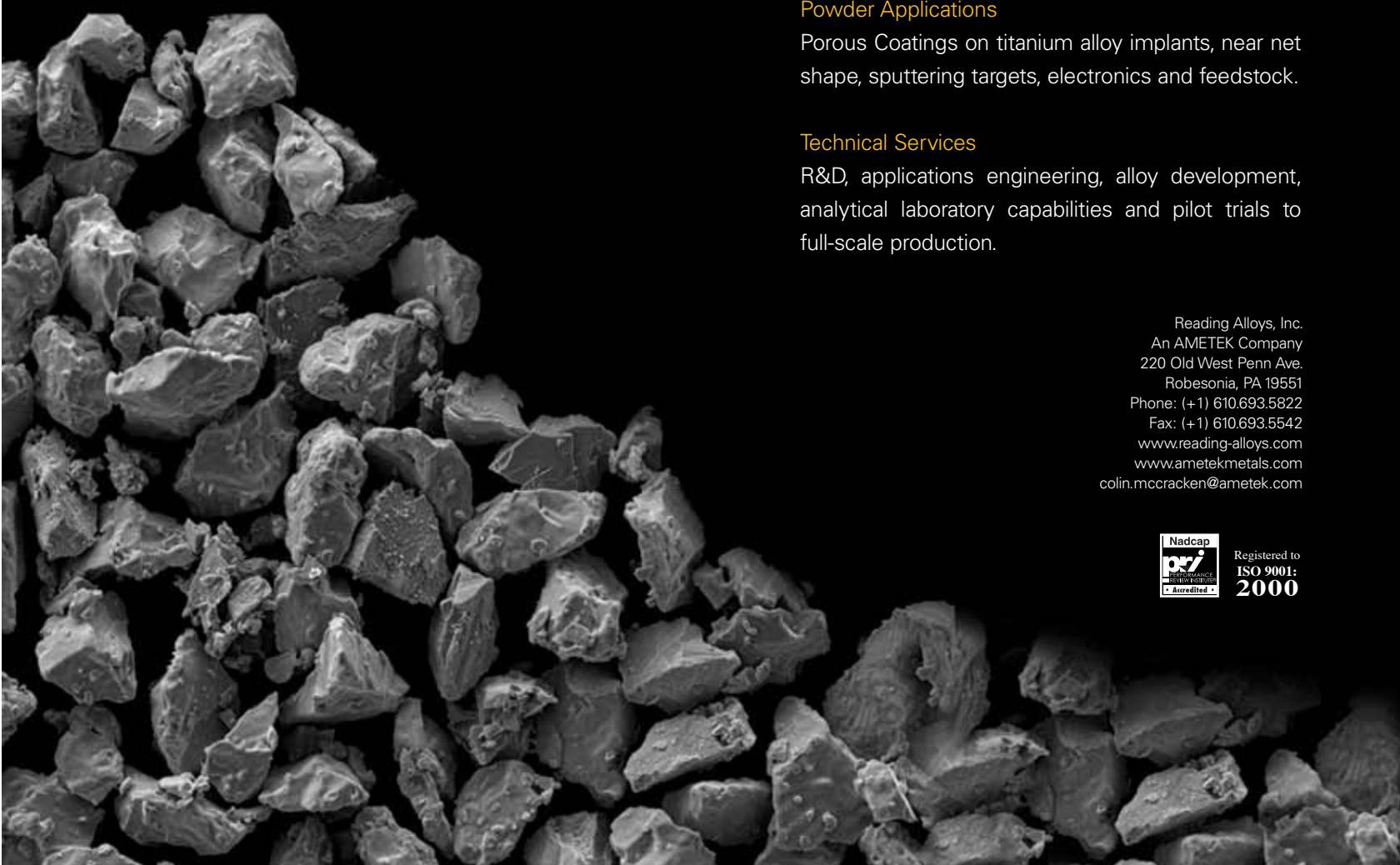
### Technical Services

R&D, applications engineering, alloy development, analytical laboratory capabilities and pilot trials to full-scale production.

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Registered to  
**ISO 9001:**  
**2000**



**Commercially Pure Titanium Powder**

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## Titanium Powder and Titanium Alloy Powders: Offering Unique Properties for the Most Demanding Applications

For several years, Reading Alloys, Inc. (RAI) has been developing and expanding its product range to include metal and alloy powders in the range of 45 microns (325 mesh) to 212 microns (70 mesh). The focus of this work has been on manufacturing CP Ti, Ti-6AL-4V (ELI) and other associated alloy powders. Our process is based on the Hydride-Dehydride (HDH) route, which relies upon the brittle nature of metal hydrides that can be milled and screened to produce fine powders, with controlled particle size distributions. The process can also be extended to produce metal hydride and metal oxide powders.

Other manufacturing processes such as Electron Beam Melting and Refining, Induction Melting, Vacuum Sintering and Cold Isostatic Pressing also play in integral part in the production of specialty powders. Additionally, all of our high-purity alloys are manufactured in accordance with ISO 9001:2000 and AS 9100 standards.

Fine powders used for orthopedic devices are magnetically screened and acid washed to remove any free Iron contamination. RAI uses its Nadcap certified laboratory to determine and certify chemistry against customer and industry standard specifications. Our typical medical grade powders are certified to ASTM F1580-01 chemistry limits.

Oxygen control is an important parameter in Titanium production as it directly impacts strength and ductility. Titanium has a very strong affinity for Oxygen, forming a very stable surface oxide layer. The Oxygen content of very fine powders can significantly increase for powders with a high surface area to volume ratio. Control of the entire manufacturing process is critical to producing powders with low Oxygen content.

Particle Size Distribution (PSD) represents another important powder parameter. Many plasma spray coaters specify US sieve sizes for powders. For some finer powder grades, laser PSD measurement is preferred which significantly increases the PSD resolution below 75 microns (200 mesh). RAI offers either Microtrac or Malvern Laser PSD test methods. A representative Microtrac powder distribution is shown in Figure 1.

Continuous development in Titanium and other alloy powders has enabled RAI to expand into applications such as sputtering targets, near net shape, powder injection molding, electronics and wire products. Related alloy powders include our Al-V, Al-Nb and Mo-Ti powders.

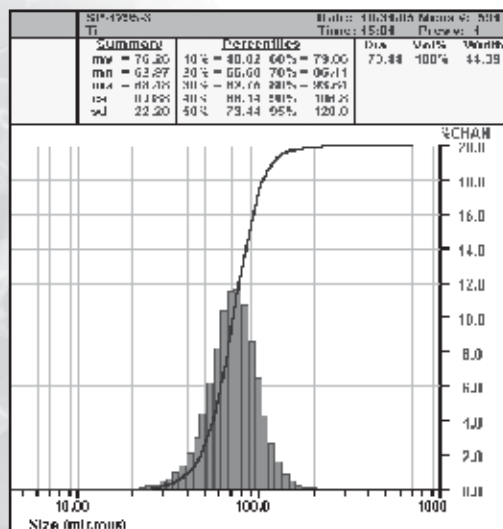


Figure 1: Microtrac Particle Size Distribution for a Typical CP Ti Powder

For further information, please contact us by fax or email outlining your areas of interest.

### YES! I WOULD LIKE TO LEARN MORE ABOUT READING ALLOYS SERVICES

Complete this form and fax it to: (+1) 610.693.5542 or email at: colin.mccracken@ametek.com

#### Contact Info

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#### Interest

CP Ti or Ti 6AL-4V Powders  Low Oxygen Powders  
 Metal Hydrides or Oxide Powders  AL-V, AL-NB or MO-TI Powders  Other Powders \_\_\_\_\_

#### Primary Business/Industry

Aerospace or Electronics  Biomedical or Plasma Coating  Sputtering Targets  
 Commercial or Advanced Ceramics  Raw Materials Manufacturer  Other \_\_\_\_\_