

MASTER ALLOYS: Niobium



TECHNICAL DATA SHEET

Niobium is an important alloying element used in the titanium, steel, and superalloy industries that increases the toughness, strength, formability, and weldability of the metal it is alloyed with.



ReadingAlloys
advanced engineered materials[®]

INTRODUCTION

Reading Alloys innovates and produces superior master alloys, specialty alloys and metal powder products renowned for high purity and specific material characteristics. From aerospace to medical, to military to electronics, applications that demand the ultimate in performance rely on Reading Alloys' products. The company is widely recognized for its expertise in aluminothermic smelting, induction melting, vacuum sintering, metal powder production and electron beam refining.

Recognized as a premier supplier in applications where ultimate quality is critical; Reading Alloys produces high-purity materials in accordance with a certified ISO 9001 / AS 9100 quality management system and tested by a Nadcap accredited analytical laboratory. Our company maintains comprehensive quality assurance processes and precision material characterization systems to support the continued development of our core master alloys and high-purity fine powders.



APPLICATIONS

Niobium is an important alloying element used in the titanium, steel, and superalloy industries. The use of niobium increases the toughness, strength, formability, and weldability of the metal it is alloyed with.

Titanium alloyed with niobium is advantageous in aerospace, medical, and industrial applications. As niobium is hypoallergenic, it is especially suitable for use in titanium medical implants. Its use in superalloys lends itself well for jet engine components and medical implants.

Because niobium is relatively lightweight and can maintain its strength at elevated temperatures, it is used extensively as an alloying addition in aerospace alloys and land based turbine applications. Its use in nuclear, aerospace, and superconducting applications is increasing each year.

Reading Alloys produces niobium containing master alloys for both vacuum and induction melting. Nickel niobium and ferro niobium vacuum grades are available as standard products for Superalloy producers. This alloy group includes materials used in the production of both 718 and 706 for aircraft and land based turbine applications. Nickel niobium can be used as a casting addition or as a powder product.

Other alloys and alloy combinations, sizes and powder products are available upon request. Our unparalleled experience in alloy design and manufacturing enable us to gain an in-depth understanding of customer specific material requirements and expectations.

Please contact us to review your requirements at rai.sales@ametech.com

Continuous product development may make it necessary to change product details without notice.

MASTER ALLOYS: NIOBIUM

Element %	Ni-Nb (Vacuum Grade)	Ni-Nb Powder	Fe-Nb (Vacuum Grade)	Fe-Nb Powder	40Al-60Nb
Niobium	60% Minimum	60% Minimum	60% Minimum	60% Minimum	58-63%
Nickel	Balance	Balance	0.25% Max	1.0% Max	0.05% Max
Aluminum	1.5% Max	1.50% Max	1.5% Max	1.25% Max	37-41% Max
Boron	--	--	--	--	0.01% Max
Carbon	0.10% Max	0.10% Max	0.10% Max	0.05% Max	0.10% Max
Chromium	0.10% Max	0.10% Max	0.10% Max	--	0.05% Max
Cobalt	0.10% Max	--	--	--	--
Copper	0.10% Max	--	0.10% Max	--	0.05% Max
Iron	1.0% Max	--	Balance	Balance	0.35% Max
Lead	--	0.02% Max	--	0.01% Max	--
Manganese	0.10% Max	0.40% Max	0.10% Max	0.02% Max	0.05% Max
Phosphorous	0.03% Max	0.03% Max	0.03% Max	0.02% Max	0.02% Max
Selenium	--	0.005% Max	--	--	--
Silicon	0.20% Max	0.50% Max	0.20% Max	0.50% Max	0.30% Max
Sulfur	0.015% Max	0.01% max	0.015% Max	0.03% Max	0.024% Max
Tantalum	0.20% Max	0.75% Max	0.20% Max	0.75% Max	0.30% Max
Tin	--	0.02% Max	--	0.01% Max	--
Titanium	--	0.30% Max	--	0.10% Max	--
Nitrogen	0.02% Max	--	0.02% Max	--	0.05% Max
Oxygen	0.15% Max	--	0.15% Max	--	0.10% Max

RAI ID#	RAI-0002	RAI-0003	RAI-0005	RAI-0006	RAI-0084
Standard Size*	2" x down	• - 30 mesh	2" x down	40 mesh x down	<ul style="list-style-type: none"> • 5/16" x down • 20 mesh x down
Packaging**	500 lb open-head steel drums (17 gallon)	500 lb open-head steel drums (17 gallon)	500 lb open-head steel drums (17 gallon)	500 lb open-head steel drums (17 gallon)	1,000 lb open-head steel drums (55 gallon)

* Other sizes available upon request. ** Other packaging available upon request. Continuous product development may make it necessary to change product details without notice.



AMETEK Specialty Metal Products at a Glance

Reading Alloys is a unit of AMETEK Specialty Metal Products (SMP) operating within the Engineered Materials division of AMETEK Inc, a leading global producer of electronic instruments and electromechanical devices.

AMETEK SMP is a leading manufacturer of advanced metallurgical products including high purity powders, master alloys, precision metal tube, strip and foil. These products are manufactured at six operating facilities in the United States and the United Kingdom for a variety of critical applications, including aerospace, automotive, defense, electronics, energy, medical, general industrial and oil and gas.



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ISO 9001 / AS9100 Certified

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