

## MASTER ALLOYS: Molybdenum



### TECHNICAL DATA SHEET

Molybdenum is a critical alloying element for the titanium and superalloy industries that has the ability to withstand extreme temperatures without significantly expanding or softening.



**ReadingAlloys**  
*advanced engineered materials*<sup>®</sup>

### 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

The ability of molybdenum to withstand extreme temperatures without significantly expanding or softening makes it useful in applications that involve intense heat. In addition, the use of molybdenum aids in corrosion resistance, weldability and increases strength.

The enhanced properties of the titanium-molybdenum alloys lend themselves well for use in aerospace, medical, and industrial applications. Many critical molybdenum containing titanium alloys are used in jet engine parts in addition to medical implants, electrical contacts, and industrial motors and filaments.

Reading Alloys produces several molybdenum master alloys for both the aerospace and non-aerospace industries. Aerospace applications include alloys for the production of jet engine components. Molybdenum master alloys are used in high-strength and high-temperature applications for specialty steels, oil pipelines and aircraft and missile components.

Molybdenum is a cost-effective metal known for imparting strength and stability in high-heat applications. Titanium alloys such as 6242, 6246, and Ti17 utilize the benefits of molybdenum to develop their unique properties. Reading Alloys' close control of raw materials and processes allow us to produce a variety of high end Al/Mo master alloys that can be used with confidence in the production of these critical alloys.

Reading Alloys 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@ametek.com](mailto:rai.sales@ametek.com)

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

## MASTER ALLOYS: MOLYBDENUM

Element %	35Al-65Mo	45Al-55Mo-Ti	Al-Mo-V-Ti	50Mo-50Ti
<b>Aluminum</b>	34-38%	40-45%	14-21%	--
<b>Molybdenum</b>	62-66%	50-55%	26.5-28.5%	48-52%
<b>Titanium</b>	0.3% Max	2-5%	3% Max	48-52%
<b>Vanadium</b>	--	0.05% Max	48-53%	--
<b>Boron</b>	0.01% Max	0.005% Max	0.005% Max	0.01% Max
<b>Carbon</b>	0.05% Max	0.10% Max	0.05% Max	0.10% Max
<b>Chromium</b>	--	0.05% Max	--	--
<b>Copper</b>	--	0.05% Max	0.03% Max	--
<b>Iron</b>	0.20% Max	0.40% Max	0.30% Max	0.50% Max
<b>Magnesium</b>	--	0.05% Max	--	--
<b>Manganese</b>	--	0.05% Max	--	--
<b>Nickel</b>	--	0.05% Max	--	--
<b>Phosphorous</b>	--	0.015% Max	0.02% Max	--
<b>Silicon</b>	0.25% Max	0.30% Max	0.20% Max	--
<b>Sulfur</b>	0.01% Max	0.02% Max	0.01% Max	0.01% Max
<b>Tungsten</b>	--	0.04% Max	--	0.01% Max
<b>Yttrium</b>	--	--	--	0.01% Max
<b>Hydrogen</b>	--	0.03% Max	--	0.05% Max
<b>Nitrogen</b>	0.025% Max	0.03% Max	0.03% Max	0.07% Max
<b>Oxygen</b>	0.15% Max	0.10% Max	0.20% Max	0.40% Max
<b>RAI ID#</b>	RAI-0096	RAI-0007	RAI-0024	RAI-0068
<b>Standard Size*</b>	20 mesh x down	<ul style="list-style-type: none"> <li>• 3/8" x 20 mesh</li> <li>• - 20 mesh</li> <li>• - 50 mesh</li> </ul>	- 20 mesh	1/4" x down
<b>Packaging**</b>	1000 lb open-head steel drums (55 gallon)	1000 lb open-head steel drums (55 gallon)	1000 lb open-head steel drums (55 gallon)	1000 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

.25M91 3W (610005)  
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