



Excellence in Deposition Materials



SPUTTERING TARGETS

EVAPORATION MATERIALS

TARGET BONDING

EVAPORATION SOURCES

SUBSTRATES & WAFERS

Eden Lab supplies laboratory and scientific research equipment in Australia and New Zealand. For nano technology research, Eden Lab represents world leading manufacturers specialising in following techniques:

Deposition	<ul style="list-style-type: none">- E Beam EvaporationPECVDSputteringThermal Evaporation	
Etching	<ul style="list-style-type: none">- RIEDRIEIon Beam MillingDry Release Etching	
Growth	<ul style="list-style-type: none">- ALDPA-MOCVD	
Cleaning	<ul style="list-style-type: none">- Wet	<ul style="list-style-type: none">- Single WaferLarge SubstratePelliclized and UnPelliclized Reticle
	<ul style="list-style-type: none">Dry	<ul style="list-style-type: none">- Plasma AshingLow Temperature Strip/ CleanHigh Temperature Strip/Clean
Dicing	<ul style="list-style-type: none">- Plasma Dicing	
Surface Modification		
Other	<ul style="list-style-type: none">- PlatesPlasma SourcesFast Atomic Sequential Technology	

To support our customers with our systems, we supply high purity non-ferrous materials, customized alloys, compounds and almost every kind of complicated synthetic material, etc. We have great advantages in magnetron sputtering targets, vacuum coating materials, high-purity metals, high-purity compounds, and coated substrates.



PROCESS EQUIPMENT

AEM has complete machining center, and we do all of our machining “In house” to ensure strict adherence to our mechanical specifications. We also provide a part of equipments for materials processing or testing to prove our strength.



American Agilent Atomic Absorption Spectrophotometer



Arc Melting Furnaces



French JY Inductively Coupled Plasma Emission Spectrometer



Sweep Election Microscope



Dehydrogenation Furnace



High Vacuum Carbon Tube Furnace



Inductively Coupled Plasma Mass Spectrometry (ICP)



CNC



Wire Electrical Discharge Machining (WEDM)



Physicochemical Analyzer

PRODUCT INTRODUCTION

Sputtering Targets

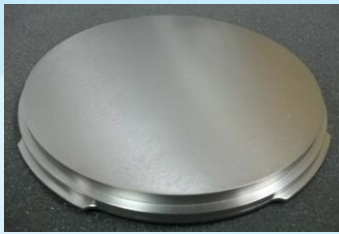
As a senior manufacturer for various nonferrous metals, AEM has rich experience in all pure metal and alloy targets production. We also extend to other new targets like oxide, ceramic, compounds etc and win good reputation by its excellent performance.



Products Specification

Hardware and decorative coating materials

AEM provides hard wearing coatings for reducing coefficient of friction and reducing wear, and tribological coatings for precision components used in automotive engines. The decorative coatings we produce for scratch resistant and decorative color finishes for hard coating on mobile phones, jewelry, watches, eyewear, automotive decoration, domestic appliances, bathroom and kitchen hardware.



Ti Sputtering Target



Ta Sputtering Target



TiSi2 Sputtering Target



Cr Sputtering Target



CrAl Sputtering Targets



CrB Sputtering Targets

Resistance materials

The chip resistor of passive component is formed by plating a resistive material on the Al_2O_3 substrate. In addition to being film plated, there are also directly cutted to some thin-film resistors .

Ni alloy: NiCr, NiCrSi, NiCrAl, NiCrAlSi, NiCrAlCu, NiCrMnAlSi

Cu alloy: CuNi, CuSn, CuNiMn, CuMnNi, CuMnSn, CuMnAl

other: CrSi, Cr+SiO, CrSiTaAl, Ta, TaSi2, TaAl



NiCr Sputtering Target

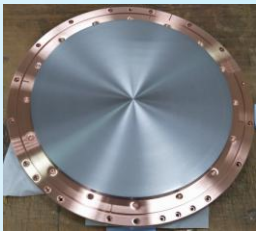
Products Specification

Semiconductor materials

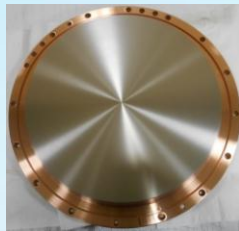
The sputtering target material is the core of semiconductor wafer manufacturing, and the chip requires high purity materials, generally over 99.999%.

AEM meets tougher standards quality to produce sub-micron scale and wafer targets in ever larger sizes.

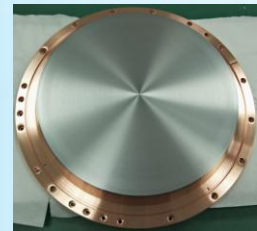
- Low particle
- Good film uniformity
- High usage efficiency



Ta Sputtering Target



WTi Sputtering Target



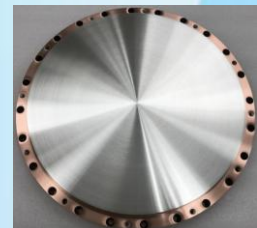
Mo Sputtering Target



AlTa Sputtering Target



Cu Sputtering Target



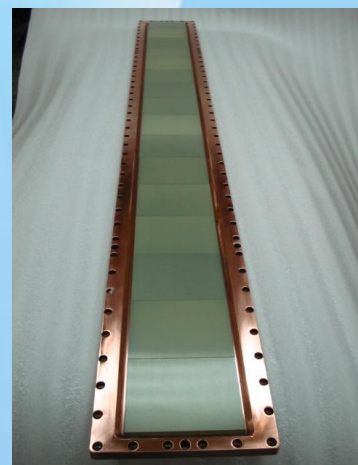
Ag Sputtering Target

Transparent conductive materials

It is a ceramic material with a visible light transmittance of ~85% and a conductivity of $\sim 10^{-4}$ ohm-cm.

P-Type: CuBO_2 , CuAlO_2 , CuCrO_2 , CuGaO_2 , CuInO_2 , SrCu_2O_2 , etc..

N-Type: ITO, IZO, InGaZnO , IGTO, AZO, GZO, MZO, ZIO, ATO, etc..

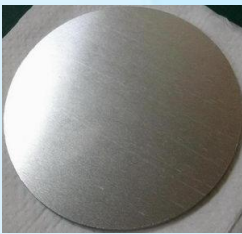


AZO Sputtering Target

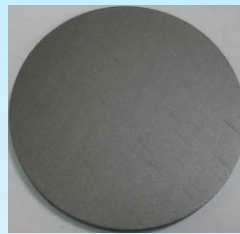
Products Specification

Thin film batteries materials

AEM's unique technologies covering the substrate, cathode deposition, passivation and packaging. So we can produce revolutionary new batteries that used in many processes and applications. These batteries are ideally suited for applications that require a high temperature compatible, compact, safe, and high power rate battery. They are also suited for smart cards, cellular phones, and other portable electronics.



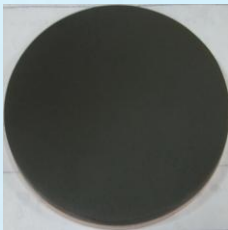
CuInGa Sputtering Target



CuZnSnS Sputtering Target



LiNiCoO₂ Sputtering Target



LiAlMnO₄ Sputtering Target



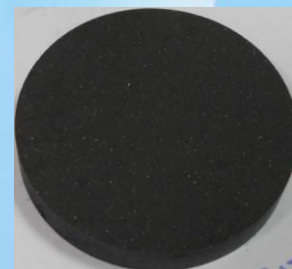
LaNiO₃ Sputtering Target



LiNaZrO Sputtering Target

High temperature superconductor materials

The high temperature superconductors materials have extraordinary superconducting, magnetic properties and great potential for wide-ranging technological applications. AEM can supply some high temperatures superconducting materials like BiSrCaCuO , TlBaCaCuO , HgBaCaCuO.



YBaCuO Sputtering Target

Products Specification

Optical materials

Optical materials are substances used to manipulate the flow of light. It includes reflecting, absorbing, focusing or splitting an optical beam. The efficiency of a specific material at each task is strongly related to wavelength dependent, thus It is vital to have a full understanding of the interaction between light and matter.

Ferroelectric and piezoelectric materials

Ferroelectric materials offer a wide range of properties. They are used in nonvolatile memories, capacitors, sensors, actuators, resonant wave devices, radio-frequency filters, infra-red detectors.

Piezoelectric materials are commonly used in actuators for micropositioning and nanopositioning, sensors, conventional vibration detectors, and also as sound pickups on musical instruments.

Ferroelectric materials: BaTiO_3 , BaZrO_3 , BaZrTiO_3

Piezoelectric materials: PbTiO_3 , PbZrO_3 , PbZrTiO_3 (PZT)



PbTiO₃ Sputtering Targets



BaTiO₃ Sputtering Target

Magnetostrictive materials

A magnetostrictive material consists of tiny ferromagnets. These ferromagnets usually are iron, nickel or cobalt, which can be applied in active noise cancellation, vibration cancellation, sonar, and more efficient dental tools.



Tb_{0.33}Dy_{0.67}Fe₂ Sputtering Target

Products Specification

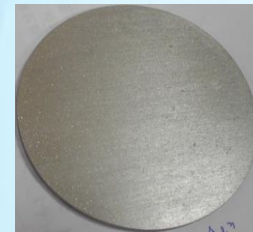
Thermoelectric materials

Thermoelectric materials can be utilized to convert waste heat into useful electricity. This makes hardly usable or almost lost thermal energy into productive applications as efficient as possible. For example, spacecrafts, manufacturing industries, automobiles.

Thermoelectric materials:

BiTe, SbTe, BiSe, BiSbTe, BiTeSe, Mg₂Si, Mg₂Sn, Mg₂Ge, Mg₂Pb, etc..

FeSb, CoSb, ZnSb, CoSbTe, NbCoSb, ZrCoSb, TiCoSb, ZrTiCoSb, HfNiSn etc..



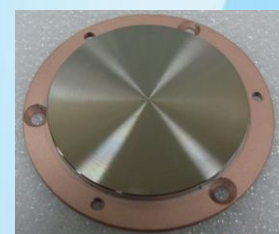
Bi₂Te₃ Sputtering Target



Sb₂Te₃ Sputtering Target

Magnetic materials

Magnetic materials play an important role in the advancement of industrial and scientific growth. They are invariably used in power generation and transmission, electronic appliances, analogue and digital data storage, medical appliances like magnetic resonance imaging (MRI), magnetic therapy and drug delivery, sensors and actuators, scientific instruments, etc.



Co/Fe Sputtering Target



Fe₃O₄ Sputtering Target

Products Specification

Oxygen storage material

Due to the formation of hydrides, metals or alloys can reversibly absorb and release hydrogen under mild conditions which called hydrogen storage alloys. They are divided into the following types: AB5 type (LaNi₅, LaNi_{4.6}Al, CaNi₅, MmNi₅, etc.), AB2 type (Ti_{1.2}Mn_{1.8}, ZrV₂, ZrMn₂, TiCr_{1.8}, etc.), AB type (TiFe, etc.), A2B type (Mg₂Ni, etc.).



Mg₂Ni Sputtering Target

High entropy alloy

HEAs have been shown to possess good creep strength, excellent oxidation corrosion and wear resistance, high hardness, superior thermal and chemical stability and good magnetic properties.



TiZrHf (1-1-1 at%)

Biomedical materials

Surface active bio-ceramics have good biocompatibility and can form a biological interface with bones. The most famous of them is hydroxyapatite, a calcium phosphate salt close to human bone components, and it is used to replace human hard tissue biomaterials. Ca₃(PO₄)₂ is also commonly used dental or bone substitute material.

Other common biomedical materials include CoCrMo (Cr: 27~30%, Mo: 5~7%) alloy for artificial joints, and stainless steel used in dentistry, pure Ti, Ti-6Al-4V, Ti-6Al-7Nb, Ti-25Nb-25Zr and other alloys.



HA Sputtering Target

PRODUCT INTRODUCTION

Evaporation Materials

AEM offers evaporation materials with high purity and in a variety of shapes and sizes to best fit your coil, boat and crucible or hearth liner. The most common shapes of evaporation materials are granules, pellets, tablets, rods, plates and rings. We offer a wide variety of evaporation materials with common shapes and sizes that are consistently in stock, so you don't waste time waiting around for your order. However, if you need an uncommon shape or size, contact AEM to see if we can meet your specific requirements.



Products Specification

Pure Metal Evaporation Materials

Product Name	Purity	Shape	Product Name	Purity	Shape
Au	99.99, 99.999%	pellets & pieces	Rh	99.95%	pieces
Ir	99.90%	pieces	Ru	99.90%	pieces
Pd	99.95%	pellets	Ag	99.99%	pellets & pieces
Pt	99.99%	pellets			



Au Evaporation Material



Pd Evaporation Material



Pt Evaporation Material



Ag Evaporation Material

Oxide Evaporation Materials

Product Name	Purity	Shape	Product Name	Purity	Shape
Al ₂ O ₃	99.99%	pieces	SiO ₂	99.995%	pieces
Cr ₂ O ₃	99.90%	pieces	Ta ₂ O ₅	99.90%	powder/tablets
HfO ₂	99.90%	pellets/pieces	TiO ₂	99.99%	powder/tablets
ITO	99.99%	pieces	WO ₃	99.90%	pieces
MgO	99.95%	pieces	ZnO	99.9, 99.99%	powder/tablets
Nb ₂ O ₅	99.95%	pieces			



Al₂O₃ Evaporation Material



ITO Evaporation Material



TiO₂ Evaporation Material



ZnO Evaporation Material

Products Specification

Chemical Compound Evaporation Material

Product Name	Purity	Shape	Product Name	Purity	Shape
Ag ₂ S	99.999%	pieces	CdTe	99.99%, 99.999%	powder & pellets
As ₃ S ₃	99.999%	pieces	PbTe	99.99%, 99.999%	powder & pellets
Bi ₂ S ₃	99.99%, 99.999%	powder & pellets	Sb ₂ Te ₃	99.99%, 99.999%	powder & pellets
CdS	99.99%, 99.999%	powder & pellets	Bi ₂ Se ₃	99.99%, 99.999%	powder & pellets
CuS	99.99%, 99.999%	powder & pellets	CdSe	99.99%, 99.999%	powder & pellets
GaS	99.99%, 99.999%	powder & pellets	Ga ₂ Se ₃	99.99%, 99.999%	powder & pellets
In ₂ S ₃	99.99%, 99.999%	powder & pellets	GeSe	99.99%, 99.999%	powder & pellets
PbS	99.99%, 99.999%	powder & pellets	In ₂ Se ₃	99.99%, 99.999%	powder & pellets
Sb ₂ S ₃	99.99%, 99.999%	powder & pellets	PbSe	99.99%, 99.999%	powder & pellets
Bi ₂ Te ₃	99.99%, 99.999%	powder & pellets	Sb ₂ Se ₃	99.99%, 99.999%	powder & pellets



MgF Pieces



YbF3 Pieces



YF3 Pieces



ZnS Pieces

PRODUCT INTRODUCTION

Target Bonding

AEM provides a complete range of target bonding services. Target Bonding is a critical process and the exact fabricating method employed can vary depending on the choice of the sputtering target material. A properly bonded sputtering target will normally give a longer working life than a non-bonded target, may enable the use of a higher power input to achieve faster sputtering rates and will enable thin film process parameters to be consistently repeated.



Sizes and Shapes of Target Bonding

AEM can easily bond most targets, in any size or shape. This includes round targets from 0.5" to 16" in diameter, rectangular targets from 1" x 1" to 10" x 60", 'Delta' targets, and other custom shapes.

Backing Plate Material

AEM also provides Oxygen-Free Copper backing plate, Molybdenum backing plate, Copper and Stainless Steel Cups for our customers.

Backing plates are available for the following systems

Perkin Elmer, Leybold, MRC, CVC, Airco, Custom Designed Systems

PRODUCT INTRODUCTION

Evaporation Sources

AEM also engages in production of components and parts used for electron beam evaporation, ion source and thermal evaporation. The range of products includes **Crucibles**, **Evaporator Boats** and **Thermal Filaments**. The quality tests are conducted in the whole production process so as to achieve perfect quality from external dimension to micro structure.



PRODUCT INTRODUCTION

Substrates & Wafers

Successful deposition of materials often depends on the proper substrates, with a good lattice match and a clean, even surface. AEM offers a variety of crystal substrates and wafers in multiple orientations to meet your deposition needs. All these materials undergo rigorous analytical testing including trace metal analysis and x-ray diffraction in order to insure the highest purity standards.



Types of Substrates & Wafers

High-temperature superconducting thin films substrates	Magnetic and ferroelectric thin film substrates
YAlO ₃	Nd:SrTiO ₃
MgAl ₂ O ₄	Fe:SrTiO ₃
LaAlO ₃	TGG
MgO	LaAlO ₃
SrTiO ₃	(La,Sr)(Al,Ta)O ₃
(La,Sr)(Al,Ta)O ₃	Nb:SrTiO ₃
YSZ	SrTiO ₃
LaSrAlO ₄	Al ₂ O ₃
NdGaO ₃	GGG
	TiO ₂
GaN thin film substrates	Semiconductor thin film substrate
GaN	InAs
Al ₂ O ₃	GaAs
ScMgAlO ₄	GaSb
LiAlO ₂	InP
MgO	Ge
6H-SiC,4H-SiC	Si
ZnO	
Halide crystal substrate	Ceramic substrate
NaCl	Al ₂ O ₃
KCl	AlN
KBr	ZrO ₂
	Si ₃ N ₄
Metal substrate	
GMM	
Cu	

Typical sizes of Substrates & Wafers:

5 mm x 5 mm, 10 mm x 10 mm, 10 mm x 5 mm, 15 mm x 15 mm
 12,7 mm x 12,7 mm, 20 mm x 20 mm, 25 mm x 25 mm, ø1", ø2"
 Lateral tolerances: +0/-0.05 mm

Typical thickness of Substrates & Wafers:

0.5 mm, 1.0 mm, other thicknesses down to 0.1 mm on request

Vertical tolerance: +/- 0.05 mm, or better on request



SERVICE IS SUPREME

Eden Lab Pty Ltd
13U/175, Lower Gibbes Street
Chatswood, NSW 2067
Sydney, Australia
Hotline: +61 491 333 699
Email: contact@edenlab.com.au
www.edenlab.com.au