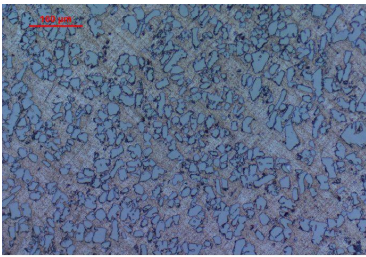
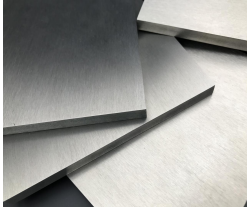




## 产品概述



### 生产手段

#### 1) 原材料生产

金属卤化物制备;

金属卤化物真空热还原;

金属氧化物熔盐电解。

#### 2) 材料提纯

金属真空蒸馏提纯;

金属真空电泳-区熔提纯;

金属电解精炼提纯。

#### 3) 产品生产

金属和合金无污染真空熔炼;

真空热等静压;

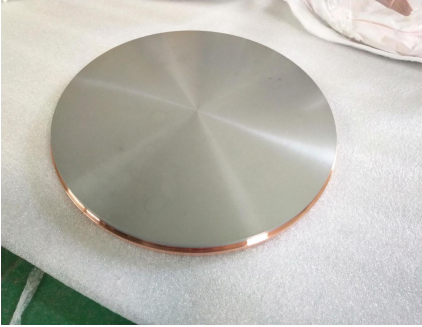
金属和合金真空热锻;

金属和合金真空热轧;

金属和合金机械精密加工成型等。

我们生产的主要产品有各种高纯金属和合金材料及溅射靶材; 稀土及合金功能材料; 半导体和陶瓷材料, 贵金属材料和蒸发镀膜颗粒等, 更多产品可定制。我们的产品具有高纯度, 大尺寸, 高密度, 合金偏析小等多种优势, 材料纯度在 99.9-99.99999%, 包括:

Sc, Y, La, Ce, Pr, Nd, Sm, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Ti, Zr, Hf, V, Nb, Ta, Cr, Mo, W, Mg, Mn, Fe, Co, Ni, Cu, Ag, Au, Zn, Al, In, Ga, Sn and Hf-Fe, Ti-Al, Y-Zr, Ni-Ti, Ti-Zr, Al-Si, Al-Cu, W-Cu, Al-B, Al-Mn, Al-Mg, Al-Sc, Al-Nd, Ni-Zr, Ce-Al, Zr-V, Gd-Ti, Ce-Zr-Y, Gd-Fe-Co, Gd-Ti-Zr, Tb-Fe-Co, Tb-Dy-Fe, Al-Mg-Si-Mo, ITO, AZO, ZnO, Al<sub>2</sub>O<sub>3</sub>, ZrO<sub>2</sub>, WO<sub>3</sub>, SrTiO<sub>3</sub>, SrRuO<sub>3</sub>, MgF<sub>2</sub>, CaF<sub>2</sub>, TiB<sub>2</sub>, HfC, VC, TiN, Si<sub>3</sub>N<sub>4</sub>, ZnS, CuS, ZnTe, CdTe, In<sub>2</sub>Se<sub>3</sub>, Bi<sub>2</sub>Se<sub>3</sub> ... etc.



## 铝钪 (Al-Sc)合金

我们生产的铝钪合金是AlSc2%，产品具有纯度高，偏析小的特点。

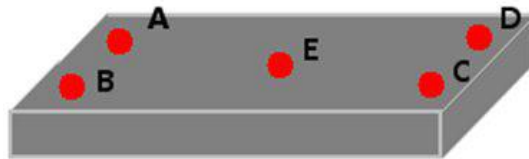
### Al-Sc 2% 合金成分单 (ppm)

Sc 2.07%

Al 97.92%

元素	Fe	Si	Ni	Ca	Mg	Cu	Li	Na	Zr
含量	42.0	12.3	21.6	0.5	4.4	2.5	0.5	0.3	5.0

偏析分析



样品位置

元素	A	B	C	D	E
Sc (wt%)	2 +/- 0.05	2 +/- 0.05	2 +/- 0.05	2 +/- 0.05	2 +/- 0.05



## 高纯金属钪 (Sc)

我们生产两种纯度的金属钪，有还原钪和蒸馏钪。

### 还原钪

纯度: TREM: 99.9%

检测方法: ICP-OES

Sc/TREM: 99.95%

杂质含量:

#### 成分 (ppm)

元素	La	Ce	Pr	Nd	Sm	Eu	Tb	Dy	Ho
含量	14	8	3	4	11	26	9	4	5

元素	Er	Tm	Yb	Lu	Y	Fe	Si	Ca	Mg
含量	3	15	22	6	27	104	52	4	7

元素	Al	Ni	W	Mo	F	Ti	Ta	Nb	
含量	45	22	5	6	14	9	155	11	

蒸馏铈：

纯度: **TREM:** >99.99%

检测方法: ICP-OES

**Sc/TREM:** >99.99%

杂质含量：

成分 ( ppm )

元素	La	Ce	Pr	Nd	Sm	Eu	Gd	Tb	Dy
含量	3	2	1	4.5	0.5	0.5	2	3.5	2

元素	Ho	Er	Tm	Yb	Lu	Y	Mn	Fe	Si
含量	0.5	1	0.5	1	3.5	4	1.5	15	5

元素	Ca	Mg	Cu	Ni	Al	Zn	Ti	Mo	Cr
含量	3	1	4	4	9	1	2.5	0.5	0.5

元素	Pb	Ta	W	Li	Be	B	K	V	Co
含量	1	0.1	1	0.1	0.1	0.2	0.9	0.5	0.1

元素	Ga	Ge	As	Se	Rb	Sr	Zr	Nb	Tc
含量	0.1	0.1	0.5	0.5	0.1	0.1	0.5	0.1	0.1

元素	Ru	Rh	Pd	Ag	Cd	In	Te	Ba	Hf
含量	0.1	0.1	0.1	0.1	0.1	0.1	0.6	2	0.1

元素	Re	Os	Pt	Au	Hg	Bi	Po	At	Er
含量	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1	0.1

元素	Ra	Ac	Sn	Sb	Na	P	Pa	Es	Np
含量	0.1	0.1	0.1	0.1	0.9	1	0.1	0.1	0.1

元素	Pu	Am	Cm	Bk	Md				
含量	0.1	0.1	0.1	0.1	0.1				



## 氧化钪 (Sc<sub>2</sub>O<sub>3</sub>)

我们有自己的氧化钪生产基地和专业生产线，工厂分别在安徽和山东。



纯度: **TREO**: >99.9%

检测方法: ICP-OES

**Sc<sub>2</sub>O<sub>3</sub>/TREO**: >99.99%

杂质含量:

### 成分 (ppm)

元素	Y	Gd	La	Yb	Ce	Sm	Fe	Si	Ni
含量	7	14	5	13	2	9	209	137	64

元素	Ca	Mg	Cu	Ti	Zn				
含量	98	51	166	74	26				

## 稀土及功能材料



纯度 99.5%-99.999%



元素	主要产品
钪 (Sc)	高纯金属钪 (还原钪和蒸馏钪), 2%Sc-Al合金和其他钪合金和靶材。
钇 (Y)	高纯金属钇, 钇靶材, 钇钆合金, 钇铝合金, 钇镁合金和其他钇合金及靶材。
镧 (La)	高纯金属镧, 镧靶材, 镧镍合金, 镧铈合金, 镧铝合金和其他镧合金及靶材。
铈 (Ce)	高纯金属铈, 铈靶材, 铈铝合金, 镧铈合金及其他铈合金和靶材。
镨 (Pr)	高纯镨, 镨靶材, 镨钆合金及其他镨合金和靶材。
钕 (Nd)	高纯金属钕, 钕靶材, 钕铁合金, 镧钕钆合金和其他合金及靶材。
钐 (Sm)	高纯金属钐, 钐靶材, 钐钴合金, 和其他钐合金及靶材。
铕 (Eu)	高纯金属铕及铕靶材。
钆 (Gd)	高纯金属钆, 钆靶材, 钆铁钴合金, 钆钆合金, 和其他钆合金及靶材。
铽 (Tb)	高纯金属铽, 铽靶材, 铽铁钴合金, 铽镧铁合金, 和其他铽合金及靶材。
镝 (Dy)	高纯金属镝, 镝靶材, 镝铁合金及其他合金和靶材。
钬 (Ho)	高纯金属钬, 钬靶材, 钬铜合金, 和其他钬合金及靶材。
铒 (Er)	高纯金属铒, 铒靶材, 铒铝合金, 铒镧合金和其他铒合金及靶材。
铥 (Tm)	高纯金属铥, 铥靶材, 和其他铥合金及靶材。
镱 (Yb)	高纯金属镱, 镱靶材, 和其他镱合金及靶材。
镥 (Lu)	高纯金属镥, 镥靶材, 和其他镥合金及靶材。



## 金属 & 陶瓷材料



### 高纯金属材料

化学式	纯度	产品
Ag	4N, 4N5	靶材, 颗粒, 丝
Au	4N, 5N	靶材, 颗粒, 丝
Ir	3N5	靶材, 颗粒
Os	3N5	靶材, 颗粒
Pd	3N5	靶材, 颗粒
Pt	3N5, 4N	靶材, 颗粒, 丝
Rh	3N5	靶材, 颗粒
Ru	3N5	靶材, 颗粒
Al	4N, 5N, 6N	靶材, 颗粒, 丝
Bi	4N, 5N	靶材, 颗粒
Cd	4N	靶材, 颗粒
Co	4N, 5N	靶材, 颗粒, 丝
Cr	3N5	靶材, 颗粒

Cu	4N, 5N, 6N, 6N5	靶材, 颗粒, 丝
Fe	3N5, 4N	靶材, 颗粒, 丝
Ga	5N, 6N, 7N	靶材
Ge	5N	靶材, 颗粒
Hf	3N5, 4N	靶材, 颗粒, 丝
In	4N5, 5N, 6N	靶材, 颗粒, 丝
Mg	3N5	靶材, 颗粒
Mn	3N	靶材, 颗粒
Mo	3N5	靶材, 颗粒, 丝
Nb	3N5, 4N	靶材, 颗粒, 丝
Ni	4N, 5N	靶材, 颗粒, 丝
Pb	4N	靶材, 颗粒
Sb	4N, 5N	靶材, 颗粒
Sn	4N	靶材, 颗粒
Sr	4N	靶材, 颗粒
Ta	3N5, 4N	靶材, 颗粒, 丝
Ti	4N, 4N5, 5N	靶材, 颗粒, 丝
V	3N	靶材, 颗粒, 丝
W	3N5	靶材, 颗粒, 丝
Zn	4N5	靶材, 颗粒, 丝
Zr	2N4, 3N	靶材, 颗粒



## 陶瓷及化合物材料

化学式	纯度	产品
Al <sub>2</sub> O <sub>3</sub>	4N	靶材, 颗粒, 粉末
Bi <sub>2</sub> O <sub>3</sub>	4N	靶材, 颗粒, 粉末
Cr <sub>2</sub> O <sub>3</sub>	4N	靶材, 颗粒, 粉末
CuO	4N	靶材, 颗粒, 粉末
Fe <sub>2</sub> O <sub>3</sub>	4N	靶材, 颗粒, 粉末
Fe <sub>3</sub> O <sub>4</sub>	4N	靶材, 颗粒, 粉末
HfO <sub>2</sub>	4N	靶材, 颗粒, 粉末
In <sub>2</sub> O <sub>3</sub>	4N, 5N	靶材, 颗粒, 粉末
MgO	4N	靶材, 颗粒, 粉末
MoO <sub>3</sub>	4N	靶材, 颗粒, 粉末
Nb <sub>2</sub> O <sub>5</sub>	4N	靶材, 颗粒, 粉末
NiO	4N	靶材, 颗粒, 粉末
SiO <sub>2</sub>	4N, 5N	靶材, 颗粒, 粉末
SnO <sub>2</sub>	4N	靶材, 颗粒, 粉末
Ta <sub>2</sub> O <sub>5</sub>	4N	靶材, 颗粒, 粉末
TiO <sub>2</sub>	4N	靶材, 颗粒, 粉末
V <sub>2</sub> O <sub>5</sub>	4N	靶材, 颗粒, 粉末
WO <sub>3</sub>	4N	靶材, 颗粒, 粉末
ZnO	4N	靶材, 颗粒, 粉末
ZrO <sub>2</sub>	4N	靶材, 颗粒, 粉末
B <sub>4</sub> C	3N	靶材, 颗粒, 粉末
SiC	2N5	靶材, 颗粒, 粉末
WC	4N	靶材, 颗粒, 粉末
AlN	3N	靶材, 颗粒, 粉末
BN	2N5	靶材, 颗粒, 粉末

TiN	3N	靶材, 颗粒, 粉末
VN	3N	靶材, 颗粒, 粉末
NbN	3N	靶材, 颗粒, 粉末
Si3N4	3N	靶材, 颗粒, 粉末
CuS	4N	靶材, 颗粒, 粉末
In2S3	4N	靶材, 颗粒, 粉末
SnS	4N	靶材, 颗粒, 粉末
ZnS	4N	靶材, 颗粒, 粉末
CdS	4N	靶材, 颗粒, 粉末
PbS	4N	靶材, 颗粒, 粉末
Sb2S3	4N	靶材, 颗粒, 粉末
MoS2	4N	靶材, 颗粒, 粉末
CIGS	4N	靶材, 颗粒, 粉末
Bi2Se3	4N, 5N	靶材, 颗粒, 粉末
In2Se3	4N, 5N	靶材, 颗粒, 粉末
ZnSe	4N	靶材, 颗粒, 粉末
Pb2Se3	4N	靶材, 颗粒, 粉末
CdSe	4N	靶材, 颗粒, 粉末
CdTe	4N	靶材, 颗粒, 粉末
PbTe	4N	靶材, 颗粒, 粉末
ZnTe	4N	靶材, 颗粒, 粉末
Bi2Te3	4N	靶材, 颗粒, 粉末
In2Te3	4N	靶材, 颗粒, 粉末
Sb2Te3	4N	靶材, 颗粒, 粉末
In2Sb3	4N	靶材, 颗粒, 粉末
PbSb	4N	靶材, 颗粒, 粉末
Bi2Sb3	4N	靶材, 颗粒, 粉末
MgF2	4N	靶材, 颗粒, 粉末
CaF2	4N	靶材, 颗粒, 粉末

BaF2	4N	靶材, 颗粒, 粉末
TiB2	2N5	靶材, 颗粒, 粉末
WB2	3N	靶材, 颗粒, 粉末
SrTiO3	4N	靶材, 颗粒, 粉末
BaTiO3	4N	靶材, 颗粒, 粉末
BaSrTiO3	4N	靶材, 颗粒, 粉末
Bi2Ti3O12	4N	靶材, 颗粒, 粉末
PZT	4N	靶材, 颗粒, 粉末
PbTiO4	4N	靶材, 颗粒, 粉末
PbZrO3	4N	靶材, 颗粒, 粉末
SrZrO3	4N	靶材, 颗粒, 粉末
LiTi2PO4	4N	靶材, 颗粒, 粉末
Li3PO4	4N	靶材, 颗粒, 粉末
LiFePO4	4N	靶材, 颗粒, 粉末
LSMO	4N	靶材, 颗粒, 粉末
LiMn2O4	4N	靶材, 颗粒, 粉末
BiFeO3	4N	靶材, 颗粒, 粉末
KNbO3	4N	靶材, 颗粒, 粉末
CuAlO2	4N	靶材, 颗粒, 粉末
LaAl2O3	4N	靶材, 颗粒, 粉末
ITO	4N	靶材, 颗粒, 粉末
AZO	4N	靶材, 颗粒, 粉末
IGZO	4N	靶材, 颗粒, 粉末
IZO	4N	靶材, 颗粒, 粉末
ATO	4N	靶材, 颗粒, 粉末
YSZ	4N	靶材, 颗粒, 粉末
YBCO	4N	靶材, 颗粒, 粉末
FTO	4N	靶材, 颗粒, 粉末



## 合金材料及溅射靶材



纯度99.5%-99.99999%

铝基合金		
产品	成分 (%)	余量
Al-Li-Ni-Mn-Co	Li:30, Ni:5, Mn5, Co: 5	Al
Al-B	B: 10	Al
Al-Ce	Ce: 20, 80	Al
Al-Ce-Cu-Zr	Ce:85;Cu:11;Zr:1	Al
Al-Co-W	Co: 70; W: 25	Al
Al-Cr	Cr: 4	Al
Al-Cr-Ni	Cr: 50; Ni: 45	Al
Al-Cr-Si	Cr: 55,80; Si: 20, 10	Al
Al-Cr-Ti	Cr: 1, Ti: 1	Al
Al-Cr-Ti	Cr: 1, Ti: 1	Al
Al-Cu	Cu: 1, 2, 5, 6, 10, 20, 45, 55, 99	Al
Al-Cu-Mg	Cu: 40, 44; Mg: 18, 17	Al
Al-Er	Er: 2	Al
Al-Fe	Fe: 86, 90	Al

Al-In	In: 45, 46	Al
Al-La	La: 20	Al
Al-La-Ni	La: 85; Ni: 10	Al
Al-Li	Li: 1	Al
Al-Li-Fe	Li: 18; Fe: 2	Al
Al-Li-Fe-Cr-Mo	Li:18,Fe:6,Cr:6,Mo6	Al
Al-Li-Nb	Li: 16; Nb: 2	Al
Al-Li-Nb-Hf-Ta	Li:6,Nb:6,Hf:6,Ta6	Al
Al-Li-Ni-Co-Mn	Li:30,Ni:5:Co5:Mn5	Al
Al-Li-Si-B-C	Li:24,Si:5,B5,C5	Al
Al-Li-Ti-Zr-W	Li:12;Ti:6;Zr6,W6	Al
Al-Mg	Mg: 1, 3, 5, 20, 35, 40, 50	Al
Al-Mg-Sc	Mg: 3, Sc: 0.2	Al
Al-Mg-Zr	Mg: 3, Zr: 0.2	Al
Al-Mn	Mn: 5, 12; Ni: 10	Al
Al-Nd	Nd: 3, 5	Al
Al-Ni	Ni: 0.1, 70, 86	Al
Al-Ni-B	Ni: 8, 9, B: 0.2	Al
Al-Ni-Co-Cr-Y	Ni: 46; Co: 21; Cr: 20; Y: 0.5	Al
Al-Ni-Cr	Ni: 60; Cr: 35	Al
Al-Ni-Cr-Cu	Ni: 50, 73; Cr: 35, 22; Cu: 2, 10	Al
Al-Ni-Cr-Fe	Ni: 74; Cr: 20; Fe: 3	Al
Al-Ni-Cr-Mn-Y-Si	Ni: 50; Cr: 29; Mn: 0.4; Y: 0.4; Si: 16	Al
Al-Ni-Cr-Y	Ni: 55; Cr: 40; Y: 0.2	Al
Al-Ni-La	Ni: 63; La: 33	Al
Al-Ni-Mn	Ni: 95; Si: 1	Al
Al-Ni-Ta-W-Cr-Mo	Ni: 70; Ta: 6; W: 10; Cr: 5; Mo: 2	Al
Al-Ni-Ti-Sn	Ni: 21; Ti: 23; Sn: 56	Al
Al-Ni-TiSn29-Nb	Ni: 29; Ti: 12; Sn: 29; Nb: 23	Al

Al-Pd	Pd: 90	Al
Al-Pd-Ni-Cu	Pr: 79; Ni: 5; Cu: 12	Al
Al-Sc	Sc: 2, 5, 20	Al
Al-Si	Si: 1, 4, 5, 10, 20, 70, 90	Al
Al-Si-Cr-Ni	Si: 60; Cr: 16; Ni: 5	Al
Al-Si-Cr-Ni	Si: 60; Cr: 15; Ni: 5	Al
Al-Si-Cu	Si: 2; Cu: 0.5	Al
Al-Sn	Sn: 1, 2	Al
Al-Ti	Ti: 1, 1.5, 2, 4, 65, 85, 90	Al
Al-Ti-Si	Ti: 2, 68; Si: 5, 3	Al
Al-Ti-Zn	Ti: 1, 2, 4, 6; Zn: 96, 95, 93, 91	Al
Al-V	V: 25, 50, 95	Al
Al-W	W: 3	Al
Al-Y	Y: 20, 25, 30	Al
Al-Yb	Yb: 2	Al
Al-Zn	Zn: 5, 50, 97, 98	Al
Al-Zn-Li	Zn: 99; Li: 0.1	Al
Al-Zr	Zr: 2, 15	Al
Al-Zr-Cu-Ag	Zr: 48; Cu: 36; Ag: 8	Al

## 钪基合金

产品	成分 (%)	余量
Ce-Gd	Gd: 10, 20, 30	Ce
Ce-La	La: 5, 40	Ce
Ce-Pd	Pd: 5	Ce
Ce-Al-Cu-Zr	Al: 3, Cu:11; Zr:1	Ce
Ce-Al	Al: 20, 80	Ce
Ce-Si	Si: 28	Ce
Ce-La-Ca-Ni	La: 18, Ca: 2.5, Ni: 70	Ce
Ce-Zr-Co-La-Nd-Y	Zr: 80, Co: 14; La: 1, Nd: 1, Y: 0.2	Ce

## 钴基合金

产品	成分 (%)	余量
Co-Al-Li-Ni-Mn	Al:55, Li:30, Ni:5, Mn5	Co
Co-Al-W	Al: 5; W: 25	Co
Co-Cr	Cr: 5, 15, 20, 65	Co
Co-Cu	Cu: 60, 99	Co
Co-Fe	Fe: 10, 30, 50, 60, 70	Co
Co-Fe-B	Fe: 10,50,70 B:5,10,	Co
Co-Fe-B	Fe: 20, 50, 70; B: 5, 7, 10	Co
Co-Fe-Ni-B	Fe: 55; Ni: 10; B: 5	Co
Co-Fe-Si-B	Fe: 65; Si: 10; B5	Co
Co-Fe-Ta	Fe: 20; Ta: 60	Co
Co-Gd	Gd: 45, 55, 70	Co
Co-Nb-Zr	Nb: 40; Zr: 35	Co
Co-Ni	Ni: 15, 50, 80, 95	Co
Co-Ni	Ni: 35, 50, 70, 80, 95	Co
Co-Ni-Fe	Fe: 70; Ni: 5	Co
Co-Pt	Pt: 75	Co
Co-Sm-Y	Sm: 20; Y: 10	Co
Co-Ta-Zr	Ta: 15; Zr: 5	Co
Co-Ta-Zr	Ta: 4, 13; Zr: 4, 5	Co
Co-Ti	Ti: 95, 98	Co
Co-Y	Y: 25	Co
Co-Zr	Zr: 15	Co
Co-Zr-Ce-La-Nd-Y	Zr:80, Ce: 2.5, La:2, Nd: 1, Y: 1	Co

## 铬基合金

产品	成分 (%)	余量
Cr-Al	Al: 96	Cr
Cr-Al-Si	Al: 25, 22, 10; Si: 20, 23, 10	Cr
Cr-Al-Ti	Al: 98; Ti: 1	Cr
Cr-Co	Co: 35, 80, 85	Cr
Cr-Cu	Cu: 34, 55	Cr
Cr-Fe	Fe: 80, 85	Cr
Cr-Mo	Mo: 97	Cr
Cr-Fe-Ni	Fe: 70; Ni: 5	Cr
Cr-Nb-Al	Nb 26, Al: 15	Cr
Cr-Ni	Ni: 3, 20, 40, 50, 62, 80, 95	Cr
Cr-Ni-Al	Ni: 55, 60; Al: 5, 5	Cr
Cr-Ni-Al-Y	Ni: 55; Al: 4.8; Y: 0.2	Cr
Cr-Ni-Al-Mn-Y-Si	Ni: 40; Al:5; Si:15, Mn: 1; Y: 1	Cr
Cr-Ni-Ti-Sn-In	Ni: 29; Ti: 12; Sn: 30; In: 16	Cr
Cr-Ni-Si	Ni: 50, 53, 88; Si: 4, 5, 2	Cr
Cr-Si	Si: 18, 20, 50, 52, 78	Cr
Cr-Si-Ti	Si: 75; Ti: 5	Cr
Cr-Ti-Nb	Ti: 16; Nb: 31	Cr
Cr-Ti-V	Ti: 40, 31; V: 35, 33	Cr
Cr-Ti-Zr-Mn	T: 30; Zr: 2, Mn: 14	Cr
Cr-Zr	Zr: 2, 3, 6, 46	Cr
Ni-Al-Ta-W-Cr-Mo	Ni: 73; Al:5; Ta:5; W:10; Mo:2	Cr
Ni-Cr-Al-Cu	Ni: 73, 50; Al: 2.5, 5; Cu: 2, 10	Cr
Ni-Cr-Al-Fe	Ni: 74; Al: 3; Fe: 3	Cr
Si-Cr-Ni-Al	Si: 60; Ni: 5; Al: 17	Cr
Al-Li-Fe-Cr-Mo	Al: 65; Li:18,Fe:6,Mo6	Cr
Cr-Ni-Co-Al-Y	Ni: 46; Co: 21; Al: 12; Y: 1	Cr



## 铜基合金

产品	成分(%)	余量
Cu-Al	Al: 1, 5, 8, 20, 45, 95	Cu
Cu-Ce-Al-Zr	Ce: 85.8; Al: 2.4; Zr: 0.5	Cu
Cu-Al-Mg	Al: 38; Mg: 17	Cu
Cu-Co	Co: 0.35, 1, 40	Cu
Cu-Cr	Cr: 45, 66	Cu
Cu-Fe	Fe: 30	Cu
Cu-Ga	Ga: 20, 50	Cu
Cu-Ho	Ho: 40, 55, 60	Cu
Cu-In	In: 17, 30, 50, 65	Cu
Cu-In-Ga	In: 65; Ga: 25	Cu
Cu-Mg	Mg: 50, 53	Cu
Cu-Mn	Mn: 3	Cu
Cu-La	La: 10	Cu
Cu-Ni	Ni: 40, 45, 50, 65	Cu
Cu-Ni-In	Ni: 31, 35; In: 10, 6	Cu
Cu-Ni-Mn	Ni: 10, 40, 44, Mn: 12, 1, 1	Cu
Cu-Ni-Nb-Fe	Ni: 30; Nb: 3, Fe: 1	Cu
Cu-Ni-Sn	Ni: 7; Sn: 4	Cu
Cu-Sn	Sn: 30, 50, 80	Cu
Cu-Ti	Ti: 3, 45	Cu
Cu-Y	Y: 60	Cu
Cu-Zn	Zn: 30, 35, 70	Cu
Cu-Zn-Sn	Zn: 20; Sn: 40, 50	Cu
Cu-Zr	Zr: 7, 10, 60, 90	Cu
Cu-Zr-Al-Ag	Zr: 48; Al: 8; Ag: 8	Cu
Cu-Zr-Nb	Zr: 65; Nb: 11	Cu
Pr-Al-Ni-Cu	Al: 2, Ni: 5; Cu: 15	Cu

## 铁基合金

产品	成分 (%)	余量
Fe-Al	Al: 6, 10, 15	Fe
Fe-Co	Co: 30, 40, 50, 70, 90	Fe
Fe-Cu	Cu: 70	Fe
Fe-B	B: 5, 10, 17, 20	Fe
Fe-Co-B	Co: 25, 70, B: 5, 10	Fe
Fe-Co-Ni-B	Co: 30; Ni: 10; B: 5	Fe
Fe-Co-Si-B	Co: 10; Si: 10; B: 5	Fe
Fe-Co-Ta	Co: 20; Ta: 60	Fe
Fe-Cr	Cr: 15, 20	Fe
Fe-Cr-Ni	Cr: 14; Ni: 16	Fe
Fe-Ga	Ga: 20, 25, 30, 35	Fe
Fe-La	La: 20	Fe
Fe-Mg	Mg: 85, 90	Fe
Fe-Mn	Mn: 50	Fe
Fe-Mo	Mo: 60	Fe
Fe-Nb	Nd: 20, 90	Fe
Fe-Nb-B	Nd: 26; B: 1	Fe
Fe-Ni	Ni: 10, 20, 40, 70, 85	Fe
Fe-Sm	Sm: 10, 20, 90	Fe
Fe-Sn	Sn; 60	Fe
Fe-Ti	Ti: 5, 45, 50, 90	Fe
Fe-Ti-Nb	Ti: 74, 80; Nb: 20, 12	Fe
Fe-Ti-Y	Ti: 10; Y: 15	Fe
Fe-Ti-Ta	Ti: 65; Ta: 30	Fe
Fe-Zn	Zn: 14, 29, 41	Fe
Fe-Zr	Zr: 15, 45	Fe
Fe-Zr-V	Zr: 70; V: 25	Fe

## 镍基合金

产品	成分 (%)	余量
Ni-Al	Al: 13, 15, 30, 98, 99	Ni
Ni-Al-Ta-W-Cr-Mo	Al:5, Ta:6; W:10; Cr:5; Mo:2	Ni
Ni-Co	Co: 5, 20, 33, 50, 65	Ni
Ni-Co-Cr-Al-Y	Co: 21; Cr: 20; Al: 12; Y: 0.5	Ni
Ni-Cr	Cr: 10, 20, 50, 60, 80	Ni
Ni-Cr-Al	Cr: 35, 40; Al: 5	Ni
Ni-Cr-Al-Cu	Cr:20, 25, 35; Al:3, 5, 10; Cu:2, 5, 10	Ni
Ni-Cr-Al-Fe	Cr: 20; Al: 3; Fe: 3	Ni
Ni-Cr-Al-Mn-Y-Si	Cr: 29; Al: 4; Mn: 0.4; Y: 0.4; Si: 16	Ni
Ni-Cr-Al-Y	Cr: 40; Al: 5; Y: 0.2	Ni
Ni-Cr-Al-Fe	Cr: 20; Al: 3; Fe: 3	Ni
Ni-Cr-Si	Cr: 12, 42, 45; Si: 1, 2, 5	Ni
Ni-Cu	Cu: 30, 45, 55, 60	Ni
Ni-Cu-Ag	Cu: 30; Ag: 1	Ni
Ni-cu-Fe-Nb	Cu: 66; Fe: 1; Nb: 3	Ni
Ni-Cu-In	Cu: 59; In: 6, 10	Ni
Ni-Cu-Mn	Cu: 54, 59, 78; Mn: 1, 2, 12	Ni
Ni-Cu-Sn	Cu: 89; Sn: 4	Ni
Ni-Fe	Fe: 15, 30, 50, 60,80, 90	Ni
Ni-Fe-Co	Fe: 15; Co: 20	Ni
Ni-Fe-Co-B	Fe: 59; Co: 26; B: 5	Ni
Ni-Fe-Cr	Fe: 70; Cr: 14	Ni
Ni-Fe-Si	Fe: 15; Si: 5	Ni
Ni-Gd	Gd: 85	Ni
Ni-La	La: 32, 49	Ni
Ni-La-Al	La: 33, 84; Al: 13, 6	Ni
Ni-La-Ce-Ca	La: 18; Ce: 6; Ca: 2	Ni

Ni-La-Mg	La: 36; Mg: 2	Ni
Ni-Mg	Mg: 45	Ni
Ni-Mn	Mn: 50	Ni
Ni-Mn-Al-Si	Mn:2, Al: 2, Si: 1	Ni
Ni-Nb	Nb: 4, 50, 70, 98, 99	Ni
Ni-Si	Si: 7.5	Ni
Ni-Si-Cr-Ni-Al	Si: 60; Cr: 16; Al: 17	Ni
Ni-Si-Mg	Si: 2; Mg: 0.04	Ni
Ni-Sn	Sn: 75	Ni
Ni-Sn-Hf-Zr	Sn: 38; Hf: 28; Zr: 14	Ni
Ni-Ti	Ti: 10, 20, 30, 50, 80	Ni
Ni-Ti-Fe	Ti: 45; Fe: 0.5	Ni
Ni-Ti-Hf	Ti: 29; Hf: 26	Ni
Ni-Ti-Sn	Ti: 23; Sn: 56	Ni
Ni-Ti-Sn-Cr	Ti: 12; Sn: 30; Cr: 13; In: 16	Ni
Ni-Ti-Sn-Nb-Al	Ti: 12; Sn: 29; Nb: 23; Al: 17	Ni
Ni-Ti-Sn-Nb-In	Ti: 10; Sn: 24; Nb: 19; In: 23	Ni
Ni-V	V: 3, 7, 10, 50	Ni
Ni-W	W: 20, 42, 51	Ni
Ni-Zn-Sn	Zn: 73; Sn: 1	Ni
Ni-Zr-Ti	Zr: 59; Ti: 17	Ni
Ni-Zr-Y	Zr: 25; Y: 5	Ni

## 钛基合金

产品	成分 (%)	余量
Ti-Ag	Ag: 3	Ti
Ti-Al	Al: 15, 30, 36, 90, 96, 98	Ti
Ti-Al-Cr	Al: 98; Cr: 1	Ti
Ti-Al-Si	Al: 25, 28, Si: 5, 4	Ti
Ti-Al-Zn	Al: 3; Zn: 96	Ti

Ti-Co	Co: 1, 2, 5	Ti
Ti-Cu	Cu: 55, 65, 97	Ti
Ti-Fe	Fe: 10, 15, 50, 55	Ti
Ti-Fe-Nb	Fe: 5, 6; Nb: 20, 12	Ti
Ti-Fe-Ta	Fe: 3, 5; Ta: 29, 22	Ti
Ti-Fe-Y	Fe: 64; Y: 15	Ti
Ti-Mn	Mn: 1, 2	Ti
Ti-Mo	Mo: 65, 67	Ti
Ti-Nb	Nb: 5, 6, 10, 13, 35, 50, 75, 88	Ti
Ti-Nb-Cr	Nb: 31; Cr: 53	Ti
Ti-Nb-Ru	Nb: 30, 32; Ru: 3, 1	Ti
Ti-Nb-Ta-Zr	Nb: 35; Ta: 2; Zr: 3	Ti
Ti-Nb-Zr-Ag	Nb: 33; Zr: 9; Ag: 1, 3, 5	Ti
Ti-Ni	Ni: 5, 20, 50, 55	Ti
Ti-Ni-Fe	Ni: 55; Fe: 1	Ti
Ti-Ni-Hf	Ni: 43, 45; hf: 26, 25	Ti
Ti-Ni-Sn	Ni: 21; Sn: 56	Ti
Ti-Ni-Sn-Cr-In	Ni: 29; Sn: 30; Cr: 13; In: 16	Ti
Ti-Ni-Sn-Nb-Al	Ni: 29; Sn: 29; Nb: 23; Al: 7	Ti
Ti-Ni-Sn-Nb-In	Ni: 24; Sn; 24; Nb: 18; In: 23	Ti
Ti-Pb	Pb: 89	Ti
Ti-Si	Si: 10, 16, 20, 55	Ti
Ti-Si-Cr	Si: 75; Cr: 20	Ti
Ti-Ta	Ta: 13, 15	Ti
Ti-Ta-Hf-Zr	Ta: 37, 40, 45; Hf: 26, 22, 18; Zr: 13, 11, 10	Ti
Ti-Ta-Zr-Nb	Ti: 38; Zr: 22, 25, 28; Nb: 8, 5, 2	Ti
Ti-V	V: 1, 2, 3, 11	Ti
Ti-V-Cr	V: 33, 35; Cr: 34, 35	Ti
Ti-W	W: 5, 10, 16, 20, 90	Ti
Ti-Zr	Zr: 44, 50, 65, 81, 92	Ti
Ti-Zr-Cr-Mn	Zr: 2; Cr: 53; Mn: 14	Ti

Ti-Zr-Nb	Zr: 10, 25, 32, 35, 40; Nb: 33, 34, 30, 28, 24	Ti
Ti-Zr-Ni	Zr: 59; Ni: 23	Ti
Ti-Zr-Pb	Zr: 23, 25; Pb: 52, 50	Ti
Ti-Zr-Si	Zr: 62; Si: 6	Ti
Ti-Zr-Si	Zr: 62; Si: 6	Ti

锡基合金		
产品	成分 (%)	余量
Sn-Ag	Ag: 4	Sn
Sn-Al	Al: 98, 99	Sn
Sn-Cu	Cu: 21, 50, 52, 68	Sn
Sn-Cu-Ni	Cu: 89; Ni: 7	Sn
Sn-Cu-Zn	Cu: 34, 40; Zn: 17, 21	Sn
Sn-Fe	Fe: 41	Sn
Sn-Hf-Zr-Ni	Hf: 28, 30; Zr: 14, 15; Ni: 18, 20	Sn
Sn-In	In: 20	Sn
Sn-Ni	Ni: 25	Sn
Sn-Ni-Ti	Ni: 21; Ti: 23	Sn
Sn-Ni-Ti-Cr-In	Ni: 29; Ti: 12; Cr: 13; In: 16	Sn
Sn-Ni-Ti-Nb-Al	Ni: 29; Ti: 12; Nb: 23; Al: 17	Sn
Sn-Ni-Ti-Nb-In	Ni: 24; Ti: 10; Nb: 19; In: 23	Sn
Sn-Pb	Pb: 37	Sn
Sn-Pb-Te	Pb: 54; Te: 39	Sn
Sn-Si	Si: 19	Sn
Sn-W	W: 3	Sn
Sn-Zn	Zn: 19, 35, 45, 56, 68, 79, 90	Sn
Sn-Zn-Ni	Zn: 73; Ni: 25	Sn

## 锆基合金

产品	成分 (%)	余量
Zr-Al7	Al: 7, 85, 98	Zr
Zr-Al-Mg	Al: 97; Mg: 2	Zr
Zr-Ce-Al-Cu	Ce: 85; Al: 2; Cu: 10	Zr
Zr-Co-Ce-La-Nd-Y	Co: 14; Ce: 2; La: 1; Nd: 1; Y: 0.25	Zr
Zr-Co-Nb	Co: 24; Nb: 38	Zr
Zr-Co-Ta	Co: 82, 91; Ta: 12, 4	Zr
Zr-Cr	Cr: 55, 94, 97	Zr
Zr-Cu	Cu: 7, 10, 30, 42, 92	Zr
Zr-Cu-Al-Ag	Cu: 35, 36; Al: 10, 8; Ag: 10, 8	Zr
Zr-Cu-Nb	Cu: 22, 25; Nb: 11, 10	Zr
Zr-Fe	Fe: 55, 84	Zr
Zr-Gd	Gd: 63, 65	Zr
Zr-Hf-Ni-Sn	Hf: 28; Ni: 18; Sn: 38	Zr
Zr-Ni-Y	Ni: 68; Y: 4	Zr
Zr-Pb	Pb: 81	Zr
Zr-Si	Si: 7, 10	Zr
Zr-Ti	Ti: 7, 10, 20, 32, 34, 50, 55	Zr
Zr-Ti-Cr-Mn	Ti: 30; Cr: 53; Mn: 14	Zr
Zr-Ti-Nb-Ag	Ti: 53, 55; Nb: 32, 33; Ag: 1, 5	Zr
Zr-Ti-Nb-Ta	Ti: 31, 58; Nb: 5, 35; Ta: 38, 2	Zr
Zr-Ti-Ni	Ti: 17, 20; Ni: 23, 25	Zr
Zr-Ti-Pb	Ti: 24; Pb: 52	Zr
Zr-Ti-Si	Ti: 32; Si: 6	Zr
Zr-Ti-Ta-Hf	Ti: 24, 26, 27; Ta: 37, 40, 45; Hf: 26, 22, 18	Zr
Zr-V-Fe	V: 25, 26; Fe: 10, 5	Zr
Zr-Y	Y: 8, 15, 18, 20	Zr

## 锌基合金

产品	成分 (%)	余量
An-Al	Al: 2, 3, 50	Zn
Zn-Al-Li	Al: 1; Li: 1	Zn
Zn-Al-Mg	Al: 98; Mg: 0.3	Zn
Zn-Al-Ti	Al: 3; Ti: 1, 2, 4, 6	Zn
Zn-Be-Mg	Be: 10, 20; Mg: 30, 25	Zn
Zn-Cu	Cu: 32, 65	Zn
Zn-Cu-Sn	Cu: 34, 40; Sn: 48, 38	Zn
Zn-Fe	59, 71, 86	Zn
Zn-Ga	Ga: 4, 5	Zn
Zn-In	In: 10	Zn
Zn-Mg	Mg: 1, 3, 5, 6, 7, 10	Zn
Zn-Mg-Ca	Mg: 36, 70; Ca: 5	Zn
Zn-Ni-Sn	Ni: 25; Sn: 2	Zn
Zn-Sn	Sn: 1, 10, 30, 43, 55, 65, 80	Zn
Zn-V	V: 1, 3	Zn
Zn-Y	Y: 3	Zn
Zn-Zr	Zr: 2	Zn

## 镁基合金

产品	成分 (%)	余量
Mg-Al	Al: 50, 65, 80	Mg
Mg-Al-Cu	Al: 38; Cu: 44	Mg
Mg-Al-Sc	Al: 97; Sc: 0.2	Mg
Mg-Al-Zr	Al: 97; Zr: 0.2	Mg
Mg-Be-Zn	Be:10,20; Zn: 55, 60,70	Mg
Mg-Be-Zn	Be: 10, 10, 20; Zn: 60, 70, 55	Mg



Mg-Cu	Cu: 45, 50	Mg
Mg-Er	Er: 2, 4, 6, 8, 10	Mg
Mg-Fe	Fe: 8, 10, 12, 15	Mg
Mg-La-Ni	La: 36; Ni: 60	Mg
Mg-Ni	Ni: 55	Mg
Mg-Sc	Sc: 2	Mg
Mg-Sn-Ca	Sn: 55; Ca: 5	Mg
Mg-Y	Y: 5, 25	Mg
Mg-Zn	Zn: 90, 93, 99	Mg
Mg-Zn-Ca	Zn: 25, 55; Ca: 5	Mg

## 其他合金材料

产品	成分(%)	余量
Ag-Cu	Cu:20	Ag
Ag-Pd	Pd:5	Ag
Ag-La	La: 20	Ag
Ag-Y	Y: 20	Ag
AuGe	Ge:12	Au
AuSn	Sn:80	Au
AuGeNi	Ge10Ni2	Au
Bi-Y	Y: 16	Bi
La-Al	Al: 20	La
La-Al-Ni	Al: 6; Ni: 8	La
La-Ca	Ca: 16	La
La-Si	Si: 5, 8	La
Nb-Mo	Nb: 10	Mo
Nb-Ni	Ni: 1, 2, 30,50, 96	Nb
Nd-Fe	Fe: 10, 15	Nd
Pb-Sn-Te	Sn: 5; Te: 39	Pb
Pb-Zr	Zr: 18	Pb

Pd-Al	Al: 10	Pd
Pd-Ni-Cu-Al	Ni: 5; Cu: 12; Al: 4	Pd
Pd-Sn-Te	Sn: 5; Te: 40	Pd
Pd-Ti	Ti: 10	Pd
Pd-Zr	Zr: 20	Pd
Pr-Al-Ni-Cu	Al: 2; Ni: 5; Cu: 12	Pr
Si-Cr-Ni-Al	Cr: 15; Ni: 5; Al: 20	Si
Si-Cr-Ni-Al	Cr: 16; Ni: 5; Al: 17	Si
Sm-Fe	Fe: 10, 15	Sm
V-Si	Si: 6	V
V-W	W: 6, 10	V
BN	N:1	Bi