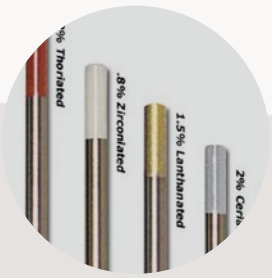
Maike
迈科钨极系统

梦想成就未来



TUNGSTEN ELECTRODE

山东迈科有色金属科技有限公司

Shandong Maike Non-ferrous Metal Technology Co.,Ltd.

www.maikewelding.net

关于迈科

Maike introduction

公司荣誉

COMPANY HONORS

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赣州钨业协会会员单位
中国焊接协会会员单位
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山东省优秀科技企业
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Member unit of China Tungsten Industry Association
Member unit of Ganzhou Tungsten Industry Association
Member unit of China Welding Association
Vice chairman of Shandong glorious Promotion Association
Excellet Scientific and Technological Enterprises in Shandong Province
Advanced unit of Zibo City
Chairman of Zibo Credit Promotion Association

山东迈科有色金属科技有限公司坐落于山东省淄博市，是一家致力于钨钼等稀有金属材料和制品研制开发、生产销售、技术服务和自营进出口业务的知名企业。厂区占地 20000 ㎡，现有职工 200 余人，作为一家科技先导型企业，所有员工全部受过职业素质教育和专业技能培训，专业工程技术人员的比例超过 40%，研发能力和技术力量雄厚，为公司的长远发展奠定了坚实的基础。

山东迈科拥有雄厚的技术力量、现代化的厂房设备和先进的检测手段，具有一套科学严格的管理制度、生产工艺和操作规程，从产品的设计、开发、生产一直到销售、服务各个环节都严格确保符合国际质量体系的要求。

公司坚持以诚信为本的理念，致力于不断创新、发展成为“ 设备一流 ”、“ 管理一流 ”、“ 质量一流 ”、“ 服务一流 ”的现代化企业，诚挚地欢迎国内外朋友、客商到公司指导治谈，互利合作，共创辉煌。

Maike Quality Control 质量控制

客户产品设计 开发需求评审 Order review

生产过程控制 Production Processing Control

服务 Service

纠正预防措施 CPA

体系改进 VPS Improvement

设备仪器 Equipment and instrument


丝材拉伸试验装置


还原车间


Hitachi 扫描电子显微镜

电感耦合等离子体光谱仪（ICP）

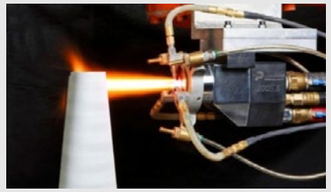

碳硫分析仪


定氧仪

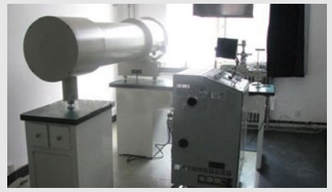

费氏粒度仪

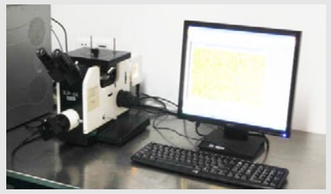

维氏硬度计

激光粒度分布仪


等离子喷涂

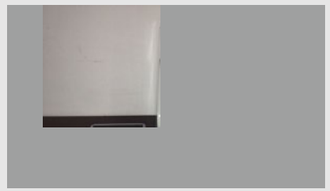

涡流探伤仪


2m 平面光栅摄谱仪


金相显微镜


热轧机

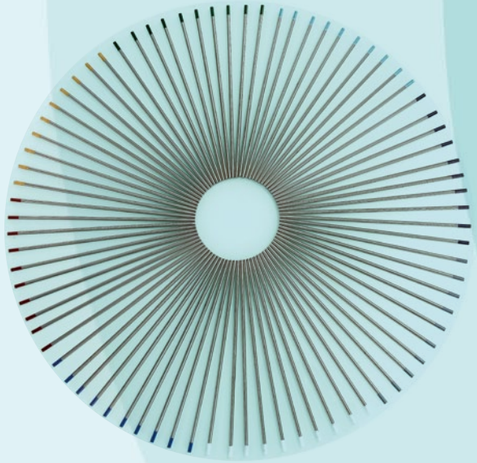

垂熔、烧结用设备


洛氏硬度仪

Maike Tungsten Electrodes
科技铸造高端产品

在众多的钨电极生产厂家中，是什么原因让他们毫不犹豫地选择了来自中国淄博的迈科品牌?

Why did these customers select Zibo Maike from numerous tungsten electrode factories in China without any hesitate?



因为，在与我们接触的那一刻开始，您就会不断地感受到迈科产品和服务所带来的快乐!

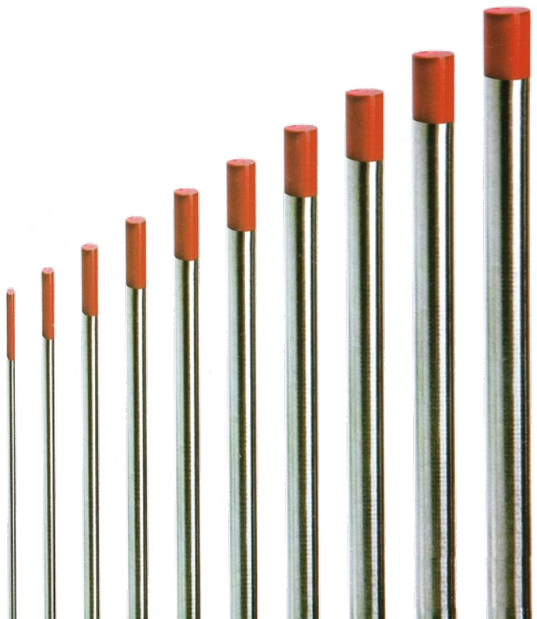
You will feel the joy come from the products and services of Maike, at the moment, when you contact with us.

钍钨电极 THORIUM–TUNGSTEN ELECTRODE

钍钨电极含有 0.8%-4.2% 的氧化钍，是一种广泛使用的添加氧化物电极，电子逸出功为 2.7eV，起弧更容易，电弧更稳定，即使在超负荷电流下也能表现良好，因而广泛应用于各种 TIG、PAW 焊接领域。氧化钍具有超强的载流能力，再结晶温度高，导电率更好，机械切割性能更强，使用寿命更长。焊接时，钍钨电极尖端保持磨尖，这样在焊接中能更大程度的保证钨电极尖端的球状不易开裂。钍钨电极广泛的使用于碳钢、不锈钢、镍合金和钛金属焊接，是高品质焊接的首选材料。

Thoriated tungsten electrode contains 0.8%-4.2% thorium oxide, its electron work function is 2.7eV.Arc to be easier, electric arc stable. It performs well with overload current, so it's widely used in various TIG and PAW. Thorium oxide has strong current-carrying capacity, high recrystallization temperature, better conductivity, stronger mechanical cutting performance and longer service life. When welding, the tip of thoriated tungsten electrode keeps sharpening so that the ball on the tip of tungsten electrode can be not easy to crack at a greater degree of assurance. Now, Thorium-tungsten electrode is widely used in welding carbon steel, stainless steel, nickel alloy and titanium metal. It becomes the first selection material for high quality welding.

牌号 Model	掺杂质 Intermingled materials	掺杂量 % Intermingled Quantity%	色标 Color standard
WT10	THO2	0.90-1.20	黄 Yellow
WT20	THO2	1.80-2.20	红 Red
WT30	THO2	2.80-3.20	紫 Purple
WT40	THO2	3.80-4.20	桔黄 Orange



CERIUM–TUNGSTEN ELECTRODE 铈钨电极

铈钨电极含有 1.8%-2.2% 的氧化铈，电子逸出功为 2.4eV, 在低电流条件下有良好的起弧和稳弧性能。维弧电流较小。因此，铈钨电极经常用于管道、不锈钢制品和细小精密部件的焊接，在低电流直流条件下或钨电极直径要求 2.0 以下的焊接一般首选铈钨电极。
氧化铈具有很高的迁移率，因此铈钨并不适合高电流条件下的应用，因为在高电流下，氧化物会快速的移动到高热区，即钨电极焊接处的顶端，这样对氧化物的均匀度造成破坏，因而因为氧化钨均匀所带来的好处将不复存在。

Ceriated tungsten electrode contains 1.8%-2.2% ceria, electron work is 2.4eV. This electrode plays a good performance on starting arc and stabilizing arc with low current. Therefore, Ceriated tungsten electrode are commonly using in pipeline, stainless steel and small precision parts welding. And it's the first choice when the condition is in the low and direct current or the diameter demands blew 2.0mm.
The mobility of cerium oxide is quite high, so ceriated tungsten is not suitable for the application in the high current. If it's used in the high current, the oxide may accelerate to the high hot area, which is the top of the tungsten electrode, and the uniformity of oxide may suffer damage, the benefit brought by cerium oxide will disappear.

牌号 Model	掺杂质 Intermingled materials	掺杂量 % Intermingled Quantity%	其他掺杂量 % Other Intermingled Quantity%	钨 Tungsten	色标 Color standard
WC20	CeO2	1.80-2.20	<0.20	余量 Remainder	灰 Grey

镧钨电极 LANTHANUM–TUNGSTEN ELECTRODE

镧钨电极含有 0.8%-2.2% 的三氧化二镧，电子逸出功为 2.8eV-3.0eV. 镧钨电极低电流下容易起弧，并且能稳定低电流下的电弧。主要用于直流焊接，用于交流焊接时也表现良好。三氧化二镧抗蠕变性能更好，延伸性强，搅拌率小，因而镧钨电极的尖端温度更低，这样有助于组织晶粒长大，提升电极使用寿命。如果无过载电流，镧钨电极寿命比钍钨长，尤其擅长防止热冲击，短周期焊接中重复点火的情况下，焊接良好，避免污染。在焊接管道时，焊工对这种镧钨电极尤其满意，因为使用寿命长而减少停机时间。

Lanthanated tungsten electrode contains 0.8%-2.2% lantana, the electron work is 2.8eV-3.0eV. It is easy to arc and arc stability with low current, it is mainly used in DC, performance well in AC welding. Lanthana has better of Creep Resistance, strong ductility, smaller stirring rate,therefore the tip temperature of lanthanated lower,which helps to precent grain growth, the service life of electrode can be increased substantially, without overload current, the life of lanthanated tungsten electrode longer than thoriated tungsten electrode, particularly good at preventing thermal shock, In the welding of short cycle, under the condition of repeated ignition, it can be welded well and prevents from pollution. When welding the pipeline, welders are quite satisfied with this lanthanated tungsten, because the service time is long to reduce the downtime.

牌号 Model	掺杂质 Intermingled materials	掺杂量 % Intermingled Quantity%	其他掺杂量 % Other Intermingled Quantity%	钨 Tungsten	色标 Color standard
WL10	La2O3	0.80-1.20	<0.20	余量 Remainder	黑 Black
WL15	La2O3	1.30-1.70	<0.20	余量 Remainder	金黄 Golden
WL20	La2O3	1.80-2.20	<0.20	余量 Remainder	天蓝 Sky blue

ZIRCONIUM– TUNGSTEN ELECTRODE 锆钨电极

在交流焊接中，锆钨电极是最常使用的，锆钨电极含少量的氧化锆。电子逸出功为 2.5eV-3.0eV, 锆钨电极焊接性能好，在焊接时比纯钨容易起弧，而且弧束稳定，也能更好地防治污染，载流能力也不错。该电极最大的特点是在高负载电流的情况下，其端部能保持成圆球状而减少渗钨现象，并具有良好的抗腐蚀性。锆钨电极表现出来的优越性能，是其他电极不可替代的。

Zirconiated tungsten electrode is the most commonly used in alternating current welding,which contains a small amount of Zirconium oxide. It's electron work is 2.5eV-3.0eV. Zirconiated tungsten electron performs well, and it is easier to start arc than pure tungsten. Arc stability. It can also prevent and control pollution well. Current-carrying capacity is quite good as well. The biggest characteristic of this electron is that its top can keep globular to reduce the seepage of tungsten in the high load current and it also has good corrosion resistance. The superior performance of zirconiated tungsten electron cannot be replaced by other electron.

牌号 Model	掺杂质 Intermingled materials	掺杂量 % Intermingled Quantity%	其他掺杂量 % Other Intermingled Quantity%	钨 Tungsten	色标 Color standard
WZ3	ZrO2	0.20-0.40	<0.20	余量 Remainder	棕 Brown
WZ8	ZrO2	0.70-0.90	<0.20	余量 Remainder	白 White

纯钨电极 PURE TUNGSTEN ELECTRODE

纯钨电极是氩弧焊接最早使用的电极，也被广泛使用在各个特定的焊接行业。纯钨电极含钨量最低 99.5%，没有合金元素。纯钨电极仅作为交流条件下的焊接电极或作为电阻焊电极，它能提供清洁木材表面，加热时焊球变尖，这种形状提供一个平衡的波形交流焊接电弧稳定，是特别良好的。纯钨具有非常高的电子逸出功，蒸汽压力低，电阻小，导电性好，热膨胀小，弹性模量高。所以在低电流时电弧稳定，低于 5A 时能够很好地焊接铝、镁及其合金，但发射电子要求电压较高，要求焊机空载电压高，长时间大电流工作时钨极烧损较明显，端部熔化后落入熔池会使焊缝夹钨，因此只作为某些黑色金属焊接用，或焊接不重要部位。

Pure tungsten electrode is the earliest use of electrodes in tig welding. It contains tungsten content minimum 99.5%,without other impurities. Pure tungsten electrode is only as welding electrode under the condition of AC or resistance welding electrode. It can clean surface of base metal, welded ball become tapering when heating. This shape provides a good and balanced wave form for AC welding. Pure tungsten electrode has a very high electron output, low vapor pressure, low resistance, good conductivity, thermal expansion, high elastic modulus bright. Therefore, stable arc at low currents, even as low below the 5A it also do the welding aluminum, magnesium and other. But the emission of electron demands high voltage and high no-load voltage of welding machine. The tungsten electrode is burned apparently if it works in the high current for a long time. The end may drop into molten pool after melting, which will bring the tungsten into the welding gap. So, it's just used for welding some black metal or welding the unimportant parts.

电极名称 Electrode name	牌号 Model	掺杂质 Intermingled materials	掺杂量 % Intermingled Quantity%	其他掺杂量 % Other Intermingled Quantity%	钨 Tungsten	色标 Color standard
纯钨电极 Pure Tungsten Electrode	WP	---	---	<0.20	余量 Remainder	绿 Green

YTTRIUM– TUNGSTEN ELECTRODE 钇钨电极

钇钨电极含有 1.8%-2.2% 的氧化钇，电子逸出功为 2.8eV-3.2eV. 钇钨电极在焊接时，弧束细长，压缩程度大，在中、大电流时其熔深最大。 在焊接高强度钛合金承力构件，以及喷气发动机高温部件采用的单晶或粗晶材料，金属间化合物，陶瓷或金属基复合材料等新型材料时，性能优越。所以，主要应用于军事工业和航空、航天工业。

Yttrium tungsten electrode contains 1.8%-2.2% yttria which its electron function of 2.8eV-3.2eV. When used in welding, Yttriated Tungsten is primarily used in military and aviation industry with narrow arc beam, high compressing strength, highest welding penetration at medium and high current. Its superior performance also recommends used in the welding of high strength titanium bearing components, as well as high-temperature jet engine components using a single crystal or coarse-grained materials, intermetallic compounds, ceramic or metal matrix composites and other new materials. Therefore they are mainly used in military industry and the aerospace industry.

电极名称 Electrode name	牌号 Model	掺杂质 Intermingled materials	掺杂量 % Intermingled Quantity%	其他掺杂量 % Other Intermingled Quantity%	钨 Tungsten	色标 Color standard
钇钨电极 Yttrium-Tungsten Electrode	WY20	YO2	1.80-2.20	<0.20	余量 Remainder	蓝 Blue

复合多元钨电极 COMPOUND TUNGSTEN ELECTRODE

复合钨电极又称三元复合稀土钨电极，其本身不具有放射性，复合目的就是为了平衡内部电子的迁移率和蒸发率，使得钨电极性能发挥到极致，而且降低电子的电子逸出功。复合钨电极起弧和重复起弧很容易。如果焊接周期在大于 15 分钟的情况下，它的使用寿命会更长。复合钨电极尖端烧损明显优于其他钨电极。由于三种氧化物在电极中掺杂混合，对生产工艺有极为严格的要求，因此生产成本较高。

Compound tungsten electrode is also known as three elements of rare earth . It is a non-radiation material. It is good to balance the electron mobility and evaporation rates, making tungsten electrodes to maximize their performances. For compound tungsten electrode, it's easy to start and restart arc. If the welding cycle more than 15 minutes, its life will be last longer. WS tungsten electrode tip burning significantly better than other tungsten electrodes. As three kinds of doping the oxide mixture in the electrode. It's strict with the production process and the cost of production is more expensive.

牌号 Model	掺杂量 % Intermingled Quantity%	其他掺杂量 % Other Intermingled Quantity%	钨 Tungsten	电子逸出功 electric discharged power	色标 Color standard
WR	1.0-4.0	<0.20	余量 Remainder	2.45-3.1	蓝绿色 Turquoise Blue

TIG(GTAW)WELDING 钨极氩弧焊

工作原理：焊接时，从喷嘴中均匀地、连续的喷出惰性气体，可靠地将焊接区保护起来，利用钨极与工件间生产的热量融化母材和填充金属（可不加填金属），形成熔池，在惰性气体保护下，熔池冷却结晶后形成焊缝。所有惰性气体都可用来做保护气体、最常用的是氩气或氦气，常用钨棒做不熔化电极，故叫钨极氩弧焊或钨极氦弧焊，简称 TIG 焊（德国简称 GTAW 焊）

优点：用惰性气体保护焊接区，不仅保护效果好，而且保护气体与融金属不发生任何化学反应，焊接过程中合金元素不会烧损，焊缝质量很高；焊接过程中无飞溅，也没有焊渣，故焊后省去了清渣的工作量；由于电弧能量集中及保护气的冷却作用，侧缝两侧的热影响区宽度较小，工作变形小。

应用范围：特别适用于焊接薄板，可焊接的最小厚度是 0.1mm，5mm 以下可单道焊，3-50mm 的工作可多层焊或多道多层焊。可适用大多数金属及合金，如碳钢、合金钢、耐热合金，难熔金属、铝合金，铜合金，镁合金，镍合金，钛合金等。

Principle:when welding,the insert gas,jetted from the nozzle equably,can prtect the welding area unfailingly.The heat produced by the arc,between tungsten electrodes and workpiece,,will melt the base metal and filler metal(The filler metal can be not added,either.)to from the melting pool.With the protection of insert gas,the melting pool cools and recrystallizes to welding line.All the insert gas can be used as the the protecting gas,among which argon gas and helium gas are the most general,Tungsten bar is commonly used as the infusible electrodes.So this is called Argon Gas Tungsten Arc Welding or Helium Gas Tungsten Arc Welding.It is shortly called TIG(In Germany,it is GTAW)

Advantage:The insert gas has a perfect protecting effect for the welding area.In addition,it doesn't produce any chemical reaction with the melting metal.The alloy metal can not be burnt to the destroy when welded.The welding line has a high quality.Because it has no welding broken bits,it can save the clearing work after welding.Moreover,due to the concentration of the arc heat and the cooling effect of the insert gas,the heat just spread to the narrow area around the welding line,so the workpiece transforms ratherish.

Using Range:it is especially suitable for welding thin metal sheets.Its minimum welding thickness is 0.1mm.Single-pass welding can be adopted under 5mm;multi-pass welding excessive pass welding can be adopted between 3-50mm.Gas Tungsten Arc Welding can weld most metal and alloy,such as carbon steel,alloy steel,heat-resistant alloy.infusible metal ,alumium alloy,copper alloy,magnesium alloy,nickel alloy,nickel alloy and titanium alloy,etc.

母材 Material	电源 Power	焊接特性 Speciality
铝（任何厚度） Aluminum(In any thickness)	交流（高周波）ACHF(high frequency)	引弧形佳，焊道清洁，耗气量小 Perfect arc, clean, low gas consumption
铝铜合金 Alumium copper	交流或直流正接 AC/DCSP(straight polarity)	最宜于母材表面补焊 Repair weld on surface properly
镁（1.5mm 以上） Magnesium(more than1.5mm)	交流（高周波） ACHF(high frequency)	焊道清洁，耗气量小 Clean,low gas consumption
低碳钢（3mm 以下） Low-carbon steel less than 3mm	直流正接 DCSP	焊道清洁，平焊时熔池易控制 Clean, control molten pool easily
低合金钢 Low alloy steel	直流正接 DCSP	同低碳钢 Same as Low-carbon steel
不锈钢 Stainless steel	直流正接 DCSP	较薄母材焊接熔透易控制 Thinner material control easily
钛（薄壁管）Ti(thin tube wall)	直流正接或交流 DCSP/ AC	焊道清洁，熔化率适宜 Clean,good melting rate
镍铜合金 Ni-Cu alloy	直流正接或交流 DCSP/ AC	施焊易控制 Welding control easily
硅铜合金 Silicon-copper	直流正接 DCSP	电弧长度适宜，易控制 Suitable arc length, control easily

全球专业钨极制造商

Global professional tungsten manufacturer

山东迈科有色金属科技有限公司

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