

### TIG Welding Tungsten Electrode

TIG Welding Tungsten Electrode : WP(Pure Tungsten Electrode),WR(Compound Tungsten Electrode),WLa(Lanthanum-Tungsten Electrode),WCe( Cerium-Tungsten Electrode),WTh( Thorium-Tungsten Electrode),WY( Yttrium Tungsten Electrode).



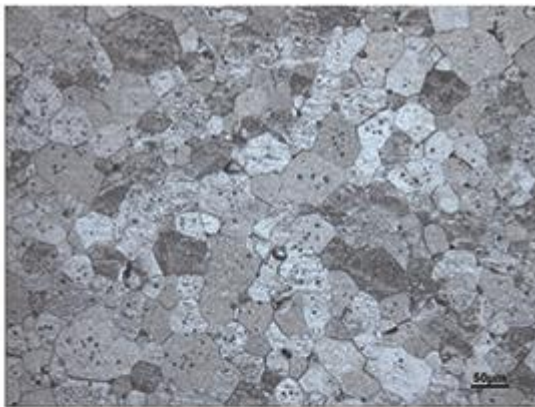


## WP(Pure Tungsten Electrode)

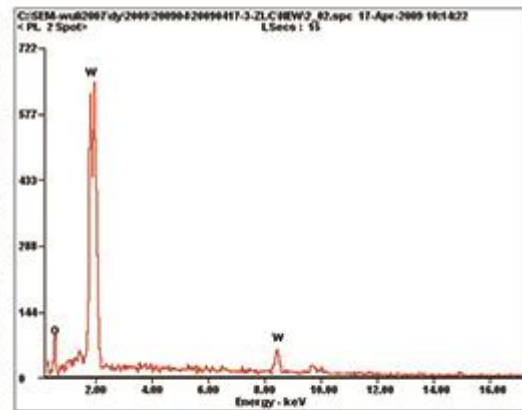
The pure Tungsten Electrode is the electrode without any addition of oxide. The power of electronic transgression is as high as 4.5ev. Requiring a high voltage for arc derivation; it has a low current capacity and easily burnt. Consequently, it is commonly used in condition of AC and low welding requirements.

Model	Oxide Additive		Impurities Content	Tungsten Contents	Color standard
	Varieties	Content%			
WP	—	—	<0.2	Remainder	 Green

Metallograph:



Energy spectrum analysis:



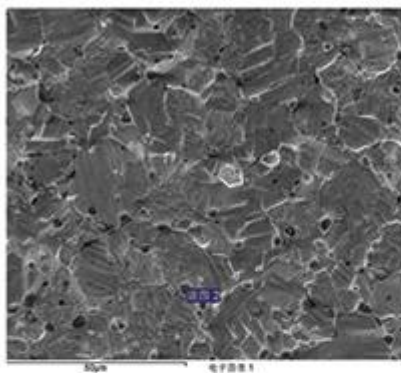
# WR (Compound Tungsten Electrode)



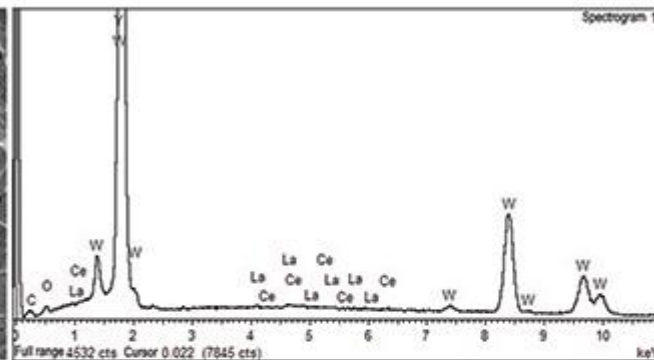
Combined Tungsten Electrode is the Tungsten material with two or more rare earth oxide additives. Every additive works to the benefit of others and serves as a complement at the same time to make its welding performance more outstanding. Multivariate composite rare earth tungsten electrode: with the progress and development of welding industry, more stringent requirements are put forward in the reliability and stability of electrode material. Rare earth oxides with high melting point, the good thermal-electron emission property, excellent thermionic emission performance, become the main material instead of thoriated tungsten electrodes, and in small –specification welding has successfully replaced the thoriated tungsten of tungsten electrode; But in AC hydrogen arc welding, there still exists shortcomings such as poor arc initiation, short service life etc. In general, the arc characteristics of compound rare-earth tungsten electrode are better than the unit rare earth tungsten electrodes, also in the compound rare -earth tungsten electrode, the tri-compound is superior to the binary. Multivariate composite rare earth tungsten electrode is considered to be the best material to substitute the thorium-tungsten electrode.

Model	Oxide Additive		Impurities Content	Tungsten Contents	Color standard
	Varieties	Content%			
WR		1.0 - 4.0	<0.2	Remainder	 Turquoise Blue

Metallograph:



Energy spectrum analysis:



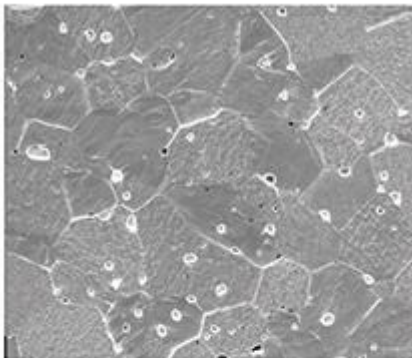


## WZr ( Zirconium- Tungsten Electrode )

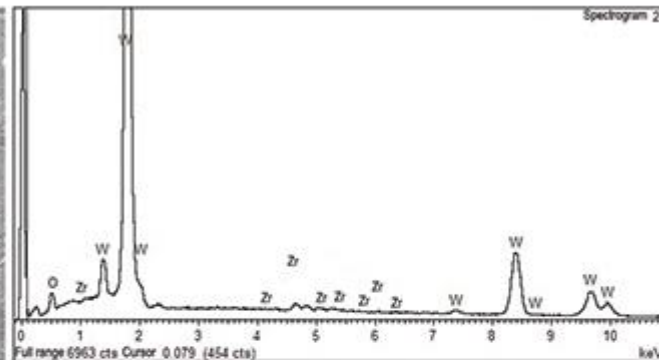
Zirconium- Tungsten Electrode bears a fine performance in welding under the condition of AC and has a good anti-corrosiveness. Especially in the case of high load of current ,the Zirconium- Tungsten excellent performance is far better than that of other electrodes. When welding ,the end of zirconium- Tungsten Electrode remains pellet-shaped, which can reduce the possibility of tungsten oozing .It is suitable for welding magnesium, aluminum and their alloy under alternating current.

Model	Oxide Additive		Impurities Content	Tungsten Contents	Color standard
	Varieties	Content%			
WZ3	ZrO <sub>2</sub>	0.20 - 0.40	<0.2	Remainder	 Brown
WZ8	ZrO <sub>2</sub>	0.70 - 0.90	<0.2	Remainder	 White

Metallograph:



Energy spectrum analysis:



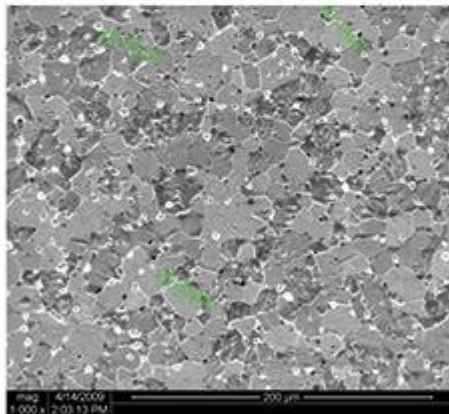


## WLa (Lanthanum-Tungsten Electrode)

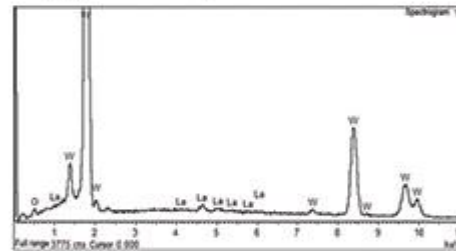
Lanthanum -Tungsten Electrode is well known for its good welding performance .It is the electrode added with 1-2% of La<sub>2</sub>O<sub>3</sub>.The power of its electronic transgression is 2.7-2.8ev ,bearing the closest features to those of the Thorium -Tungsten Electrode. Its arc features and burn spoilage endurance are better under the small or medium currents condition. Lanthanum-Tungsten Electrode is the most promising substitution product of thorium-tungsten electrode because of its non-radiation. Its another advantage is the endurance of high current and low burn spoilage rate.

Model	OxideAddictive		Impurities Content	Tungsten Contents	Color standard
	Varieties	Content%			
WL10	La <sub>2</sub> O <sub>3</sub>	0.80 - 1.20	<0.2	Remainder	 Black
WL15	La <sub>2</sub> O <sub>3</sub>	1.30 - 1.70	<0.2	Remainder	 Gold
WL20	La <sub>2</sub> O <sub>3</sub>	1.80 - 2.20	<0.2	Remainder	 Blue

Metallograph:



Energy spectrum analysis:



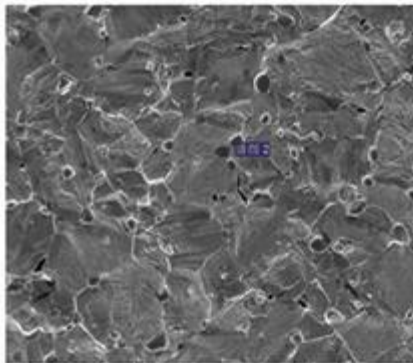


## WCe (Cerium-Tungsten Electrode)

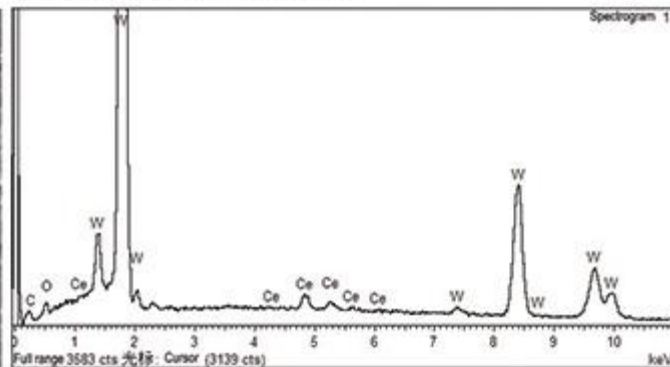
Cerium-tungsten electrode is a non-radioactive and green product. It can start performing arc with a low current. It is known to be especially good for direct current welding with low amperage because it starts very easily at low amps. Therefore, it is very popular in welding of pipeline, fine parts, short welding cycles and given number welding.

Model	Oxide Additive		Impurities Content	Tungsten Contents	Color standard
	Varieties	Content%			
WC20	CeO <sub>2</sub>	1.80 - 2.20	<0.2	Remainder	Grey

Metallograph:







Energy spectrum analysis:



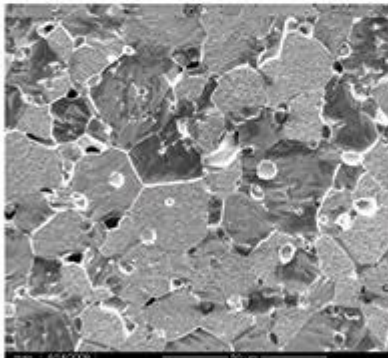


## WTh(Thorium- Tungsten Electrode)

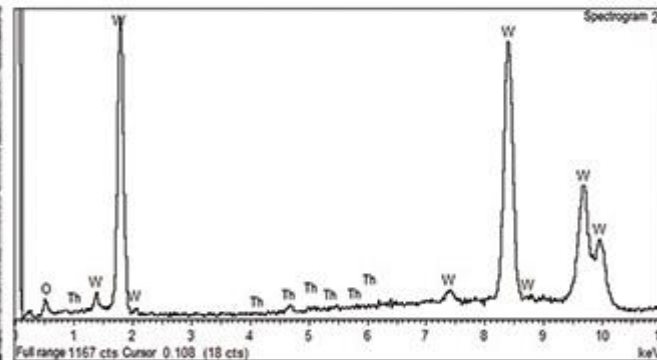
Thorium-Tungsten Electrode is widely used as an additive oxide electrode ,having much more advanced comprehensive welding performance than the properties of Pure Tungsten Electrode and other additive oxide electrodes. It can not be replaced by other oxide electrodes during the long use process. It can be operated easily, has a high current load and produces arc easily and steadily.In addition, the gap of the breaking arc is big ,loss less and life longer .It has higher re-crystallized temperature, better conductivity and mechanical cutting property .Now,Thorium-Tungsten

Model	OxideAddictive		Impurities Content	Tungsten Contents	Color standard
	Varieties	Content%			
WT10	ThO <sub>2</sub>	0.90 - 1.20	<0.2	balance	 Yellow
WT20	ThO <sub>2</sub>	1.80 - 2.20	<0.2	balance	 Red
WT30	ThO <sub>2</sub>	2.80 - 3.20	<0.2	balance	 Purple
WT40	ThO <sub>2</sub>	3.80 - 4.20	<0.2	balance	 Orange

Metallograph:



Energy spectrum analysis:



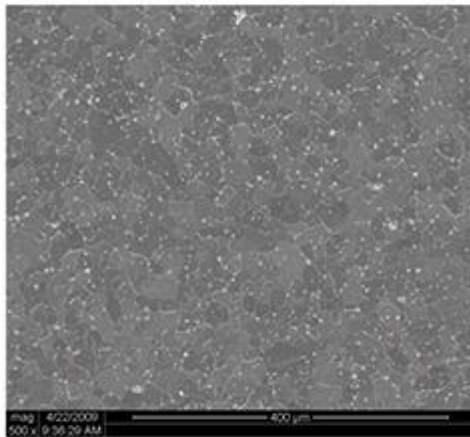


## WY(Yttrium Tungsten Electrode)

The Yttrium- Tungsten Electrode produces a slim arc and a level of compression when used in welding .Moreover, it has a deeper melting depth in medium and high current .It is mainly in the military, aviate and astronautic industries.

Model	OxideAddictive Varieties	Content%	Impurities Content	Tungsten Contents	Color standard
WY	Y <sub>2</sub> O <sub>3</sub>	1.8 - 2.2	<0.2	Remainder	 Sky Blue

Metallograph:



Energy spectrum analysis:

