

## Tungsten Electrodes

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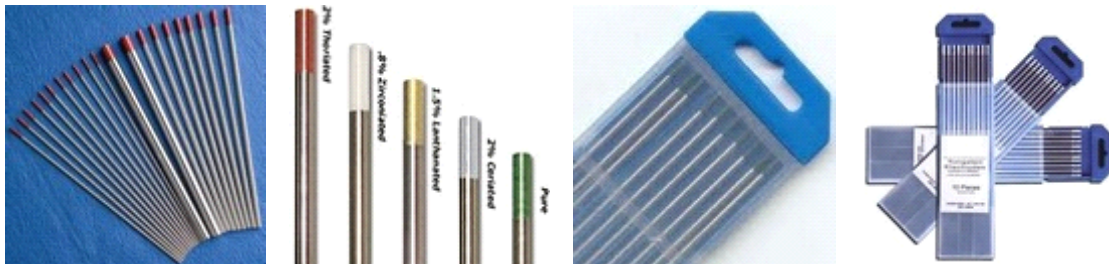
Chemical Name: Tungsten Carbide

Chemical Family: Refractory Metal (non-ferrous metal)

*Chemical Formula: WC*

E-Biz Center of China Tungsten Industry Association

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MORE INFORMATION

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These electrodes consist of solid tungsten or tungsten alloy rods, manufactured in short lengths and supplied in packages. The composition of the tungsten electrodes varies depending on the type of electrode supplied to different classifications of the relevant National Standards. They consist of tungsten metal containing different amounts of metal oxide powders.

Details of the contents of the tungsten electrodes covered by this data sheet are given below.

## 1. Thoriated Tungsten Electrode (EWTh)

Trade mark: WT10, WT20, WT30, WT40

Quality of surface: Ground finish, polish finish

Diameters: 1.0mm-10.0mm

Length: 150mm, 175mm

Property: Easy to get up the arc, in the welding process unceasingly arches.

Easy to get up the arc, in the welding process unceasingly arches. The electric arc is stable, not spread around and disperse the arc. The electricity saving effect is obvious, gets up the arc current relatively Drops 20 - 50%. Because welding current lower, in the use process is not easy to appear splashes, extremely not instable circle. The electrode causes Is long with the life. The thorium tungsten electrode is the traditional electrode, has the superior welding performance, but the tungsten thorium electrode slight radioactivity, caused it the application to receive certain resisting and the limit.

Trade mark	Added impurity	Impurity quantity(%)	Color sign
WT10	ThO <sub>2</sub>	0.90~1.20%	yellow
WT20	ThO <sub>2</sub>	1.8~2.2%	red
WT30	ThO <sub>2</sub>	2.80~3.20%	purple
WT40	ThO <sub>2</sub>	3.80~4.20%	orange

## 2. Cerium tungsten electrode (EWCe)

Trade mark: WC20

Diameters: 1.0mm-10.0mm

Length: 150mm, 175mm

Quality of surface: Ground finish, polish finish

Property: Cerium-Tungsten is the first choice for replacing thoriated tungsten electrode under the condition of low DC

Cerium Tungsten Electrode has good starting arc performance under the condition of low current. The arc current is low; therefore the electrodes can be used for welding of pipe, stainless and fine parts. Cerium-Tungsten is the first choice for replacing thoriated tungsten electrode under the condition of low DC.

Cerium-Tungsten Electrode has the following merit compared to the thorium tungsten electrode:

- Non- radioactivity;
- Low melting rate;
- Long welding life;
- Good gets up the arc.

Trade mark	Added impurit	Impurity quar (%)	Other impurity	Electric discharged power	Color sign
WC20	CeO2	1.8~2.2%	<0.2%	2.7~2.8	grey

## 3. Lanthanated tungsten electrode (EWLa)

Model Number: WL10, WL15, WL20

Diameters: 1.0mm-10.0mm

Length: 150mm, 175mm

Quality of surface: Ground finish, polish finish

Property: Another advantage of Lanthanated Tungsten is being able to bear high current and having the lowest burn-loss rate.

The Lanthanated Tungsten Electrode became very popular in the circle of welding in the world soon after it was developed because of its good welding performance. The electric conductivity of Lanthanated Tungsten electrode is most closed to that of 2%Thoriated Tungsten. Welders can easily replace Thoriated Tungsten Electrode with Lanthanated Tungsten Electrode at either AC or DC and do not have to make any welding program changes. The radioactivity form Thoriated Tungsten can thus be avoided. Another advantage of Lanthanated Tungsten is being able to bear high current and having the lowest burn-loss rate.

The advantages of lanthanated tungsten electrode:

- Better Cutting Mechanical Properties
- better performance of creep resistant
- High temperature recrystallization
- Good tractility

Trade mark	Added impurity	Impurity quantity (%)	Other impurity	Electric Discharged power	Color sign
WL10	La203	0.8~1.2	<0.2%	2.6~2.7	black
WL15	La203	1.3~1.7	<0.2%	2.8~3.0	gold
WL20	La203	1.8~2.2	<0.2%	2.8~3.2	Sky blue

#### 4. Zirconiated tungsten electrode (EWZr)

Model Number: WZ

Diameters: 1.0mm-10.0mm

Length: 150mm, 175mm

Quality of surface: Ground finish, polish finish

Property: Zirconiated Tungsten electrode is excellent for AC welding due to

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favorable retention of balled end

Zirconiated Tungsten Electrode has good performance in AC welding, especially under high load current. Zirconiated Tungsten Electrodes can not be replaced by any other electrodes in terms of its excellent performance. While welding, the end of electrode can retain globe, because of this the seep of tungsten phenomenon can be reduced.

The technical staffs in our factory have been engaged in research and testing work and succeeded in solving the conflicts between zirconium contents and processing properties.

Trade mark	Added impurity	Impurity quantity (%)	Other impurity	Electric discharged power	Color sign
WZ3	ZrO2	0.20~0.40%	<0.2%	2.5~3.0	brown
WZ8	ZrO2	0.70~0.90%	<0.2%	2.5~3.0	white

## 5. Yttrium tungsten electrode (EWY)

Model Number: WY20; Color: Green

Diameters: 1.0mm-12.0mm

Length: 150mm, 175mm

Quality of surface: Ground finish, polish finish

Property: Yttrium Tungsten Electrode: Mainly applied in military and aviation industry

When welding, it has slightness arc, big compression degree, when in the middle and big electric current, the dissolves depth is biggest. At present mainly applies to the war industry and the aerospace industry.

## 6. Compound tungsten electrode

Model Number: WX

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Diameters: 1.0mm-10.0mm

Length: 150mm, 175mm

Quality of surface: Ground finish, polish finish

Property: It has good welding performance and it is better than WT20

Compound Tungsten electrode is the Tungsten material with two or more rare earth oxide. Each additive works to the benefit of others and serves as a complement at the same time.

Depending on the strong capability in R&D, after thousands experiments, we finally found the best-quality composition. When this product is published, it got the approval from the authorities and the experts. Now this product has been exported to European and American, and become the noble in the Tungsten electrodes family.

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