

# WELDING CONSUMABLES

## TUNGSTEN ELECTRODES



### WT20 2% THORIATED TUNGSTEN ELECTRODE

This has been the most commonly used type of tungsten for a long time and thus is the standard that is used for comparison to other tungstens. However, since it is a low-level radioactive hazard many users have switched to other alternatives. Regarding the radioactivity, Thorium is an alpha emitter but when its enclosed in a tungsten matrix the risks are negligible, thus holding a stick of Thoriated tungsten in your hand should not pose a great threat unless a welder has open cuts on their skin. Thoriated tungsten should not get in contact with open cuts or wounds. The more significant danger to welders can occur when thorium oxide gets into the lungs. This can happen from the exposure to vapours during welding or from ingestion of material/dust in the manufacture and grinding of the tungsten. Therefore, precautions should be taken when welding and use of an exhaust system should be implemented to remove the grinding dust from the work area when grinding tungsten. Proper disposal in an environmentally friendly way is also a responsibility. There are discussions under way in Europe about eliminating the use of thorium there altogether because of these problems. Please research this subject yourself to get a complete understanding. Notwithstanding these issues, 2% Thoriated tungsten is still the most commonly used tungsten and is a good general use tungsten. It has one of the lowest work functions, and it performs well when overloaded with extra amperage. However, it does not hold its point as well as some other non-radioactive tungsten that have been introduced.

This tungsten is used primarily for DC welding and may split if used for AC welding.



Part-No	Description	Pkt Qty
WT20-10-175	2.0% Thoriated Tungsten 1.0mm x 175mm	10
WT20-16-175	2.0% Thoriated Tungsten 1.6mm x 175mm	10
WT20-24-175	2.0% Thoriated Tungsten 2.4mm x 175mm	10
WT20-32-175	2.0% Thoriated Tungsten 3.2mm x 175mm	10

### WLa LANTHANATED TUNGSTEN ELECTRODES

In Europe and Japan this has been the most popular alternative to 2% Thoriated tungsten for most applications. It is available as 2%, 1.5%, and 1% Lanthanated tungsten. Lanthanum Trioxide has the lowest work function of any of the materials thus it usually starts easiest and has the lowest temperature at the tip which resists grain growth and promotes longer service life. Testing of 2% Lanthanated material showed that it offers much longer life than Thoriated if not overloaded and better arc starting in most applications.

It is also especially good at;

- Resisting the "Thermal shock" of pulsing
- Welding in situations where there are numerous re-ignitions with a short weld cycle
- Resistance to contamination.

Welders with tube mill applications have been especially satisfied with this material because its longer life reduces down time. Also, as a general rule it will probably require about 15% less amps to start and sustain low current arcs. Lanthanum in this tungsten is a "rare earth" material and is not radioactive.

This tungsten is primarily used for DC welding, but will also show good results for AC welding.



Part-No	Description	Pkt Qty
WLA-16-175	1.5% Lanthanated Tungsten 1.6mm x 175mm	10
WLA-24-175	1.5% Lanthanated Tungsten 2.4mm x 175mm	10
WLA-32-175	1.5% Lanthanated Tungsten 3.2mm x 175mm	10

Part-No	Description	Pkt Qty
WLA2-16-175	2.0% Lanthanated Tungsten 1.6mm x 175mm	10
WLA2-24-175	2.0% Lanthanated Tungsten 2.4mm x 175mm	10
WLA2-32-175	2.0% Lanthanated Tungsten 3.2mm x 175mm	10

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## TUNGSTEN ELECTRODES



### WZ8 0.8% ZIRCONIATED TUNGSTEN ELECTRODE

Zirconiated Tungsten has good performance in AC welding. It easily forms and retains a balled tip at the end of the tungsten which is ideal to give the radiating arc suited to AC TIG welding. Zirconiated tungsten electrode produces an extremely stable arc and resists tungsten spitting. Zirconiated tungsten has a high resistance to contamination with excellent performance in high load AC welding. Zirconiated Tungsten is most commonly used for AC welding of aluminium and magnesium alloys.

Zirconiated is not recommended for DC welding.

Part-No	Description	Pkt Qty
WZ8-10-175	0.8% Zirconiated Tungsten 1.0mm x 175mm	10
WZ8-16-175	0.8% Zirconiated Tungsten 1.6mm x 175mm	10
WZ8-24-175	0.8% Zirconiated Tungsten 2.4mm x 175mm	10
WZ8-32-175	0.8% Zirconiated Tungsten 3.2mm x 175mm	10



### WCe-2 1.8 - 2.2% CERIATED TUNGSTEN ELECTRODE

Ceriated tungsten electrodes (AWS classification EWCe-2) contain a minimum of 97.30 percent tungsten and 1.80 to 2.20 percent cerium and are referred to as 2 percent ceriated. Ceriated tungstens perform best in DC welding at low current settings. They have excellent arc starts at low amperages and become popular in such applications as orbital tube welding, thin sheet metal work. They are best used to weld carbon steel, stainless steel, nickel alloys, and titanium, and in some cases it can replace 2 percent thoriated electrodes. Ceriated tungsten is best suited for lower amperages as it should last longer than Thoriated tungsten. Higher amperage applications are best left to Thoriated or Lanthanated tungsten.

Part-No	Description	Pkt Qty
WC20-16-175	1.8-2.2% Ceriated Tungsten 1.6mm x 175mm	10
WC20-24-175	1.8-2.2% Ceriated Tungsten 2.4mm x 175mm	10
WC20-32-175	1.8-2.2% Ceriated Tungsten 3.2mm x 175mm	10



### E3 TUNGSTEN ELECTRODE

E3 tungsten electrodes (AWS classification EWG) contain a minimum of 98% percent tungsten and up to 1.5 percent Lanthanum and small percentages of Zirconium and Yttrium they are called E3 Tungsten. E3 Tungsten Electrodes provide conductivity similar to that of thoriated electrodes. Typically, this means that E3 Tungsten Electrodes are exchangeable with thoriated electrodes without requiring significant welding process changes. E3 deliver superior arc starting, electrode lifetime, and overall cost-effectiveness. When E3 Tungsten Electrodes are compared with 2% thoriated tungsten, E3 requires fewer re-grinds and provides a longer overall lifetime. Tests have shown that ignition delay with E3 Tungsten Electrodes actually improves over time, while 2% thoriated tungsten starts to deteriorate after only 25 starts. At equivalent energy output, E3 Tungsten Electrodes run cooler than 2% thoriated tungsten, thereby extending overall tip lifetime. E3 Tungsten Electrodes work well on AC or DC. They can be used DC electrode positive or negative with a pointed end, or balled for use with AC power sources.

Part-No	Description	Pkt Qty
E3-16-175	E3 Tungsten 1.6mm x 175mm	10
E3-24-175	E3 Tungsten 2.4mm x 175mm	10
E3-32-175	E3 Tungsten 3.2mm x 175mm	10

