

### TUNGSTEN TIP PREPARATION

**DC TIG WELDING**

Flat: 1/4 TO 1/2 X DIA  
Taper Length: 2-3 X DIA

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**AC TIG WELDING**

Typical Tip Geometry for Inverter  
Typical Tip Geometry for Transformer  
Maximum Ball Size: 1 X DIA

Ball tip by arcing on non-ferrous metal at low current DCRP (EP) then slowly increase current to form the desired ball diameter. Return setting to AC.

### TUNGSTEN EXTENSION

**STANDARD PARTS**

General Purpose 3 X DIA

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**GAS LENS PARTS**

General Purpose 3 X DIA  
MAX: 6 X DIA. (In draft-free areas)

### TUNGSTEN GRINDING

Use a medium (60 grit or finer) diamond or aluminum oxide wheel.

- Grind longitudinally (never radially)
- Truncate (blunt) end
- Diameter of flat spot determines amperage capacity

The included angle determines weld bead shape and size. Generally, as the included angle increases, penetration increases and bead width decreases.  
\*Refer to page 5

### COLOR CODE FOR TUNGSTEN ELECTRODES

Designation		Chemical Composition Impurities ≤ 0.1%		TIP COLOR
ISO 6848	AWS A5.12	OXIDE ADDITIVE	TUNGSTEN	
WT20	EWTh-2	ThO <sub>2</sub> : 1.70–2.20%	2% THORIATED	Red
WP	EWP	~~~~~	PURE	Green
WL15	EWLa-1.5	La <sub>2</sub> O <sub>3</sub> : 1.30–1.70%	1.5% LANTHANATED	Gold
WC20	EWCe-2	CeO <sub>2</sub> : 1.80–2.20%	2% CERIATED	Gray
WL20	EWLa-2	La <sub>2</sub> O <sub>3</sub> : 1.80–2.20%	2% LANTHANATED	Blue
WZ8	EWZr-8	ZrO <sub>2</sub> : 0.70–0.90%	0.8% ZIRCONIATED	White
LaYzr™	EWG	La <sub>2</sub> O <sub>3</sub> : 1.3–1.7%; Y <sub>2</sub> O <sub>3</sub> : 0.06–0.10%; ZrO <sub>2</sub> : 0.6–1.0%	1.5% LANTHANATED 0.8% YTTRIATED 0.8% ZIRCONIATED	Chartreuse

## TUNGSTEN ELECTRODE CHARACTERISTICS

Tungsten	Color Code	Characteristics
Pure	 Green	Provides good arc stability for AC welding. Reasonably good resistance to contamination. Lowest current carrying capacity. Least expensive. Maintains a balled end. Used on transformer based machines only.
2% Ceriated	 Gray	Similar performance to thoriated tungsten. Easy arc starting, good arc stability, long life. Possible replacement for thoriated.
2% Thoriated	 Red	Easier arc starting. Higher current capacity. Greater arc stability. High resistance to weld pool contamination. Difficult to maintain balled end on AC.
1.5% Lanthanated	 Gold	Similar performance to thoriated tungsten. Easy arc starting, good arc stability, long life, high current capacity. 1.5% possible replacement for thoriated. 2% possible replacement for Pure.
2% Lanthanated	 Blue	Similar performance to thoriated tungsten. Easy arc starting, good arc stability, long life, high current capacity. 1.5% possible replacement for thoriated. 2% possible replacement for Pure.
.8% Zirconiated	 White	Excellent for AC welding due to favorable retention of balled end, high resistance to contamination, and good arc starting. Preferred when tungsten contamination of weld is intolerable. Possible replacement for Pure.
LaYZr™	 Chartreuse*	Best for use on automated or robotic applications. Runs cooler than 2% Thoriated with longer life. Low to medium amperage range.

\*Substitute for Purple (Same oxide blend).

## TUNGSTEN ELECTRODE CURRENT RANGES

Tungsten Diameter in inches (mm)	Gas Cup (Inside Diameter)	TYPICAL CURRENT RANGE				
		Direct Current, DC		Alternating Current, AC		
		DCEN	70% Penetration		(50/50) Balanced Wave, AC	
		Ceriated	Zirconiated	Ceriated	Zirconiated	Ceriated
.040" (1.0mm)	#6 (3/8")	15–80 amps	20–60 amps	15–80 amps	10–30 amps	20–60 amps
1/16" (1.6mm)	#6 (3/8")	70–150 amps	50–100 amps	70–150 amps	30–80 amps	60–120 amps
3/32" (2.3mm)	#8 (1/2")	150–250 amps	100–160 amps	140–235 amps	60–130 amps	100–180 amps
1/8" (3.2mm)	#8 (1/2")	250–400 amps	150–200 amps	225–325 amps	100–180 amps	160–250 amps

All values are based on the use of Argon as a shielding gas. Other current values may be employed depending on the shielding gas, type of equipment, and application. DCEN = Direct Current Electrode Negative (Straight Polarity)

WELD PENETRATION PROFILE			
Gas Type	 30° Angle .005" FLAT	 60° Angle .010" FLAT	 90° Angle .020" FLAT
<b>100Ar</b> 100% Argon			
<b>75Ar-25He</b> 75% Argon 25% Helium			
<b>50Ar-50He</b> 50% Argon 50% Helium			
<b>25Ar-75He</b> 25% Argon 75% Helium			
<b>100He</b> 100% Helium			
<b>95Ar-5H<sub>2</sub></b> 95% Argon 5% Hydrogen			