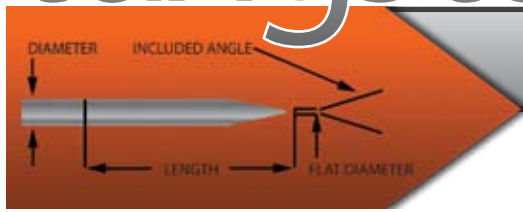


# tungsten grinding



## PRECISION GRINDING TUNGSTEN ELECTRODES



**The included grind angle (taper) and tip flat diameter (geometry) of a tungsten electrode greatly affect the size and quality of the weld bead and penetration.**

With precision applications like orbital tube and pipe welding or plasma arc welding, it is important that electrodes are precision ground consistently once a welding procedure is established. Arc-Zone.com® recommends using a dedicated tungsten grinder which allows you to pre-set the angle. A tungsten grinding machine is also safer than a bench grinder and some offer dust collection.

For highly mechanized welding operations purchasing preground electrodes may be the best solution.

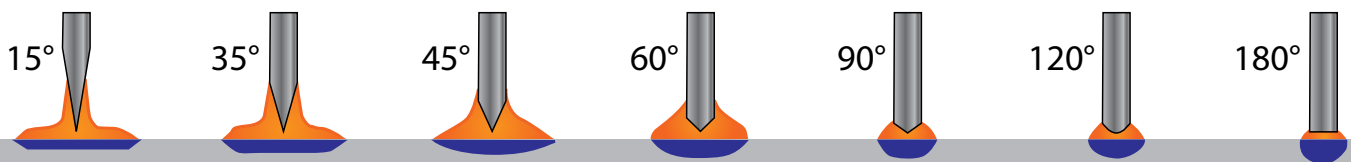
Always purchase your Pre-Ground Tungsten Electrodes from a trusted source like Arc-Zone.com, as manufacturing and grinding methods can greatly affect tungsten electrode performance.

Whatever your TIG/GTAW or Plasma welding application, the electrode should be properly cut and tapered.

### SELECTING THE GRIND ANGLE

Follow your equipment supplier's suggested grind angle specifications first, because they have performed tests to determine the optimal electrode preparation for their equipment.

If specifications do not exist or you would like to change those settings to potentially improve and optimize your particular welding operations, the following chart should help you.



Sharper Electrode (Narrow Angle)	Blunter Electrode (Wider Angle)
Wider weld bead	Narrower weld bead
Easier arc starting	Harder arc starting
Less amperage	More amperage
Improved arc stability	Increased potential for arc wander
Less weld penetration	Better weld penetration
Shorter electrode life	Longer electrode life



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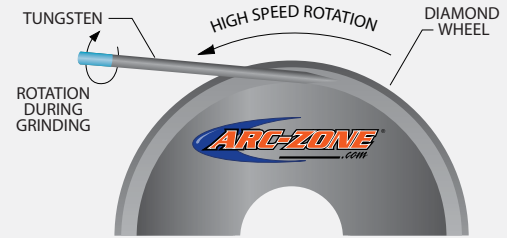
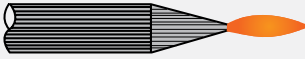
## GRINDING ELECTRODES

Use a dedicated Tungsten grinder to avoid contamination of the electrode and to maximize welding performance. Grinding wheels should be made of diamond or borazon. Grind longitudinally and concentrically so that the lines on the ground surface move in the same direction as the length of the tungsten electrode and the electrode has no flat spots.

Crosswise grinding restricts current and may cause arc wander.



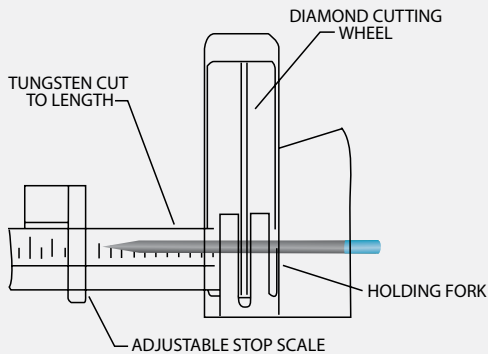
Lengthwise grind marks don't restrict current.



## CUTTING ELECTRODES

Tungsten alloys are dense and very brittle and can splinter or shatter, causing fractures in tungsten electrodes. This can lead to arc instability or "break off" during welding, creating gross weld defects.

When you need to cut your electrode to a specific length, or remove contamination from the tip, be sure to cut electrodes correctly. Incorrect cutting methods damage the integrity of the tungsten alloys, shorten arc time and increase the potential for tungsten contamination in the weld.



For a clean, smooth cut, use a diamond wheel with the electrode secured on both sides of the cut.



Do not bend electrodes until they fracture.



Do not cut tungsten electrodes with wire cutters or pliers.

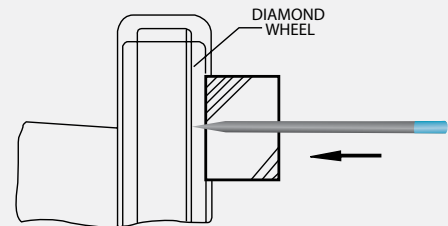


Do not notch the electrode on the grinding wheel, then "snap it off."

## FLAT-TIP

Pointed tips can burn-off and drop into the weld puddle resulting in weld contamination and poor weld quality.

After grinding the angle (taper), "knock off" the tip of the electrode as demonstrated here. You may also grind a new flat-tip prior to re-grinding when reconditioning an old electrode.



- ⊘ Never grind tungsten electrodes on belt sanders or the sides of standard grinding wheels.
- ⊘ Do Not breath grinding dust.
- ⊘ Do Not wear loose clothing, which may get caught in moving parts.
- ⊘ Do Not operate electrical equipment in or around standing water.



Wear approved safety glasses.



Use an electrode grinding wand when grinding by hand. Electrodes get hot when grinding! Arc-Zone recommends an electrode grinding wand to minimize burns and lacerations to fingers and splintered tungsten electrodes that can penetrate the operators hands and eyes.



Use an exhaust system when grinding radioactive thoriated tungsten electrodes.



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