

When and why truncate the tip of the electrode?

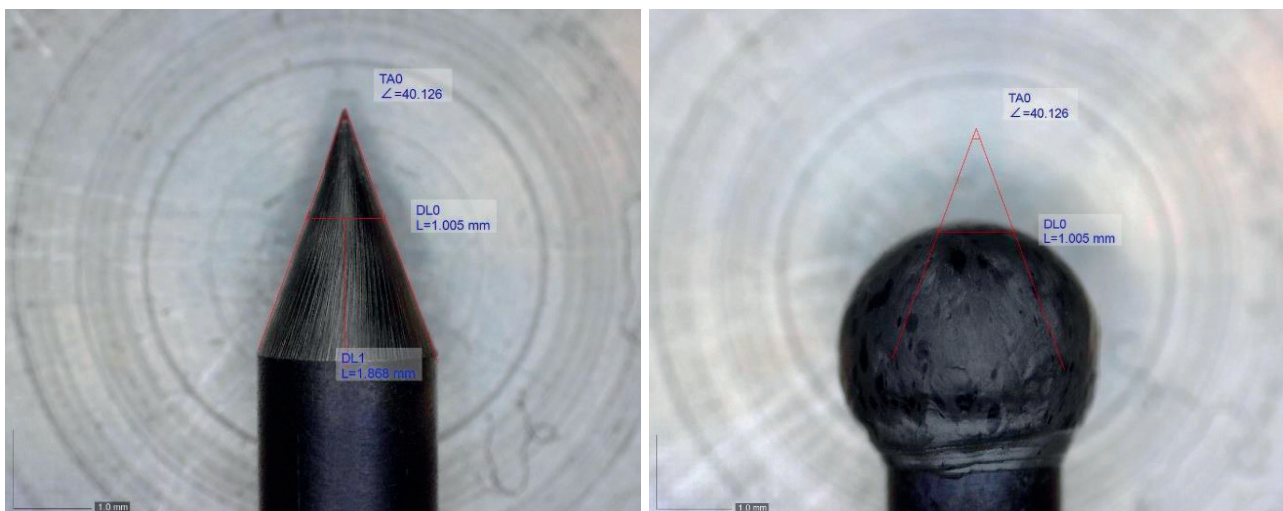
There are 2 situations, when TIG welding, that really stress your tungsten electrode.

1. High amperage welding

2. AC welding aluminum.

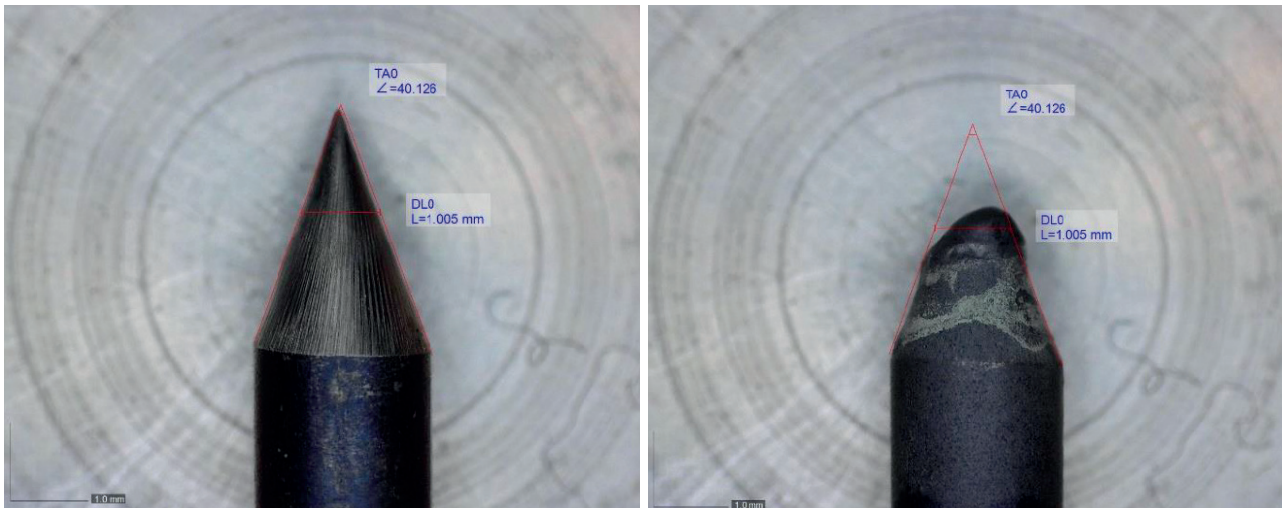
The first situation is stressful on the tungsten electrode, because the arc is creating a lot of heat. Although tungsten has a melting temperature of 3.422°C ($=6192^{\circ}\text{F}$), it is just as affected by heat as any other metal. Meaning that the smaller the material, the less heat it can carry. A ground electrode cannot carry the same amount of heat at the point as further up the electrode. Therefore, welding at high amperage and creating a lot of heat wears down your tungsten. The worst-case scenario is the point of your tungsten electrode melting off and falling into your weldpool and thereby polluting the weld.

The second situation, welding aluminum, is stressful on the electrode because of the alternating current. When alternating current is applied, the heat is alternately focused on the electrode and the base material. Causing the electrode tip to melt and “ball up”. With incorrect settings, ground or not, the electrode will “ball up” tremendously, causing an unstable and wandering arc, a wide weldpool and a poor quality weld.



A ground electrode before welding (left) and after AC welding (right) with **incorrect** settings on the welding machine.

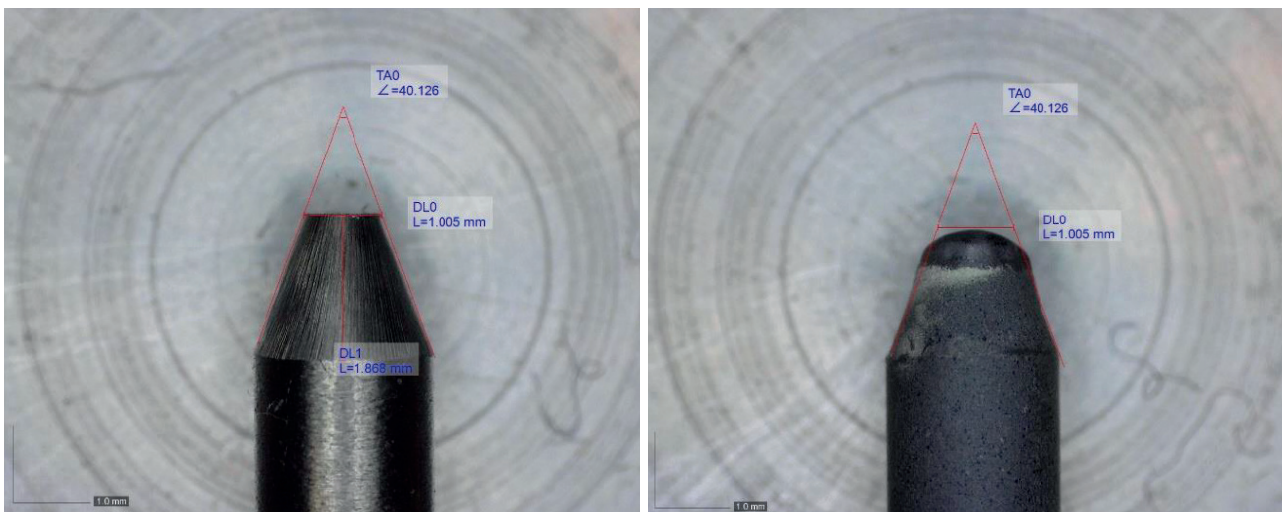
However, with the correct settings (frequency, AC-T and AC-I balance and electrode preheat) you can somewhat maintain the point of your ground electrode. If the electrode is too pointy, the tip will melt off, because of the heat applied on the electrode. In this case, your tip might fall into your weldpool and pollute the weld.



A ground electrode before welding (left) and after AC welding (right) with **correct** settings on the welding machine.

Diameter Ø 2,4 mm , grinding angle 20° = tip angle 40°
Where did the tip go?

In both situations you can diminish the risk of melting of the tip by truncating your tungsten electrode. Research has shown, that truncating the tip prevents the tip from melting off, preserves the tip and a stable arc AND extends the amount of time between regrinds.



A ground and truncated electrode before welding (left) and after AC welding (right) with **correct** settings on the welding machine.

Diameter Ø 2,4 mm , grinding angle 20° = tip angle 40°

Conclusion:

Truncate the tip of the electrode if welding with high current or with AC welding!

Because it provides:

- Better welding quality
- More stable arc
- Less wear on the electrode