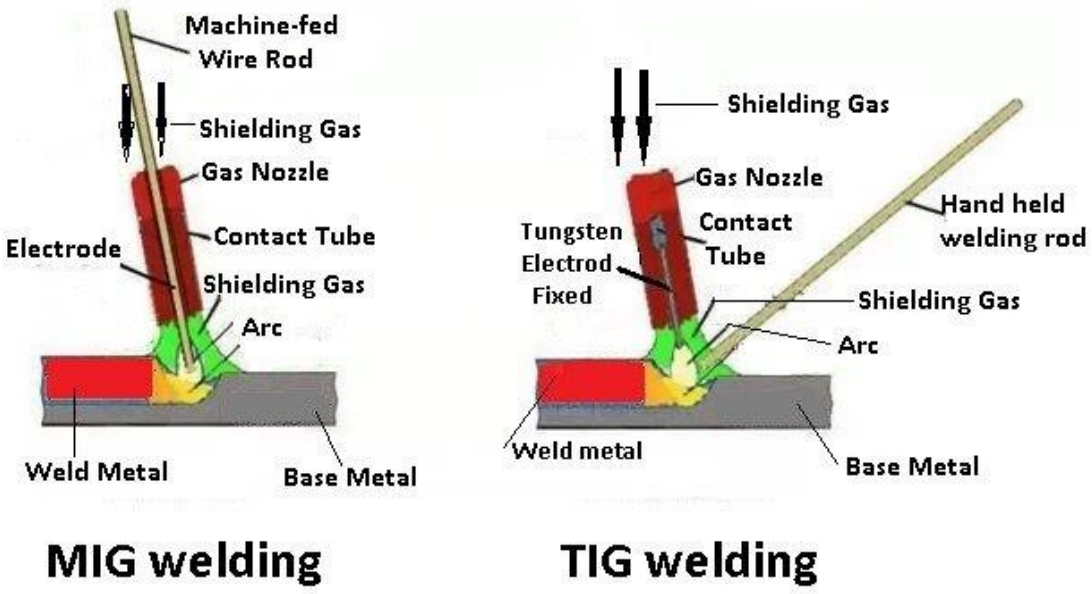
What are TIG and MIG welding?



The **difference between TIG and MIG welding** is that MIG uses continuous feeding wire, and TIG uses welding rods that slowly feed them into the welding place.

Both **TIG and MIG welding uses an electric arc to make the weld**. With the help of MIG welding, you can weld various materials such as stainless steel, mild steel, and aluminum. On the other hand, tig welding is more commonly used for thinner gauge materials.

Read more: Different Types of Welding Processes & Their Uses [PDF]

Watch Slideshow Of This Post:

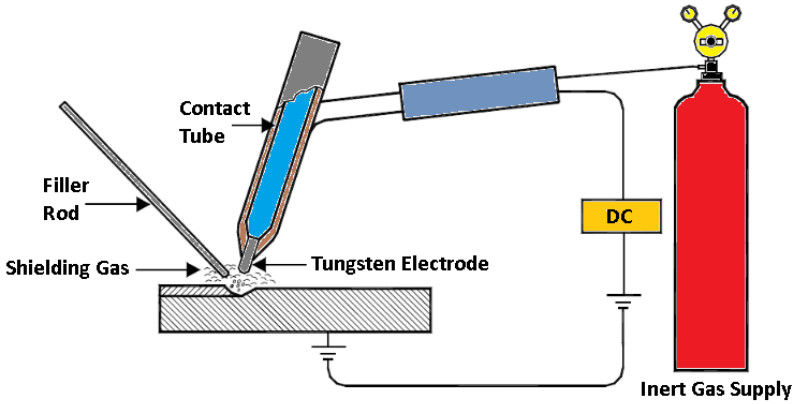
Let's discuss both TIG and MIG welding one by one.

Tungsten Inert Gas Arc Welding (TIG)

TIG welding TIG stands for tungsten inert gas arc welding. From the American welding society, it is also known as (GTAW). The TIG stands for tungsten inert gas welding. This welding process is also called gas welding.

It is a welding process in which heat is produced by an electric arc ignited between a base metal (workpiece) and the non-consumable tungsten electrode.

TIG welding uses a tungsten electrode because tungsten has a high melting point. When the tig weld electrode gets hot but doesn't melt, it is a non-consumable electrode. The non-consumable electrode doesn't mean it lasts forever that just means that it doesn't melt and become a part of the weld.



TUNGSTEN INERT GAS WELDING

- The weld pool is shielded by an inert gas (Helium, Argon, Nitrogen), protecting the molten metal from atmospheric contamination.
- For most metals, the current is direct current or DC.
- The heat generated by the arc melts the workpiece edges and joins them.
- In tig welding, you can control the amount of heat by pressing a foot pedal or thumbwheel on the torch.
- If required filler rod may be used.
- It produces a high-quality weld of most metals.
- Flux is not used in the process.

Advantages of Tungsten Inter Gas Arc Welding

1. In tig welding, the weld composition is close to that of the parent metal.
2. The Weld structure is of high quality.
3. Slag removal is not required (on slag).
4. Thermal distortions of workpieces are minimal due to the concentration of heat in the small zone.

Disadvantages of Tungsten Inter Gas Arc Welding

- Low welding rate.
- Tig welding is comparatively expensive.
- To tig weld, a highly skilled operator is required.

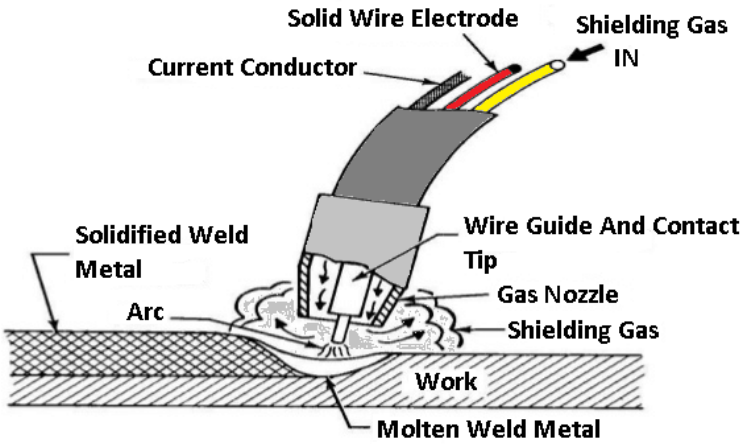
Read more: What is Underwater Welding and types of Underwater welding?

Metal Inter Gas Arc Welding (MIG)

MIG welding is an arc welding process. MIG stands for metal inert gas welding. This MIG welding process is also known as gas metal arc welding (GMAW) you might also call wire welding.

In this welding, a thin wire acts as the electrode fed from a spool mounted on a gun through a flexible tube and comes out of the nozzle on the welding gun or torch. The wire is fed continuously when the trigger on the welding gun is pulled.

An electric arc forms between this wire electrode and the workpiece and heats both metals above their melting point these metals mix and solidify to join the workpieces into a single piece. The metal in these parts to be joined calls as the base metal. Here, the metal from the melting wire electrode is filler metal.



METAL INERT GAS WELDING

MIG welding uses filler metal for the joint. Because the wire electrode melts as it's being used. These types of electrodes are called consumable electrodes.

- It is the arc welding process, in which the weld is shielded by an external gas such as argon, helium, CO2, and argon+oxygen.
- It has consumable electrode wire with a chemical composition similar to the parent material, continuously fed from a spool to the arc zone.
- The arc heats and metals both the workpiece's edges and the electrode wire.
- The fused electrode material is supplied to the surfaces of the workpieces, fills the weld pool, and forms joints.
- Due to the automatic feeding of the filling wire (electrode), the process is considered semi-automatic.
- The operator can control only the torch positioning and speed.

Advantages of MIG welding

- The continuous weld may be produced (no interruptions)
- A high level of operator skill is not required.
- Slag removal is not required (on the slug).

Disadvantages of MIG welding:

- Expensive and non- portable equipment is required.
- The outdoor application is limited because of the effect of wind, dispersing the shielding gas.

Difference Between TIG and MIG Welding

Following are the main difference between TIG and MIG welding:

1. No flux is required in both cases.
2. TIG uses a non-consumable electrode, whereas MIG uses a consumable electrode.
3. In TIG welding zone is shielded by Helium.
4. Various gas mixtures used in TIG are argon, Helium, argon-helium, Argon H2 & Argon CO2.
5. TIG and MIG are used in automatic manufacturing, shipbuilding, aircraft, and electrical engineering.

Conclusion

So now, we hope that we have cleared all your doubts about TIG and MIG welding. If you still have doubts about the "**Difference Between TIG and MIG welding**," you can contact us or ask in the comments. If you like our article, then please share it with your friends.

You may be interested in reading this article on machines:

1. Different Types of Welding Machines & Their Functions
2. 16 Types of Welding Defects [Causes and Remedies] PDF
3. Shaper Machine and types of shaper machine.
4. Planner machine and types of planner machine