**Arc Welding (AW)** - A group of welding processes which produces coalescence of metal by heating them with an arc, with or without the application of pressure and with or without the use of filler metal.   
(2) **Arc Welding (Shielded Metal Arc Welding ) (SMAW)** - A welding process where similar materials are joined with a heating process caused by an electric arc. In the most common use, this process includes the use of a filler metal.

Refer to documents:

* Arc Welding SOP.docx
* Lincoln Arc Welding .pdf

[How Arc Welding Works](https://www.bing.com/videos/search?q=How+Arc+Welding+Works+Edison+Historic+Video+Clip.+&view=detail&mid=B0F7A83FED706804C216B0F7A83FED706804C216&FORM=VIRE) is an Edison Historic Video Clip.   
  
**What is Arc Welding?**

Arc welding is a fusion process for joining metals. This type of welding uses an electrical power source to create an arc between the base metal and an electrode stick or wire. The arc is struck by turning on the welding machine, adjusting the settings, getting safety gear and materials in place and then scratching or tapping the electrode against the base metal. This arc then melts the base metals at the point where they are to be joined. The molten areas on the base metals join together, creating a pool of liquid metal that is then slowly lengthened and crafted into a weld. A filler metal is often added to this pool to strengthen the resulting weld.

**Do Different Types of Arc Welding Exist?**

Arc welding can use consumable or non-consumable electrodes. Consumable electrodes and sticks are used in both Shielded Metal Arc Welding, or “stick” welding, and Gas Metal Arc Welding, either MIG or MAG. These consumable electrodes don’t just help form the arc: they usually contain a filler metal that melts into the weld as the stick is consumed. Using a consumable electrode is the most popular method for welding steel. Arc welding with consumable electrodes creates a lot of spatter, smoke and noise.  
  
Non-consumable electrodes are used in Tungsten Inert Gas Welding, which is generally known as TIG. TIG is one of the more difficult welding processes to learn and is most often used to weld very thin pieces of stainless steel and non-ferrous metals such as magnesium and aluminum. Filler metal is added to the weld from a tungsten rod that is separate from the electrode. TIG welding is slower than other forms of arc welding but produces very high quality welds. It makes no smoke and very little spatter.

**Is Arc Welding Safe?**

  
Arc welding combines electricity, high temperatures and molten metal, so precautions need to be taken. Arc welders should wear a welding helmet with a full face shield, thick leather welding gloves, leather or fire resistant jacket, jeans and shock-resistant leather boots. Looking at the arc with unshielded eyes can cause arc eye, a painful condition that results from inflamed corneas and burned retinas. Never look at an arc without proper eye protection. When TIG welding, use an even stronger level of eye protection than in stick, MIG or MAG since the lack of smoke can make the arc even brighter.  
  
<http://www.weldingschool.com/articles/whatisarc/>