



## Aluminum Welding

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Welding metalwork pieces such as those made from aluminum is relatively easy as it melts at a much lower temperature and does not crack after solidifying. Aluminum welding is done according to the type of aluminum used such as commercial grade aluminum having 99 percent purity, non-heat treatable alloys containing small amounts of manganese (Mn) or magnesium (Mg), and heat treatable alloys containing copper, silicon, zinc, or magnesium.

Work pieces made from these types of aluminum are easier to weld whereas aluminum work pieces containing copper or lead additives are difficult to weld and often lead to cracking while welding.

Aluminum welding methods include MIG and TIG welding, apart from conventional techniques such as gas, plasma, resistance welding, and welding with covered electrodes. The TIG technique is used when there is a need for good surface finishes and when welding from one side is not accessible, such as when welding pipes, and when repairing castings. The MIG technique is better suited for welding thicker aluminum work pieces at a faster rate and for achieving long, continuous welds. This technique has a lower heat input, which results in less distortion in the welding zone.

The latest aluminum welding technique involves the use of pulse arc welding combined with MIG that give much better results as compared to conventional methods. This technique gives better control of the molten pool in the case of thin material, makes the arc more stable, reduces spatters, and mitigates the risk of welding imperfections.

Welders need to take a few precautions while welding aluminum work pieces as the higher melting point of oxide that forms on its surface, when mixed into the molten pool, can cause welding defects. The surface of work pieces that are to be welded need to be scraped or brushed clean using stainless steel wire brush immediately before welding.

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