

Welding thin materials

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Welding Thin Materials Affiliation Welding Thin Materials Shielded metal arc welding (SMAW) is a process that uses an expendable electrode plastered in flux to melt and fuse metals. An arc between the metals being joined and the electrode is formed by means of an electric current. The electric current can either be an alternating current or direct current. As the weld is performed, the flux layer covering the electrode degenerates, producing a layer of slag and a shielding gas, both of which guard the weld from contamination until it cools. Tungsten inert gas (TIG) welding is a welding method in which, a non-expendable tungsten electrode is used to produce the weld (GoWelding. Org, 2015). A filler metal and an inert gas shielding are used to guard the weld region from contamination.

In my opinion, the vice president of manufacturing is right. Although TIG welding is excellent and suitable for all metals, it is an expensive process and is limited to level welding. On the other hand, SMAW is advantageous in several ways, for instance; its equipment is simple and portable, is of low cost, it is appropriate for out-of-position welding and has a broad range of electrodes. For these reasons, SMAW is the most prevalent welding method globally. The main limitation of the SMAW process is that it causes metal burn-through, especially in thin wall tubing and sheets.

However, if the following precautions are taken, it is possible to avoid metal burn-through. First, electrodes of suitable size should be used. It is important to note that big electrodes are intended for welding at great deposition levels. Welders normally use the largest electrode that is reasonable for their particular application and produces weld that is of good quality. However, when welding thin wall steel, it is advisable to limit the electrode size to prevent metal burn-through. Second, steel that is SMAW friendly should be <https://assignbuster.com/welding-thin-materials/>

used, in order to make the welding process simpler. The ideal steels to use are AISI-SAE 1015 to 1025 with a maximum of 0.035 percent sulfur and 0.1 percent silicon content. These steels are possible to weld at fast speeds with minimum metal burn through. Steels that contain high phosphorous and sulfur contents are not suitable to use. In cases where they are the only type available, low-hydrogen electrodes with small diameters should be used (Guide & Sadler, 2009).

Third, joint position and electrode should be carefully matched with the metal. Joint position normally influences the quality of a finished weld. When working with 10- to 18-gauge sheet steel, the quickest travel speeds are achieved when the work is positioned at 45 to 75 degrees downward.

Welders should avoid over-welding or making a weld that is larger than necessary in order to prevent metal burn through. When welding low-alloy and high-carbon steel, it is best to do it in the flat position. Lastly, welders should be trained to follow the rules of joint geometry and fit-up. Proper joint dimensions are important for good quality weld and fast welding speed to be achieved. Appropriate joint geometry demands that fit-up ought to be even for the entire joint. Since thin wall metal is tightly fastened for the entire length, gaps should be regulated carefully over the whole joint (Sheet & Mathison, 2013). Any alterations in a joint will force the welder to slow the welding process to avoid burn-through.

In conclusion, when deciding which welding process to use for a business, it is important to consider the method that saves the company money without compromising quality of the company's product. Because of the low cost of the SMAW method, it remains to be the preferred method in the production of steel structures.

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