

GENERAL WELDING TIPS

- I. (GTAW) When using stainless steels with the gas tungsten arc process, direct current electrode negative (dcen) is preferred. For base metal up to 1/16 in. (1.6mm) thick, argon is the preferred shielding gas because there is less tendency to melt through these lighter thicknesses. For greater thickness, or for automatic welding, mixtures of helium and argon are recommended because of the greater penetration and better surface appearance. Argon gas for shielding may also be used and will give satisfactory results in most cases, but a somewhat higher amperage will be required.
- II. (GMAW) When using the gas metal arc welding process in which the filler metal is employed as an electrode, direct current electrode positive (dcep) is most commonly used. The shielding gas for spray transfer is usually argon, with or without minor additions of oxygen. For short circuiting transfer, shielding gases composed of helium plus additions of oxygen and carbon dioxide often are used. The minimum thickness that can be welded is approximately 1/8 to 3/16 in. (3.2 to 4.8mm). However, thinner sections can be joined if a backing is used. The higher silicon levels improve the washing and wetting behavior of the weld metal. For instance, for increases from 0.30 to 0.65 percent silicon, the improvement is pronounced; for increases from 0.65 to 1.0 percent silicon, further improvement is experienced but is less pronounced.
- III. (SMAW) For submerged arc welding, direct current electrode positive (dcep) or alternating current (ac) may be used. Basic or neutral fluxes are generally recommended in order to minimize silicon pickup and the oxidation of chromium and other elements. When welding with fluxes that are not basic or neutral, electrodes having a silicon content below the normal 0.30 percent minimum may be desired for submerged arc welding. Such active fluxes may contribute some silicon to the weld metal. In this case, the higher silicon does not significantly improve the washing and wetting action of the weld metal.