

ABSTRACT

One of the most important methods of permanent fastening and versatile means of fabrication available to industry is welding. This is because it is one of the most important tools available to engineers in his efforts to reduce production, fabrication and maintenance costs. Welding is simply an art of joining metals by heating and then pressing together which simply requires a heat source to produce a high temperature zone to melt the material its application includes: used in ships building, bridges, pressure vessels, industrial machinery, automobile, rolling stock and many other fields. Welding operation were carried out on the medium carbon steel followed by heat treating (annealing), the specimen has to be heat treated at the weld zone to a temperature of 550°C using heat treatment furnace. GMAW butt welding of AISI4340 & AISI4140 steel best tensile strength was obtained and depth of penetration also good in the Gas metal arc welding process. Comparatively tensile strength obtained with PWHT process is higher than WOPWHT test plate. During the PWHT process tensile strength of AISI4340 & AISI4140 steel increased 43%.

Keywords: AISI4340, AISI4140, Tensile test, Hardness test, Depth of penetration, PWHT, WOPWHT, Annealing