

ABSTRACT

ELECTRODE DIAMETER INFLUENCE TO STRENGTH OF SINGLE V WELD JOINT AT STEEL AISI 1045

By

Chandra Hardiyuda, Ir. Nafrizal, M.T., Tarkono, S.T., M.T.

One of the most common process in manufacture industry is welding, where approximately 40-60 % of all the machining process is welding. In this the quality needed for the process is joint strength and avoiding welding defect. One of the variable that influence the welding quality is value of electrode diameter. If the diameter is too big, the penetration become enwell when doing root welding, so the root formed improperly. Root perfection affected greatly whit the joint strength. That phenomena encouraging the writer to do a research about affect of electrode diameter with the welding joint strength on the AISI 1045 materials. The purposes is to acquire a good knowledge about welding so the welding process can be planned well.

To get the valueof the joint strength, the writer did the Destructive Testing (DT), such as tensile test with the specimen that appropriated with the ASTM E-8. This research used 3 variations on the electrode diameter, that is (2.6 mm, 3.2 mm, 4.0mm)

The results of this research is follows. The highest tensile strength of the material is 653.3 MPa at the welding condition (\emptyset electrode : 3.2 mm, I : 110 Ampere), and the lowest is 500 MPa at the welding condition (\emptyset electrode : 4.0 mm, I : 130 Ampere). The value of electrode diameter affected the tensile strength, especially on some cases when the electrode diameter that is used is not suited with the seam welding that is formed. As there are variations on diameter on the seam welding width. So there are differences on the sum of multypass layer that is formed.

Key word : welding process, AISI 1045, electrode diameter.