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| Independent Study Title | Influence of Stabilized Heat treatments on Microstructure, Hardness and Intergranular Corrosion Resistance in Welding AISI 321 |
| Credits | 6 |
| Candidate | Mr. Pharadorn Sermboonsong |
| Independent Study Advisor | Assoc. Prof. Dr. Bovornchok Poopat |
| Program | Master of Engineering |
| Field of Study | Welding Engineering |
| Department | Production Engineering |
| Faculty | Engineering |
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Abstract

Austenitic AISI 321 normally requires stabilization heat treatment before using to improve intergranular corrosion resistance. The objective of this industrial study was to study the influence of stabilization heat treatment process on mechanical properties, microstructure, sensitization resistance. In this study, the welded samples were stabilization heat treated at 950 °C for 1 hour and then cool slowly in the furnace. The samples were then again heated to 600 °C for 24 hour in order to simulate sensitization service. Samples also were carried out 3 type of testing and divided herein Vicker's Hardness test, Corrosion test by using DLEPR method, Classification of corrosion microstructure according to ASTM A262-A were evaluated. The results showed that there are no significant different in hardness and Ir/Ia electrical quantity ratio of weld metal, heat affected zone and base metal. The average hardness value is 154-155HV. The maximum Ir/Ia electrical quantity ratio is 0.001896 at base metal because of dissolution of Titanium from Carbon at the stability temperature. The corrosion microstructure of three welding zones have been classified in term of Step structure according to ASTM A262-A

Keywords: Double Loop Electrochemical Potentiodynamic Reactivation/ Hardness Test/
Microstructure/ Sensitization Resistance/ Stainless Steel AISI 321/ Step Structure