

Thesis Title	Study on Copper Diffusion on Carbon Steel SS400-Pure Copper Dissimilar Joining with Ni-Base Butter Layer.
Thesis Credits	12
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### Abstract

In welding of carbon steel to copper using copper filler metal, there is the diffusion of copper to carbon steel which could put a risk of cracking at carbon steel base material. In addition, in welding, there must be a preheat in which, if not appropriate, it would affect the copper diffusion. This study has an aim to determine the copper diffusion in carbon steel SS400 in GTAW using copper filler metal. The experiment was divided in to 2 sections. First part was the welding in U-Groove of carbon steel SS400. The result showed that copper diffused into carbon steel base material. Second part was to determine the ability of nickel butter layer to prevent copper diffusion. Temperatures used for preheat were 100 °C, 200 °C, 300 °C and 400 °C. The result showed that the butter layer could help in preventing of copper diffusion. In addition, the copper diffusion increased with increasing of preheat temperature.

Keywords : Carbon steel and copper welding/ Butter layer/ Preheat/ Copper diffusion