

ABSTRACT

The Effect of Carbon Content in Coating Steel Process Hot Dip Aluminium

**BY
ALFURKHAN**

Carbon steel is widely used as a component of engineering work in high temperature conditions. During the application decreases of oxidation resistance drastically. A steel coating is very needed to increase an oxidation resistance. One technique is inexpensive and used to be coating for large components are dip heat coating.

This experiment aimed to determine the effect of carbon content in steel AISI 1020, AISI 1045 and AISI 1090 against aluminium dip heat coating on hot dip aluminium coating process and to study the influence of immersion time in the tub aluminium molten steel on the growth of intermetallic layer. Immersion times used were 4, 9, and 16 seconds with a temperature of 700 °C. Volume composition used for each solution is 100 ml flux with three variations, namely Y1 flux (1.5 g KF, NaF 1.5 g, 8.5 g Borax , and 2.5 g of acetic acid), Y2 (2.0 KF g, 2.0 g NaF, 9.5 g Borax, and 3.0 acetic acid) and Y3 (2.5 g of KF, 2.5 g NaF, 10 g Borax, 3.5 g acetic acid). Then do the impact test , SEM , OM and XRD.

For the most thick aluminium layer was AISI 1020 steel with immersion time of 4 seconds is 0.118 mm and Fe - Al intermetallic layer ($\text{FeAl}_3 + \text{Fe}_2\text{Al}_5$) is the thickest on AISI 1045 steel with immersion time of 9 seconds. Energy values were greatest impact on AISI 1020 steel is 187.2 J, means less carbon content of the energy generated greater impact.

Keywords: Hot Dip Aluminum, Carbon Steel, Impact Energy, Fe-Al ($\text{FeAl}_3 + \text{Fe}_2\text{Al}_5$), Flux Variations.