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# Study of intermetallic compounds of X182CrN11-1steel hot dipped into molten aluminum

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**Abstract :** Aluminum coating technique has been applied toimprove high temperature oxidation resistance of steels. Thismethod is adopted widely due to the low cost and goodperformance. The principle of hot-dip aluminizing isaccomplished by immersing materials into molten aluminumbath to form multiple aluminized layers on the surface ofmaterial by atomic inter-diffusion between dipped materials andaluminum. This work focuses on the study of intermetallic layersformed during the hot dip aluminizing of steel with 1.82 %carbon strongly combined with chromium (10.8 %) into a moltenaluminum bath. The X182CrN11-1 steel specimens wereimmersed into molten aluminum at 750°C for 1h, 2h and 3h.Intermetallic compounds were analyzed by optical microscopeand scanning electron microscope (SEM) coupled with energydispersive X-ray spectroscopy (EDS). This study is complementedby microhardness testing.The results showed that hot dip aluminized layer was dividedinto an outer pure aluminum topcoat and an intermetallic layer.This intermetallic layer consisted of an outer FeAllayer and aninner Fe2Al53layer with tongue/finger-like morphology and themicrohardness testing records high values of the intermetallicformed (through the) up to 800Hv0

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