

IMPROVEMENT OF CORROSION RESISTANCE IN MODIFIED 3003 ALUMINUM ALLOYS PRODUCED BY TWIN ROLL CASTING UNDER DIFFERENT CASTING PARAMETERS

Mert GÜNYÜZ, Hatice MOLLAOĞLU ALTUNER, Ali ULUS

ASSAN Alüminyum San. ve Tic. A.Ş. Tuzla, İstanbul

ABSTRACT

Finstock materials having different chemical compositions produced by TRC have been widely used in heat exchanger systems. Al-Mn alloys produced with TRC technique are also used as fin materials in various brazing applications. With the addition of zinc, these alloys are utilized as sacrificial materials to protect tube material. Alloy chemistry and casting parameters primarily dictate the stoichiometry and morphology of microstructural constituents in TRC strip.

Motivation of this study is to prolong the corrosion resistance of fin material by tailoring microstructure of as-cast strip during casting process. This was accomplished by decreasing the magnitude of centerline segregation instead of altering overall composition of the alloy.

Casting parameters were altered to gain better control over the microstructural constituents. Microstructure of as-cast strip and end product were characterized through entire thicknesses. Magnitude of CLS was correlated with variants of casting parameters. Results were supported by electro-chemical potential measurements and salt-spray tests.

Keywords: Twin-roll cast aluminum, corrosion, 3003 alloy.