Effect of Electrolytic Conditions on Electrodeposition of Manganese in NaCl-KCl Melt

Guolong Liu^{1,2}, Wei Liu^{1,2}, Qian Kou^{1,2}, Saijun Xiao^{1,2,*}

¹ School of Metallurgy Engineering, Anhui University of Technology, Maanshan, Anhui, China, 243002;

² Key Laboratory of Metallurgical Emission Reduction & Resources Recycling, Anhui University of Technology, Maanshan, Anhui, China, 243002

*E-mail: xiaosaijunzj@yahoo.com

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In this paper, molten NaCl-KCl-MnCl₂ mixture salts were used as electrolyte, tungsten as the cathode and graphite as the anode to explore the influence of different current density, electrolysis temperature and electrolysis time on current efficiency and microstructure of manganese deposits. The morphology of products were examined by scanning electron microscopy. The results demonstrated that the current efficiency and morphology of deposited manganese varied with electrodeposition time, operating temperature and current density. The optimized conditions for the highest current efficiency (98%) were obtained at the temperature of 710°C, with the electrodeposition time for 7h and the operating current density of 300 mA • cm⁻², respectively.

Keywords: Manganese, Electrodeposition, Molten salts, Current efficiency, Morphology

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