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The Effect of Temperature on the Chromizing Process for Ferritic-Martensitic Steel (Conference Paper)

Alia, F.F.^a, Kurniawan, T.^a, Ani, M.H.B.^b, Nandiyanto, A.B.D.^c

^aStructural and Material Degradation Group, Faculty of Mechanical Engineering, Pekan, Pahang, Malaysia
^bFaculty of Engineering, International Islamic University Malaysia, PO Box 10, Kuala Lumpur, Malaysia
^cDepartment of Chemical, Universitas Pendidikan Indonesia, Jl. Dr. Setiabudi No. 229, Bandung, Indonesia

Abstract

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The formation of protective Cr₂O₃ layer was usually retarded in the high temperature steam oxidation of boiler tube materials. This condition makes the oxidation rate higher than that in dry condition. Therefore in this work, chromizing process is introduced to diffuse chromium on the surface of boiler steel so that it can act as a reservoir for the formation of Cr₂O₃ layer. The chromizing process was conducted on T91 steel by exposing it into alumina crucible. The crucible was exposed at different temperature (600°C–1050°C) under argon environment in the crucible that contains the chromizing mixture powder of masteralloy Cr, activator NH₄Cl and filler Al₂O₃. It was found that Cr diffusion was happened at higher temperature and it formed Cr carbide on the surface. It also clarified that this chromizing process can prevent the retardation of Cr₂O₃ layer. © Published under licence by IOP Publishing Ltd.

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