

J. Fedotova, G. Bonnet, F. Pedraza, J. Balmain, S. Dubois, V. Gauthier, M.F. Denanot, N. Ouabadi, A. Letsko, A. Illyuschenko and A. Akimov. Effect of lamellar microstructure on oxidation kinetics of Fe₃Al sintered by high isostatic pressing // Corrosion science.- 2008.- V. 50, Is. 6.- p. 1693-1700.

The present paper focuses on the investigation of the relationship between microstructure of Fe₃Al prepared by hot isostatic pressing (HIP) and kinetics of alumina layer formation during oxidation at 900 °C, 1000 °C and 1100 °C. As prepared HIPed Fe₃Al sample reveals lamellar microstructure with inhomogeneous Al distribution which originates from the preliminary mechanical activation of Fe-Al mixture. At 900 °C, Fe₃Al oxidation is characterized by selective growth of very rough alumina layer containing only transient aluminium oxides. In addition to these transient oxides, α -Al₂O₃ stable phase is formed at 1000 °C. At the highest temperature (1100 °C), continuous and relatively smooth alumina layer mainly contains fine crystallites of α -Al₂O₃. The initial lamellar structure and phase inhomogeneity in as-HIPed Fe₃Al samples are supposed to be the main factors that determine observed peculiarities after Fe₃Al oxidation at 900 °C and 1000 °C.

[Назад к списку публикаций](#)