genation reaction is not affected by initial hydrogen pressure and temperature does not influnce the rate of hydrogen absorption obviously in the range of 303 ~343 K, in $\alpha+\beta$ phase.

(2) The process of absorbing hydrogen is controlled by chemical reaction and follows the kinetis equation of $(1-\alpha)^{-1}=kt$ on the prior period for $MLNi_{3.8}(Co, Mn, Al)_{1.2}$ alloy. It is controlled by diffusion of hydrogen atoms through the hydride and follows 2-dimensional diffusion equation of $(1-\alpha)\ln(1-\alpha)+\alpha=kt$ on the later period.

(3) The addition of copper increases the rate of hydrogen absorption and the rate-controlling step changes from chemical reaction to the nucleation and its growth of hydride phase. The mechanism of hydrogenation follows kinetic equation of $[-\ln(1-\alpha)]^{1/2}=kt$ on the prior period and 2-dimensional diffusion equation of $[1-(1-\alpha)^{1/2}]^2=kt$ on the later period.

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Extrapolation Model of High Temperature Creep for 12Cr1MoV Steel

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Abstract: The creep curves of heat resistant steel 12Cr1MoV was investigated. by constant stress creep tests. The creep curves of constant stress creep are quite different from that of constant load creep. The original θ— Concept Project procedure can be validated to successfully describe the constant stress creep curves but not constant load creep. A modified θ procedure was developed. This approach can successfully described both constant stress creep and constant load creep curves. The new approach leads to a great improvement in accuracy of long term prediction of extrapolation due to validation of a great number of existing constant load creep data.

Key words: heat resistant steel, creep, life,

Strain-induced Microstructural Changes and Effects of Alloying Elements for Fe_3Al-based Alloys

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Abstract: The strain-induced microstructural changes of Fe_3Al-based alloys during room temperature deformation and high temperature creep were investigated. The results illustrated the strain-induced disor dering occured during room temperature deformation. Creep strain could induced two opposite processes, which are strain-induced disordering and creep recovery-induced reordering. These two opposite creep induced processes during creep result in reducing the influence of primary microstructure on the rupture life.

Key words: intermetallics, iron aluminides, creep, ordering, strain induced disordering and order

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