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TB2钛合金亚稳β相的分解特性

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PRECIPITATION CHARACTERISTICS OF METASTABLE β PHASE IN TITANIUM ALLOY TB2

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摘要

本文主要研究TB2合金在等温和时效过程中亚稳β相的转交规律,测定了等温分解和时效动力学曲线、各个阶段析出相的性质与取向关系,以及时效硬化特性等。并发现合金成分、纯度、固溶温度及时效加热速度等对时效过程均有明显的影响。

关键词：

Abstract：

The purpose of the research is to study the transformation behavior of metastable P phase and to establish relationship between microstructure and parameters of heat treatment in TB2 alloy. Quantitative optical and scanning electron microscopy methods have been used to measure the extent of transformation. The crystal structure and orientation relationship have been identified by electron diffraction analysis. According to the results of experiments, isothermal and aging transformation diagrams are illustrated. The factors exerting effect on transformation kinetics are also discussed. It is found that theαphase is directly precipitated from the metastable P phase at 400 to 700℃ and follows the well known Burgers orientation relationship, i. e. （111）β//(1120)α, （110）β//（000l）α referred to as type 1. At temperature below 400℃, P phase transforms into ω, an intermediate precipitate, which is related to β matrix by the orientation relationship (0001）α//<111>β, （1120）α//（110）β. The remarkable influence of the solution-ning temperature, content of oxygen and heating rate of aging on the transformation kinetics of the alloy is confirmed.

Keywords：