

MATERIALS AND STRUCTURES SYMPOSIUM (C2)  
Advancements in Materials Applications and Rapid Prototyping (9)

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THE INFLUENCE OF AGEING TREATMENT ON MICROSTRUCTURE AND MECHANICAL  
PROPERTIES OF TB2 TITANIUM ALLOY

**Abstract**

Beta titanium alloy with extensive prospect in the field of aviation and aerospace has excellent mechanical performance, such as high yield-strength, high of specific strength and specific stiffness. In aerospace field, some steel parts were replaced by TB2 titanium alloy, which effectively decreased the weight of space craft. The mechanical performance of titanium alloy mainly depends on aging treatment. In this paper, microstructure was investigated with optical microscopy, mechanical properties were tested by standard tensile tests, phase scale and texture were analyzed by X-ray diffraction (XRD). The results show that ageing treatment at 500 to 520 for 8 to 10 hour, the alloy has a better mechanical properties. Ageing treatment at 460 to 560, the phase consisted of alpha phase and beta phase, without other phase. Grain boundaries become wider, plenty of alpha phase black spots which yield inside grains as ageing temperature increasing, the shape of alpha phase changed in turns: punctiform, spicule, lamellae and clump.