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A comparative investigation on the microstructural features in Ti-6Al-4Me(Cr,Mo) alloys of annealing conditions

Cong Li^{a,b}, Jian Chen^{a,b*}, Wei Li^{a,b}, Jianghua Chen^c

a. School of Energy and Power Engineering, Changsha University of Science and Technology, Changsha 410114, China

b. Key Laboratory of Efficient and Clean Energy Utilization, College of Hunan Province, Changsha 410114, China

c. College of Materials Science and Engineering, Hunan University, Changsha 410082, China

E-mail: csuost@126.com

Abstract: $\alpha+\beta$ titanium alloys have been widely used in many industrial fields. Two novel alloys with the name of Ti-6Al-4Me(Cr, Mo) have been fabricated in laboratory scale. β phase solution heat treatment and high temperature aging were performed to study the microstructure variations. A systematic microstructural investigation has been carried out. The results show that samples soaked in β phase field, α' martensite were formed during the quenching, but in Ti-6Al-4Cr alloy, the microstructure is more uniform. After aging treatment, both alloys present a typical Widmanstätten microstructure. With the increase of the aging temperature, the size of α platelet in Ti-6Al-4Cr alloy coarse more apparently as compare to the Ti-6Al-4Mo alloy. Furthermore, in Ti-6Al-4Cr alloy, samples with 600°C aging, TiCr_2 Laves phase was observed along the α/β interface, and in some part of α phase, special Cr solid solution bands were also found.

Key Words: Ti-6Al-4Me alloy, Heat treatment, Microstructure, Laves phase

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