

IMPROVEMENT OF YIELD STRENGTH OF A206 ALLOY

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In this study, TiB₂ particles were employed to improve the microstructure of A206 alloy and therefore, to increase the yield strength and tensile strength of this kind of alloy. In-situ TiB₂ particles were obtained by direct reaction among K₂TiF₆, KBF₄ and Al melt at 800-850°C. Microstructure examination shows that the size of in-situ formed TiB₂ particles was about 1µm, and interestingly, with addition of in-situ TiB₂ particles, the coarse eutectic phase of Al₂Cu was refined completely. More important, the yield strength and the tensile strength of TiB₂/A206 are increased by 140MPa, 100MPa than that of A206 alloy. The value of 490MPa and 535MPa is for yield strength and tensile strength of TiB₂/A206 respectively. Besides, the yield strength and tensile strength are 488MPa and 533MPa respectively for TiB₂/A206 alloy after remelting and casting. This verifies that the improvement of mechanical properties of such kind of material possesses stability and reliability.

Keywords: Yield strength, aluminium alloy, TiB₂ particles

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