

论文摘要

中国有色金属学报

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精铸Ti Al Zr合金的显微组织和力学性能

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摘 要: 用陶瓷型壳浇注了Ti Al Zr合金, 研究了精铸Ti Al Zr合金的相组成、铸造显微组织、室温和高温力学性能及断口形貌。结果显示, 精铸Ti Al Zr合金属于近 α 型, 其铸态组织为网篮状魏氏组织, 具有较好的室温和高温性能。Ti Al Zr合金的室温力学性能为: 抗拉强度1057.5 MPa, 屈服强度995MPa, 延伸率18.45%; 500 °C时的力学性能为: 抗拉强度658.7 MPa, 屈服强度538.9 MPa, 延伸率16.5%。该合金室温断口以延性断裂为主, 伴有部分解理断裂, 而高温拉伸断口为延性断裂。

关键字: Ti Al Zr合金; 精密铸造; 显微组织

Microstructures and mechanical properties of investment cast Ti Al Zr alloy

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Abstract: Ti Al Zr alloy was cast into a ceramic shell mould by investment technology. Microstructure phase constitution and mechanical properties at room temperature and elevated temperature and fracture morphology of Ti Al Zr alloy were studied. The microstructures of Ti Al Zr casting are basket weave configuration of Widmanst ten plates of α phase. The mechanical properties of Ti Al Zr alloy at room temperature are as follows: tensile strength 1 057.5 MPa, yield strength 995 MPa, elongation 18.45% and at 500 °C: tensile strength 695 MPa, yield strength 539 MPa, elongation 16.5%. The fracture mechanism of Ti Al Zr alloy is dominated by ductile fracture delineated by small amounts of cleavage fracture at room temperature. The fracture mode at 500 °C is ductile fracture.

Key words: Ti Al Zr alloy; investment casting; microstructures

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