

### 论文摘要

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## ZL107合金的高温静态蠕变和循环蠕变

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**摘 要:** 研究了不同热处理状态的ZL107合金在300℃的高温静态蠕变和循环蠕变的行为。结果发现: 峰时效下, 合金的蠕变抗力强于过时效状态下材料的蠕变抗力。循环蠕变时材料表现出蠕变减速现象。经峰时效处理的ZL107合金在循环蠕变中表现出较静态蠕变低的激活能, 用非热空位机制进行了解释, 而经过时效处理的ZL107合金表现出高的激活能, 滞弹性机制起了重要作用。

**关键字:** ZL107合金; 热处理; 蠕变

## Static and cyclic creep behavior of ZL107 alloy

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**Abstract:** The elevated temperature static and cyclic creep behavior of ZL107 alloy by different heating treatments at 300℃ were investigated. The results indicate that on the condition of peak aging, the materials show higher resistant to creep than those overaged materials do. During cyclic creep, ZL107 alloy shows cyclic creep retardation in the tested stress range. On the condition of peak aging, ZL107 alloy shows lower apparent activation energy in cyclic creep in comparison with that in static creep and an analysis based on a thermal vacancy is introduced to explain result on the condition of over-aging. ZL107 alloy shows higher apparent energy, anelastic recovery plays a more important role.

**Key words:** ZL107 alloy; heating treatment; creep

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