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论文

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时效对快速凝固铝锂合金组织和性能的影响

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EFFECT OF AGING ON MICROSTRUCTURE AND PROPERTIES OF RAPID SOLIDIFIED Al-Li ALLOY

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摘要

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摘要 研究了时效对快速凝固 Al-3.2Li-1.2Mg-0.3Cu-0.2Zr 合金拉伸性能和微观组织的影响。结果表明,低温长时间时效达到接近峰值状态,合金的综合性能优于高温短时间时效达到峰值状态的综合性能。合金中主要强化相为 δ' (Al₃Li) 相, Cu、Mg 起固溶强化。合金中 Zr 主要以亚稳态的 Al₃Zr 存在,并同时与 δ' 相形成 (δ' /Al₃Zr) 相。文中讨论了影响合金塑性的因素,指出界面析出相是快速凝固 Al-Li 合金中值得重视的问题。

关键词: 固化 铝锂合金 时效

Abstract: Effect of aging on tensile properties and microstructure of rapid solidified Al-3.2Li-1.2Mg-0.3Cu-0.2Zr was studied. The results showed that tensile properties obtained by aging for long time at relatively low temperature were more desirable than those obtained by aging for short time at high aging temperature. The primary strengthening phase was δ' and Cu, Mg was for solution strengthening. Zirconium existed primarily in form of metastable Al₃Zr and duplex δ' /Al₃Zr. Factors affecting the ductility of the RS Al-Li alloys were discussed, and it was suggested that powder boundary precipitations were worthy of note for RS Al-Li alloys.

Keywords: Solidification Aluminum-lithium alloy aging

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