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7050铝合金热轧板的淬火敏感性

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摘要: 用末端淬火、光学金相显微镜和透射电镜技术研究7050铝合金热轧板的淬火敏感性。结果表明: 7050铝合金末端淬火试样硬度下降10%的淬透深度约60 mm。决定7050铝合金淬火敏感性的本质是析出的 η 平衡相的尺寸和体积分数, 主要发生 η 相析出的淬火临界平均冷却速率约为40 °C/s, 此时 η 相的体积分数约为2.1%。淬火平均冷却速率低于40 °C/s, η 相析出和粗化—再结晶— Al_3Zr 非共格化交互影响。

关键字: 7050铝合金; 末端淬火; 淬火敏感性

Quenching sensitivity of 7050 aluminium alloy hot-rolled plate

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Abstract: The quenching sensitivity of 7050 aluminium alloy hot-rolled plate was studied by using end quenching test and optical microscopy (OM) and transmission electron microscopy (TEM). It is showed that, the distance from the quenching end where hardness decreases by 10% is about 60 mm. The reducing of mechanical properties is mainly caused by precipitation of equilibrium η phase. The critical average quenching cooling rate for precipitation of η phase is about 40 °C/s, at which the volume fraction of η phase is about 2.1%. When the critical average quenching cooling rate is lower than 40 °C/s, three processes of formation and growth of η phase—recrystallization—formation of incoherent Al_3Zr dispersoid happen.

Key words: 7050 aluminium alloy; end quenching; quenching sensitivity

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