

论文

高强高韧FV520B马氏体钢的时效工艺优化

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摘要:

通过在600, 630, 680, 700和720℃保温1 h空冷, 以及在630℃短时时效后炉冷和空冷的热处理, 研究了不同时效温度、时效时间以及冷却方式对沉淀硬化马氏体不锈钢FV520B的组织 and 力学性能的影响. 结果表明, 630℃短时时效后钢中即可析出一定量的逆转变奥氏体, 且钢中的析出相尺寸较小并弥散分布, 由此提出了一种沉淀强化马氏体不锈钢的热处理工艺优化, 即FV520B钢经630℃短时时效并炉冷后, 可以获得较佳的高强度和g高韧性组合.

关键词: 马氏体钢 逆转变奥氏体 析出相 时效

AGING PROCESS OPTIMIZATION FOR A HIGH STRENGTH AND TOUGHNESS OF FV520B MARTENSITIC STEEL

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Abstract:

Low carbon martensitic precipitation hardening stainless steels are widely utilized in many engineering applications due to their high strength with reasonable toughness, ductility and corrosion resistance. However, those properties and their combinations are not always satisfactory to their users. For further improvement of the mechanical properties of these types of steels, a fundamental understanding of the detailed microstructural features with various aging conditions is necessary. Therefore, the effects of aging temperature, aging time and cooling rate on the microstructure and mechanical properties of a martensitic precipitation hardening stainless steel FV520B were investigated by OM, SEM, TEM and XRD methods. The results show that the steel aged at 630 for a short time and then furnace cooled, in which a typical lath martensitic with the proper amounts of everse austenite and fined dispersed precipitates was bservedhas a good combination of high strength and high toughness. It could be an optimized ang process for FV520B steel.

Keywords:

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