



航空学报 » 1997, Vol. 18 » Issue (1) :45-50 DOI:

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## 新型二次硬化高Co—Ni超高强度钢强韧化机制的研究

凌斌, 钟平, 钟炳文, 赵振业, 张少卿

北京航空材料研究所4室, 北京, 100095

### ON THE STRENGTHENING MECHANISM OF HIGH Co Ni ULTRAHIGH STRENGTH STEEL

Ling Bin, Zhong Ping, Zhong Bingwen, Zhao Zhengye, Zhang Shaoqing

4th Faculty, Beijing Institute of Aeronautical Materials, Beijing, 100095

摘要

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**摘要** 研究了二次硬化型超高强度钢23NiCo的显微组织及其强韧化机制。结果表明, 430℃回火, 马氏体分解形成大量的渗碳体, 粗大渗碳体粒子分布在板条边界, 合金的韧性最差。440~455℃回火, 位错上有细小碳化物的析出共格区, 合金的强度最高。482℃回火, 片状渗碳体含量减少以及在板条边界形成薄膜状的逆转变奥氏体, 合金的韧性迅速增加。高温回火, M2C粗化失去与基体的共格关系, 钢的强度下降

**关键词:** 超高强度钢 二次硬化 回火

**Abstract:** The microstructure and strengthening mechanism of ultrahigh strength 23NiCo steel were studied. Upon tempering at 430°C, the martensite was decomposed to form a lot of cementite platelets concomitant with a significant drop in toughness. Tempering at 440~455°C resulted in peak strength due to the precipitation of coherent zones of fine carbides. The peak in toughness was attained in the absence of cementite and the formation of reverted and stable austenite. Tempering at higher temperatures resulted in loss of both strength and toughness. The drop of the strength tempering at high temperature is due to precipitations coarsening and loss of the coherent with the matrix.

**Keywords:** ultrahigh-strength-steels secondary hardening temper

Received 1995-11-16; published 1997-02-25

引用本文:

凌斌;钟平;钟炳文;赵振业;张少卿. 新型二次硬化高Co—Ni超高强度钢强韧化机制的研究[J]. 航空学报, 1997, 18(1): 45-50.

Ling Bin; Zhong Ping; Zhong Bingwen; Zhao Zhengye; Zhang Shaoqing. ON THE STRENGTHENING MECHANISM OF HIGH Co Ni ULTRAHIGH STRENGTH STEEL[J]. Acta Aeronautica et Astronautica Sinica, 1997, 18(1): 45-50.

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