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论文

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20Cr11MoVNbNB 钢高温蠕变过程中沉淀相的粗化动力学

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COARSENING KINETICS OF PRECIPITATES IN 20Cr11MoVNbNB STEEL DURING CREEP

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摘要

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摘要 对 20Cr11MoVNbNB 钢 550℃、650℃ 蠕变过程中的沉淀相研究表明: M₂₃C₆ 和 MC 型碳化物是该钢的主要沉淀相; M₂₃C₆ 和 MC 的粗化均符合 $D-t^{1/4}$ 线性规律、受体扩散和位错扩散综合控制; M₂₃C₆ 的粗化速率比 MC 的大。

关键词: 20Cr11MoVNbNB 耐热钢 蠕变 沉淀相

Abstract: The precipitates in 20Cr11MoVNbNB heat resisting steel quenched at 1130℃ and tempered at 700℃ for 4h, and subsequently crept at 550℃ for 5462h and 650℃ for 2968h were studied by means of XRD, TEM, etc. It is shown that M₂₃C₆ and MC are main precipitates in 20Cr11MoVNbNB steel. The coarsening kinetics of M₂₃C₆ and MC have the same 4th power law, synthetically controlled by both block diffusion and dislocation diffusion, and regardless of their original precipitating positions. The coarsening rate of M₂₃C₆ is faster than that of MC.

Keywords: 20Cr11MoVNbNB heat resisting steel creep precipitates

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