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Strain rate sensitivity of Ti-22Al-25Nb (at.%) alloy during high temperature deformation

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Abstract: The strain rate sensitivity evolution of Ti-22Al-25Nb (at.%) alloy was studied using strain rate jump testing technique. The strain rate jump tests were conducted over a wide range of strain rates ($2.5 \times 10^{-4} \sim 1.6 \times 10^{-2} \text{ s}^{-1}$) at temperatures of 930 °C and 970 °C. The increase in strain rate has a hardening effect on the alloy, leading to an increase in the flow stress. Deformation at higher strain rates always has shorter hardening stage and higher softening rates. The strain rate sensitivity index, m , monotonically decreases with increasing the strain rate, but the decreasing rate gradually slows down. The alloy shows relatively high m -values and the strain rate variation has stronger effect on m -values at higher deformation temperatures. The m -value presents uncertain changes with increasing the strain during high temperature deformation. At 970 °C, m -values almost keep constant with increasing strain due to

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