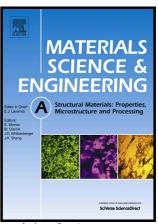
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Impact toughness transition temperature of ferritic Fe-Al-V alloy with strengthening Fe₂AlV precipitates

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CCEPTED MANUSCR

Impact toughness transition temperature of ferritic Fe-Al-V alloy with

strengthening Fe₂AIV precipitates

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ABSTRACT

The Fe₂AIV-strengthened ferritic alloys show an appreciable flow stress and creep strength

up to 700 °C, comparable to those of other iron aluminide based alloys with coherent

microstructures. In the present study, the brittle-to-ductile transition temperature (BDTT) of

the Fe₇₆Al₁₂V₁₂ alloy was investigated in the peak hardness condition by Charpy test. A BDTT

value of 617 °C was estimated using the criterion of the midpoint of the impact-energy

transition region. An attempt is made to gain understanding of the micro-mechanisms

controlling the fracture process and their interaction with the microstructure in order to identify

ways for enhancing ductility in disordered Fe-Al alloys strengthened by coherent precipitates.

Keywords: Ferrous alloy; Fe₂AIV; Charpy test; High temperature; Brittle-to-ductile transition

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