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# Impact toughness transition temperature of ferritic Fe-Al-V alloy with strengthening Fe<sub>2</sub>AlV precipitates

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## ABSTRACT

The Fe<sub>2</sub>AlV-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 Fe<sub>76</sub>Al<sub>12</sub>V<sub>12</sub> 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; Fe<sub>2</sub>AlV; Charpy test; High temperature; Brittle-to-ductile transition

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