

DEVELOPMENT OF OXIDE DISPERSION STRENGTHENED FERRITIC STEELS FOR FUSION - D.K. Mukhopadhyay (Vista Metals, Inc., McKeesport, PA), F.H. Froes (University of Idaho) and D. S. Gelles (Pacific Northwest National Laboratory)*

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EXTENDED ABSTRACT

An oxide dispersion strengthened (ODS) ferritic steel with high temperature strength has been developed in line with low activation criteria for application in fusion power systems. The composition Fe-13.5Cr-2W-0.5Ti-0.25Y₂O₃ was chosen to provide a minimum chromium content to insure fully delta-ferrite stability. High temperature strength has been demonstrated by measuring creep response of the ODS alloy in uniaxial tension at 650 and 900°C in an inert atmosphere chamber. Results of tests at 900°C demonstrate that this alloy has creep properties similar other alloys of similar design and can be considered for use in high temperature fusion power system designs. The alloy selection process, materials production, microstructural evaluation and creep testing are described.

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