



TENSILE BEHAVIOR CHANGE DEPENDING ON THE VARYING TUNGSTEN CONTENT OF W-NI-FE ALLOYS

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Abstract:

Tungsten heavy alloys (WHAs) are metal-metal composites consisting of nearly pure spherical tungsten particles embedded in a Ni-Fe-W or Ni-Co-W or Ni-Cu-W ductile matrix. In this dual phase alloy, there are several complicated relations between the ductile matrix and hard tungsten particles. The aim of this research was to examine the effect of varying tungsten content on the microstructure and mechanical properties of tungsten heavy alloys. The microstructural parameters (grain size, connectivity, contiguity and solid volume fraction) were measured and were found to have a significant effect on the mechanical properties of tungsten-based heavy alloys. The result shows that the binding strength between the W and the matrix phase has a major influence on the ductility of tungsten-based alloys. The larger this binding force is, the better the ductility is.

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