

Title (en)
Method for manufacturing bands and films from TiAl6V4

Title (de)
Verfahren zur Herstellung von Bändern bzw. Folien aus TiAl6V4

Title (fr)
Procédé de fabrication de bandes ou de feuilles en TiAl6V4

Publication
EP 2027946 A1 20090225 (DE)

Application
EP 08014681 A 20080819

Priority
DE 102007040132 A 20070824

Abstract (en)
The method for the production of superplastically deformable strip or foil out of alloy of titanium, aluminum and vanadium (TiAl6V4) with a thickness of more than 0.9 mm, comprises hot-rolling the strip with a forming grade of 30-80% at 800-1000[deg] C, thermally pretreating the hot-rolled strip at 700-800[deg] C under high vacuum of more than 13.3 mPa, and cold-rolling the hot-rolled and thermally pre-treated strip with a forming grade per single stitch of 3-7 %. The forming grade per single stitch is 1-15% to the strip or foil with a thickness of more than 0.9 mm. The method for the production of superplastically deformable strip or foil out of alloy of titanium, aluminum and vanadium (TiAl6V4) with a thickness of more than 0.9 mm, comprises hot-rolling the strip with a forming grade of 30-80% at 800-1000[deg] C, thermally pretreating the hot-rolled strip at 700-800[deg] C under high vacuum of more than 13.3 mPa, and cold-rolling the hot-rolled and thermally pre-treated strip with a forming grade per single stitch of 3-7 %. The forming grade per single stitch is 1-15% to the strip or foil with a thickness of more than 0.9 mm. After the hot-rolling, the TiAl6V4 alloy comprises a composition of aluminum (5.5-6.0 wt.%), vanadium (3.5-4.2 wt.%), nitrogen (less than 0.02 wt.%), carbon (less than 0.05 wt. %), oxygen (less than 0.15 wt.%), hydrogen (less than 0.01 wt.%), iron (less than 0.15 wt.%) and remnant of unavoidable pollutants and titanium. A mechanical pre-treatment of the hot-rolled strip is carried out before, simultaneous or after the thermal pre-treatment and comprises degreasing with a degreasing agent. The hot-rolled strip has a thickness of 1 mm. The cold-rolling comprises cold-rolling the hot-rolled and thermally treated strip with the forming grade of 30%, where the forming grade per single stitch is 1-15% to the strip or foil with a thickness of more than 0.9 mm, intermediate annealing the strip at 650-850[deg] C and cold-rolling the strip with the forming grade of 10-40%, where the forming grade per single stitch is 0.1-10 %. The final thickness of the strip and/or the foil is 0.1-0.3 mm after the cold-rolling process. An independent claim is included for a superplastically deformable strip or foil.

Abstract (de)
Ein Verfahren zur Herstellung eines superplastisch umformbaren Bandes oder einer superplastisch umformbaren Folie aus TiAl6V4 mit einer Dicke von nicht mehr als 0,9 mm, vorzugsweise von weniger gleich 0,5 mm, umfasst die Schritte: a) Warmwalzen eines Blechs aus TiAl6V4, b) thermische Vorbehandlung des warmgewalzten Blechs bei einer Temperatur zwischen 650 und 850 °C und c) Kaltwalzen des warmgewalzten und thermisch vorbehandelten Blechs mit einem Umformgrad von wenigstens 30 %, wobei der Umformgrad pro Einzelstich zwischen 1 und 15 % beträgt, zu einem Band oder einer Folie mit einer Dicke von nicht mehr als 0,9 mm, wobei das kaltgewalzte Band oder die kaltgewalzte Folie nicht endgeglüht wird.

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CPC (source: EP US)
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Citation (applicant)
• US 5222282 A 19930629 - SUKONNIK ISRAIL [US], et al
• US 4838337 A 19890613 - SIEMERS PAUL A [US]

Citation (search report)
• [X] US 5222282 A 19930629 - SUKONNIK ISRAIL [US], et al
• [A] US 3169085 A 19650209 - NEWMAN JEREMY R
• [A] DE 19532278 A1 19970306 - GEWERK KERAMCHEMIE [DE], et al
• [A] GB 852405 A 19601026 - ENGLISH ELECTRIC CO LTD

Cited by
CN109604337A; CN103203361A

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