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Method for coating surface of tial intermetallic compound or ti-al alloy with thick multiple titanium oxide film

JP06040724

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- **International Patent Classification**
  C01G-023/00
- **Publication Information**
  JPH0640724 A 1994-02-15 [JP06040724]
- **Priority Details**
  1992JP-0215601 1992-07-21

- **Fampat family**

JPH0640724	A	1994-02-15	[JP06040724]

- **Abstract:**
  (JP06040724)
  PURPOSE: To coat the surface of a TiAl intermetallic compd. or a Ti-Al alloy with a thick multiple titanium oxide film in a short time. CONSTITUTION: One or more among oxycarbonates, hydroxides, nitrates, sulfates and halides of alkali metals are added to one or more among oxycarbonates and hydroxides of alkaline earth metals. They are melted, a TiAl intermetallic compd. or a Ti-Al alloy is immersed in the resulting mixed molten salt and the surface of the Till intermetallic compd. or the Ti-Al alloy is coated with a thick multiple titanium oxide film. COPYRIGHT: (C)1994,JPO&Japio

Claims

(JP06040724)

Claims machine translated from Japanese
1. Alkaline earths metal carbonation ones and [aruka]
Above 1 or 2 kinds inside [ri] earths metal hydroxide, Al
Kalium metal carbonation ones, alkaline metal hydroxide, alkaline gold
Being attached nitrate, alkaline metal sulfate and alkaline metal halo
The mixture which becomes including above 1 or 2 kinds among the gene chemical materials ***
In molten salt, TiAl intermetallic or Ti-Al combination
The TiAl intermetallic [ma] which features that the gold is soaked
It is on the Ti-Al based alloy surface suffering the compound titanium oxide thick film
The [ru] method of overturning.
2. Temperature: It is inside the range of the 150-800.deg.C
The claim 1 statement which features that it soaks in the mixed fused salt
In TiAl intermetallic or Ti-Al based alloy surface double
The method of covering the combination titanium oxide thick film.

Manufacturing method of the TiAl intermetallic based Ti alloy which is superior in strength and ductility

JP04235263

- **Patent Assignee**
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- **International Patent Classification**
  C22C-001/00 C22C-014/00 C22F-001/00 C22F-001/18

- **Publication Information**
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- **Priority Details**
  1991JP-0060800 1991-01-08

- **Fampat family**

JPH04235263	A	1992-08-24	[JP04235263]
JP2817428	B2	1998-10-30	[JP2817428]

- **Abstract:**
  (JP2817428)
  PURPOSE: To improve the strength and ductility of a Ti-Al intermetallic compound-series Ti alloy. CONSTITUTION: This is a method for manufacturing a Ti-Al intermetallic compound-series Ti alloy excellent in strength and ductility of executing cycle heat treatment of repeatedly subjecting a Ti-Al intermetallic compound Ti alloy contg., by atom, 38 to 45% Al and the balance Ti with inevitable impurities to heat treatment of holding it under heating to a prescribed temp., subjecting it to soln. treatment, successively holding it to a prescribed temp. in an .alpha. single phase range and thereafter raising its temp. to a prescribed one in a .beta. single phase range and holding it and a method for manufacturing a Ti-Al intermetallic compound-series Ti alloy excellent in strength and ductility of, after the above cycle heat treatment, furthermore executing .alpha. soln. treatment of holding it to a prescribed temp. T of 1150 to 1300 deg.C for prescribed time and thereafter executing cooling and then executing aging treatment of holding it to a prescribed temp. in the range of 650 to (T-100) deg.C and thereafter rapidly cooling it. COPYRIGHT: (C)1992,JPO&Japio

Claims

(JP2817428)

Claims machine translated from Japanese
1. Al: The 38-45 atmoic % to contain, remainder
Chemical combination between the TiAl metal which consist of Ti and the inevitable impurity
Heating keeping the thing type Ti alloy in specified temperature solution heat treatment
It does, continuously, keeps in specified temperature inside the I phase single-phase temperature range
It heats to the specified temperature while [ru] heat treatment and the I phase single-phase temperature range
The cycle heat treatment which repeatedly does the heat treatment which you keep is administered, it is dense
That between the TiAl metal which are superior in strength and the ductility which are featured
Manufacturing method of chemical compound based Ti alloy.
2. Al: The 38-45 atmoic % to contain, remainder
Chemical combination between the TiAl metal which consist of Ti and the inevitable impurity
Heating keeping the thing type Ti alloy in specified temperature solution heat treatment
Administering, continuously, retention to specified temperature inside I phase single-phase temperature range
In specified temperature while heat treatment and the I phase single-phase temperature range which it does ascent
Warm the cycle heat treatment which repeatedly does the heat treatment which is kept ***
To do, furthermore specified temperature inside the 1150-1300.deg.C: In T
To administer the I solution heat treatment of cooling after the predetermined time keeping, next 65
0.deg.C- (T-100) .deg.C in specified temperature inside range specified time
Between the strength which features that aging processing of sudden cooling after the keeping is administered
The TiAl intermetallic based Ti alloy which is superior in calling ductility make
Structure method.
3. As for the above-mentioned solution heat treatment temperature, desirably, 1
Being specified temperature inside the 300.deg.C super -1500.deg.C special
The claim being superior to the strength and ductility of 1 which is made collection/symbol or 2 statements
It is manufacturing method of the TiAl intermetallic based Ti alloy.

Manufacturing method of the TiAl intermetallic based Ti alloy which is superior in strength and ductility

JP04235262

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- **International Patent Classification**
  C22C-001/00 C22C-014/00 C22F-001/00 C22F-001/18
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  JPH04235262 A 1992-08-24 [JP04235262]
- **Priority Details**
  1991JP-0060798 1991-01-08

- **Fampat family**

JPH04235262	A	1992-08-24	[JP04235262]
JP2817427	B2	1998-10-30	[JP2817427]

- **Abstract:**
  (JP2817427)
  PURPOSE: To manufacture a Ti-Al intermetallic compound-series Ti alloy improved in strength and ductility by successively subjecting a Ti-Al intermetallic compound-series Ti alloy having a specified componental compsn. to soln. treatment and cycle heat treatment under specified conditions. CONSTITUTION: A Ti-Al intermetallic compound-series Ti alloy contg., by atom, 38 to 50% Al, furthermore contg. total 0.1 to 5% of one or two or more kinds of elements among Cr, Ru, Mo, W, Mn, Ni, Cu, Fe, V, Nb, Ta, Ag and Co and the balance Ti with inevitable impurities is subjected to soln. treatment at a prescribed temp. of >1300 to 1500 deg.C. Next, cycle heat treatment of repeatedly executing heat treatment of reducing its temp. to an .alpha. single phase temp. range, then executing .alpha. signal phase converting treatment to form its phase into an .alpha. one formed of the closest hexagonal system, thereafter raising its temp. to a .beta. single phase temp. range, then executing .beta. single phase converting treatment to form its phase into a .beta. one constituted of the body-centered cubic system. In this way, the grain size of the structure is refined to obtain a Ti-Al intermetallic compound-series Ti alloy improved in strength and ductility. COPYRIGHT: (C)1992,JPO&Japio

Claims

(JP2817427)

Claims machine translated from Japanese
1. [Claim page 1] Al: The 38-50 atmoic % to contain, the plate
Cr, Ru, Mo, W, Mn, Ni, Cu and Fe,
V, 1 or 2 kinds inside Nb, Ta, Ag and Co from here
The 0.1-5 atmoic % to contain on at total, remainder Ti
The TiAl intermetallic Ti combination which consists of the [bi] inevitable impurity
Heating keeping the gold in specified temperature, it solves processes,
Consequently, the heat which is kept in specified temperature inside the I phase single-phase temperature range
In specified temperature while processing and I phase single-phase temperature range heating retention
Administering the cycle heat treatment which repeatedly does the heat treatment which it does
Chemical combination between the TiAl metal which are superior in strength and the ductility which are made feature
Manufacturing method of thing type Ti alloy.
2. Al: The 38-50 atmoic % to contain, the plate
Cr, Ru, Mo, W, Mn, Ni, Cu and Fe,
V, 1 or 2 kinds inside Nb, Ta, Ag and Co from here
The 0.1-5 atmoic % to contain on at total, remainder Ti
The TiAl intermetallic Ti combination which consists of the [bi] inevitable impurity
Heating keeping the gold in specified temperature, to solve process, continuously,
The heat treatment which is kept in specified temperature inside the I phase single-phase temperature range
The thermal place which it heats keeps in specified temperature inside the [bi] I phase single-phase temperature range
To administer the cycle heat treatment which repeatedly does reason, furthermore 115
Specified temperature inside 0-1300.deg.C: In T predetermined time after the keeping cold
To administer the I solution heat treatment of the *** , next the 650.deg.C- (T-10
0) .deg.C In specified temperature inside range predetermined time when cooling suddenly after the keeping
It was superior in strength and the ductility which feature that effective processing is administered
Manufacturing method of TiAl intermetallic based Ti alloy.
3. As for the above-mentioned solution heat treatment temperature, desirably, 1
Being specified temperature inside the 300.deg.C super -1500.deg.C special
The claim being superior to the strength and ductility of 1 which is made collection/symbol or 2 statements
It is manufacturing method of the TiAl intermetallic based Ti alloy.

Production of molded goods of ti3al intermetallic compound
JP07258766

- **Patent Assignee**
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- **International Patent Classification**
  B22F-003/26 C22C-001/00 C22C-014/00

- **Publication Information**
  JPH07258766 **A 1995-10-09 [JP07258766]**
- **Priority Details**
  1994JP-0048070 1994-03-18

- **Fampat family**

JPH07258766	A	1995-10-09	[JP07258766]

- **Abstract:**
  (JP07258766)
  PURPOSE: To easily produce molded goods of a Ti(sub 3)Al intermetallic compd. having excellent dimensional accuracy by dropping the melt of an Al-Ti alloy having a specific compsn. onto a porous sintered compact of Ti, thereby bringing this molten metal into penetration reaction. CONSTITUTION: Powder of Ti is press molded and the molding is sintered, by which the porous Ti sintered compact 2 having porosity of 23 to 35% and a desired shape is produced. This porous Ti sintered compact 2 is put into a vacuum furnace 1 and the melt 8 of 900 to 1200 deg.C of the Al-Ti alloy having the compsn. contg. 2 to 10wt.% Ti and consisting of the balance Al is pressed by a cylinder 5 and is dropped onto the surface of the Ti sintered compact 2, by which the melt is penetrated into the Ti sintered compact and is brought into reaction with the Ti. The molded goods 6 consisting of the Ti(sub 3)Al intermetallic compd. and having excellent high-temp. strength are thus produced. The molding of the Ti(sub 3)Al intermetallic compd. having the excellent dimensional accuracy is obtd. without deforming the Ti sintered compact 2 by the excessive reaction heat of the Ti(sub 3)Al intermetallic compd. by adjusting the Ti content of the melt of the Al-Ti alloy to be dropped to a range of 2 to 10%. COPYRIGHT: (C)1995,JPO

Claims

(JP07258766)

Claims machine translated from Japanese
1. Porosity rate: Ti porous sinterring of 23-35%
In body, Ti: The 2-10 weight % to contain, remainder Al
To drip the Al alloy hot water which consists of the [bi] inevitable impurity, Al combination
While permeating the gold hot water to the above-mentioned Ti porous sintered body naturally
The Ti [3] Al intermetallic forming which features that it reacts
Manufacturing method of shape item.
2. As for temperature of the above-mentioned Al alloy hot water 900.deg.C-1
Features that it is the 200.deg.C Ti [3] of the claim 1 statement which
Manufacturing method of Al intermetallic formation item.

Method for heat-treating ti-al intermetallic compound series ti alloy
JP06116691

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- **International Patent Classification**
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- **Publication Information**
  JPH06116691 A 1994-04-26 [JP06116691]
- **Priority Details**
  1992JP-0290725 1992-10-05

- **Fampat family**

JPH06116691	A	1994-04-26	[JP06116691]

- **Abstract:**
  (JP06116691)
  PURPOSE: To improve the toughness of a Ti-Al intermetallic compound series Ti alloy without deteriorating its strength, at the time of subjecting a Ti alloy having a specified compsn. to heat treatment, by executing massive transformation treatment between solution treatment and aging treatment therefor. CONSTITUTION: A Ti-Al intermetallic compound series Ti alloy constituted of, by atom, 41 to 50% Al and total 3 to 12% of one or >= two kinds among Nb, Mo and Cr, and the balance Ti with inevitable impurities is subjected to solution treatment in such a manner that it is held under heating to an .alpha. phase region and is thereafter rapidly cooled. By the solution treatment, its phase is formed into an .alpha. phase single phase, and after that, massive transformation treatment in which it is held under heating to a .gamma. phase single region in vacuum or in a nonoxidizing atmosphere of an inert gas or the like is executed. By the massive transformation treatment, its structure is formed into a sufficient massive .gamma. phase one, and after that, aging treatment in which it is held under heating in an .alpha. +.beta. phase region and is subsequently subjected to rapid cooling is executed. The Ti-Al intermetallic compound base Ti alloy subjected to the heat treatment by this method can sufficiently correspond as the structural member of various equipment exposed to the cycle of high temps. and ordinary temps. accompanied by high output. COPYRIGHT: (C)1994,JPO&Japio

Claims

(JP06116691)

Claims machine translated from Japanese
1. Atmoic % With,
Al: 41-50%,
Totaling above the inside 1 or 2 kinds of Nb, Mo and Cr
So to contain the 3-12%, remainder Ti and the inevitable impurity
The TiAl intermetallic based Ti alloy which consists of, the I phase territory
After heating keeping, cooling suddenly, it solves processes,
The TiAl intermetallic based Ti alloy which aforementioned it solved processed
Heating keeping in the I phase territory, massive you transform process,
The TiAl intermetallic type Ti which aforementioned massive you transformed processed
After heating keeping in the .alpha.+.gamma. phase territory cooling suddenly the alloy, the aging place
The high tenacious TiAl intermetallic which reason it does, features thing
Heat treatment method of type Ti alloy.
2. As for the aforementioned massive metamorphosis processing, the aforementioned solution place
Reason the TiAl intermetallic based Ti alloy which is done in the I phase territory adding
Heat after keeping, the high tenacity TiA which features that it cools suddenly
Heat treatment method l of intermetallic based Ti alloy.