Number of documents: 9

CA2496093	Method for manufacturing of workpieces or semifinished products containing titanium aluminide alloys and products made thereby GKSS FORSCHUNGSZENTRUM GKSS FORSHUNGSTSENTRUM GEESTKH HELMHOLTZ ZENTRUM GEESTHACHT
US20140010701	Titanium aluminide alloys GKSS FORSCHUNGSZENTRUM HELMHOLTZ ZENTRUM GEESTHACHT
WO9909228	Alloy based on titanium aluminides GKSS FORSCHUNGSZENTRUM GKSS FORSHUNGSTSENTRUM GEESTKH GKSSFORSCHUNGS ZENTRUM GEESTHACHT
US20120263623	Titanium aluminide based alloy GKSS FORSCHUNGSZENTRUM
CA2645843	Titanium aluminide alloys GKSS FORCHUNGSZENTRUM GEESTHACHT GKSS FORSCHUNGSZENTRUM GKSS FORSHUNGSTSENTRUM GEESTKHAKHT HELMHOLTZ ZENTRUM GEESTHACHT
WO200656248	Titanium aluminide based alloy CAR GAME FOLDER SHUN SS GUSS ZENTRUM DOVE GAME STORE GKSS FORSCHUNGSZENTRUM GKSS FORSHUNGSTSENTRUM GEESTKH
DE102007032406	Production of alloys based on titanium aluminides CAR GAME CACHE FOLDER JUNG SS GAME GRAPHICS ZENTRUM UMM HAFT EST GKKS FORSCHUNGSZENTRUM GEESTHACHT GKSS FORCHUNGSZENTRUM GEESTHACHT GKSS FORSCHUNGSZENTRUM HELMHOLTZ ZENTRUM GEESTHACHT
DE10058155	Alloy on the basis of titanium aluminides GKSS FORSCHUNGSZENTRUM
EP1214995	Method for the treatment of metal materials GKSS FORSCHUNGSZENTRUM GKSS FORSHUNGSTSENTRUM GEESTKHAKHT

Method for manufacturing of workpieces or semifinished products containing titanium aluminide alloys and products made thereby

CA2496093

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- **International Patent Classification**
  B21D B21D-053/78 B21K-001/32 B21K-003/04 B23K-001/00 B23K-001/19 B23K-020/00 B23K-020/14 B23K-020/22 B23P-015/04 B23P-023/04 B32B-015/01 B32B-038/00 C22C-014/00 F01D-005/02
- **US Patent Classification**
  PCLO=029889700 PCLX=029889000 PCLX=029889200 PCLX=228178000
- **CPC Code**
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- **Fampat family**

CA2496093	A1	2005-08-26	[CA2496093]
CN1660540	A	2005-08-31	[CN1660540]
EP1568486	A1	2005-08-31	[EP1568486]
JP2005238334	A	2005-09-08	[JP2005238334]
KR20060042190	A	2006-05-12	[KR20060042190]
US2006138200	A1	2006-06-29	[US20060138200]
RU2005105411	A	2006-08-10	[RU2005105411]
IN0256/DEL/2005	A	2006-12-01	[IN2005DE00256]
RU2306227	C2	2007-09-20	[RU2306227]
EP1568486	B1	2008-04-30	[EP1568486]
AT393699	T	2008-05-15	[ATE393699]
DE502004006993	D1	2008-06-12	[DE502004006993]
ES2305593	T3	2008-11-01	[ES2305593]
CN1660540	B	2010-09-01	[CN1660540B]
US7870670	B2	2011-01-18	[US7870670]
CA2496093	C	2012-01-24	[CA2496093]
IN255780	B	2013-03-29	[IN-255780]

- **Abstract:**

(EP1568486)
Manufacture of components or semi-finished products containing intermetallic titanium-aluminide alloy, by forming connections between surfaces of plate-shaped bodies to form aggregate body The method involves coarse-contouring a number of plate-shaped bodies corresponding to the desired final form of the component or semi-finished product. Part of this body consists of titanium-aluminide alloy. Surface connections are formed between the plate-shaped bodies to form an aggregate body. The desired final shape is then formed from the aggregate body. - An INDEPENDENT CLAIM is included for a component.

Claims

(EP1568486)

1. A method for producing components or semi-finished products, which consist solely of titanium aluminide alloys, with the following method steps: a. rough contouring a plurality of plate-like bodies from one or more titanium aluminide alloys, so that by means of this production step an oversized preform of the geometry of the component or semi-finished product to be produced is formed;
b. carrying out surface-to-surface joins between the plurality of bodies stacked on top of one another so as to form an overall body;
c. forming the desired final shape of the overall body.
2. The method for producing components or semi-finished products, which consist solely of titanium aluminide alloys, with the following method steps: a. rough contouring of a plurality of plate-like bodies from one or more titanium aluminide alloys, so that by means of this production step an oversized preform of the geometry of the component or semi-finished product to be produced is formed;
b. stacking the plurality of plate-like bodies on top of one another to form an overall body;
c. joining the bodies forming the overall body and forming the desired final shape of the overall body, whereby the joining and the formation of the final shape is carried out in a single operation.
3. The method according to one or both of claims 1 or 2, characterised in that the rough contouring of the plate-like bodies is performed by chipless shaping.
4. The method according to one or both of claims 1 or 2, characterised in that the rough structuring of the plate-like bodies is performed by cutting.
5. The method according to one or more of claims 1 to 4, characterised in that the plate-like bodies which have been stacked on top of one another are joined together by diffusion welding.
6. The method according to one or more of claims 1 to 4, characterised in that the plate-like bodies which have been stacked on top of one another are joined together by soldering.
7. The method according to one or more of claims 1 to 6, characterised in that the final shape of the overall body is achieved by cutting the overall body.
8. The method according to one or both of claims 5 or 7, characterised in that the joining of the plate-like and the forming of the final shape of the overall body take place in one device.
9. The method according to one or more of claims 5 or 7 and 8, characterised in that the plate-like bodies which have been stacked on top of one another are joined together and/or the final shape of the overall body is formed under a vacuum.
10. The method according to one or more of claims 2 or 7 and 8, characterised in that the plate-like bodies which have been stacked on top of one another are joined together and/or the final shape of the overall body is formed in an inert gas atmosphere.
11. The method according to one or more of claims 1 to 10, characterised in that the plate-like bodies which form the overall body in each case consist of different titanium aluminide alloys.
12. The method according to one or more of claims 1 to 11, characterised in that the plate-like bodies which form the overall body have different microstructures.
13. The method according to one or more of claims 1 to 12, characterised in that the plate-like bodies which form the overall body have different textures.
14. The method according to one or more of claims 1 to 13, characterised in that orientation of the surfaces of the bodies which have been stacked on top of one another is defined with respect to the orientation of the main loading direction of the final shape which is formed.

Titanium aluminide alloys
US20140010701

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- **International Patent Classification**
  C22C-001/02 C22C-001/04 C22C-014/00 C22C-030/00
- **US Patent Classification**
  PCLO=419025000 PCLX=075228000 PCLX=075245000 PCLX=148421000 PCLX=148442000 PCLX=148538000 PCLX=420418000 PCLX=420420000 PCLX=420580000 PCLX=420581000 PCLX=420588000
- **CPC Code**
  C22C-001/02; C22C-001/04/58; C22C-001/04/91; C22C-001/04; C22C-014/00; C22C-030/00; C22F-001/18/3

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  US2014010701 A1 2014-01-09 [US20140010701]
- **Priority Details**
  2007DE-10060587 2007-12-13
  2008US-12331909 2008-12-10
  2013US-13931051 2013-06-28

- **Fampat family**

US2014010701	A1	2014-01-09	[US20140010701]

- **Abstract:**
  (US20140010701)
  Alloys based on titanium aluminides, such as gamma (TiAl) which may be made through the use of casting or powder metallurgical processes and heat treatments. The alloys contain titanium, 38 to 46 atom % aluminum, and 5 to 10 atom % niobium, and they contain composite lamella structures with B19 phase and beta phase there in a volume ratio of the B19 phase to beta phase 0.05:1 and 20:1.

Claims

(US20140010701)

What is claimed is:

1.

An alloy comprising titanium, 38 to 46 at % aluminum, and 5 to 10 at % niobium, and comprising composite lamella that contain a B19 phase and a beta phase in a volume ratio of B19:13 of 0.05:1 to 20:1.

2. The alloy of claim 1, comprising/containing 38 to 42 at % aluminum.

3. The alloy of claim 1, comprising 38.5 to 42.5 at % aluminum, and 0.5 to 5 at % chromium.

4. The alloy of claim 1, comprising 39 to 43 at % aluminum, and 0.5 to 5 at % zirconium.

5. The alloy of claim 1, comprising 41 to 45 at % aluminum, and 0.5 to 5 at % tantalum.

6. The alloy of claim 1, comprising 41 to 45 at % aluminum, and 0.1 to 1 at % lanthanum, scandium or yttrium.

7. The alloy of claim 1, comprising 41 to 45 at % aluminum, and 0.5 to 5 at % vanadium.

8. The alloy of claim 1, comprising 41 to 44.5 at % aluminum, and 0.5 to 5 at % iron or molybdenum.

9. The alloy of claim 1, comprising 41 to 46 at % aluminum, and 0.5 to 5 at % tungsten.

10. The alloy of claim 1, comprising 41 to 46 at % aluminum, and 0.5 to 5 at % manganese.

11. The alloy of claim 1, comprising 0.1 to 1 at % boron, or 0.1 to 1 at % carbon, or both 0.1 to 1 at % boron and 0.1 to 1 at % carbon.

12. The alloy of claim 1, the alloy containing composite lamella structures that include B19 phase and beta phase in a volume ratio between 0.2:1 and 5:1.

13. The alloy of claim 1, the alloy containing composite lamella structures that include B19 phase and beta phase in a volume ratio between 1:3 and 3:1.

14. The alloy of claim 1, the alloy containing composite lamella structures that include B19 phase and beta phase in a volume ratio between 0.75:1 and 1.25:1.

15. The alloy of claim 1, the alloy containing composite lamella structures and type gamma TiAl lamella structures.

16. The alloy of claim 15, comprising composite lamella structures surrounded by type gamma TiAl lamella structures.

17. The alloy of claim 1, the alloy containing more than 10 volume percent composite lamella structures, based on the volume of the alloy.

18. The alloy of claim 1, wherein the composite lamella structures include a alpha 2-Ti3Al phase.

19. The alloy of claim 18, wherein the alloy contains 20 volume percent alpha 2-Ti3Al phase or less, by volume of the alloy.

20. A method for the production of an alloy, comprising: providing a composition that comprises titanium, 38 to 46 at % aluminum, and 5 to 10 at % niobium;

subjecting the composition to a casting or powder metallurgical technique to produce an intermediate product; and

subjecting the intermediate product to a heat treatment, the heat treatment comprising heating the intermediate product at a temperature above 900 deg. C. for more than sixty minutes, and cooling the intermediate product at a rate of more than 0.5 deg. C. per minute.

21. The method of claim 20 wherein the heat treatment comprises heating the intermediate product at a temperature above 1000 deg. C.

22. The method of claim 20 wherein the heat treatment comprises heating the intermediate product at a temperature between 1000 deg. C. and 1200 deg. C.

23. The method of claim 20 wherein the heat treatment comprises heating the intermediate product at said temperature above 900 deg. C. for more than 90 minutes.

24. The method of claim 20 wherein the heat treatment comprises heating the intermediate product at a temperature above 1000 deg. C. for more than 90 minutes.

25. The method of claim 20, comprising cooling the intermediate product at a rate of 1 deg. C. per minute to 20 deg. C. per minute.

26. The method of claim 20, comprising cooling the intermediate product at a rate of 1 deg. C. per minute to 10 deg. C. per minute.

27. An alloy made by the method of claim 20.

28. A component comprising the alloy of claim 1.

Alloy based on titanium aluminides

WO9909228

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- **International Patent Classification**
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- **US Patent Classification**
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- **CPC Code**
  C22C-014/00

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  1997DE-1035841 1997-08-19
  1998DE-5010561 1998-08-12
  1998WO-DE02323 1998-08-12

- **Fampat family**

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DE19735841	A1	1999-02-25	[DE19735841]
EP1015650	A1	2000-07-05	[EP1015650]
CN1276021	A	2000-12-06	[CN1276021]
US6524407	B1	2003-02-25	[US6524407]
RU2203339	C2	2003-04-27	[RU2203339]
CN1115421	C	2003-07-23	[CN1115421C]
EP1015650	B1	2004-01-07	[EP1015650]
AT257521	T	2004-01-15	[ATE257521]
DE59810561	D1	2004-02-12	[DE59810561]
IN1459/CAL/1998	A	2005-03-25	[IN1998CA01459]

- **Abstract:**
  (EP1015650)
  FIELD: metallurgy; titanium-aluminide-based alloys by casting or powder metallurgy. SUBSTANCE: alloy contains titanium, aluminum, niobium at content of 5<= x <= 10% and carbon in the amount lesser than 0.5%. EFFECT: enhanced heat resistance of alloy; possibility of using this alloy instead of nickel -based alloys. 4 cl, 2 dwg (From RU2203339 C2)

Claims

(EP1015650)

1. Titanium aluminide alloy whose composition is Ti-45Al-xNb where 5 <= x <= 10 % atom/atom, and optionally in addition up to 0.5 % atom/atom of B and/or C.
2. Titanium aluminide alloy according to Claim 1, manufactured using casting or powder-metallurgical techniques

Titanium aluminide based alloy
US20120263623

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- **International Patent Classification**
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- **US Patent Classification**
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- **CPC Code**
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- **Publication Information**
  US2012263623 **A1 2012-10-18 [US20120263623]**
- **Priority Details**
  2004DE-10056582 2004-11-23
  2005WO-EP09402 2005-09-01
  2007US-11805043 2007-05-21
  2012US-13536281 2012-06-28

- **Fampat family**

US2012263623	A1	2012-10-18	[US20120263623]

- **Abstract:**
  (US20120263623)
  The invention concerns alloys made through the use of melting and powdered metallurgical techniques on the basis of titanium aluminides with an alloy composition of Ti-z Al-y Nb where 44.5 Atom % z47 Atom %, 44.5 Atom % z45.5 Atom %, and 5 Atom % y10 Atom % with possibly the addition of B and/or C at a content between 0.05 Atom % and 0.8 Atom %. Said alloy is characterized in that it contains a molybdenum (Mo) content ranging between 0.1 Atom % to 3.0 Atom %.

Claims

(US20120263623)

What is claimed is:

1.

An alloy made on the basis of titanium aluminide through the use of melting and powdered metallurgical techniques the alloy comprising Ti-z Al-y Nb where 44.5 Atom % is <= z <= 47 Atom %, and where 5 Atom % is <= y <= 10 Atom %, and the alloy containing molybdenum (Mo) in between 0.1 Atom % to 3 Atom % and defining a beta -phase present up to a temperature of about 1,320 degrees C.

2. An alloy as defined by claim 1 wherein 44.5 Atom % is <= z <= 45.5 Atom %.

3. An alloy on the basis of titanium aluminide made with the use of melting and powdered metallurgical techniques the alloy comprising Ti-z Al-y Nb-x B where 44.5 Atom % is <= z <= 47 Atom % and where 5 Atom % is <= y <= 10 Atom % and 0.05 Atom % is <= x <= 0.8 Atom % and wherein the alloy contains molybdenum (Mo) between 0.1 Atom % to 3 Atom % and defining a beta -phase present up to a temperature of about 1,320 degrees C.

4. An alloy as defined by claim 3 wherein 44.5 Atom % is <= z <= 45.5 Atom %.

5. An alloy on the basis of titanium aluminide made with the use of melting and powdered metallurgical techniques the alloy comprising Ti-z Al-y Nb-w C where 44.5 Atom % is <= z <= 47 Atom %, and where 5 Atom % is <= y <= 10 Atom % and 0.05 Atom % is <= w <= 0.8 Atom %, and wherein the alloy contains molybdenum (Mo) between 0.1 Atom % to 3 Atom % and defining a beta -phase present up to a temperature of about 1,320 degrees C.

6. An alloy as defined by claim 5 wherein 44.5 Atom % is <= z <= 45.5 Atom %.

7. An alloy as defined by claim 5 wherein the alloy contains molybdenum between 0.5 Atom % to 3 Atom %.

8. An alloy on the basis of titanium aluminide made with the use of melting and powdered metallurgical techniques the alloy comprising Ti-z Al-y Nb-x B-w C where 44.5 Atom % is <= z <= 47 Atom %, and where 5 Atom % is <= y <= 10 Atom % and 0.05 Atom % is <= x <= 0.8 Atom % and 0.05 Atom % is <= w <= 0.8 Atom %, and wherein the alloy contains molybdenum (Mo) between 0.1 Atom % to 3 Atom % and defining a beta -phase present up to a temperature of about 1,320 degrees C.

9. An alloy as defined by claim 8 wherein 44.5 Atom % <= z <= 45.5 Atom %.

10. A construction component made from an alloy according to claim 1.

11. A construction component made from an alloy according to claim 3.

12. A construction component made from an alloy according to claim 5.

13. A construction component made from an alloy according to claim 8.

Titanium aluminide alloys
CA2645843

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- **International Patent Classification**
  A61K B22F-001/00 C22C-001/02 C22C-001/04 C22C-014/00 C22C-021/00 C22C-030/00 C22C-032/00 C22F-001/00 C22F-001/04 C22F-001/18 F01D-005/28 F01D-025/00 F02C-007/00
- **US Patent Classification**
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- **CPC Code**
  C22C-001/02; C22C-001/04/58; C22C-001/04/91; C22C-001/04; C22C-014/00; C22C-030/00; C22F-001/18/3

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  2007DE-10060587 2007-12-13
  2008EP-0020431 2008-11-25
  2008US-12331909 2008-12-10
  2009EP-0010152 2008-11-25
  2009US-12512451 2009-07-30

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EP2075349	A2	2009-07-01	[EP2075349]
JP2009144247	A	2009-07-02	[JP2009144247]
EP2075349	A3	2009-09-09	[EP2075349]
IL195756	D0	2009-11-18	[IL-195756]
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BRPI0806979	A2	2010-04-20	[BR200806979]
EP2145967	A3	2010-04-21	[EP2145967]
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EP2423341	A1	2012-02-29	[EP2423341]
RU2466201	C2	2012-11-10	[RU2466201]
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EP2423341	B1	2013-07-10	[EP2423341]
CN101457314	B	2013-07-24	[CN101457314B]
EP2145967	B1	2013-07-24	[EP2145967]
JP5512964	B2	2014-06-04	[JP5512964]
EP2075349	B1	2016-03-09	[EP2075349]

- **Abstract:**
  (EP2423341)
  Alloy based on titanium aluminides has the composition: Ti - (38 -42 at.%) Al - (5-10 at.%) Nb. The composition has composite lamellae structures with B19-phase and beta -phase in each lamella. The ratio, especially the volume ratio, of the B19-phase and the beta -phase in each lamella is 0.05-20, especially 0.1-10. Independent claims are also included for the following: (1) Method for the production of the alloy; and (2) Component made from the alloy.

Claims

(EP2423341)

1. An alloy based on titanium aluminides, particularly made with the use of fusion or powder metallurgical processes, preferably on the basis of gamma (TiAl), wherein TiAl alloys with further additives contain volumetric fractions of the beta phase, characterised in that the composition includes composite lamellar structures with B19 phase and beta phase in each lamella, wherein the ratio, particularly the volumetric ratio, of the B19 phase and the beta phase in each lamella is between 0.05 and 20, particularly between 0.1 and 10, wherein the alloy has the following composition: Ti - (41 to 44.5 at %) Al - (5 to 10 at %) Nb - (0.5 to 5 at %) Fe.

2. An alloy as claimed in claim 1, characterised in that the ratio, particularly the volumetric ratio, of the B19 phase and the beta phase in each lamella is between 0.2 and 5, particularly between 0.25 and 4.

3. An alloy as claimed in claim 1 or 2, characterised in that the ratio, particularly the volumetric ratio, of the B19 phase and beta phase in each lamella is between (1/3) and 3, particularly between 0.5 and 2.

4. An alloy as claimed in one of claims 1 to 3, characterised in that the ratio, particularly the volumetric ratio, of the B19 phase and beta phase in each lamella is between 0.75 and 1.25, particularly between 0.8 and 1.2, preferably between 0.9 and 1.1.

5. An alloy as claimed in one of claims 1 to 4, characterised in that the composition selectively includes (0.1 to 1 to 1 at %) B (boron) and/or (0.1 to 1 at %) C (carbon).

6. An alloy as claimed in one of claims 1 to 5, characterised in that lamellas of the composite lamellar structures are surrounded by lamellas of the gamma (TiAl) type, preferably on both sides of the lamella.

7. An alloy as claimed in one of claims 1 to 6, characterised in that the lamellas of the composite lamellar structures have a volumetric proportion of more than 10%, preferably more than 20%, of the alloy.

8. An alloy as claimed in one of claims 1 to 7, characterised in that the lamellas of the composite lamellar structures include the phase alpha 2-Ti 3Al in a proportion of up to 20%.

9. A method of making an alloy as claimed in one claims 1 to 8 using fusion or powder metallurgical techniques, wherein after making the alloy into an intermediate product a further heat treatment of the intermediate product is performed at temperatures above 900 deg.c, preferably above 1000 deg.c, particularly at temperatures between 1000 deg.c and 1200 deg.c for a predetermined period of time of more than 60 minutes, preferably more than 90 minutes and subsequently the heat-treated alloy is cooled at a predetermined cooling rate of more than 0.5 deg.C per minute.

10. A method as claimed in claim 9, characterised in that heat-treated alloy is cooled at a predetermined cooling rate of between 1 deg.c per minute to 20 deg.c per minute, preferably to 10 deg.c per minute.

11. A component which is made of an alloy as claimed in one of claims 1 to 8, wherein, in particular, the alloy is made by fusion or powder metallurgical methods or techniques.

12. Use of an alloy as claimed in one of claims 1 to 8 for making a component.

Titanium aluminide based alloy
WO200656248

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- **International Patent Classification**
  C22C-001/04 C22C-014/00 C22C-021/00 C22C-030/00 C22F-001/00 C22F-001/18 F01D-005/28 F01D-025/00 F02C-007/00
- **US Patent Classification**
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- **Publication Information**
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- **Priority Details**
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  2005WO-EP09402 2005-09-01

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WO2006056248	A1	2006-06-01	[WO200656248]
CA2587237	A1	2006-06-01	[CA2587237]
DE102004056582	A1	2006-06-01	[DE102004056582]
EP1819838	A1	2007-08-22	[EP1819838]
IN3666/DELNP/2007	A	2007-08-24	[IN2007DN03666]
KR20070086597	A	2007-08-27	[KR20070086597]
CN101056998	A	2007-10-17	[CN101056998]
JP2008520826	A	2008-06-19	[JP2008520826]
DE102004056582	B4	2008-06-26	[DE102004056582]
RU2007123588	A	2008-12-27	[RU2007123588]
EP1819838	B1	2009-03-11	[EP1819838]
AT425272	T	2009-03-15	[ATE425272]
DE502005006844	D1	2009-04-23	[DE502005006844]
JP2009097095	A	2009-05-07	[JP2009097095]
ES2322082	T3	2009-06-16	[ES2322082]
RU2370561	C2	2009-10-20	[RU2370561]
JP2009256802	A	2009-11-05	[JP2009256802]
US2010015005	A1	2010-01-21	[US20100015005]
JP4467637	B2	2010-05-26	[JP4467637]
CN101056998	B	2010-10-13	[CN101056998B]
KR101010965	B1	2011-01-26	[KR101010965]
CA2587237	C	2012-03-20	[CA2587237]

- **Abstract:**
  (EP1819838)
  The invention concerns alloys made through the use of melting and powdered metallurgical techniques on the basis of titanium aluminides with an alloy composition of Ti-z Al-y Nb where 44.5 Atom %<=z<=47 Atom %, 44.5 Atom %<=z<=45.5 Atom %, and 5 Atom %<=y<=10 Atom % with possibly the addition of B and/or C at a content between 0.05 Atom % and 0.8 Atom %. Said alloy is characterized in that it contains a molybdenum (Mo) content ranging between 0.1 Atom % to 3.0 Atom %. (From US2010015005 A1)

Claims

(EP1819838)

1. A titanium aluminide based alloy, produced by using melt metallurgical and powder metallurgical techniques with an alloy composition of 44.5 atom % <= Al <= 47 atom %, 5 atom % <= Nb <= 10 atom %, molybdenum between 0.1 atom % to 3 atom %, optionally B and/or C with contents >= 0.05 atom % and <= 0.8 atom %, and the remainder being titanium and conventional impurities, wherein the gamma -titanium aluminide alloy is formed with a fine dispersion of the beta phase and the beta phase is present up to a temperature of less than 1320 deg.C.

2. An alloy as claimed in claim 1, characterised in that the proportion of aluminium in the alloy composition is between 44.5 atom % to 45.5 atom %.

3. A component produced from an alloy as claimed in claim 1 or 2.

Production of alloys based on titanium aluminides
DE102007032406

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  CAR GAME CACHE FOLDER JUNG SS GAME GRAPHICS ZENTRUM UMM HAFT EST GKKS FORSCHUNGSZENTRUM GEESTHACHT GKSS FORCHUNGSZENTRUM GEESTHACHT GKSS FORSCHUNGSZENTRUM HELMHOLTZ ZENTRUM GEESTHACHT
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- **US Patent Classification**
  PCLO=419033000
- **CPC Code**
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- **Fampat family**

DE102007032406	B3	2008-10-23	[DE102007032406]
WO2009006954	A2	2009-01-15	[WO200906954]
WO2009006954	A3	2010-04-15	[WO200906954]
US2010119402	A1	2010-05-13	[US20100119402]
EP2185738	A2	2010-05-19	[EP2185738]
CN101796205	A	2010-08-04	[CN101796205]
JP2010532822	A	2010-10-14	[JP2010532822]
EP2185738	B1	2012-02-22	[EP2185738]
AT546556	T	2012-03-15	[ATE546556]
ES2378254	T3	2012-04-10	[ES2378254]
CN101796205	B	2012-07-25	[CN101796205B]

- **Abstract:**
  (EP2185738)
  In a process to form a titanium and aluminium alloy, the molten metals are combined in a gas atomisation process resulting in metal droplets. The droplets are exposed to a halogen-enriched gas, resulting in halogen-enriched titanium-aluminium alloy droplets, which are then subjected to hot isostatic pressure to form the alloy. (From DE102007032406 B3)

Claims

(EP2185738)

1. A method of producing an alloy based on titanium aluminides, wherein titanium-containing powder and aluminium-containing powder or pulverulent titanium aluminide, particularly titanium-aluminide-metal powder, are ground by means of a mill, preferably ground by means of a ball mill, wherein an atmosphere enriched with halogens is provided during the milling process in the mill, preferably ball mill, so that halogen-enriched titanium-aluminide-metal powder is produced during the milling process and the pulverulent titanium-aluminide enriched with halogens is then formed into an alloy by, preferably hot isostatic, pressing, wherein the proportion of halogens in the alloy is between 0.005 atom % and 1.5 atom %.

2. A method as claimed in Claim 1, characterised in that the atmosphere enriched with halogens is provided in the form of a gaseous and/or liquid atmosphere.

3. A method as claimed in Claim 1 or 2, characterised in that the atmosphere enriched with halogens is provided with at least one inert gas.

4. A method as claimed in one of Claims 1 to 3, characterised in that a component is manufactured from the alloy.

Alloy on the basis of titanium aluminides
DE10058155

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- **Priority Details**
  2000DE-1058155 2000-11-22

- **Fampat family**

DE10058155	A1	2002-05-23	[DE10058155]
KR20020040583	A	2002-05-30	[KR20020040583]
JP2002167635	A	2002-06-11	[JP2002167635]
EP1213365	A1	2002-06-12	[EP1213365]
CN1360074	A	2002-07-24	[CN1360074]

- **Abstract:**
  (EP1213365)
  Alloy based on titanium aluminides produced using a smelting and powder metallurgical process and containing an alloy composition made from titanium, aluminum and niobium has specified an aluminum content Alloy based on titanium aluminides produced using a smelting and powder metallurgical process and containing an alloy composition made from titanium, aluminum and niobium has an aluminum content of 45.5-49 at.%. Preferred Features: The alloy contains 0.1-0.5 at.% boron, 0.1-0.8 at.% carbon and 4-10 at.% niobium.

Claims

(EP1213365)

Claims machine translated from German

1. Alloy on the Basis characterized of using bloom and powder metallurgy Techniques manufactured Titanaluminiden by an Alloy Composition from Titanium, Aluminum and Niobium, by the fact that is appropriate for Aluminum Content of the Alloy in the Range between 45,5 and 49 Atom %.
2. Alloy according to claim 1, by the fact characterized that this Boron contains.
3. Alloy according to claim 2, by the fact characterized that the Borrowing Stop lies in the Alloy in the Range between 0,1 to 0.5 Atom %.
4. After Alloy or several of the claims 1 to 3, by the fact characterized that this Carbon contains.
5. Alloy according to claim 4, by the fact characterized that is appropriate for Carbon Content in the Range between 0,1 to 0.8 Atom %.
6. After Alloy or several of the claims 1 to 5, by the fact characterized that the Niobium Content lies in the Alloy in the Range between 4 to 10 Atom %.

Method for the treatment of metal materials
EP1214995

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- **US Patent Classification**
  PCLO=148639000 PCLX=148640000 PCLX=148643000 PCLX=148670000 PCLX=148671000
- **CPC Code**
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- **Priority Details**
  2000DE-1062310 2000-12-14
  2001DE-5011187 2001-11-23

- **Fampat family**

EP1214995	A2	2002-06-19	[EP1214995]
KR20020047012	A	2002-06-21	[KR20020047012]
DE10062310	A1	2002-07-18	[DE10062310]
JP2002241912	A	2002-08-28	[JP2002241912]
US2002157740	A1	2002-10-31	[US20020157740]
DE10062310	C2	2002-11-07	[DE10062310]
CN1380437	A	2002-11-20	[CN1380437]
EP1214995	A3	2003-08-06	[EP1214995]
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KR100505168	B1	2005-08-03	[KR100505168]
CN1237196	C	2006-01-18	[CN1237196C]
US7115177	B2	2006-10-03	[US7115177]
EP1214995	B1	2006-10-11	[EP1214995]
AT342142	T	2006-11-15	[ATE342142]
DE50111187	D1	2006-11-23	[DE50111187]
JP3859504	B2	2006-12-20	[JP3859504]
ES2269282	T3	2007-04-01	[ES2269282]

- **Abstract:**
  (EP1214995)
  Process for treating metallic materials, especially for consolidating the structure of metallic materials comprises producing a blank of the metallic materials, heating to a deformation temperature and deforming the blank. An Independent claim is also included for a blank made from titanium aluminide. Preferably deformation is exerted by producing torsion or compressing. Heating is carried out using electrical induction. Deformation is carried out at 1,000 degrees C.

Claims

(EP1214995)

1. Method of processing metallic materials that are difficult to form as a means of consolidating the structure of the metallic materials, comprising the method steps of producing a blank of metallic material, heating the blank to forming temperature and deforming the blank, deformation being effected in the form of a twisting motion and simultaneous compression.
2. Method as claimed in claim 1, characterised in that the compression is effected by subjecting the blank to a constant force.
3. Method as claimed in claim 1, characterised in that compression is effected by subjecting the blank to a constant deformation rate.
4. Method as claimed in one of claims 1 to 3, characterised in that heating is applied so that the blank as a whole is heated.
5. Method as claimed in one of claims 1 to 3, characterised in that heating is applied so that the area of the blank intended to be deformed is specifically heated.
6. Method as claimed in one of claims 1 to 5, characterised in that the blank is heated by means of electric induction.
7. Method as claimed in one of claims 1 to 6, characterised in that the blank is deformed at a temperature in the region of 1000 deg.C.
8. Method as claimed in one of claims 1 to 7, characterised in that processing is conducted under an inert gas atmosphere.