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Damage-tolerant grade titanium alloy plate

损伤容限型钛合金板材

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Damage-tolerant grade titanium alloy plate

1 Scope

This Standard specifies technical requirements, test methods, inspection rules and marks, packaging, transportation, storage, quality certificate and content of order sheet (or contract) for damage-tolerant grade titanium alloy plate.

This Standard is applicable to damage-tolerant grade titanium alloy plate produced by rolling method.

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

GB/T 228.1-2010, *Metallic materials - Tensile testing - Part 1: Method of test at room temperature*

GB/T 3620.1, *Designation and Composition of Titanium and Titanium Alloys*

GB/T 3620.2, *Designation and composition of titanium and titanium alloys*

GB/T 4161, *Metallic materials - Determination of plane-strain fracture toughness*

GB/T 4698 (all parts), *Sponge titanium, titanium and titanium alloys*

GB/T 5168, *Microstructure and macrostructure examination for titanium and titanium alloys*

GB/T 5193, *Method of ultrasonic inspection for wrought titanium and titanium alloy products*

GB/T 8180, *Wrought titanium and titanium alloy products packing marking transporting and storing*

GB/T 23603, *Test method of titanium and titanium alloy surface contamination layer*

GB/T 23605, *Determination of β transus temperature of titanium alloys*

3.11 β transition temperature

Plates shall provide β transition temperature according to the melting furnace number. The β transition temperature only provides the actual measured value, not as a basis for judgment.

3.12 Ultrasonic testing

Plates shall be ultrasonically tested. The inspection results shall meet the requirements of level A1 in GB/T 5193.

3.13 Surface quality

3.13.1 Plates shall be supplied with water milled, sandblasted or machined surfaces.

3.13.2 The surface of the plate shall be smooth and clean. Allow to remove local defects on the surface by grinding. However, the minimum allowable thickness of the plate shall be guaranteed after removal.

3.13.3 When removing local defects on the surface, grind along the rolling direction. After grinding, the plate shall be water-milled, sand-blasted or machined to make the surface gloss and roughness of the plate tend to be uniform.

4 Test methods

4.1 The chemical composition is inspected according to GB/T 4698 (all parts) or YS/T 1262. The arbitration analysis is carried out in accordance with GB/T 4698 (all parts).

4.2 The external dimensions and their allowable deviations are inspected with corresponding precision measuring tools. Thickness measurement shall be carried out within the range of 10mm~100mm from the edge of the plate.

4.3 The tensile properties are inspected according to GB/T 228.1-2010. Select the R4 sample in GB/T 228.1-2010.

4.4 Fracture toughness is inspected according to GB/T 4161. Choose compact tensile sample.

4.5 The microstructure is inspected according to GB/T 5168. The magnification is 500 times.

4.6 The macrostructure is inspected according to GB/T 5168.

4.7 Surface contamination shall be inspected according to GB/T 23603. The

The following marks (or labels) shall be made on the products that have passed the inspection:

- a) designation;
- b) specification;
- c) condition;
- d) batch number;
- e) reference to this Standard.

6.2 Packaging, marks, transportation and storage

Packaging, marks, transportation and storage of the product shall comply with the provisions of GB/T 8180.

6.3 Quality certificate

Each batch of products shall be accompanied by a quality certificate, indicating:

- a) supplier's name;
- b) product name;
- c) product designation, specification and condition;
- d) smelting furnace number, batch number, batch weight and number of sheets;
- e) various analysis and inspection results and mark of quality inspection department;
- f) reference to this Standard;
- g) packing date.

7 Order sheet (contract) content

The order sheet (or contract) for the products listed in this Standard shall include at least the following:

- a) product name;
- b) designation;
- c) specification;

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