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NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

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GB/T 3621-2007

Replacing GB/T 3621-1994

Titanium and titanium alloy plate and sheet

钛及钛合金板材

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Foreword

This Standard replaces GB/T 3621-1994 "Titanium and titanium alloy sheet and plate".

Compared with GB/T 3621-1994, the main changes are as follows:

- added 11 new alloy designations: TA8, TA8-1, TA9-1, TA11, TA15, TA17, TA18, TB5, TB6, TB8, TC4EL1 as well as their product size tolerance, mechanical properties, process performance;
- changed the thickness specification of the cold-rolled product from the original 0.3mm~4.0mm to 0.3mm~6.0mm; revised the thickness specification of the hot-rolled finished product to >4.75mm~60.0mm;
- revised the thickness specifications of pure titanium and TC4 finished products to 0.3mm~25mm and 0.8mm~25mm; revised the allowable deviation of the length of some specification plates;
- added roughness requirements for β alloy and near β alloy plates;
- used ST, STA to replace original C, CS as delivery status symbols, to be consistent with international representation;
- divided the thickness specification in the dimensional deviation into continuous type;
- changed the mechanical properties of the sheet at room temperature specify the residual elongation stress $\sigma_{r0.2}$ TO specify non-proportional extension strength $R_{P0.2}$;
- made major adjustments to the mechanical properties and process performance index of pure titanium plate and sheet; specified that the non-proportional extension strength adopts the ASTM B265-2006 index; the indexes of tensile strength and elongation after fracture are higher than ASTM B265-2006;
- added mechanical properties index (Class B) of TA10 plate and sheet for composite board;
- added stress relief state (m) for supply of finished titanium and titanium alloy plate and sheet;
- added plate and sheet with sanded surface.

This Standard was proposed by China Nonferrous Metals Industry Association.

Titanium and titanium alloy plate and sheet

1 Scope

This Standard specifies requirements, test methods, inspection rules and marks, packaging, transport, storage and contract content of titanium and titanium alloy plate and sheet.

This Standard is applicable to titanium and titanium alloy plate and sheet of various uses.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For dated references, the subsequent amendments (excluding corrigendum) or revisions do not apply to this Standard, however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable. For undated references, the latest edition of the referenced document applies.

GB/T 228, *Metallic materials - Tensile test method at room temperature*

GB/T 232, *Metallic materials - Bend test*

GB/T 2039, *Metallic materials - Creep and stress-rupture test in tension*

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

GB/T 3620.2, *Titanium and titanium alloys - permissible variations of chemical composition for wrought product analysis*

GB/T 4338, *Metallic materials - Tensile testing at elevated temperature*

GB/T 4698 (all parts), *Methods for chemical analysis of titanium sponge, titanium and titanium alloys*

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

3 Requirements

3.1 Product classification

unevenness of plate and sheet.

4.3 Inspection method for mechanical properties

4.3.1 The tensile test of plate and sheet at room temperature is carried out according to GB/T 228. For plate and sheet with a thickness not greater than 3.0mm, take P1 sample. For 3.0mm~6.0mm plate and sheet, take P7 sample. For plate and sheet with a thickness greater than 6.0mm~10.0mm, take R8 sample. For plate and sheet with a thickness greater than 10.0mm, take R7 sample.

4.3.2 The tensile test of plate and sheet at high temperature is carried out according to GB/T 4338.

4.3.3 The tensile durability test of plate and sheet at high temperature is carried out according to GB/T 2039.

4.4 Inspection method for bending performance

The bending test of plate and sheet is carried out according to GB/T 232. Use 15mm wide samples.

4.5 Appearance quality

Visually inspect the appearance quality of plate and sheet.

5 Inspection rules

5.1 Examination and acceptance

5.1.1 Plate and sheet shall be inspected by the supplier's quality inspection department to ensure that the product quality meets the requirements of this Standard (or contract) and fill in the quality certificate.

5.1.2 The purchaser shall inspect the received products in accordance with the provisions of this Standard (or contract). If the inspection result does not conform to the provisions of this Standard, it shall be submitted to the supplier within 3 months from the date of receipt of the product. The supplier and the purchaser shall negotiate and resolve it.

5.2 Batching

Plate and sheet shall be submitted for acceptance in batches. Each batch shall be composed of products of the same designation, melting furnace number, thickness specification, manufacturing method, status and heat treatment furnace.

6 Marks, packaging, transport and storage

6.1 Product marks

On the inspected plate and sheet, the following marks (or labels) shall be made:

- a) Designation;
- b) Specifications;
- c) Supply status;
- d) Batch number.

6.2 Packaging, transport and storage

Product's packaging, packaging marks, transport and storage shall comply with GB/T 8180.

6.3 Quality certificate

Each batch of plates and sheets shall be attached with quality certificate, indicating:

- a) Supplier's name;
- b) Product name;
- c) Product designation, specification and status;
- d) Smelting furnace number, batch number, batch weight and number of pieces;
- e) Specified analysis and inspection results and mark of quality inspection department;
- f) Reference to this Standard;
- g) Packaging date.

7 Order sheet (contract) content

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

- a) Product name;

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