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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 14845-2007

Replacing GB/T 14845-1993

Titanium sheet for plate heat exchangers

板式换热器用钛板

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Table of Contents

Foreword...	3
1 Scope...	4
2 Normative References...	4
3 Requirements...	5
4 Test Methods...	7
5 Inspection Rules...	8
6 Packaging, Marking, Transportation and Storage...	9

1 Scope

GB/T 14845-2007 is the Chinese national standard on titanium sheet for plate heat exchangers, in the field of metallurgy. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 30 April 2007 by the General Administration of Quality Supervision, Inspection and Quarantine of the People's Republic of China; Standardization Administration of China, and has been in force since 1 November 2007. Classification: ICS 77.150.50, CCS H64. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This Standard specifies the classification, requirements, test methods, inspection rules and markings, packaging, transportation, storage and contract content of titanium plates for plate heat exchangers. This Standard applies to the cold (warm) stamped titanium plate for heat transfer plate of plate heat exchanger.

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 Testing at Ambient Temperature

GB/T 232 Metallic Materials - Bend Test

GB/T 3620.2 Titanium and Titanium Alloys - Permissible Variations of Chemical Composition for Wrought Product Analysis

GB/T 4156 Metals - Cupping Testing Method (Thickness 0.2~2mm)

GB/T 4698 (all parts) Methods for Chemical Analysis of Titanium Sponge, Titanium and Titanium Alloys

GB/T 6394 Metal - Methods for Estimating the Average Grain Size

GB/T 8180 Wrought Titanium and Titanium Alloy Products Packing Marking Transporting and Storing metallic or non-metallic inclusions, etc.

3.6.3 The surface of the plate is allowed to exist the local defects not exceeding half thickness tolerance such as scratches, pocked spots, indentation, pits, etc.; but the minimum thickness shall be guaranteed.

3.6.4 The scrapper or #120 multi-leaf grinding wheel to remove the local defects along the rolling direction; and polish the treatment place. The thickness of the plate after treatment shall be no less than the minimum allowable thickness.

3.6.5 When there are special requirements on the surface quality, it shall be indicated on the contract and through the negotiation between the supplier and the purchaser.

4 Test Methods

4.1 Arbitration analysis method of chemical compositions The arbitration analysis for the chemical compositions of the product shall be carried out as per the provisions of GB/T 4698.

4.2 Test method of mechanical properties The tensile test at ambient temperature shall be carried out as per the provisions of GB/T 228. The specimen of the tensile test shall comply with the provisions on size of P1 specimen.

4.3 Test method of process performance The bending test shall be carried out as per the provisions of GB/T 232 (using the 15mm-wide specimen; and the bending diameter shall be three times of the plate thickness). The cupping test shall be carried out as per the provisions of GB/T 4156 (the punching diameter shall be 20mm).

4.4 Measurement method of unevenness The unevenness of the plate is determined by the maximum trough between the plate surface on the inspection platform and a ruler placed in any direction of the plate. Its value is calculated according to Formula (1). Where. L - the distance between the two contact points between the plate surface and the ruler, in mm; Unevenness H - The maximum vertical distance with L corresponding plate surface and ruler, in mm.

4.5 Measurement method of size The size of the plate is measured with a measuring tool of corresponding precision. The thickness of the plate is measured at a place no less than 100 mm from the top corner and no less than 10 mm from the edge.

4.6 Determination method of the grain size The determination of the grain size shall be carried out as per the provisions of GB/T 6394.

4.7 Inspection method of the appearance quality The appearance quality of the plate shall be visually inspected.

5.1 Inspection and acceptance

5.1.1 The plates shall be inspected by the quality inspection department of the supplier to ensure that the product quality conforms to the provisions of this Standard; and a quality certificate shall be filled in.

5.1.2 The purchaser shall inspect the received products according to the provisions of this Standard. If the inspection result is inconsistent with the provisions of this Standard and the order contract, it shall be submitted to the supplier in written; and the supplier and the purchaser shall negotiate to resolve it. Objections belonging to surface quality and dimensional deviation shall be raised within one month from the date of receipt of the product; and objections belonging to other properties shall be raised within three months from the date of receipt of the product. If arbitration is required, both the supplier and the purchaser shall jointly conduct arbitration sampling.

5.2 Batching Plates shall be submitted for inspection in batches. Each batch shall consist of products of the same designation, melting furnace number, specification, manufacturing method, state and the same heat treatment furnace number.

5.3 Inspection items Each batch of plates shall be inspected for chemical compositions, dimensional deviation, mechanical properties, process performances, grain size and appearance quality.