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**Superelastic titanium-nickel shape memory alloy bar
and wire**

超弹性钛镍形状记忆合金棒材和丝材

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Superelastic titanium-nickel shape memory alloy bar and wire

1 Scope

This document specifies the technical requirements, test methods, inspection rules, marking, packing, transporting, storing, accompanying documents and order form content for superelastic titanium-nickel shape memory alloy bar and wire.

This document is applicable to round and rectangular superelastic titanium-nickel shape memory alloy bar and wire used for making spectacle frames, orthopedic wires, guide wires, communication antennas, and for construction industry and power industry, etc.

2 Normative references

The contents of the following documents, through normative references in this text, constitute indispensable provisions of this document. Among them, for dated references, only the edition corresponding to that date applies to this document. For undated references, the latest edition (including all amendments) applies to this document.

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

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

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

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

GB/T 6394-2017 Determination of estimating the average grain size of metal

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

GB/T 23614.1 Methods for chemical analysis of titanium nickel shape memory alloy - Part 1: Determination of nickel content - Dimethylglyoxime

5.6 The appearance quality shall be inspected visually. When necessary, use a magnifying glass of not less than 10 times to inspect.

5.7 The superelasticity shall be inspected in accordance with the provisions of Appendix A.

6 Inspection rules

6.1 Inspection and acceptance

6.1.1 The product shall be inspected by the supplier, to ensure that the product meets the requirements of this document and the order form. And it shall fill in the accompanying documents.

6.1.2 The purchaser shall inspect and accept the received products in accordance with the provisions of this document and the order form. If the inspection result does not conform to the provisions of this document and the order form, 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.

6.2 Lot grouping

Products shall be submitted for acceptance in lots. Each lot shall consist of products of the same designation, heat number, specifications, manufacturing method, and supply state.

6.3 Inspection items

Each lot of products shall be inspected for chemical composition, dimensions and shape, mechanical properties, macrostructure, superelasticity, and appearance quality. If required in the order form, inspect the grain size and microstructure.

6.4 Sampling

The inspection items and sampling of the product shall meet the requirements of Table 7.

6.5.4 When the macrostructure inspection is nonconformity, the supplier is allowed to inspect stick by stick (roll by roll/coil by coil), remove the defects, and deliver the conformity ones.

6.5.5 When the average grain size or microstructure inspection is nonconformity, the supplier is allowed to inspect the rest stick by stick (roll by roll/coil by coil). And the conformity ones will be delivered.

7 Marking, packing, transporting, storing, and accompanying documents

7.1 Product marking

Labels or plates shall be affixed to the products that have passed the inspection. The following marks shall be indicated on them:

- a) Product designation;
- b) Lot number and supply state;
- c) Product specifications;
- d) Quantity and weight.

7.2 Packing, transporting, storing

The packing, transporting and storing of the product shall meet the requirements of GB/T 8180.

7.3 Accompanying documents

Each lot of products shall be accompanied by accompanying documents, which shall include supplier information, product information, number of this document, date of exit-factory or packing; and should also include:

- a) Product quality assurance:
 - Main performance and technical parameters of the product;
 - Product characteristics (including the characteristics of manufacturing process and raw materials);
 - Responsibility for product quality;
 - Quality certification obtained by the product and the results of various analyses and inspections with the inspection seal of the technical

supervision department of the supplier.

b) Product conformity certificate:

- Inspection items and their results or inspection conclusions;
- Lot size or lot number;
- Inspection date;
- Inspector's signature or seal.

c) Inspection report and finished product inspection report during product quality control.

d) Product use instructions: Correct handling, use, storage methods, etc.

e) Other.

8 Order form content

The order form for the products listed in this document shall include the following content:

- a) Product name;
- b) Designation and supply state;
- c) Product specifications;
- d) Quantity or weight;
- e) Other requirements;
- f) Number of this document.

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