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NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA

ICS 77.160;25.030

H 71

GB/T 38974-2020

**Niobium and niobium alloy powder for additive
manufacturing**

增材制造用铌及铌合金粉

Issued on: July 21, 2020

Implemented on: June 01, 2021

**Issued by: State Administration for Market Regulation;
Standardization Administration of the People's Republic of China.**

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Niobium and niobium alloy powder for additive manufacturing

1 Scope

This Standard specifies the technical requirements, test methods, inspection rules, marking, packaging, transportation, storage and quality certificates, and order (or contract) contents of niobium and niobium alloy powder for additive manufacturing.

This Standard applies to niobium and niobium alloy powder for additive manufacturing prepared by processes such as plasma rotating electrode method, plasma atomization method, and plasma spheroidization 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 1479 (all parts), Metallic powders - Determination of apparent density

GB/T 1480, Metallic powders - Determination of particle size by dry sieving

GB/T 1482, Metallic powders - Determination of flow time by means of a calibrated funnel (Hall flowmeter)

GB/T 5162, Metallic powders - Determination of tap density

GB/T 5314, Powders for powder metallurgical purposes - Sampling

GB/T 15076 (all parts), Methods for chemical analysis of tantalum and niobium

GB/T 19077, Particle size analysis. Laser diffraction methods

YS/T 1297, Measuring method for sphericity ratio of titanium and titanium alloy powders

3 Technical requirements

3.1 Chemical composition

5.4.2 If the product fails the appearance quality inspection, the bottle/bag shall be judged as unqualified.

6 Marking, packaging, transportation, storage and quality certificate

6.1 Marking

The product packaging bottle/bag shall be marked (or labeled) as follows:

- a) Name of the supplier;
- b) Product name:
- c) Designation and category;
- d) Production batch number;
- e) Particle size range;
- f) Net weight and gross weight;
- g) Packaging date;
- h) Code of this Standard;
- i) Signs such as “Flammable”, “Fireproof”, “Moisture-proof”, “Upward”, and “No Tumbling”.

6.2 Packaging

The product shall be packaged in clean metal bottles, plastic barrels or iron barrels, and shall be protected by inert gas or vacuum packed, or vacuum sealed in thick plastic bags. The environment shall be strictly controlled during the packaging process to avoid pollution. The product can be packaged in four specifications of mass: 1 kg, 2 kg, 5 kg and 10 kg, and can also be packaged as required by the buyer. The packaging container shall be ensured of its integrity during transportation, and shall not be damaged, damp, or expose the product to foreign contaminants.

6.3 Transportation

The product shall be transported in a covered environment. It shall be protected from rain and moisture during transportation. Severe collision and mechanical extrusion are strictly prohibited. It shall be loaded and unloaded gently during handling, and shall not be inverted. It is strictly prohibited to approach fire and ignition sources.

6.4 Storage

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