



## **National Standard of People's Republic of China**

### **GB\_T 3457-2013**

### **Violet Tungsten Oxide**

#### 1. Range

Violet tungsten oxide national standard stipulates the requirement, test method, detection rule, sign, packing, transportation, storage, quality certificate and contract (or order) content.

This standard is applied for yellow tungsten oxide, blue tungsten oxide and violet tungsten oxide.

#### 2. Normative reference

The following documents are essential for the application of this document. Note dated reference documents, only note the date of the version is applicable to this document. Any reference to the date of the document, its latest version (including the amendment used alone) is applicable to the document.

GB/T 1479.1 Determination of bulk density of metal powders - part first: Funnel method

GB/T 3249 method for the determination of metallic and its compound powder granularity Fernandez

GB/T 4324 (all parts) tungsten chemical analysis method

GB/T 5314 Method of sampling for powder metallurgy

#### 3. Requirement

##### 3.1 Product classification

According to different producing method, tungsten oxide can be sorted into two grades: WO<sub>x</sub>-0 and WO<sub>x</sub>-1.

##### 3.2 Chemical component:

##### 3.3 Phase composition

In the phase composition of violet tungsten oxide, WO<sub>3</sub> is less than 5%.

##### 3.4 Particle size

The product of Fisher particle size can be negotiated by both parties. The products shall by 180μ m (80 mesh sieve).

##### 3.5 Apparent density

The product of apparent density can be negotiated by both parties.

##### 3.6 Appearance quality

The product is blue powder. Under visual contact there is no inclusion or agglomeration.



|                         |                        |      |
|-------------------------|------------------------|------|
| Grade                   |                        | A1   |
| W18O49 Content (%min)   |                        | 95.0 |
| WO3 Content (%max)      |                        | 5    |
| Impurities<br>(PPM,max) | Element                | Max  |
|                         | Sn                     | 0.5  |
|                         | S                      | 5    |
|                         | Cu                     | 1    |
|                         | Mo                     | 10   |
|                         | Bi                     | 0.5  |
|                         | As                     | 5    |
|                         | P                      | 5    |
|                         | Si                     | 5    |
|                         | Ca                     | 5    |
|                         | Mn                     | 1    |
|                         | Pb                     | 0.5  |
|                         | Fe                     | 5    |
|                         | Ti                     | 2    |
|                         | Mg                     | 2    |
|                         | Na                     | 4    |
|                         | K                      | 6    |
|                         | Cr                     | 2    |
|                         | V                      | 2    |
|                         | Co                     | 2    |
|                         | Ni                     | 2    |
| Al                      | 2                      |      |
| Cd                      | 0.5                    |      |
| Sb                      | 1                      |      |
| Scott Density           | 1.75g/ cm <sup>3</sup> |      |
| F.S.S.S.                | 10-18μm                |      |

#### 4. Test method

- 4.1 Chemical component test is processed under provision GB/T 4324.
- 4.2 The analysis method of the phase composition of blue tungsten and tungsten is negotiated by both sides of supply and demand.
- 4.3 Particle size is processed under provision GB/T 3249.
- 4.4 Apparent density is processed under provision GB/T 1479.1.
- 4.5 Appearance quality is tested by visual contact.

#### 5. Detection rule

##### 5.1 Inspection and acceptance

- 5.1.1 Product is checked by supplier to ensure the product is up to the standard, the product quality certificate is required.
- 5.1.2 After received the product, demander check the product according to the national standard. If the test result is not match to the stipulation, demander should inform the supplier within 30 days from the date of receive. If arbitration is involved, the sampling is provided by demander and arbitration is executed by both parties.



5.2 Order grouping product should be examined in group, the weight is negotiated by both parties.

5.3 Inspection item Inspection items are listed as below:

5.4 Testing result

5.4.1 If one of the follows such as chemical component, water insoluble matter, PH value is unqualified, then check this item repeated, if the repeated trial is still unqualified, then the product is below the standard.

5.4.2 If the appearance quality is below the standard, then the barrel is unqualified.

6. Sign, packing, transportation, storage and quality certificate.

6.1 Sign

There should be signs on the package include suppliers' name, product name, grade, batch number, net weight, also letters like 'keep away from moisture', etc.

6.2 Packing

Product is sealed by the packing of the packing material, which is lined with polyethylene plastic bag.

6.3 Transportation

Product transport should prevent wet, and not upside down and violent collision.

6.4 Storage

Products should be stored in a dry and non corrosive atmosphere.

6.5 Quality certificate

Quality certificate should be included in every batch of product. It should include:

- 1) Supplier name, address, postcode;
- 2) Product name, grade;
- 3) Batch number;
  
- 4) Weight (net weight and gross weight);
- 5) Standard number GB/T 3457-2013;
- 6) Test result and seal of quality inspection department;
- 7) Inspector ID;
- 8) Inspecting date.

7. Contract (or order) content.

Contract (or order) content includes

- 1) Product name;
- 2) Grade;
- 3) Weight;
- 4) Standard number GB/T 3457-2013.