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

GB/T 3459-2022

Tungsten bars

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Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and Definitions
- 4 Categories

Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for Standardization Work Part

1. Structure and Drafting Rules for Standardization Documents" drafting. This document replaces GB/T 3459-2006 "Tungsten Bar". Compared with GB/T 3459-2006, except for structural adjustment and editorial changes, the main technical changes are as follows:

- a) TW-0 designation and requirements are added (see Chapter 4 and Chapter 5);
- b) Changed the main purpose of TW-1 (see 4.1, 3.1.1 of the 2006 edition);
- c) The chemical composition increases the Cr content and S content requirements (see 5.1);
- d) Changed the content requirements of impurity elements such as Fe, Ni, Mo, C and O (see 5.1, 3.2 of the 2006 edition);
- e) Changed the size range of tungsten square bar and tungsten round bar (see 5.3, 3.4 of the 2006 edition);
- f) Changed the appearance quality requirements (see 5.4.1, 3.5.1 of the 2006 edition);
- g) Added the normative reference document YS/T 559 (see 6.1);
- h) Changed the sampling position (see 7.3,

1 Scope

China's national standard for tungsten bar. It specifies the classification, the technical requirements, the test methods, the inspection rules, the marking, packaging, transport and

storage, the accompanying documents and the order content, and it applies to pure tungsten bar produced by powder metallurgy. Tungsten cannot be cast into a usable bar. It melts at 3422 degrees C, higher than any other metal, which is exactly the property that makes it wanted and also means no crucible will hold it molten. So a tungsten bar is made by pressing the powder into a compact and sintering it, often by passing a current through the compact itself to heat it close to its melting point. What comes out is dense but coarse-grained and brittle; it becomes workable only after hot swaging or rolling breaks the structure down. That processing history is why the bar is a standardised product in its own right rather than a stage nobody sees: it is the feedstock from which wire, electrodes, targets and heating elements are made, and its density, grain structure and purity are set here.

This document specifies the classification, technical requirements, test methods, inspection rules, signs, packaging, transportation, storage, accompanying documents and ordering of tungsten bars. single content. This document applies to pure tungsten rods produced by powder metallurgy.

2 Normative references

The contents of the following documents constitute the essential provisions of this document through normative references in the text. Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document.

GB/T 3850 Density Determination Method for Dense Sintered Metal Materials and Cemented Carbide

GB/T 4324 (all parts) Methods for chemical analysis of tungsten

GB/T 6394-2017 Determination method for average grain size of metals YS/T 559 Emission spectrum analysis method of tungsten

3 Terms and Definitions

This document does not have terms and definitions that need to be defined.

4 Categories

4.1 Tungsten bars are divided into four grades. TW-0, TW-1, TW-2, and TW-4 according to different chemical compositions and uses. TW-0 is mainly used for high temperature alloy Additives such as gold and high-entropy alloys; TW-1 is mainly used as additives for high-temperature alloys; TW-2 is mainly used as raw materials for processing materials; TW-4 is mainly used As an alloy additive.

4.2 Tungsten bars are divided into tungsten square bars and tungsten round bars according to different shapes. See Example 1 for the representation of tungsten square bars, and see Example 1 for the representation of tungsten round bars Example 2. Example 1. product. TW-1 tungsten square bar with a width of 12mm, a height of 12mm, and a length of 300mm. mark. TW-112x12x300 Example 2. product. TW-1 tungsten round bar with a diameter of 16mm and a length of 300mm. mark. TW-1phi16x300

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