

ICS 77.040.01
CCS H22



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

GB/T 23604-2024

**Method of sampling for mechanical properties testing of
titanium and titanium alloy products**

钛及钛合金产品力学性能试验取样方法

Issued on: September 29, 2024

Implemented on: April 1, 2025

**Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC**

Table of Contents

- 1 Scope
- 2 Normative references
- 3 Terms and definitions
- 4 General requirements
- 4.1 Representative samples

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 23604-2009 "Methods for sampling for mechanical properties test of titanium and titanium alloy products". Compared with 2009, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) The scope of application has been changed (see Chapter 1, Chapter 1 of the 2009 edition);
- b) Added some "Terms and Definitions" (see Chapter 3);
- c) The general requirements for sampling have been changed (see 4.1, Chapter 5 of the 2009 edition);
- d) The identification of sampled products, test materials, samples and specimens has been changed (see 4.3, 5.3 of the 2009 edition);
- e) The requirements for sampling from original products have been changed (see 5.1.2, 4.1.2 of the 2009 edition);
- f) "State of the test material" (Chapter 6 of the 2009 edition) was deleted;
- g) The requirements for specimen preparation have been changed (see Chapter 6, Chapter 7 of the 2009 edition);
- h) The requirements for sampling locations for mechanical property tests of titanium and titanium alloy products have been changed (see Appendix A, Appendix A of the 2009 edition);
- i) Added sampling requirements for profiles (see A.5);

j) The requirements for the selection of sample blank machining allowance have been changed (see Appendix B, Appendix B of the 2009 edition);

1 Scope

GB/T 23604-2024 specifies how specimens are taken from titanium and titanium alloy products for mechanical testing. Sampling is where a titanium acceptance test is won or lost, because the alloys are strongly textured by working: a specimen cut longitudinally from a rolled plate and one cut transversely give different strengths and very different ductilities from the same plate, and a specimen taken from the surface differs from one taken at mid-thickness. Titanium is bought for aerospace and medical applications where those differences are not academic. The standard sets, for each product form, plate and sheet, bar and billet, tube, wire, forgings and castings, the location and orientation from which the specimens are taken, the number required, the identification and marking, the removal method and the restrictions on heating and cold work during it, the machining of the specimens and the retention of the material. It takes effect on 1 April 2025.

This document describes the mechanical properties tests of titanium and titanium alloy bars, wires, tubes, plates, strips, foils, cakes, rings, profiles, etc. Sampling method. This document applies to sampling and specimen preparation for mechanical property testing of titanium and titanium alloy processed products.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date, only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies to This document.

GB/T 34647 Titanium and titanium alloy product status codes

3 Terms and definitions

The terms and definitions defined in GB/T 34647 and the following apply to this document.

3.1 Sample product sample product Part of the product is taken out from the test unit during inspection and test.

Note. The test unit is the number of pieces or tons of products that are accepted or rejected based on the results of product sampling tests according to the requirements of product standards or purchase orders.

3.2 Test portion A sufficient quantity of material cut from the sampled product to prepare one or more test specimens.

3.3 rough specimen In order to prepare the sample, a part of the sample is cut by machining for preparing the sample.

3.4 Test piece Part of the test material or sample with or without machining, which has the qualified dimensions and meets the test requirements.

4.1 Representative samples

4.1.1 The samples, specimens and test pieces selected in accordance with Appendix A should be representative of the product.

4.1.2 Usually, two samples are taken for the same test item of the same batch of products. The two samples should be taken from different sampled products. When the sampling positions are the same, samples can be taken at adjacent locations of the specified positions.

4.1.3 The sampling direction shall comply with the requirements of the product standard or order.