



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

GB/T 17593.2-2025

Replacing GB/T 17593.2-2007

**Textile - Determination of Heavy Metals - Part 2: Inductively
Coupled Plasma-optical Emission Spectrometry (ICP-OES) and
Inductively Coupled Plasma-mass Spectrometry (ICP-MS)**

纺织品 重金属的测定 第2部分: 电感耦合等离子体发射光谱法和
电感耦合等离子体质谱法

Issued on: October 31, 2025

Implemented on: November 1, 2027

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

Table of Contents

Foreword

Introduction

1 Scope

2 Normative References

3 Terms and Definitions

4 Principle

5 Reagents and Materials

6 Instruments and Equipment

7 Test Procedures

8 Result Expression

9 Limit of Quantitation and Precision

10 Test Report

Appendix A Reference Conditions for ICP-OES Instrument Operation

Appendix B Reference Conditions for ICP-MS Instrument Operation

Appendix C Limit of Quantitation

Foreword

This document was drafted in accordance with the rules provided in GB/T 1.1-2020 Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents.

This document is Part 2 of GB/T 17593 Textile - Determination of Heavy Metals. GB/T 17593 has issued the following parts:

and Inductively Coupled Plasma-mass Spectrometry (ICP-MS);

---Part 3: Chromium (VI) - Spectrophotometry;

---Part 4: Arsenic and Mercury - Atomic Fluorescence Spectrophotometry.

This document serves as a replacement for GB/T 17593.2-2007 Textiles - Determination of Heavy Metals - Part 2: Inductively Coupled Plasma Atomic Emission Spectrometry. In comparison with GB/T 17593.2-2007, apart from structural adjustments and editorial modifications, the main technical changes are as follows:

---The scope of application is modified (see Chapter 1; Chapter 1 of Version 2007);

---The test principle of inductively coupled plasma-mass spectrometer is added (see Chapter 4);

---Reagents and materials are added, including three types of concentrated nitric acid and nitric acid solution reagents, internal standard stock solution, and gold element solution (see 5.2 ~ 5.4, 5.7 and 5.8);

---Instruments and equipment are added, including aqueous filter membrane, detection instruments, balance and pipette (see 5.9, 6.2, 6.3 and 6.6);

---The preparation of the mixed internal standard working solution is added to the test procedures (see 7.1.2);

---“ICP-AES method” is modified into “ICP-OES method”, “low limit of determination” is modified into “limit of quantitation”, and the quantitation limit values for each element are modified (see 9.1 and Appendix C; Table 1 of 8.1 in Version 2007);

---The quantitation limit of ICP-MS method is added (see 9.1 and Appendix C);

---The instrument detection method is added to the test report [see c) of Chapter 10].

Please be noted that certain content of this document may involve patents. The issuing institution of this document does not undertake the responsibility of identifying these patents. This document was proposed by China National Textile and Apparel Council.

This document shall be under the jurisdiction of National Technical Committee 209 on Textiles of Standardization Administration of China (SAC/TC 209).

The drafting organizations of this document: Nanjing Customs Industrial Product Testing

Center; TOREAD Holding Group Co., Ltd.; Zhejiang Ganglong Textile Technology Co., Ltd.; Shaoxing Jinxianghui Textile Printing and Dyeing Co., Ltd.; Guangdong Testing Institute of Product Quality Supervision; GIGE Holdings Group Co., Ltd.; China TESTA Textile Testing & Certification Services; Ningbo Party More Fun Cultural Creativity Co., Ltd.; China National Garment Association; China TESTA (Fujian) Textile Testing Co., Ltd.

The main drafters of this document: Zhou Jia, Du Qianqian, Hu Minzhuan, Ding Youchao, Zhang Guoqing, Sui Jiaojiao, Ma Linyu, Gong Yingqiu, Zhang Ruijie, Lou Danli, Du Chao, Xie Guoliang, Qian Lijun.

Introduction

GB/T 17593 Textile - Determination of Heavy Metals is a standard of test methods for testing the heavy metal contents in textiles using different methods, and it is proposed to consist of the following parts.

---Part 1: Atomic Absorption Spectrophotometry. The purpose is to determine the heavy metal contents in textiles using atomic absorption spectrophotometry.

and Inductively Coupled Plasma-mass Spectrometry (ICP-MS). The purpose is to determine the heavy metal contents in textiles using inductively coupled plasma-optical emission spectrometry and inductively coupled plasma-mass spectrometry.

---Part 3: Chromium (VI) - Spectrophotometry. The purpose is to determine the content of hexavalent chromium, a heavy metal, in textiles using spectrophotometry.

purpose is to determine the content of heavy metals arsenic and mercury in textiles using atomic fluorescence spectrophotometry.

1 Scope

This document describes the methods for determining 12 extractable heavy metals--lead (Pb), copper (Cu), zinc (Zn), arsenic (As), cadmium (Cd), chromium (Cr), cobalt (Co), nickel (Ni), mercury (Hg), antimony (Sb), selenium (Se), and barium (Ba) in textiles using inductively coupled plasma-optical emission spectrometry (ICP-OES) and inductively coupled plasamass spectrometry (ICP-MS).

This document applies to all types of textile products.

2 Normative References

The contents of the following documents constitute indispensable clauses of this document through the normative references in the text. In terms of references with a specified date, only versions with a specified date are applicable to this document. In terms of references without a specified date, the latest version (including all the modifications) is applicable to