

ICS 85.040; 85.060
CCS Y 30



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

GB/T 22904-2023

Replacing GB/T 22904-2008

**Paper, board and pulp - Determination of total chlorine and
organically bound chlorine**

Issued on: September 7, 2023

Implemented on: April 1, 2024

**Issued by: State Administration for Market Regulation, China National
Standardization Administration**

Table of Contents

Foreword

1 Scope

2 Normative reference documents

3 Terms and definitions

4 Microcoulomb method

4.1 Principle

Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1. Structure and Drafting Rules of Standardization Documents"

Drafting.

This document replaces GB/T 22904-2008 "Determination of total chlorine and organochlorine in pulp, paper and paperboard" and is consistent with GB/T 22904-2008

In comparison, in addition to structural adjustments and editorial changes, the main technical changes are as follows.

- a) A balance is added to the instrument and equipment (see 4.3.8);
- b) Added combustion flask-ion chromatography method (see Chapter 5);
- c) Change Appendix A to text terms (see 4.10, Appendix A of the 2008 version).

This document has been modified to adopt ISO 11480.2017 "Determination of total chlorine and organochlorine in pulp, paper and paperboard".

Compared with ISO 11480.2017, this document has many structural adjustments.

Comparison list of structure number changes between the two files

See Appendix A.

The technical differences between this document and ISO 11480.2017 and their reasons are as follows.

- a) Replaced ISO 287 and ISO 638 (see 4.4.2 and 5.4.2) with normatively cited GB/T 462 to adapt to our country's technology

condition;

- b) Added normative reference documents GB/T 450, GB/T 740 and GB/T 6682 (see 4.2,

4.4.2, 5.2 and 5.4.2) to suit

In response to my country's technical conditions;

- c) A balance has been added to the instrument and equipment (see 4.3.8 and 5.3.7) to accurately complete the test;
- d) Added the statement about the use of activated carbon in the extraction process (see 4.2.5, 4.5.1, 5.2.5 and 5.5.1) to improve the accuracy of the test;
- e) Added chloride standard intermediate solution and chloride standard working solution (see 5.2.9 and 5.2.10) to enable the test to proceed smoothly;
- f) The calculation formula has been changed (see 5.9.1). Domestic ion chromatographs have data processing workstations that can directly process data into concentrations.

Adapt to my country's technical conditions.

The following editorial changes have been made to this document.

- a) The name of the standard is changed to "Determination of total chlorine and organochlorine in paper, cardboard and pulp";
- b) Delete the informative Appendix A, Appendix B and Appendix C in ISO 11480.2017;
- c) Added Note 2 in 4.6.2;
- d) Added informative appendix A.

Please note that some content in this document may be subject to patents. The publisher of this document assumes no responsibility for identifying patents.

1 Scope

This document describes methods for the determination of total and organochlorine in paper, board and pulp by microcoulometric and combustion flask-ion chromatography methods.

This document applies to all types of paper, board and pulp.

The detection limit of the method specified in this document is 20mg/kg.

2 Normative reference documents

The contents of the following documents constitute essential provisions of this document through normative references in the text. Among them, the dated quotations

For undated referenced documents, only the version corresponding to that date applies to this document; for undated referenced documents, the latest version (including all amendments) applies to

this document.

GB/T 450 Collection of paper and cardboard samples and determination of longitudinal, transverse, front and back sides of the sample (GB/T 450-2008, ISO 186.

2002,MOD)

GB/T 462 Determination of moisture content of paper, cardboard and pulp analysis samples (GB/T 462-2023, ISO 287.2017, ISO 638-1.

2022,ISO 638-2.2022,MOD)

GB/T 740 Collection of pulp samples (GB/T 740-2003, ISO 7213.1981, IDT)

GB/T 6682 Analytical laboratory water specifications and test methods (GB/T 6682-2008, ISO 3696.1987, MOD)

3 Terms and definitions

The following terms and definitions apply to this document.

3.1

totalchlorine

Total amount of chlorine in paper, board and pulp.

3.2

Total amount of organically bound chlorine in paper, board and pulp.

4.1 Principle

The sample is placed in a quartz tube and burned in a high-temperature furnace with controlled temperature. The hydrogen chloride gas produced by the combustion enters the electrolyte and is absorbed.

Collect and measure the chlorine content in the electrolyte using a microcoulometer. Before burning, use dilute HNO₃ solution to separate the inorganic chlorides in the sample.

Determination of organochlorine content.

Note 1.If there is no need to detect organic chlorine, the nitric acid separation step can be omitted.

Note 2.The presence of bromine will interfere with the determination and cause positive errors (see 4.10).