

ICS 85.010
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**NATIONAL STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

GB/T 22877-2023

Replacing GB/T 22877-2008

**Paper, board, pulps and cellulose nanomaterials -
Determination of residue (ash content) on ignition at 525 °C
(English Translation)**

Issued on: December 28, 2023

Implemented on: July 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

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 22877-2008 "Determination of ignition residue (ash) of paper, cardboard and pulp (525 °C)" and is consistent with Compared with GB/T 22877-2008, in addition to structural adjustments and editorial changes, the main technical changes are as follows:

- a) Changed the scope (see Chapter 1, Chapter 1 of the:2008 edition);
- b) Added terms and definitions for nanoscale, nanoobjects, cellulose nanoobjects and cellulose nanomaterials (see 3.1, 3:2, 3:3 and 3:4), changed the terms and definitions of ignition residue (ash) (see 3.5, 3:1 of the:2008 version);
- c) Added an explanation of the principles in Chapter 4 and a description of the specific composition of the residue (see Chapter 4);
- d) The electric furnace was deleted (see 5.2 of the:2008 edition) and a dryer was added (see 5.4);
- e) Added sampling and burning methods for cellulose nanomaterials (see 6.3 and 7:3:3);
- f) Added parallel test requirements and suggestions on sample handling methods (see 7.1);
- g) Changed the ignition time of cardboard and pulp samples (see 7.3:2, 7:3:3 of the:2008 edition);
- h) The sample carbonization process is deleted (see 7.3:3 of the:2008 edition);
- i) The result expression has been changed, and the measurement results are reported based on the ignition residue (ash content) of the sample (see Chapter 8,:2008 Chapter 8 of the annual edition):

This document is modified to adopt ISO 1762:2019 "Determination of ignition residue (ash) of paper, cardboard, pulp and cellulose nanomaterials" (525°C)":

The technical differences between this document and ISO 1762:2019 and their reasons are as follows:

- a) The scope has been changed to comply with the requirements for compiling standard documents in my country (see Chapter 1);
- b) ISO 186 (see 6.2:1) was replaced with normatively cited GB/T 450 to adapt to my country's technical conditions;
- c) Replaced ISO 287, ISO 638-1 and ISO 638-2 (see 7.2) with normatively quoted GB/T 462 to adapt to our country's technology condition;
- d) Replaced ISO 7213 (see 6.2:1) with normatively cited GB/T 740 to adapt to my country's technical conditions;
- e) The cooling steps after crucible burning have been changed (see 7.3:1:1, 7:4) to adapt to the actual operating conditions of domestic laboratories:

The following editorial changes have been made to this document:

---The sampling of cellulose nanomaterials in international standards has been changed, and the preparation methods and methods of cellulose nanofibers and cellulose nanocrystals have been changed:

The influencing factors were changed to Note:

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 a method for the determination of the ignition residue (ash) of paper, cardboard, pulp and cellulose nanomaterials at 525°C:

This document is applicable to a variety of paper, board, pulp and cellulose nanomaterials:

Note 1: In this document, the term "cellulose nanomaterials" refers specifically to cellulose nanoobjects (see 3.2~3:4): Cellulose nanoobjects due to their nanoscale Degree, having inherent properties, characteristics or functions that are different from paper, cardboard and pulp:

Note 2: For the determination method of the ignition residue (ash content) of papermaking raw materials, pulp, paper and cardboard at 900°C, see GB/T 742:

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)

3 Terms and definitions

The following terms and definitions apply to this document:

nanoscale

In the size range between 1nm and 100nm:

Note: This size range generally, but not exclusively, exhibits characteristics that cannot be extrapolated from larger sizes:

[Source: GB/T 30544.1-2014,2:1] 3.2 nano-object Objects with one, two or three external dimensions at the nanometer scale (3:1):

Note: The second and third dimensions are perpendicular to the first dimension and to each other:

[Source: GB/T 30544.1-2014,2:5]