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

GB/T 24997-2010

**Paper, board and pulps -- Determination of cadmium content --
Atomic absorption spectrometric method**

纸、纸板和纸浆 镉含量的测定 原子吸收光谱法

(English Translation)

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Foreword

This revised standard adopts ISO 10775:1995 "Atomic paper, paperboard and pulp cadmium content absorption spectrometry" (in English).

This standard and ISO 10775:1995 The main differences are as follows.

- Increasing the measurement principle by Flame Atomic Absorption (see Chapter 3);
- Adjust the concentration of cadmium standard solution (see Chapter 4);
- According to the domestic instrument, the adjustment means high pressure digestion and microwave digestion tank technical parameters (see Chapter 5);
- According to the domestic instrument, the adjustment process of the high pressure digestion and microwave digestion process technical parameters, including the amount of sample heating Temperature, time, etc. (see Chapter 7);
- Increased flame atomic absorption determination of Cd, and increases the calculation formula (see Chapter 8);
- Increased quality assurance and control chapter (see Chapter 9);
- Increasing the variety of models of microwave digestion instrument setting parameters (see Appendix A).

This standard and ISO 10775:1995 technical differences are listed in Appendix C.

This standard and ISO 10775:1995 structure comparison are listed in Appendix B.

This standard Annex A, Annex B and Annex C is informative appendix.

The standard proposed by China National Light Industry Council.

The standard paper by the National Standardization Technical Committee (SAC/TC141) centralized.

This standard was drafted. Shenzhen Inspection and Quarantine Science Research Institute, China Pulp and Paper Research Institute, Shenzhen CIQ industry Products

Testing Center, the State Quality Supervision and Inspection Center of paper.

1 Scope

This standard specifies the method for determination of paper, board and pulp cadmium content.

This standard applies to all kinds of wet digestion available nitric acid, including those containing recycled fiber, including paper, board and pulp.

The detection limit of this method. by flame atomic absorption spectrometry is about 1mg/kg, as the method of three pre-treatment is about 0.2mg/kg; with Graphite Furnace Atomic Absorption Spectrometry about 10μg/kg.

2 Normative references

The following documents contain provisions which, through reference in this standard and become the standard terms. For dated references, subsequent Amendments (not including errata content) or revisions do not apply to this standard, however, encourage the parties to the agreement are based on research Whether the latest versions of these documents. For undated reference documents, the latest versions apply to this standard.

GB/T 450 and take samples to an aspect of paper and paperboard samples, positive and negative determination (GB/T 450-2008, ISO 186.

2002, MOD)

GB/T 462 paper, board and pulp - Determination of water sample (GB/T 462-2008; ISO 287. 1985, MOD;

ISO 638. 1978, MOD)

GB/T 740 pulp samples taken (GB/T 740-2003, ISO 7213. 1981, IDT) GB/T 6682 analytical laboratory use specifications and test methods (GB/T 6682-2008, ISO 3696. 1987, MOD) Principle 3 in a closed vessel, under high temperature and pressure conditions with nitric acid treated samples diluted to give the sample, based on the inspection of limited requirements, the election Optional flame atomic absorption or graphite furnace atomic absorption determination of cadmium content.

4 Reagents

Unless otherwise indicated, used in the analysis confirmed only for the gifted class pure reagents.

4.1

Water, GB/T 6682, Grade 2.

4.2

Concentrated nitric acid (HNO_3), $\rho = 1.40\text{g/mL}$, the mass fraction is 65% to 68%.

4.3

nitric acid (HNO_3), 5 95, take 50mL of concentrated nitric acid (4.2) diluted with water to 1L.

4.4

Hydrogen peroxide (H_2O_2), $\rho = 1.11\text{g/mL}$, the mass fraction of $\geq 30\%$.

4.5

matrix modifiers. the selection of the matrix modifier may be determined by a blank test, we recommend the following matrix modifier.

4.5.1

palladium nitrate stock solution, 0.4%, taking 2.0g of $\text{Pd}(\text{NO}_3)_2$ was dissolved in 10mL of concentrated nitric acid (4.2), and then washed with water in capacity Bottle diluted to 500mL. Valid for six months.

4.5.2

Working palladium nitrate solution, 200mg/L, take 5mL palladium nitrate stock solution (4.5.1), diluted with water to 100mL. That solution with Ready to use.

4.5.3

solution of ammonium dihydrogen phosphate, 2%, taking 2.0g $\text{NH}_4\text{H}_2\text{PO}_4$ was dissolved in water, dilute to 100mL. With a solution that is ready to use.

4.5.4

magnesium nitrate solution, 0.5%, of 0.5g of $\text{Mg}(\text{NO}_3)_2 \cdot 6\text{H}_2\text{O}$ was dissolved in water, dilute to 100mL. With a solution that is ready to use.

4.6

Cadmium standard solution I, 1000mg/L, said take 2.744g cadmium nitrate tetrahydrate [$\text{Cd}(\text{NO}_3)_2 \cdot 4\text{H}_2\text{O}$], dissolved and set the volume to a 1L 595 nitrate (4.3) in. Stored in polyethylene bottles, storage for one year.