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

GB/T 1546-2018

Replacing GB/T 1546-2004

Pulp -- Determination of Kappa number

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Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009.

This standard replaces GB/T 1546-2004 "Determination of pulp Kappa number".

Compared with GB/T 1546-2004, the main changes of this standard are as follows.

--- Revised scope (see Chapter 1, Chapter 1 of the.2004 edition);

--- Revised the expression of the normative reference document, modified the referenced standard, and added GB/T 740 and GB/T 6682,

GB/T 741 was changed to GB/T 462, and GB/T 2678.3 was deleted (see Chapter 2, Chapter 2 of the.2004 edition);

--- Modified the content of the reaction formula, increased the ionic reaction formula and dioxane of potassium permanganate with residual lignin and other reducing compounds

Ionic reaction of manganese and potassium iodide (see Chapter 5, Chapter 5 of the.2004 edition);

--- Revised the content of the reagent preparation, adjusted the addition volume of concentrated sulfuric acid in the preparation of sulfuric acid solution (see Chapter 6,.2004 edition)

Chapter 6);

---Modified the content of the test procedure, increased the test method of Kappa range 1~5 and 5~100, will burn "2000mL reaction

Change the cup to "1000mL reaction beaker" (see Chapter 9, Chapter 9 of the.2004 edition);

--- The ratio of potassium permanganate consumption to the amount added is adjusted from 30% to 70% to 20% to 60% (see 9.1, 9.1 of the 2004 edition);

--- Revised the expression of the result and calculated the symbols in the formula (see Chapter 10, Chapter 10 of the 2004 edition);

--- Increased requirements for the addition of starch indicators in quality control and assurance (see 12.3, Chapter 12 of the 2004 edition);

--- Removed the normative appendix "Changes to Standard Steps" (see Appendix A of the 2004 edition);

--- Removed the informative appendix "Kappa number and lignin content" (see Appendix B of the 2004 edition).

This standard uses the redrafting method to modify the ISO 302:2015 "Determination of pulp Kappa number".

This standard has more structural adjustments than ISO 302:2015. Appendix A lists the standards and ISO 302:2015 chapters.

The bar number comparison checklist.

The main technical differences between this standard and ISO 302:2015 and their reasons are as follows.

---About the normative reference documents, this standard has made technical adjustments to adapt to China's technical conditions, adjustments

The situation is reflected in Chapter 2, "Regulatory Citations", and the specific adjustments are as follows.

* Replace ISO 638 with GB/T 462 modified to international standards;

* Replace ISO 7213 with GB/T 740 equivalent to international standards;

* Add references to GB/T 601 and GB/T 6682.

--- Remove the definition of oxidation capacity and total oxidation capacity to adapt to China's national conditions;

--- Revised the formulation of the principle and listed the reaction as a separate chapter to comply with industry practices (see Chapter 4);

---Modified the requirements of test water, increased the calibration method of standard solution, warning statement, storage of potassium iodide solution and starch indicator

Precautions and storage period, modified the potassium permanganate standard titration solution concentration method and concentration tolerance, modified

The concentration of the starch indicator to suit the technical conditions of our country (see

Chapter 6);

--- Modified the temperature requirements of the constant temperature water bath, and added a magnetic stirrer to adapt to the conditions of use of our instruments (see Chapter 7);

--- Modified the drying temperature of the wet cake, reducing the effect of temperature on the sample (see Chapter 8);

--- Modify the volume of washed distilled water while ensuring the same total volume, the requirements for titration are more specific (see Chapter 9);

--- Modified the determination and calculation method of high kappa pulp to obtain higher accuracy (see Chapter 9);

--- Removed the reference pulp to adapt to the technical conditions of our country;

--- Increased the requirements for the measurement results, to facilitate the evaluation of the accuracy of the test results (see Chapter 10);

--- Increase quality assurance and control to improve the accuracy of the test (see Chapter 12).

This standard was proposed by the China Light Industry Association.

This standard is under the jurisdiction of the National Paper Industry Standardization Technical Committee (SAC/TC141).

This standard was drafted. Deqing County Hongfeng Paper Co., Ltd., China Pulp and Paper Research Institute Co., Ltd., National Paper Quality Supervision

Inspection Center, China Paper Association Standardization Professional Committee.

1 Scope

This standard specifies the method for determining the kappa number of pulp.

This standard is applicable to various chemical pulps and semi-chemical pulps with Kappa numbers ranging from 1 to 100. For pulps with a Kappa number greater than 100,

The degree of delignification is measured by measuring the chlorine consumption of the pulp.

Note. There is no general and clear relationship between pulp kappa number and lignin content in pulp. This relationship is a function of wood type and delignification process. except

In addition to lignin, all compounds that can be oxidized by potassium permanganate increase the consumption of potassium permanganate, resulting in an increase in Kappa number. If you want to use Kappa number to indicate paper

The lignin content of the pulp can establish a specific relationship for different pulp types.

2 Normative references

The following documents are indispensable for the application of this document. For dated references, only dated versions apply to this article.

Pieces. For undated references, the latest edition (including all amendments) applies to this document.

GB/T 462 Determination of moisture in paper, paperboard and pulp analysis samples (GB/T 462-2008, ISO 287.1985, ISO 638.

1978, MOD)

Preparation of GB/T 601 chemical reagent standard titration solution

GB/T 740 pulp sample (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

Kappa number of pulp

Under the specified conditions, 1 g of pulp (based on the mass of dry pulp) consumed $c(1/5\text{KMnO}_4)=0.1000\text{mol/L}$ potassium permanganate

The number of milliliters of liquid.

Note. The results obtained are corrected to be equivalent to 50% (mass fraction) of the amount of potassium permanganate solution added.

4 Principle

In a strong acid medium, the dissociated pulp is reacted with a certain amount of potassium permanganate solution for a period of time. The selected amount of pulp should be in the opposite

At the end of the time, about 50% of the potassium permanganate was not consumed, and the reaction was terminated after the addition of potassium iodide solution. Then measured by indirect iodometry

Its remaining potassium permanganate.