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

GB/T 19227-2008

Replacing GB/T 18856.12-2002; GB/T 19227-2003; GB/T 476-2001

Determination of nitrogen in coal

煤中氮的测定方法

(English Translation)

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Foreword

This revised standard adopts ISO 333:1996 "Determination of nitrogen --- coal semi-micro Kjeldahl method" (in English) and ISO/T S11725.

2002 "Determination solid mineral fuels --- N --- semi-micro steam Law" (in English). For ease of comparison, listed in Appendix A of this Standard reg number and 333 ISO .1996 List of control clauses numbered, listed in Appendix B of this standard reg number and ISO/T S11725.2002 reg control list numbered.

This standard and ISO 333:1996 and ISO/T S11725.2002 technical differences between a single vertical line identifies the article to which they are involved Section of the page margin. Given the ISO 333 standard and Appendix C. List of technical differences and the reasons 1996, in the appendix D is given in this standard and ISO/T S11725. List of technical differences between the 2002 and the reasons for reference.

For ease of use, this standard also made the following editorial changes.

- a) "Solid mineral fuels" to "coal";
- b) the standard name from the "Determination of nitrogen --- coal semi-micro Kjeldahl method" and "Solid mineral fuels - Determination of nitrogen --- semi-micro Steam Act "to" Determination of nitrogen in coal ";
- c) "this International Standard" be replaced by "this standard";
- d) as a decimal by decimal points instead of "and", ".";
- e) Remove the preface to international standards.

This standard replaces GB/T 476-2001 "elemental analysis of coal," Chapter 4. Determination of nitrogen, GB/T 18856.12-2002 "water Coal Slurry Test methods - Part 12. CWS nitrogen determination method "and GB/T 19227-2003" Determination party coal and coke nitrogen French semi-micro gasification method. " the main changes compared to the

standard and GB/T 476-2001 Determination of nitrogen in Chapter 4 as follows.

- Increasing the semi-micro Kjeldahl method Determination of the nitrogen content of coal-water slurry (Chapter edition Chapters 1 and 3);
- Modify the standard solution of sulfuric acid in the sample weight of anhydrous sodium carbonate (2001 Version 4.2.9.2, this version 3.2.8.2);
- Increasing the sulfuric acid standard solution titration times and allow the requirements of difference (this version 3.2.8.2);
- In the "agent" added methyl orange indicator (this version 3.2.9);
- Increased ball diameter Kelvin request (this version 3.3.2.4);
- Increased microburette performance level requirements (this version 3.3.3);
- Increasing the sample weight range requirements (this version 3.4.1);
- Increasing the chromic anhydride sample was digested sample is dissolved after the transfer instructions (this version 3.4.2);
- Increasing the content of the sample distillation time (this version 3.4.4);
- Increasing the distillation flask add water when required (this version 3.4.4);
- Increasing the blank test measures the difference between the allowed claim (this version 3.5.3).

This standard compared with GB/T 18856.12-2002 main changes are as follows.

- Removed weighed CWS samples measured nitrogen content (Chapter 3, 2002 edition).

This standard and GB/T 19227-2003 compared to the main changes are as follows.

- Modify the concentration of boric acid solution (2003 version 3.1, this version 4.2.3);
- Modify the concentration of standard solution of sulfuric acid (2003 version 3.6, this version 4.2.5);
- Increasing the steam generator instructions when adding water (this version 4.4.5);
- Increased hydrolysis distillation apparatus tightness check (this version 4.4.6);
- Increasing the description (this version 4.5.6) absorbing liquid volume.

The Standard Appendix A, Appendix B, Appendix C and Appendix D is an informative annex.

The standard proposed by China Coal Industry Association.

This standard by the National Standardization Technical Committee of Coal.

This standard was drafted. CCRI coal analysis laboratory, Yunnan Coal Exploration Institute

laboratory.

1 Scope

This standard specifies the determination of coal, coke and coal nitrogen in semi-micro Kjeldahl method and semi-micro gasification method principle, reagents and materials, apparatus, Device, test procedures, the results of calculation and precision and so on.

Kelvin method is suitable for lignite, bituminous coal, anthracite and coal; steam method is applicable to bituminous coal, anthracite and coke.

NOTE: For high metamorphic grade anthracite, Kelvin sample digestion method for too long may lead to low measurement results, this time can be steam method.

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 212 industrial analysis of coal (GB/T 212-2008, ISO 11722:1999; ISO 1171:1997; ISO 562.

1998, NEQ)

GB 474 coal sample preparation method (GB 474-1996, eqv ISO 1988. 1975) GB/T 483 coal analysis test methods - General provisions

3.1 Principle of the method

Weigh a certain amount of air-dried coal or coal-water slurry dried sample was added and mixed sulfuric acid catalyst, thermal decomposition, nitrogen is converted to sulfuric acid Ammonium hydrogen. Excess sodium hydroxide solution was added, ammonia was distilled off and absorbed in the boric acid solution. Titrated with standard solution of sulfuric acid, according to the use of sulfuric acid Calculate the amount of nitrogen content in the sample.

3.2 Reagents

3.2.1

mixed catalyst. anhydrous sodium sulfate, sulfuric acid, mercury and chemically pure selenium powder mass ratio 64.10.1 (eg 32g + 5g + 0.5g) mixed Together, finely and mix well and reserve.

3.2.2

sulfuric acid.

3.2.3

Potassium permanganate or chromic acid anhydride.

3.2.4

sucrose.

3.2.5

anhydrous sodium carbonate. pure class distinctions, the benchmark reagents or sodium carbonate purity standard material.

3.2.6

mixed alkali solution. 370g of sodium hydroxide and sodium sulfide 30g dissolved in water to prepare a solution of 1000mL.

3.2.7

boric acid. 30g/L.

30g of boric acid dissolved in 1L of water, the preparation was dissolved by heating and filtered to remove insoluble material.

3.2.8

Standard Solution. $\text{Ba 12H}_2\text{SO}_4$ $\rho = 0.025\text{mol/L}$.

Preparation of standard solution of sulfuric acid 3.2.8.1. in 1000mL volumetric flask, add about 40mL distilled water with pipette 0.7mL Sulfuric acid (3.2.2) was added slowly flask, diluted with water to the mark even shaking.

3.2.8.2

Calibration standard solution of sulfuric acid. pre-dried at 130 °C to the conical flask Weigh 0.02g (weighing accuracy of 0.0002g) Constant mass of anhydrous sodium carbonate (3.2.5), was added (50 ~ 60) mL distilled water and dissolved, then (2-3) drops of methyl orange indicator Agent (3.2.9), with a standard solution of sulfuric acid titration to change from yellow to orange. Boil to expel carbon dioxide, after cooling, to continue titration