

ICS 73.040

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

**中华人民共和国国家标准**

GB/T 216-2003

Replace GB/T 216-1996

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**Methods for determination of phosphorus  
content in coal**

**煤中磷的测定方法**

(ISO 622: 1981, Solid mineral fuels—Determination of phosphorus content—Reduced  
molybdophosphate photometric method, NEQ)

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## Foreword

This Standard corresponds to ISO 622:1981 *Solid mineral fuels - Determination of phosphorus content – Reduced molybdophosphate photometric method* (English edition).

This Standard is not equivalent to ISO 622. The major disparities between this Standard and ISO 622 are as below:

- Delete the wet oxidation process in decomposition method of samples and only adopt dry oxidation process.
- Add the mass of coal sample measured directly and add the step of re-ashing.

This Standard will replace GB/T 216-1996 *Methods for determination of phosphorus content in coal*.

Comparison with GB/T 216-1996, main changes of this Standard are as follows:

- Cancel the Appendix A “Ash decomposition methods for hydrochloric - perchlorate” (1996).

This Standard is proposed by China National Coal Association.

This Standard is under the jurisdiction of National Technical Committee on Coal of Standardization of China.

This Standard is drafted by: China Coal Research Institute-Coal analysis laboratory and Yunnan Coalfield Exploration Company, Team 143.

Main drafters of this Standard: Zhang Kerui, Ma Zunmei.

This Standard replaces the following historical editions issued:

GB 216-63; GB 216-82; GB/T 216-1996.

# Methods for determination of phosphorus content in coal

## 1 Scope

This Standard specifies abstract of methods for determination of phosphorus content in coal, reagents, instrument and equipment, determination procedure, result expression and degree of precision.

This Standard is applicable to determination of phosphorus content in lignite, bituminous coal, anthracite and coking coal.

## 2 Normative references

The articles contained in the following documents have become this Standard when they are quoted herein. For the dated documents so quoted, all the modifications (excluding corrections) or revisions made thereafter shall not be applicable to this Standard. For the undated documents so quoted, the latest editions shall be applicable to this Standard.

GB/T 212 Proximate analysis of coal (GB/T 212-2001, eqv ISO 1171: 1997)

## 3 Abstract of methods

After ashing of the coal sample, decompose it with hydrofluoric acid-sulfuric acid. Remove silicon dioxide. Then add ammonium molybdate and ascorbic acid and generate phosphorus molybdenum blue. Determine the absorbance with spectrophotometer.

## 4 Reagents

4.1 Hydrofluoric acid (GB/T 620): 40% (mass fraction).

4.2 Sulfuric acid solution:  $c(1/2H_2SO_4) = 10\text{mol/L}$ . Measure concentrated sulfuric acid (GB/T 625) 278mL and put them into proper amount of water slowly. Put and stir and dilute with water to 1000mL.

4.3 Sulfuric acid solution:  $c(1/2H_2SO_4) = 7.2\text{mol/L}$ . Measure concentrated sulfuric acid 200mL and put them into proper amount of water slowly. Put and stir and dilute with water to 1000mL.

4.4 Ammonium molybdate-sulfuric acid solution: dissolve 17.2g ammonium molybdate (GB/T 657) in proper amount of sulfuric acid solution (4.3) and dilute it with sulfuric acid solution (4.3) to 1000mL.



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