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

GB/T 212-2008

**Proximate analysis of coal
(English Translation)**

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Table of Contents

Foreword...	3
1 Scope...	5
2 Normative references...	5
3 Determination of moisture...	5
4 Determination of ash...	8
5 Determination of volatiles...	12
6 Calculation of fixed carbon...	16

Foreword

This standard corresponds to the following international standards. ISO

11722.1999 Solid mineral fuels - Hard coal - Determination of moisture in the

general analysis test sample by drying in nitrogen, ISO 1171.1997 Solid mineral fuels - Determination of ash, ISO 562.1998 Hard coal and coke - Determination of volatile matter. The degree of consistency with the above international standards is not equivalent. The main differences are as follows.

- ADD the industrial analysis method for coal water mixture;
- ADD the air drying method for moisture determination;
- ADD the fast ashing method for ash determination;
- In the volatile content determination procedure, SPECIFY the raising temperature and time as $(900 \pm 10) ^\circ\text{C}$, 3 min;
- USE the appendix to add the microwave drying method for moisture determination.

This standard replaces GB/T 212-2001 "Proximate analysis of coal", GB/T 15334-1994 "Determination of moisture in coal - Microwave drying method", GB/T 18856.7-2002 "Test methods for quality of coal water mixture - Part 7. Proximate analysis of coal water mixture".

The main changes of this standard as compared with GB/T 212-2001 are as

follows.

- ADD the industrial analysis method for coal water mixture (Chapter 8 of this edition);
- ADD the "Determination of moisture in coal - Microwave drying method" (Appendix A of this edition).

Appendix A and Appendix B of this standard are normative appendices.

This standard was proposed by China Coal Industry Association.

This standard shall be under the jurisdiction of the National Coal Standardization Technical Committee.

Drafting organizations of this standard. Coal Analysis Laboratory of China Coal Research Institute, Yunnan Coalfield Geological Survey Company 143 Team.

1 Scope

This standard specifies the methods for determining the moisture, ash, volatile content of coal and coal water mixture as well as the method for calculating the fixed carbon.

This standard applies to lignite, bituminous coal, anthracite, coal water mixture.

2 Normative references

The provisions in following documents become the provisions of this Standard through reference in this Standard. For the dated references, the subsequent amendments (excluding corrections) or revisions do not apply to this Standard; however, parties who reach an agreement based on this Standard are encouraged to study if the latest versions of these documents are applicable.

For undated references, the latest edition of the referenced document applies.

GB/T 218 Determination of carbonate carbon dioxide content in coal (GB/T 218-1996, eqv ISO 925.1980)

GB/T 7560 Determination of mineral matter in coal (GB/T 7560-2001, eqv ISO 602.1983)

3 Determination of moisture

This chapter specifies three methods for determining the moisture content of coal. Among them, method A is applicable to all coal types; method B is only applicable to bituminous coal and anthracite; microwave drying method (see Appendix A) is suitable for rapid determination of moisture content of lignite and bituminous coal.

3.1.1 Method summary

Weigh a certain amount of coal sample for general analysis test; put them in a drying box at (105 ~ 110) °C; dry them in a dry nitrogen stream to a constant mass. Then calculate the mass fraction of water based on the mass loss of the coal sample.

3.1.3.1 Small space drying cabinet. The cabinet is tight, has a small free space, has gas inlet and outlet, is equipped with an automatic temperature control device, which can maintain the temperature within the range of (105 ~ 110) °C.

3.1.4.1 In a pre-dried and weighed weighing bottle, weigh (1 ± 0.1) g of coal sample for general analysis test which has a particle size of less than 0.2 mm, accurate to 0.0002 g; spread it flatly in the weighing bottle.

3.2.1 Method summary

Weigh a certain amount of coal sample for general analysis test; place them in blast drying oven at (105 ~ 110) °C; dry them in an air stream to a constant mass. The mass fraction of water is calculated from the mass loss of the coal sample.

3.2.3.1 In a pre-dried and weighed weighing bottle, weigh (1 ± 0.1) g of the coal sample for general analysis test which has a particle size of less than 0.2 mm, accurate to 0.0002 g; flatly spread it in the weighing bottle.

3.2.3.2 Open the lid of the weighing bottle and put it in a drying box (3.2.2.1)

that has been blasted and heated to $(105 \sim 110) ^\circ\text{C}$. Under the condition of constant blowing, bituminous coal is dried for 1 h, whilst anthracite is dried for 1.5 h.

3.3 Calculation of results

Calculate the moisture content of the coal sample for general analysis test according to formula (1).

4 Determination of ash

This chapter includes two methods for determining ash in coal. Slow ashing method and fast ashing method. The slow ashing method is an arbitration method.

4.1.1 Method summary

Weigh a certain amount of coal sample for general analytical test; put it in a muffle furnace; heat it to $(815 \pm 10) ^\circ\text{C}$ at a certain rate; ash and burn to a constant mass. The mass fraction of the residue to the mass of the coal sample is taken as the ash content of the coal sample.

4.1.3.1 In an ash dish pre-burned to a constant mass, weigh (1 ± 0.1) g of coal

sample for general analysis test with a particle size of less than 0.2 mm, accurate to 0.0002 g; spread evenly and flatly in an ash dish so that its mass per square centimeter does not exceed 0.15 g.

4.2 Fast ashing method

This part includes two fast ashing methods. method A and method B.

4.2.1.1 Method summary

Place the ash dish containing the coal sample on the conveyor belt of the fast ash tester which is heated to $(815 \pm 10) ^\circ\text{C}$ in advance. The coal sample is automatically fed into the instrument to completely ash and then sent out. The