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

GB/T 480-2010

Test of low temperature distillation of coal by aluminum retort

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(English Translation)

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Foreword

This Standard modifies and adopts ISO 647:1974, Brown coals and lignites - Determination of the yields of tar, water, gas and coke residue by low temperature distillation (English version).

This Standard is redrafted in accordance with ISO 647:1974. Compared with ISO 647:1974, there are some adjustments in the structure. Appendix A makes a comparison list of changes in chapter numbers between this Standard and ISO 647:1974.

In consideration of China's national conditions, when this Standard is adopted, there are technical differences compared with ISO 647:1974; the terms which are involved in these differences have been marked by vertical single lines (|) on the outer page margins; Appendix B gives a list of corresponding technical differences and their causes.

The main technical differences between this Standard and ISO 647:1974 are as follows:

- Remove the calculation method summary of each product yield;
- Retain only electrical heating for the type of heating; remove the gas heating method;
- Add technical requirements for moisture measuring tubes, condensers and balances;
- Add equipment drawings, air tightness inspection methods, and pretreatment methods for coal of strong expansibility;
- Add regulations for the export method of dry distillation products, the method for determining the water content in the condensate (dry distillation total moisture) and the calculation formula for the yield of each product;
- Remove the calculation of coal gas production rate;
- Add conversion and correction formulas for the dry ash-free basis coke residue yield result basis;
- Modify the precision for the determination of dry distillation product yield;

This Standard replaces GB 480-2000, Test for carbonization of coal in aluminum retort; compared with GB/T 480-2000, the main technical changes, except editorial changes, are as follows:

Test of low temperature distillation of coal by
aluminum retort

1 Scope

This Standard specifies the method summary, instruments and apparatuses, test procedure and result expression of the test of low temperature distillation by aluminum retort.

This Standard applies to brown coal and soft coal.

2 Normative references

The terms in the following documents become the terms of this Standard by reference to this Standard. For dated references, all subsequent amendments

(not including errata content) or revisions do not apply to this standard. However, parties to agreements that are based on this Standard are encouraged to study whether the latest versions of these documents can be used. For undated references, the latest edition applies to this Standard.

GB/T 212, Proximate analysis of coal (GB/T 212-2008, 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, NEQ)

GB/T 218, Determination of the carbonate carbon dioxide content in coal (GB/T 218-1996, eqv ISO 925:1997)

GB 474, Preparation of coal sample (GB 474-2008, ISO 18283:2006, Hard coal and coke - Manual sampling, MOD)

GB/T 19494.2, Mechanical sampling of coal - Part 2: Method for sample preparation (GB/T 19494.2-2004, ISO 13909-1:2001 Hard coal and coke - Mechanical sampling - Part 1: General introduction; ISO 13909-4:2001 Hard coal and coke - Mechanical sampling - Part 4: Coal - Preparation of test samples, NEQ)

3 Method summary

Hold the coal sample in the aluminum retort; use a certain temperature-rising program to heat to 510 °C, and maintain for a certain period of time; measure the yields of tar, pyrolysis water, coke residue and coal gas that are obtained after dry distillation.

5.2 Heating device: with temperature control device; specifications and performance shall meet the following requirements:

- a) The temperature shall be increased to 260 °C within the first (15 ~ 20) min;
- b) During (260 ~ 510) °C, the heating rate is 5 °C/min. The total temperature rise error is ± 10 °C;

c) The final temperature can reach above 510 °C.

6.3 Coal sample

The coal sample is an air-dried coal sample, whose particle size is less than

6.4.1 Cover the retort cover. Use a small wooden hammer to lightly tap the retort

cover tightly. Use a tight airtight cork stopper to connect the aluminum retort delivery line to the conical flask. Extend the aluminum retort delivery line into the bottle; the length of the extension shall not be less than half the height of the bottle, but shall not be in contact with the bottom of the bottle. Insert a slightly curved glass air duct from another small hole of the cork stopper for gas discharge. All junctions shall be airtight. The conical flask shall be washed, dried and weighed, to 0.01 g, in advance before it is connected to the aluminum retort.

6.4.2 Put the aluminum retort into the electric furnace; at the same time, put the

conical flask into the cooling bath. Close the furnace cover; insert the thermocouple or thermometer into the temperature measuring hole of the aluminum retort.

6.4.3 Put a certain amount of water and ice cubes in the cooling bath; the

conical flask shall be immersed in the water as much as possible, but the bottle mouth shall be higher than the water surface. Circulating water below 15 °C can also be used; but the circulating water flow shall be able to make tar and water vapor condense.

6.4.4 The test device shall be placed in a fume hood; otherwise, a rubber tube

shall be connected to the air duct on the conical flask, so as to lead the gas out of the room.

7.1 Fully stir the coal samples; take (20 ± 0.5) g of coal sample (weigh to 0.01

g) from 4 ~ 5 different parts of the coal sample container; put it in a watch glass; then, transfer all the coal samples to the aluminum retort.