



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

GB/T 1575-2018

**Determination of yield of benzene-soluble extract in brown
coals**

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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 1575-2001 "Determination of yield of benzene-soluble extract in brown coal". As compared with GB/T 1575-2001, except for editorial changes, the main technical content changes are as follows.

- MODIFY the size of the filter paper tube (see 4.2; 4.1 of 2001 version);
- ADD the blank test (see 5.2.2.2);
- MODIFY the calculation formula for the determination of the yield of benzene-soluble extract in brown coals (see clause 6; clause 8 of the 2001 version).

This standard uses the redrafting method to modify the use of ISO 975.2013 "Brown coals and lignites - Determination of yield of benzene-soluble extract - Semi-automatic method".

This standard has many structural adjustments than ISO 975.2013. Appendix A lists the details of the clause number comparison of this standard with ISO 975.2013.

There are technical differences between this standard and ISO 975.2013. The

terms involved in these differences have been marked by a vertical single line (|) at the margin of the outer margin, and a list of technical differences and their causes are given in Appendix B.

This standard was proposed by the China Coal Industry Association.

This standard shall be under the jurisdiction of the National Coal Standardization Technical Committee (SAC/TC 42).

Drafting organizations of this standard. Coal Science and Technology Research Institute Co., Ltd. Testing Branch.

1 Scope

This standard specifies the automatic extraction method and the conical flask extraction method for the determination of benzene-soluble extract yield in brown coal. The conical flask extraction method is the arbitration method.

This standard applies to brown coal.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) are applicable to this standard.

GB/T 483 General rules for coal analysis test methods

3 Method summary

The coal sample is placed in an extractor and extracted with benzene. After the coal sample is extracted with benzene, the benzene is distilled off, then the solvent is distilled off and the extract is dried to a constant mass. The yield of benzene-soluble extract in brown coal is calculated based on the extract mass.

4 Reagents and materials

Caution - Benzene is flammable, toxic, volatile, and may cause poisoning in case of inhalation or skin contact with large amounts. The test must be

carried out in a fume hood.

Unless otherwise stated, only analytically pure reagents and distilled or deionized water or water of comparable purity are used in the analysis.

4.1 Benzene. $\rho = 0.876 \text{ g/mL}$, distillation range $80^\circ \text{C} \sim 81^\circ \text{C}$, at least 95% is distilled off.

5.2.2.1.1 Weigh 2 g of general analytical test coal sample (accurate to 0.0002

g) which is mixed uniformly, put it into the filter paper tube, put a group of absorbent cotton on the top of the paper tube and make the edge as close as possible to the paper tube, place the filter paper tube with coal sample into the extraction chamber. In a conical flask which is pre-dried to a constant mass and weighed, add 60 mL ~ 70 mL of benzene. Connect all parts of the automatic extractor.

5.2.2.1.2 When the power is turned on and the program switch is pressed, the

instrument automatically performs extraction-rinsing-evaporation in accordance with the preset procedure. The extraction-rinsing-evaporation device is lowered until the conical flask is immersed in the water bath to a predetermined position, the condenser is tilted until the benzene liquid can be dripped back to the extraction chamber, the cooling water circulation device starts to work, at the same time the water bath starts to heat.

5.2.2.1.3 When the temperature rises to the pre-set extraction temperature, the

pump starts, the hot water in the water bath enters the extraction chamber jacket, and circulates between the two, the benzene in the conical flask evaporates to the condenser, condensates there, dripped back into the filter paper tube of the extraction chamber, the extraction starts. After 180 min (or other set time), the pump stops and the extraction ends.

5.2.2.1.4 The extraction chamber is cooled by the hot water flowing back into

the water bath in the jacket, where the benzene vapor condenses and wash the

extract adhering to the inner wall of the extraction chamber into the conical flask, the rinsing starts. After about 10 minutes, the rinsing is stopped, the condenser is further tilted until the benzene liquid can flow out of the measuring system and enter the recovery container, the pump starts again, the hot water enters the extraction chamber jacket, the benzene vapor condenses in the condenser and flows into the receiver, the evaporation starts. After about 50 minutes, the evaporation ends and the extraction-rinsing-evaporation system raise to its original position.

5.2.2.1.5 Remove the conical flask with the extract and place it in an air drying

box at a temperature of 105 °C ~ 110 °C or a vacuum drying box at a temperature of (80 +/- 2) °C and a pressure of 50 kPa to dry it to constant mass.

Note. Generally, the first drying is 1.5 h, then the inspection drying is performed for 30 min each time. When the mass difference between two consecutive dryings is less than 0.0010 g, the mass is constant.

5.2.2.2 Blank test

Except that no sample is added, the remaining steps are the same as 5.2.2.1.

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