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

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**Determination of mineral oil content in phosphate ester
fire-resistant fluid used in power plant**

电力用磷酸酯抗燃油中矿物油含量测定法

(English Translation)

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Table of Contents

Foreword
1 Scope
2 Normative references
3 Method overview
4 Apparatus and materials
5 Test procedure
6 Calculation
7 Precision
8 Report value

Foreword

This standard was drafted in accordance with the rules given in GB/T 1.1-2009 "Guidelines for Standardization Work Part 1: Standard Structure and Compilation".

Please note that certain contents of this document may involve patents. The issuing agency of this document is not responsible for identifying these patents.

This standard was proposed by the China Electricity Council.

This standard is under the jurisdiction of the National Electrochemical Standardization Technical Committee.

The main drafting unit of this standard. Xi'an Thermal Power Research Institute Co., Ltd.

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1 Scope

This standard specifies the method overview, instrument materials, test procedures for the determination of mineral oil content in phosphate ester fire-resistant fuel for power use.

Steps, calculations, etc.

This standard is applicable to the determination of mineral oil content in phosphate ester fire-resistant fuel for electric power.

2 Normative references

The following documents are indispensable for the application of this document. For dated reference documents, only the dated version is suitable Used in this document. For undated references, the latest version (including all amendments) applies to this document.

GB/T 6682 Analytical laboratory water specifications and test methods

3 Method overview

Add a certain amount of sample to lye to completely saponify the phosphate ester, extract the mineral oil in the sample with petroleum ether, and transfer the extract to Move to a beaker with constant weight, and weigh the total weight of the beaker and the mineral oil in it again after the petroleum ether is evaporated, the difference between the two weighings it is the content of mineral oil in the sample, and the result is expressed in mass percentage.

4 Apparatus and materials

4.1

Potassium hydroxide. analytically pure.

4.2

Petroleum ether. analytically pure, boiling range is 60°C~90°C.

4.3

Water. The test water should meet the third-level water requirements specified in GB/T 6682.

4.4

Flask. 500mL.

4.5

Beaker. 150mL.

4.6

Measuring cylinder. 50mL.

4.7

Separation funnel. 250mL.

4.8

Spherical or straight reflux condenser. about 300mm in length.

4.9

Electric heating plate. adjustable, working temperature does not exceed 100°C.

4.10

Electric heating mantle. adjustable, 500mL, the highest operating temperature is 380°C.

4.11 Dryer

4.12 Balance. Sensitivity 0.1g, 0.1mg.

4.13 Zeolite. porcelain tube or glass beads.

5 Test procedure

5.1

Weigh a sample of $10\text{g} \pm 0.1\text{g}$ (accurate to 0.1g) in a clean flask and record it as m1.

5.2

Add 10g of potassium hydroxide to the flask containing the sample, measure 40mL of test water with a graduated cylinder and add it, then Add a small amount of zeolite to prevent bumping. Place the flask in an electric heating mantle.

5.3

Install the reflux condenser, turn on the electric heating mantle, and heat to reflux for at least 1 h until the reflux liquid in the flask becomes clear.

5.4

After cooling to room temperature, flush the reflux condenser with 50 mL test water to make the flushing liquid flow back into the flask.

5.5

Remove the reflux condenser.

5.6

Completely transfer the reflux liquid in the flask to a 250mL separatory funnel.

5.7

Rinse the flask three times with 50 mL petroleum ether, and pour the rinse liquid into the separatory funnel one by one.

5.8

Shake the liquid in the separatory funnel evenly, let it stand, and deflate once every 30s.

5.9

After the liquid in the separatory funnel is completely separated, drain the lower aqueous solution.

5.10

Transfer the upper petroleum ether extract to a 150mL beaker and let it stand for 5 minutes.

5.11

Take another clean and dry 150mL beaker, weigh it with a balance (accurate to 0.0001g), and record it as m3.

5.12

Pour the petroleum ether extract into a weighed beaker, and prevent the remaining aqueous solution from entering the beaker.

5.13

Place the beaker containing the petroleum ether extract on the electric heating plate or adjustable electric heating mantle in a fume hood.

Bump, after the petroleum ether in the beaker evaporates, place it in a desiccator to cool to room temperature and weigh (accurate to 0.0001g), and record it as m2.

6 Calculation

Calculate the mineral oil content in the sample according to the following formula.

7.1 Repeatability

The difference between two parallel determination results in the same laboratory should not exceed the following allowable values.

7.2 Reproducibility

The difference between the two results proposed by the two laboratories should not exceed the following allowable values.

8 Report value

Take the arithmetic average of the two test results that meet the repeatability requirements as the reported value, and keep two digits after the decimal point.