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Method for measuring distillation range of coking viscous oil products

焦化粘油类产品馏程的测定方法

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Method for measuring distillation range of coking viscous oil products

Warning – The personnel who uses this document shall have hands-on experience in formal laboratory work. This document does not address all possible safety issues. It is the responsibility of the user to take appropriate safety and health measures and to ensure compliance with the conditions which are set by the relevant national regulations.

1 Scope

This document specifies the instruments and equipment, test procedures, temperature correction, calculation of test results, tolerances and test report of the method for measuring distillation range of coking viscous oil products.

This document applies to the measurement of distillation range of coking viscous oil products such as coking washing oil, wood preservative oil, coking raw oil for carbon black, anthracene oil, and fuel oil.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the version corresponding to that date is applicable to this document; for undated references, the latest version (including all amendments) is applicable to this document.

GB/T 1999, Sampling of coking oil products

GB/T 2288, Coking products - Determination of moisture content

GB/T 8170, Rules of rounding off for numerical values & expression and judgment of limiting values

YB/T 2305, Glass thermometers for coking products

3 Terms and definitions

No terms and definitions need to be defined in this document.

$$t = t_0 - t_1 - t_2 - t_3 \quad \cdots\cdots (1)$$

$$t_2 = 0.000\ 9(273 + t_0)(101.3 - p) \quad \cdots\cdots (2)$$

$$t_3 = 0.000\ 16H(t_0 - t_B) \quad \cdots\cdots (3)$$

$$p = p_0 - 0.001\alpha \quad \cdots\cdots (4)$$

Where:

t – the temperature that shall be observed after correction, in degrees Celsius (°C);

t_0 – the temperature that shall be observed according to the specifications in the standard, in degrees Celsius (°C);

t_1 – the collected value of the thermometer, in degrees Celsius (°C);

t_2 – pressure correction value, in degrees Celsius (°C);

t_3 – the correction value of the temperature of the exposed part of the mercury column, in degrees Celsius (°C);

t_B – the temperature of the auxiliary thermometer attached to 1/2H, in degrees Celsius (°C);

H – the temperature difference corresponding to the height of the mercury column on the exposed part of the thermometer, in degrees Celsius (°C);

p – the atmospheric pressure converted into the atmospheric pressure in the standard state during the test, in kilopascals (kPa);

p_0 – atmospheric pressure during the test, in kilopascals (kPa);

α – correction value of temperature under atmospheric pressure, in pascals (Pa) (see Appendix A for the value of α).

7.2 When the atmospheric pressure is (101.3 ± 2.0) kPa during the test, the distillation range temperature does not need to be corrected for atmospheric pressure.

8 Calculation of test results

8.1 The dry base quantity of distillate X (%) at each stage is calculated according to Formula (5):

$$X = \frac{V - 100W'}{100 - 100W'} \times 100\% \quad \cdots\cdots (5)$$

Where:

V – quantity of distillate, in milliliters or grams (mL or g);

W' – moisture content of the distilled sample, %;

100 – Sample size, in milliliters or grams (mL or g).

8.2 Round off the calculation results according to GB/T 8170.

9 Tolerances

The repeatability of the test results shall not be greater than 1.5%.

10 Test report

The test report shall contain at least the following information:

a) information such as identification sample, laboratory and date of analysis;

b) number of this document (including the year of issue);

c) the extent of compliance with the provisions of this document;

d) analysis results and their expression;

e) abnormal phenomena observed in the measurement;

f) operations not specified in this document, or any operations that may affect the results.

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