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Dimethyl ether for city gas

城镇燃气用二甲醚

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Dimethyl ether for city gas

1 Scope

This standard specifies the requirements, test methods, inspection rules, marking, packaging, transportation, storage of dimethyl ether for city gas.

This standard applies to dimethyl ether for city gas used by urban residents, commercial and industrial enterprises.

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 7376 Determination of micro-amounts of water in industrial fluorinated alkane

GB/T 10410 Analysis of manufactured gas and liquefied petroleum gas normal composition by gas chromatography

GB 14193 Rules for filling of liquefied gas cylinders

GB 18180 The requirements for the safety operation of gas carrier

GB 50016 Code of design on building fire protection and prevention

GB 50028 Code for design of city gas engineering

SH/T 0232 Determination method for copper strip corrosion of liquefied petroleum gas

Gas cylinder safety supervision procedures (Quality and Technical Supervision Bureau GF [2000] No.250)

Safety Technology Supervision Regulations for Pressure Vessel (Quality and Technology Supervision Bureau GF (1999) No.154)

Safety Management Regulations for Liquefied Gas Railway Tank Cars ((87)

Appendix B

(Informative)

Gas chromatographic analysis method for dimethyl ether and methanol in dimethyl ether for city gas

B.1 Scope

This Appendix gives typical working conditions for gas chromatographic analysis of the mass fraction of dimethyl ether and methanol in dimethyl ether for city gas. It may also use other chromatographic conditions to achieve equivalent or higher analytical results.

B.2 Principle of method

Use a gas chromatograph which is equipped with a thermal conductivity detector (TCD) to, under selected chromatographic conditions, through a gas chromatographic column, separate dimethyl ether, methanol, carbon dioxide from the dimethyl ether sample for city gas. Use a detector to detect it. Use recorder, integrator or microprocessor to record the peak area data of each component.

Under the same operating conditions, use the external standard method to analyze the standard gas of the known mass fraction of component. Compare the measured peak area data of the sample with the peak area data of standard gas. Use the correction of the correction factor to calculate the mass fraction of each component.

B.3 Sampling

It is performed according to the provisions of GB/T 10410. The temperature of the gasification water bath is 70 °C ~ 90 °C.

B.4 Gas Chromatograph

Gas chromatograph which is equipped with thermal conductivity detector. It uses gas six-way valve injector to inject sample. The material is stainless-steel.

B.5 Standard gas

B.5.1 General requirements

The standard gas required for the analysis may be a national grade-2 standard substance or otherwise prepared by itself.

The peak order of the dimethyl ether and methanol components in the specimen is as follows: dimethyl ether first, followed by methanol.

B.8 Calculation of mass fraction of component

B.8.1 The calculated mass fraction of the dimethyl ether or methanol component in the specimen is calculated according to formula (B.1):

$$X_i = X_i^0 \times \frac{A_i}{A_i^0} \quad \dots\dots\dots (B.1)$$

Where:

X_i - The calculated mass fraction of the dimethyl ether or methanol component in the specimen, in percentage (%);

X_i^0 - The mass fraction of the dimethyl ether or methanol component in the standard gas, in percentage (%);

A_i - The number of peak areas of the dimethyl ether or methanol component in the specimen;

A_i^0 - The number of peak areas of the dimethyl ether or methanol component in the standard gas.

B.8.2 The normalized mass fraction of the dimethyl ether or methanol component is calculated according to formula (B.2):

$$X_i' = \frac{X_i}{\sum X_i} \times (100 - X_{H_2O}) \quad \dots\dots\dots (B.2)$$

Where:

X_i' - The normalized mass fraction of the dimethyl ether or methanol component in the specimen, in percentage (%);

X_i - The calculated mass fraction of the dimethyl ether or methanol component in the specimen, in percentage (%);

$\sum X_i$ - The sum of the calculated mass fractions of the dimethyl ether and methanol components and other impurity components in the specimen, in percentage (%);

X_{H_2O} - The mass fraction of water in the specimen, in percentage (%).

B.9 Repeatability and reproducibility

B.9.1 Repeatability

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