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

GB/T 5275.9-2014

**Gas analysis -- Preparation of calibration gas mixtures using
dynamic volumetric methods -- Part 9: Saturation method**

气体分析 动态体积法制备校准用混合气体 第9部分：饱和法

(English Translation)

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Foreword

GB/T 5275 "gas analysis dynamic volume Preparation of calibration gas mixtures" is divided into the following sections.

- Part 1. calibration method;
- Part 2. positive displacement pump;
- Part 4. continuous injection;
- Part 5. Capillary calibration devices;
- Part 6. Critical orifices;
- Part 7. Thermal mass flow controller;
- Part 8. Diffusion method;
- Part 9. Saturation method;
- Part 10. Permeation;
- Part 11. Electrochemical method occurs.

This section GB/T 95275 Part of.

This section drafted in accordance with GB/T 1.1-2009 given rules.

This section uses the translation method identical with ISO 6145-9:2009 "gas analysis dynamic volume Preparation of calibration gas mixtures 9 Part I. saturation method. " Consistency correspondence between this part of international documents and normative references of our files are as follows.

- GB/T 10628-2008 gas analysis calibration gas mixture composition measurements and calibration comparison (ISO 6143:2001, IDT);
- GB/T 14850-2008 gas analysis vocabulary (ISO 7504:2001, IDT).

This part is proposed by the China Petroleum and Chemical Industry Association.

This part of the National Gas Standardization Technical Committee (SAC/TC206) centralized.

This section drafted by. China Institute of Metrology, Southwest Chemical Industry Research and Design Institute Limited.

1 Scope

GB/T 5275 is part of this dynamic part of the calibration volume prepared by the national standards for mixing gases. This section it specifies the use of one or more condensable components of the gas mixture the continuous preparation of a calibration method. Through the relative standard uncertainty contribution Synthesis, the process to obtain the relative expanded uncertainty of less than 1% (expansion factor $k = 2$).

The rest of the series is different from the method described in this section does not require precise measurements of the velocity, calculated as the volume fraction of the formula no flow parameters.

For condensable component part of the gas and gas adsorption prone, difficult to prepare stable calibration concentration precise method using a static mixing Aiki. Moreover, this calibration pressure of the mixed gas is not close to saturation vapor pressure, otherwise condensation will occur. Saturated vapor pressure method could Preparation for this type of mixed gas.

2 Normative references

The following documents for the application of this document is essential. For dated references, only the dated version suitable for use herein Member. For undated references, the latest edition (including any amendments) applies to this document.

ISO 6143 Gas analysis calibration gas mixture composition measurements and check Comparative Law (Gasanalysis-Comparison methodsfordeterminingandcheckingthecompositionofcalibrationgasmixtures) ISO 7504 Gas analysis vocabulary (Gasanalysis-Vocabulary) ISO 16664 Gas analysis calibration gases and gas mixture Guide (Gasanalysis-Handlingofcalibra-tiongasesandgasmixtures-Guidelines)

3 Terms and Definitions

Terms and definitions as defined in ISO 7504 apply to this document.

Principle 4

When its condensed phases reach equilibrium, the vapor pressure of pure substances depends only on the temperature. At a pressure near atmospheric gas phase and no significant the case of interaction (for example, the occurrence of interactions between

hydrocarbon gas mixture) can be calculated based on the set of temperature and pressure of the system Sub-volume fraction.

If no other external factors, at a certain temperature, so that the carrier gas simply by contacting the gaseous components of the condensed phase to achieve full and the balance is very slow. To speed up the process, at higher temperatures T_1 , a carrier gas through the condensed phase, and then mixing the resulting Gas is cooled to a temperature below the dew point T_2 . To ensure saturated temperature difference ($T_1 - T_2$) is at least 5K.

The volume fraction of component x is approximately equal to the component at the temperature T_2 is divided by the vapor pressure p_x at the same temperature the mixture gas condenser Body total pressure p , that was the formula (1).

$\phi_{ix} =$