

ICS 71.040.40
CCS G 86



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

GB/T 5275.8-2014

**Gas analysis -- Preparation of calibration gas mixtures using
dynamic volumetric methods -- Part 8: Diffusion method**

气体分析 动态体积法制备校准用混合气体 第8部分：扩散法

(English Translation)

Issued on: July 8, 2014

Implemented on: December 1, 2014

Issued by: Standardization Administration of China

Table of Contents

Foreword
1 Scope
2 Normative references

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 5275 Part 8.

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

This section uses the translation method identical with ISO 6145-8:2005 "gas analysis dynamic volume Preparation of calibration gas mixtures 8th Part I. diffusion method. " Consistency correspondence between this part of international documents and normative references of our files are as follows.

- GB/T 5275.7-2014 gas analysis dynamic volume Preparation of calibration gas mixtures - Part 7. Thermal mass flow Volume controllers (ISO 6145-7:2009, 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, a Shanghai Song chemical gas the company.

1 Scope

This section provides diffusion prepared by mole fractions within the range of 10^{-9} to 10^{-3} in the calibration gas mixtures dynamic method. The party Law relative expanded uncertainty U , whose value does not exceed $\pm 2\%$, the combined standard uncertainty multiplied by a coverage factor ($k = 2$) obtained.

If the source line diffusion and use of location between the very short, the diffusion method can be used to prepare a boiling point at room temperature within a range of $40\text{ }^{\circ}\text{C} \sim 160\text{ }^{\circ}\text{C}$ for Low-Level Calibration liquid organic component gas mixtures.

This section provides the diffusion method, not only for the preparation of the atmospheric environment and indoor air concentrations corresponding to a variety of hydrocarbons calibration mix Combined gas, a mixed gas of water is also applicable to the preparation of low concentration.

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 6145-7 Gas analysis dynamic volume Preparation of calibration gas mixtures - Part 7. Thermal mass flow controllers (Gas

analysis-Preparation of calibration gas mixtures using dynamic volumetric methods-Part 7.

Thermal mass-flow controllers) Principle 3 After appropriate calibration component dimensions (length, diameter) of the diffuser diffusion into the gas mixture to be prepared in the carrier gas stream. Container has been charged with Known high purity liquid calibration component as a component vapor source, mounted vertically on the container the diffuser. The device (cell proliferation) is placed in a constant Bath temperature, the bath was a known constant flow rate carrier gas purge of high purity (Figure 1). The composition of the mixed gas diffusion by the calibration component Mass flow and carrier gas flow rate determination.

Diffusion mass flow calibration component depends on the principle.

- Calibration component in a carrier gas diffusion coefficient;
- Calibration component vapor pressure at bath temperature;
- Diffusion tube size.

By diffusion tubes were placed on a magnetic levitation microbalance continuous weighing,

or through other periodic weighing microbalance, accurately Measuring the mass flow rate of diffusion. Determination will affect the calibration component (instantaneous) mass flow uncertainty.