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

GB/T 5274.2-2026

**Gas analysis - Preparation of calibration gas mixtures - Part 2:
Gravimetric method for Class ? mixtures
(English Translation)**

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Foreword

This document complies with the provisions of GB/T 1.1-2020 "Standardization Work Guidelines Part 1: Structure and Drafting Rules of Standardization Documents".

Drafting.

This document is Part 2 of GB/T 5274, "Preparation of Mixed Gases for Gas Analysis Calibration". GB/T 5274 has been published.

The following section.

---Part 1: Preparation of Primary Gas Mixtures by Weighing Method;

---Part 2: Preparation of Type II Mixed Gases by Weighing Method this document is equivalent to ISO 6142-2:2024 "Preparation of gas mixtures for gas analysis and calibration - Part 2: Preparation by weighing method II".

"Mixed gas".

The following minimal editorial changes have been made to this document.

---Added variable symbols i and v_k , with explanations of i and v_k (see 6.2);

---Added table titles and table references (see Appendix C).

Please note that some content in this document may involve patents. The issuing organization of this document assumes no responsibility for identifying patents.

This document was proposed by the China Petroleum and Chemical Industry Federation.

This document is under the jurisdiction of the National Technical Committee on Gas Standardization (SAC/TC206).

Introduction

Weighing is one of the important methods for preparing mixed gases for calibration, and ISO has specifically developed the ISO 6142 series of standards for this purpose.

GB/T 5274 is equivalent to the ISO 6142 series of standards. ISO 6142 is divided into two parts, which specify the preparation of by weighing method.

Two methods for calibration using mixed gases with different quality assurance levels and different measurement uncertainty levels, GB/T 5274 and ISO 6142 remains consistent, corresponding to two parts. Part 2 of GB/T 5274 specifies the batch production in a single process using the static weighing method.

A method for preparing multiple gas mixtures is described, along with a method for calculating the uncertainty related to the mole fraction of each component in the gas mixture, to ensure that...

This document provides better guidance for users, especially those concerned with quality assurance measures and laboratory accreditation.

GB/T 5274 is intended for use by trained and experienced professionals. GB/T 5274 consists of two parts.

---Part 1: Preparation of Primary Gas Mixtures by Weighing Method. The purpose is to specify the method for preparing bottled Class I calibration gas mixtures by weighing.

Purity analysis, determination of the mass of added components and calculation of preparation uncertainty, assessment of homogeneity and stability, and verification of

composition.

This paper discusses the requirements for certification, uncertainty assessment, and certificate preparation, and introduces the principle of preparing bottled Type I calibration mixed gases using the weighing method.

The method for preparation and planning. Type I calibration gas mixtures need to be validated individually, and the preparation and validation process of the gas mixtures...

If rigorous and comprehensive quality assurance and quality control procedures are employed, the uncertainty of this preparation method is lower than that of any other preparation method.

The uncertainty of the methods is much smaller, thus ensuring the quality of the prepared calibration gas mixture.

---Part 2: Preparation of Type II Gas Mixtures by Weighing Method. The purpose is to specify the method for preparing Type II calibration gas mixtures by weighing method.

Preparation steps, methods for defining the range of components and molar fractions according to similar gas mixtures, certificate content preparation requirements, etc., describe the use of the principle of preparing Class II calibration gas mixtures by weighing method. Class II calibration gas mixtures can be prepared individually or in batches, and are specified in the certificate.

The relevant general uncertainties are given. The method for preparing Type II calibration gas mixtures is described separately from the method for preparing Type I calibration gas mixtures.

The method is similar for the mixed gases used in Class II calibration, but individual verification is not required; periodic verification and testing can be used for each gas.

The prepared Class II calibration gas mixture was used for verification. The principle of batch preparation of Class II calibration gas mixtures is described in ISO 6142-1.

The principle of the weighing method described in [the text] has been extended. This method is applicable to mixtures of gases containing the same components and molar fractions.

The uncertainty of the mole fraction of the same component in a Type II calibration gas mixture is generally higher than that in a Type I calibration gas mixture.

The uncertainty is greater for the mole fraction of the same component.

Preparation of mixed gases for gas analysis calibration Part 2: Preparation of Type II Mixed Gases by Weighing Method

1 Scope

This document describes a method for preparing a Class II calibration gas mixture using a static weighing method, and also describes the mole fraction of each component.

The document outlines methods for calculating related uncertainties. It considers not only all factors contributing to uncertainty mentioned in ISO 6142-1, but also...

Uncertainty arising during the verification of mixed gases for Type II calibration (not the step-by-step verification required for mixed gases for Type I calibration) has been taken into account.

factor.

This document expands upon the description in ISO 6142-1 to include aspects related to uncertainty, including batch production and verification processes.

Impact on Uncertainty. This document provides guidance for assessing representative uncertainties for specific categories of gas mixtures.

This document contains methods for batch preparation of two or more mixtures in a single process.

This document applies only to the preparation of gas mixtures containing gaseous or fully vaporized components that can be introduced into the gaseous or liquid state.

In a bottle. This document covers the preparation of binary and multicomponent gas mixtures.

This document applies only to non-reactive components with a mole fraction of not less than 100×10^{-6} (mole fraction), and does not apply to mutually reactive components.

It should contain components that react with common pollutants (such as water vapor and oxygen) or are absorbed or adsorbed by the inner walls of gas cylinders and valves.

2 Normative references

The contents of the following documents, through normative references within the text, constitute essential provisions of this document. Dated citations are not included.

For references to documents, only the version corresponding to that date applies to this document; for undated references, the latest version (including all amendments) applies.

This document.

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Note: Contents of GB/T 35860-2018 Certificate for Mixed Gases for Gas Analysis Calibration (ISO 6141:2015, IDT) ISO 6142-1:2015 Gas analysis calibration - Preparation of gas mixtures - Part 1: