ICS 71.100.20
CCS G86

NATIONAL STANDARD OF THE PEOPLE'S REPUBLIC OF CHINA

GB/T 44329-2024

Preparation of gas mixtures - Gravimetric method

混合气体的制备 称量法

Issued on: August 23, 2024 **Implemented on: August 23, 2024**

Issued by: State Administration for Market Regulation;
Standardization Administration of the PRC

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Foreword

This document is in accordance with the provisions of GB/T 1.1-2020 "Guidelines for standardization work Part

1.Structure and drafting rules for standardization documents" Drafting is required. Please note that some of the contents of this document may involve patents. The issuing organization of this document does not assume the 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 Gas Standardization Technical Committee (SAC/TC 206). This document was drafted by: Hangzhou New Century Mixed Gas Co., Ltd., Dalian Data Gas Co., Ltd., Haohua Gas Co., Ltd. Southwest Branch, Beijing Hepu North Branch Gas Industry Co., Ltd., Wuhan Iron and Steel Group Gas Co., Ltd., Jebeton Petroleum Technology Group Co., Ltd. Co., Ltd., Foshan Sanshui Deli Messer Gas Co., Ltd., China Testing Technology Research Institute, Quzhou Hangyang Special Gas Co., Ltd. Co., Ltd., Southwest Chemical Research and Design Institute Co., Ltd., Zhejiang Chemical Research Institute Co., Ltd., Zhejiang Special Equipment Science Research Institute, Zhejiang Ecological Environment and Low Carbon Development Center, Dalian Kerui Gas Co., Ltd., Dalian Longyuan Gas Technology Co., Ltd., Yingde Xizhou GAS LIMITED. The main drafters of this document are. Zhang Jinbo, Li Fufen, Jiang Hongda, Zeng Bin, Zhou Haibin, Ye Shuisheng, Zhou Xin, Zhao Junxiu, Qi Libing, Mao Lingling, Shi Wanjun, Chen Yali, Ren Yanhong, Lai Xiaofeng, Tang Xiamei, Cheng Xin, Lu Changmin, Cui Xuejiao, Wang Fucheng, Tang Zhengming. Preparation and weighing of mixed gases

1 Scope

GB/T 44329-2024 specifies the gravimetric preparation of gas mixtures, the method by which primary reference gas mixtures are made. It underpins a great deal of measurement that is never traced back to it: every emission monitor, process analyser and breath alcohol instrument is calibrated against a mixture whose composition is ultimately known because a cylinder was weighed before and after each component was added. The standard sets the preparation method and the preparation process, the work required before preparation, the cleaning, evacuation and pre-treatment of the cylinder and the purity assessment of the parent gases, then the weighing itself with the balance, the buoyancy correction and the tare cylinder arrangement that make a difference of a few grams in a heavy cylinder meaningful, the transfer of each component, the homogenisation, the calculation of the composition from the masses and molar masses, the uncertainty budget, and the verification of the mixture and its stability, followed by the labelling and the certificate. It took effect on 23 August 2024.

This document describes the method and process for preparing mixed gases by weighing, and specifies the preparation, filling, and assembly of mixed gases. The calculation of preparation content, preparation verification and certification requirements are divided into two parts, and a preparation example is given. This document applies to the preparation of mixed gases packaged in cylinders and cylinder clusters.

2 Normative references

The contents of the following documents constitute the essential clauses of this document through normative references in this document. For referenced documents without a date,

only the version corresponding to that date applies to this document; for referenced documents without a date, the latest version (including all amendments) applies. in this document.

GB/T 14850 Gas Analysis Vocabulary

GB/T 34526 Provisions for filling mixed gas cylinders

GB/T 34528 Gas Cylinder Cluster Filling Regulations

GB/T 38523 Preparation of mixed gases by pressure method

GB/T 38527 General technical rules for calibration of mixed gases

3 Terms and definitions

The terms and definitions defined in GB/T 14850 and the following apply to this document.

3.1 Batch When preparing mixed gases, all gases are prepared in one filling process.

3.2 Filling system Gas filling equipment consisting of gas control valves, delivery pipelines, seals, pressure measuring equipment, weighing equipment and vacuum pumps General term.

3.3 relative deviation of preparation The difference between the measured content of the target component in the mixed gas and its target content is the percentage of the target content.

Note. The calculation formula for preparation relative deviation is given in 9.3.

3.4 relative tolerance of preparation The maximum relative deviation of the target component content in the mixed gas agreed upon by the supplier and the buyer.

3.5 cylinder for weighing When preparing mixed gas, place it on a weighing device for weighing to obtain the mixed gas in each gas cylinder or gas cylinder cluster device prepared this time. Gas cylinders or gas cylinder clusters that indicate the content of each component of a gas.