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

GB/T 11060.13-2023

**Natural gas - Determination of sulfur compound - Part 13:
Determination of hydrogen sulfide content by ultraviolet
absorption method**

天然气 含硫化合物的测定 第13部分：用紫外吸收法测定硫化氢含量

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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: This document is part 13 of GB/T 11060 "Determination of Sulfur Compounds in Natural Gas": GB/T 11060 has issued the following part:

- Part 1: Determination of hydrogen sulfide content by iodometric method;
 - Part 2: Determination of hydrogen sulfide content by the methylene blue method;
 - Part 3: Determination of hydrogen sulfide content by double-light path detection method of lead acetate reaction rate;
 - Part 4: Determination of total sulfur content by oxidative microcoulometry;
 - Part 5: Determination of total sulfur content by hydrogenolysis-rate meter colorimetric method;
 - Part 6: Measuring the content of hydrogen sulfide, mercaptan sulfur and sulfur oxide carbon by potentiometric method;
 - Part 8: Determination of total sulfur content by ultraviolet fluorescence photometry;
 - Part 9: Determination of mercaptan sulfur content by iodometric method;
 - Part 10: Determination of sulfur compounds by gas chromatography;
 - Part 11: Determination of hydrogen sulfide content by coloring length detection tube method;
 - Part 12: Determination of hydrogen sulfide content by laser absorption spectroscopy;
 - Part 13: Determination of hydrogen sulfide content by ultraviolet absorption method:
- Please note that some contents of this document may refer to patents: The issuing agency of this document assumes no responsibility for identifying patents: This document is proposed and managed by the National Natural Gas Standardization Technical Committee

(SAC/TC244): This document was drafted by: PetroChina Southwest Oil and Gas Field Branch Natural Gas Research Institute, PetroChina Gas Transmission Management Office of Southwest Oil and Gas Field Branch Company of Co., Ltd., Southwest Oil and Gas Field Branch Company of PetroChina Co., Ltd., Sinopec Sichuan Northeast Operation Branch of Southwest Oil and Gas Field Branch of Oil and Gas Co., Ltd., Institute of Chemistry of China Academy of Testing Technology, China Petroleum Corporation Petrochemical Co., Ltd: Zhongyuan Oilfield Puguang Branch, National Petroleum Pipeline Network Group Co., Ltd: West-East Gas Transmission Branch, PetroChina International Pipeline Co., Ltd., China National Institute of Metrology, China National Petroleum Corporation North China Oilfield Branch, Pyle Experimental Equipment Ltd: The main drafters of this document: Chang Honggang, Shen Lin, Cai Li, Zhou Li, Ding Sijia, Huang Ling, Xie Yu, Wang Xiaoqin, Wen Shaomu, Chen Xuefeng, Lin Daming, Cao Zhi, Gan Fengming, Qin Ji, Xu Wenxiao, Li Xiaohong, Luo Qin, Zhou Daibing, He Min, Ni Rui, Pan Yi, Hu Jian, Liu Hong, Ma Fan, Deng Fanfeng, Qiu Hui, Wang Huaqing, Wu Hai, Zhang Yingxia, Zhu Xiaoping:

Sulfur compounds in natural gas include hydrogen sulfide, mercaptans and other organic sulfur compounds: From the perspective of safety, environmental protection and pipeline and equipment corrosion The content of sulfur compounds is an important quality indicator of natural gas: The purpose of measuring the content of sulfur compounds:

1 Scope

GB/T 11060.13-2023 is the Chinese national standard on natural gas - determination of sulfur compound - part 13: determination of hydrogen sulfide content by ultraviolet absorption method, in the field of petroleum and related technologies. The /T suffix marks it as a recommended standard: it is not compulsory by itself, but it becomes binding as soon as a contract, a tender or a customer specification calls it up - which in practice is how most foreign buyers meet it. It was issued on 23 May 2023 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 September 2023. Classification: ICS 75.060, CCS E24. This page is published from the official record of the standard held by the Chinese standards administration: the identification, the dates, the classification and the issuing body are taken from there. The clause text, the tables and the numeric limits are in the document itself, which is delivered complete in English translation.

This document specifies the principle, reagents and materials, instruments, samples, test procedures, Experimental data processing, precision: This document is applicable to the online continuous detection of hydrogen sulfide content in natural gas, the measurement range: 0:1mg/m³~50mg/m³:

2 Normative references

The contents of the following documents constitute the essential provisions of this

document through normative references in the text: Among them, dated references For documents, only the version corresponding to the date is applicable to this document; for undated reference documents, the latest version (including all amendments) is applicable to this document: GB/T 5274:

1 Preparation of mixed gas for gas analysis and calibration Part 1: Preparation of primary mixed gas by weighing method

GB/T 10628 Gas Analysis Calibration Method for Determination and Calibration of Mixed Gas Composition

GB/T 20604 Natural Gas Vocabulary

GB/T 30490 Natural Gas Automatic Sampling Method

3 Terms and Definitions

The terms and definitions defined in GB/T 20604 apply to this document:

4 Principles

1 After the ultraviolet light emitted by the light source is split by the grating or prism, it is absorbed by the natural gas sample and then projected onto the photomultiplier tube: After conversion and amplification, hydrogen sulfide can be quantitatively analyzed from the drawn ultraviolet absorption spectrum, and the absorbance detected by the receiving unit is consistent with the measured gas: The hydrogen sulfide content follows the Lambert-Beer law: 4:

2 The fiber optic cable transmits the UV light from the pulsed light source to the flow cell, where a continuous natural gas sample interacts with the light within the optical path Each component in natural gas has a specific optical response signal, absorbing different amounts of light at different wavelengths: UV light passes through After the sample leaves the flow cell, it passes through an optical fiber to the spectrum analyzer, where a spectral holographic grating decomposes the ultraviolet light into continuous wavelengths and Each decomposed wavelength is focused to a specific photodiode on the diode array, and is calculated according to the Lambert-Beer law through a built-in algorithm hydrogen sulfide content:

5 Reagents and materials

1 Zero point gas: The volume fraction of methane or high-purity nitrogen is not less than 99.999%: