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

GB/T 17674-2021

Replacing GB/T 17674-2012

**Determination of nitrogen in crude oil - Boat-inlet
chemiluminescence**

原油中氮含量的测定 舟进样化学发光法

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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 of Standardization Documents" drafted: This document replaces GB/T 17674-2012 "Determination of nitrogen content in crude oil by boat injection chemiluminescence method", and GB/T 17674- Compared with:2012, except for structural adjustment and editorial changes, the main technical changes are as follows:

- Changed the units of mass fraction and mass concentration (see Chapter 1, 6:7, 9:1, 9:5, 10:1, 11:1, 11:2,:2012 edition of Chapter 1, 5:6, 8:1, 8:5, 9:1, 10:1, 10:2, 10:3);
- Changed Figure 1 to Figure 3 (see Figure 1 to Figure 3, Figure 1 to Figure 3 of the:2012 edition);
- Added the content of the standard stock solution prepared by the quality method (see 6:7);
- Added the description of subtracting blank solution (see 9:4, 10:5);
- Change the dilution factor calculation formula [see formula (1) ~ formula (8), formula (1) ~ formula (4) in the:2012 edition];
- Added instructions for use of quality control samples (see 13:1): Please note that some content of this document may be patented: The issuing agency of this document assumes no responsibility for identifying patents: This document is proposed and managed by the National Petroleum and Natural Gas Standardization Technical Committee (SAC/TC355): This document is drafted by: Daqing Oilfield Design Institute Co., Ltd., Petrochemical Research Institute of China National Petroleum Corporation, China Petrochemical Research Institute of Petrochemical Co., Ltd., PetroChina Dushanzi Petrochemical Company, PetroChina Dalian Petrochemical Company: The main drafters of this document: Song Shouguo, Ma Tianyi, Yang Fan, He Pei, Zhang Hanpei, Zhou Feng, Wu Mei, Dong Yuancheng, Han Ming: This document was first published in:1999, and was revised for the

first time in:2012: This is the second revision: Determination of nitrogen content in crude oil boat injection chemiluminescence method Warning: Persons using this document should have practical experience in formal laboratory work: This document does not address all possible security issues: It is the user's responsibility to take appropriate safety and health measures and to ensure compliance with the conditions stipulated by relevant national regulations:

1 Scope

GB/T 17674-2021 is the Chinese national standard on determination of nitrogen in crude oil - boat-inlet chemiluminescence, 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 31 December 2021 by the State Administration for Market Regulation; Standardization Administration of China, and has been in force since 1 July 2022. Classification: ICS 75.040, CCS E21. 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 a method for the determination of nitrogen content in crude oil by boat injection chemiluminescence method: This document is applicable to the determination of crude oil with nitrogen content ranging from 40mg/kg to 10000mg/kg:

2 Normative references

The contents of the following documents constitute essential provisions of this document through normative references in the text: Among them, dated citations documents, only the version corresponding to that date applies to this document; for undated references, the latest edition (including all amendments) applies to this document:

GB/T 1884 Laboratory Determination of Density of Crude Oil and Liquid Petroleum Products (Densitometer Method)

GB/T 4756 Petroleum liquid manual sampling method

GB/T 8929 Determination of Crude Oil Water Content Distillation Method

GB/T 27867 Petroleum liquid pipeline automatic sampling method SH/T 0604 Determination of Density of Crude Oil and Petroleum Products (U-Shaped Vibrating Tube Method)

3 Terms and Definitions

There are no terms and definitions that need to be defined in this document:

4 Method overview

The diluted crude oil sample was injected into the sample boat at room temperature, and the sample boat was sent into the high-temperature combustion tube through the injector: The element is oxidized into nitric oxide under oxygen-rich conditions, and nitric oxide is converted into excited state nitrogen dioxide in contact with ozone, and excited state nitrogen dioxide The emitted light during decay is detected by a photomultiplier tube, and the nitrogen content in the sample is calculated from the measured signal value:

5 Instruments

1 The composition of the instrument mainly includes the following parts:

a) Boat sampling system: It can be sealed with the inlet of the combustion tube, and can be easily purged with inert gas: The sample boat is made of platinum or quartz: To facilitate the injection of liquid samples, a small piece of quartz wool should be added to the sample boat: The boat injector should be able to completely feed the sample boat into combustion The inlet section of the tube, and can be further pushed into the high temperature zone of the heating furnace, and the speed of feeding and removing should be controllable:

b) Burner tube: Made of quartz: The inlet should allow the sample boat to enter, with side tubes for the introduction of oxygen and carrier gas: oxidized The space should be sufficient to ensure complete combustion of the specimen: A schematic diagram of a typical combustion tube structure is shown in Figures 1 to 3: With guaranteed precision In addition, other structures of combustion tubes can also be used: