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International Standard



6326/2

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INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

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**Gas analysis — Determination of sulphur compounds in natural gas —  
Part 2 : Gas chromatographic method using an electrochemical detector for the determination of odoriferous sulphur compounds**

*Analyse des gaz — Détermination des composés soufrés dans le gaz naturel — Partie 2 : Méthode par chromatographie en phase gazeuse avec détecteur électrochimique pour la détermination des composés soufrés odorants*

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## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards institutes (ISO member bodies). The work of developing International Standards is carried out through ISO technical committees. Every member body interested in a subject for which a technical committee has been set up has the right to be represented on that committee. International organizations, governmental and non-governmental, in liaison with ISO, also take part in the work.

Draft International Standards adopted by the technical committees are circulated to the member bodies for approval before their acceptance as International Standards by the ISO Council.

International Standard ISO 6326/2 was developed by Technical Committee ISO/TC 158, *Analysis of gases*, and was circulated to the member bodies in September 1979.

It has been approved by the member bodies of the following countries :

Belgium	Germany, F. R.	Poland
Bulgaria	Korea, Rep. of	Romania
Czechoslovakia	Libyan Arab Jamahiriya	South Africa, Rep. of
Egypt, Arab Rep. of	Netherlands	USSR
France	Philippines	

The member bodies of the following countries expressed disapproval of the document on technical grounds :

India  
United Kingdom

# Gas analysis — Determination of sulphur compounds in natural gas —

## Part 2 : Gas chromatographic method using an electrochemical detector for the determination of odoriferous sulphur compounds

### 0 Introduction

The standardization of several methods for the determination of sulphur compounds in natural gas is necessary in view of the diversity of these compounds (hydrogen sulphide, carbonyl sulphide, thiacyclopentane, etc.) and the purposes of the determinations (required accuracy, measurement at the drilling head or in the transmission pipes, etc.).

In order to enable the user to choose the method most appropriate to his needs and to perform the measurements under the best conditions, this International Standard has been prepared in several parts.

Part 1<sup>1)</sup> gives a rapid comparison of standardized methods and therefore provides information for the choice of the method.

The other parts, including part 2, describe in detail the various standardized methods.

The determination of total sulphur is specified in ISO 4260, *Petroleum products — Determination of sulphur content — Wickbold combustion method.*<sup>2)</sup>

### 1 Scope and field of application

This part of ISO 6326 specifies a gas chromatographic method for the qualitative and quantitative analysis of odoriferous sulphur compounds in natural gas.

Sulphur compounds may occur naturally in natural gas and remain as traces after treatment, or they may have been injected deliberately to allow subsequent olfactory detection.

The method is applicable to the following compounds :

- hydrogen sulphide;
- methanethiol<sup>3)</sup> and homologues up to butanethiols;
- thiacyclopentane<sup>4)</sup>.

It is not applicable for the determination of carbonyl sulphide.

Under normal conditions of application, this method can be used to determine the content of each compound within a concentration range from 0,1 to 100 mg (concentration expressed in milligrams of sulphur) per cubic metre of gas at standard pressure and temperature.

The detector used is not sensitive to the major components of natural gases.

#### NOTES

1 The chromatographic conditions described enable hydrogen sulphide and methanethiol to be determined if the ratio of the concentration of the former to the concentration of the latter is less than 10. The same applies for two thiols eluted consecutively. The resolution of the chromatographic column can be improved to increase this ratio.

2 The method can also be used to determine the contents of

- the same sulphur compounds in air. If such an application is contemplated, it is appropriate, however, to take account of possible interferences from gases or vapours which can be detected by the electrochemical cell, and which could contaminate the atmosphere under consideration;
- organic sulphides and disulphides; the conditions of analysis are however different and are not within the scope of this International Standard.

3 See the bibliography concerning the method described in this International Standard.

### 2 Apparatus

The apparatus operates at room temperature (see 3.4.2) and consists essentially of four parts.

#### 2.1 Device for sample injection

To avoid adsorption and desorption phenomena, the use of metal in this part of the apparatus shall be restricted.

1) In preparation.

2) At present at the stage of draft.

3) Trivial name : methyl mercaptan.

4) Trivial name : tetrahydrothiophene (THT). For the determination of the content of this compound only, see the annex.