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**Zemeljski plin - Določevanje žveplovih spojin - 3. del: Določevanje vodikovega sulfida, merkaptanskega žvepla in ogljikosulfidnega žvepla s potenciometrijo (ISO 6326-3:1989)**

Natural gas - Determination of sulfur compounds - Part 3: Determination of hydrogen sulfide, mercaptan sulfur and carbonyl sulfide sulfur by potentiometry (ISO 6326-3:1989)

Erdgas - Bestimmung von Schwefelverbindungen - Teil 3: Bestimmung von Schwefelwasserstoff, Mercaptanschwefel und Kohlenstoffoxidsulfidschwefel durch Potentiometrie (ISO 6326-3:1989)

Gaz naturel - Détermination des composés soufrés - Partie 3: Détermination du sulfure d'hydrogene, des thiols et du sulfure de carbonyle par potentiométrie (ISO 6326-3:1989)

**Ta slovenski standard je istoveten z: EN ISO 6326-3:1997**

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**ICS:**

75.060            Zemeljski plin                                    Natural gas

**SIST EN ISO 6326-3:2000**                                    **en**

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EUROPEAN STANDARD  
NORME EUROPÉENNE  
EUROPÄISCHE NORM

EN ISO 6326-3

December 1997

ICS 75.060

Descriptors: See ISO document

English version

Natural gas - Determination of sulfur compounds - Part 3:  
Determination of hydrogen sulfide, mercaptan sulfur and  
carbonyl sulfide sulfur by potentiometry (ISO 6326-3:1989)

Gaz naturel - Détermination des composés soufrés - Partie  
3: Détermination du sulfure d'hydrogène, des thiols et du  
sulfure de carbonyle par potentiométrie (ISO 6326-3:1989)

Erdgas - Bestimmung von Schwefelverbindungen - Teil 3:  
Bestimmung von Schwefelwasserstoff, Mercaptanschwefel  
und Kohlenstoffoxidsulfidschwefel durch Potentiometrie  
(ISO 6326-3:1989)

This European Standard was approved by CEN on 6 November 1997.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the Central Secretariat or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the Central Secretariat has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION  
COMITÉ EUROPÉEN DE NORMALISATION  
EUROPÄISCHES KOMITEE FÜR NORMUNG

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EN ISO 6326-3:1997

### Foreword

The text of the International Standard from Technical Committee ISO/TC 193 "Natural gas" of the International Organization for Standardization (ISO) has been taken over as an European Standard by CEN/CS.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by June 1998, and conflicting national standards shall be withdrawn at the latest by June 1998.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland and the United Kingdom.

### Endorsement notice

The text of the International Standard ISO 6326-3:1989 has been approved by CEN as a European Standard without any modification.

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# INTERNATIONAL STANDARD

**ISO**  
**6326-3**

First edition  
1989-07-01

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## Natural gas — Determination of sulfur compounds —

### Part 3 :

Determination of hydrogen sulfide, mercaptan sulfur  
and carbonyl sulfide sulfur by potentiometry

iTeh STANDARD PREVIEW  
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*Gaz naturel — Détermination des composés soufrés —*

*Partie 3 : Détermination du sulfure d'hydrogène, des thiols et du sulfure de  
carbonyle par potentiométrie*



Reference number  
ISO 6326-3 : 1989 (E)

## Foreword

ISO (the International Organization for Standardization) is a worldwide federation of national standards bodies (ISO member bodies). The work of preparing International Standards is normally carried out through ISO technical committees. Each member body interested in a subject for which a technical committee has been established 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. ISO collaborates closely with the International Electrotechnical Commission (IEC) on all matters of electrotechnical standardization.

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. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 6326-3 was prepared by Technical Committee ISO/TC 158, *Analysis of gases*.

[http://www.iso.org/iso/standards\\_catalog/standards/iso\\_6326-3/iso\\_6326-3\\_2000.htm](http://www.iso.org/iso/standards_catalog/standards/iso_6326-3/iso_6326-3_2000.htm)

ISO 6326 consists of the following parts, under the general title *Natural gas*:  
*Determination of sulfur compounds:*

- *Part 1: General introduction*
- *Part 2: Gas chromatographic method using an electrochemical detector for the determination of odoriferous sulfur compounds*
- *Part 3: Determination of hydrogen sulfide, mercaptan sulfur and carbonyl sulfide sulfur by potentiometry*
- *Part 4: Determination of individual sulfur compounds by gas chromatography with a flame photometric detector*
- *Part 5: Lingener combustion method*

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Printed in Switzerland

## Introduction

The standardization of several methods for the determination of sulfur compounds in natural gas is necessary in view of the diversity of these compounds [hydrogen sulfide, carbonyl sulfide, thiols (mercaptans), tetrahydrothiophene (THT), 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, ISO 6326 has been prepared in several parts.

ISO 6326-1 gives a rapid comparison of standardized methods and therefore provides information for the choice of the method.

The other parts of ISO 6326, including this part, describe in detail the various standardized methods.

The determination of total sulfur is specified in ISO 4260 : 1987, *Petroleum products and hydrocarbons — Determination of sulfur content — Wickbold combustion method*.  
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# Natural gas — Determination of sulfur compounds —

## Part 3 :

## Determination of hydrogen sulfide, mercaptan sulfur and carbonyl sulfide sulfur by potentiometry

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#### 1 Scope

This part of ISO 6326 specifies a potentiometric method for the determination of hydrogen sulfide, mercaptan sulfur, and carbonyl sulfide sulfur in natural gas in the concentration range equal to or above 1 mg/m<sup>3</sup>. The gas must be free of dust, mist, oxygen, hydrogen cyanide and carbon disulfide. The hydrogen sulfide/mercaptan sulfur ratio and also the mercaptan sulfur/hydrogen sulfide ratio should not exceed 50 : 1.

The method is not recommended for gases containing more than approximately 1,5 % (V/V) carbon dioxide.

NOTE — In all parts of ISO 6326, 1 m<sup>3</sup> of gas is expressed at normal conditions (0 °C; 101,325 kPa).

#### 2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 6326. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 6326 are encouraged to investigate the possibility of applying the most recent editions of the standards listed below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 385-1 : 1984, *Laboratory glassware — Burettes — Part 1 : General requirements*.

ISO 648 : 1977, *Laboratory glassware — One-mark pipettes*.

ISO 1042 : 1983, *Laboratory glassware — One-mark volumetric flasks*.

#### 3 Principle

Hydrogen sulfide and mercaptans are absorbed in a 35 % (m/m) aqueous potassium hydroxide solution and carbonyl sulfide in a 5 % (m/m) ethanoholic monoethanolamine solution. The solutions are titrated potentiometrically using silver nitrate solutions with a silver/silver sulfide electrode system to indicate the end point.

#### 4 Reagents and materials

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

##### 4.1 Potassium hydroxide, solution.

Dissolve 35 g of potassium hydroxide (KOH) in 65 g of water.

NOTE — In order to prevent interference by heavy metal ions, 0,5 g of a mixture of polyaminoacetic acids is added for each 50 ml of absorption solution to inactivate the heavy metal ions.

The mixture consists of equal parts of

the pentasodium salt of diethylenetriamine pentaacetic acid (Na<sub>5</sub>DTPA);

the trisodium salt of *N*-hydroxyethylenediamine triacetic acid (Na<sub>3</sub>HEDTA);

the sodium salt of *N,N*-di(2-hydroxyethyl-glycin) (NaDHEG);

the tetrasodium salt of ethylenediamine tetraacetic acid (Na<sub>4</sub>EDTA).