Looduslik gaas. Väävliühendite määramine. Osa 5: Lingeneri põletusmeetod

Natural gas - Determination of sulfur compounds - Part 5: Lingener combustion method

EESTI STANDARDI EESSÕNA **NATIONAL FOREWORD**

Käesolev Eesti standard EVS-EN ISO 6326-5:2003 sisaldab Euroopa standardi EN ISO 6326-5:1997 ingliskeelset teksti. Käesolev dokument on jõustatud 19.03.2003 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes. Standard on kättesaadav Eesti standardiorganisatsioonist.	This Estonian standard EVS-EN ISO 6326-5:2003 consists of the English text of the European standard EN ISO 6326-5:1997. This document is endorsed on 19.03.2003 with the notification being published in the official publication of the Estonian national standardisation organisation. The standard is available from Estonian standardisation organisation.

Käsitlusala: EN ISO 6326 käesolev osa esitab looduslikus gaasis summaarse väävli määramise meetodi. Meetod on rakendatav gaasidele, millede väävlisisaldus on vahemikus 0,5 mg/m3 ja 1000 mg/m3. Summaarse väävli sisaldustel üle 0,1 mg väävlit absorbtsioonlahuses on võimalik valida visuaalne tiitrimine kasutades indikaatorit, madalamatel sisaldustel on eelistatav turbidimeetriline tiitrimine.	**Scope:**

ICS 75.060

Võtmesõnad: gaasianalüüs, looduslik gaas, põletusanalüüsid, sisalduse määramine, väävel

EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 6326-5

December 1997

ICS 75.060

Descriptors: Natural gas, sulfur compounds, testing.

English version

Natural gas

Determination of sulfur compounds
Part 5: Lingener combustion method
(ISO 6326-5 : 1989)

Gaz naturel – Détermination des composés soufrés – Partie 5: Méthode de combustion Lingener (ISO 6326-5 : 1989)

Erdgas – Bestimmung von Schwefelverbindungen – Teil 5: Verbrennung nach dem Lingener-Verfahren (ISO 6326-5 : 1989)

This European Standard was approved by CEN on 1997-11-06.

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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.

The European Standards exist 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.

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CEN

European Committee for Standardization
Comité Européen de Normalisation
Europäisches Komitee für Normung

Central Secretariat: rue de Stassart 36, B-1050 Brussels

Foreword

International Standard

ISO 6326-5 : 1989 Natural gas – Determination of sulfur compounds – Part 5: Lingener combustion method, which was prepared by ISO/TC 193 'Natural gas' of the International Organization for Standardization, has been adopted by Technical Committee CEN/TC 19 'Petroleum products, lubricants and related products', the Secretariat of which is held by NNI, as a European Standard.

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

In accordance with the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard:

Austria, Belgium, the Czech Republic, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

Endorsement notice

The text of the International Standard ISO 6326-5 : 1989 was approved by CEN as a European Standard without any modification.

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.*

1 Scope

This part of ISO 6326 specifies a method for the determination of total sulfur in natural gas. The method is applicable to gases with sulfur contents between 0,5 mg/m^3 and 1 000 mg/m^3. With a total sulfur content of more than 0,1 mg sulfur in the absorption solution, visual titration with an indicator can be chosen, whereas for lower contents turbidimetric titration is preferable.

NOTE — In all parts of ISO 6326, 1 m^3 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.*

ISO 3585 : 1976, *Glass plant, pipeline and fittings — Properties of borosilicate glass 3.3.*

3 Principle

A measured volume of gas is burnt with air at atmospheric pressure in a glass combustion apparatus. The resulting sulfur oxides are converted into sulfuric acid by absorption in hydrogen peroxide solution. Depending on the sulfur content of the test gas, the sulfate ions in the absorption solution are determined using either visual titration with an indicator or turbidimetric titration.

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 Hydrogen peroxide, 10 % (m/m) aqueous solution, sulfur-free, as absorbing liquid for the sulfur oxides.

4.2 Activated carbon, for adsorption of sulfur impurities from the combustion air.

4.3 Absorbing liquid : 30 % (m/m) aqueous solution of potassium hydroxide, for the purification of the combustion air.

5 Apparatus

The schematic layout of the apparatus is shown in figure 1.

Ordinary laboratory apparatus and