

**Natural gas - Organic sulfur compounds  
used as odorants - Requirements and test  
methods**

Natural gas - Organic sulfur compounds used as  
odorants - Requirements and test methods

## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 13734:2000 sisaldab Euroopa standardi EN ISO 13734:2000 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 12.09.2000 ja selle kohta on avaldatud teade Eesti standardiorganisatsiooni ametlikus väljaandes.</p> <p>Standard on kättesaadav Eesti standardiorganisatsioonist.</p>	<p>This Estonian standard EVS-EN ISO 13734:2000 consists of the English text of the European standard EN ISO 13734:2000.</p> <p>This document is endorsed on 12.09.2000 with the notification being published in the official publication of the Estonian national standardisation organisation.</p> <p>The standard is available from Estonian standardisation organisation.</p>
--	---

<p><b>Käsitlusala:</b></p> <p>This standard specifies requirements and test methods for organic sulfur compounds suitable for odorization of natural gas and natural gas substitutes for public gas supply, hereafter referred to as odorants.</p>	<p><b>Scope:</b></p> <p>This standard specifies requirements and test methods for organic sulfur compounds suitable for odorization of natural gas and natural gas substitutes for public gas supply, hereafter referred to as odorants.</p>
--	--

ICS 75.060

Võtmesõnad:

**English version**

**Natural gas – Organic sulfur compounds used as odorants  
Requirements and test methods  
(ISO 13734:1998)**

Gaz naturel – Composés organiques  
soufrés utilisés comme odorisants –  
Prescriptions et méthodes d'essai  
(ISO 13734:1998)

Erdgas – Organische Schwefel-  
verbindungen verwendet als  
Odoriermittel – Anforderungen und  
Prüfverfahren (ISO 13734:1998)

This European Standard was approved by CEN on 2000-02-03.

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.

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.

CEN members are the national standards bodies of 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.

**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 13734 : 1998 Natural gas – Organic sulfur compounds used as odorants – Requirements and test methods,

which was prepared by ISO/TC 193 'Natural gas' of the International Organization for Standardization, has been adopted by CEN/CS 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 September 2000 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 13734:1998 was approved by CEN as a European Standard without any modification.

NOTE: Normative references to international publications are listed in Annex ZA (normative).

Contents	Page
1 Scope .....	4
2 Normative reference .....	4
3 Definitions .....	4
4 Requirements .....	5
4.1 Composition .....	5
4.2 Cloud point .....	5
4.3 Boiling point .....	5
4.4 Evaporation residue .....	5
4.5 Insoluble matter .....	5
4.6 Solubility in water (optional requirement) .....	5
5 Handling and transport .....	6
6 Tests .....	6
6.1 Test sample .....	6
6.2 Test documentation .....	6
6.3 Determination of composition .....	6
6.4 Determination of cloud point .....	6
6.5 Determination of boiling point .....	7
6.6 Determination of evaporation residue .....	8
6.7 Visual examination for solids or suspended matter .....	8
6.8 Determination of solubility in water .....	8
7 Marking .....	9

## Introduction

Processed natural gas received from suppliers normally has little or no odour. For safety reasons, natural gas is therefore odorized to permit the detection by smell of the gas at very low concentrations in air.

NOTE — It is a common requirement that natural gas in air be readily detectable by smell at a concentration of 20 % of the lower flammability limit (LFL). The LFL of natural gas is normally taken as a volume content in air of 4 % to 5 %.

Odorants used for the odorization of natural gas need to meet several basic requirements:

- a) They need to have an intense odour.
- b) The odour needs to be distinctive and not confusable with other frequently occurring odours.
- c) The odour needs to be unpleasant but not too obnoxious. The odour character needs to be the same at different dilutions of natural gas with air.
- d) The odorized gas must not be toxic or an irritant at the concentration levels at which the odorant is employed and the addition of the odorant must not lead to the production of significant levels of harmful combustion products.
- e) The odorant needs to be volatile, and sufficiently stable in the gas phase and during storage. It must not form deposits on burners and safety devices.

Experience in many countries has shown that these basic requirements are best met by organic sulfur compounds — sulfides (thioethers) and mercaptans (thiols) — with boiling points below 130 °C. Since primary mercaptans are easily oxidized to disulfides which have a much lower odour intensity, mercaptan-based odorants need to predominantly contain secondary and tertiary mercaptans.

While it has been established that the above sulfur compounds fulfil the basic requirements listed above under a) to e), the suitability of other compounds (e.g. non-sulfur compounds) should not be precluded, provided they meet these basic requirements.

## 1 Scope

This International Standard specifies requirements and test methods for organic sulfur compounds suitable for odorization of natural gas and natural gas substitutes for public gas supply, hereafter referred to as odorants.

## 2 Normative reference

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

ISO 3015:1992, *Petroleum products — Determination of cloud point.*

## 3 Definitions

For the purposes of this International Standard, the following definitions apply.

### 3.1

#### **odorant**

an intensely smelling organic chemical or combination of chemicals added to natural gas at low concentration and capable of imparting a characteristic and distinctive (usually disagreeable) warning odour so gas leaks can be detected at concentrations below their lower flammability limit

NOTE — Currently commercially used odorants belong to the following classes of substances:

- a) alkyl sulfides (alkyl thioethers)
  - symmetrical sulfides, e.g.  $C_2H_5-S-C_2H_5$
  - asymmetrical sulfides, e.g.  $CH_3-S-C_2H_5$
- b) cyclic sulfides (cyclic thioethers), e.g.  $C_4H_8S$
- c) alkyl mercaptans (alkane thiols)
  - primary mercaptans, e.g.  $C_2H_5-SH$
  - secondary mercaptans, e.g.  $(CH_3)_2CH-SH$
  - tertiary mercaptans, e.g.  $(CH_3)_3C-SH$