

**Natural gas - Determination of composition with defined uncertainty by gas chromatography - Part 2: Measuring-system characteristics and statistics for processing of data**

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## EESTI STANDARDI EESSÕNA

## NATIONAL FOREWORD

<p>Käesolev Eesti standard EVS-EN ISO 6974-2:2002 sisaldab Euroopa standardi EN ISO 6974-2:2002 ingliskeelset teksti.</p> <p>Käesolev dokument on jõustatud 06.08.2002 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 6974-2:2002 consists of the English text of the European standard EN ISO 6974-2:2002.</p> <p>This document is endorsed on 06.08.2002 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>
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<p><b>Käsitlusala:</b></p> <p>This part of ISO 6974 describes the data processing for the tailored analysis of natural gas. It includes the determination of the measuring system characteristics and the statistical approach to data handling and error calculation with the aim of defining the uncertainty in the mole fractions of the component measured.</p>	<p><b>Scope:</b></p> <p>This part of ISO 6974 describes the data processing for the tailored analysis of natural gas. It includes the determination of the measuring system characteristics and the statistical approach to data handling and error calculation with the aim of defining the uncertainty in the mole fractions of the component measured.</p>
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**Võtmesõnad:** chemical analysis and testin, chemical analysis and testing, chemical composition, composition, determination of content, gas analysis, gas chromatography, measuring systems, natural gas, statistics, uncertainties

**English version**

**Natural gas – Determination of composition with  
defined uncertainty by gas chromatography**

**Part 2: Measuring-system characteristics and statistics  
for processing of data  
(ISO 6974-2 : 2001)**

Gaz naturel – Détermination de la composition avec une incertitude définie par chromatographie en phase gazeuse – Partie 2: Caractéristiques du système de mesure et statistiques pour le traitement des données (ISO 6974-2 : 2001)

Erdgas – Bestimmung der Zusammensetzung mit definierter Unsicherheit durch Gaschromatographie – Teil 2: Messsystemcharakteristiken und Statistiken für die Datenverarbeitung (ISO 6974-2 : 2001)

This European Standard was approved by CEN on 2002-01-05.

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 Management Centre 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 Management Centre 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

**Management Centre: rue de Stassart 36, B-1050 Brussels**

## Foreword

International Standard

ISO 6974-2 : 2001 Natural gas – Determination of composition with defined uncertainty by gas chromatography – Part 2: Measuring-system characteristics and statistics for processing of data, which was prepared by ISO/TC 193 'Natural gas' of the International Organization for Standardization, has been adopted by CEN/CMC 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 2002 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, Malta, the Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, and the United Kingdom.

## Endorsement notice

The text of the International Standard ISO 6974-2 : 2001 was approved by CEN as a European Standard without any modification.

## Contents

	Page
<b>Foreword</b> .....	<b>2</b>
<b>Introduction</b> .....	<b>3</b>
<b>1 Scope</b> .....	<b>4</b>
<b>2 Normative references</b> .....	<b>4</b>
<b>3 Terms and definitions</b> .....	<b>4</b>
<b>4 Symbols and subscripts</b> .....	<b>5</b>
4.1 <b>Symbols</b> .....	<b>5</b>
4.2 <b>Subscripts</b> .....	<b>6</b>
<b>5 Procedure</b> .....	<b>7</b>
5.1 <b>Step 1: Determination of the optimal response functions</b> .....	<b>7</b>
5.2 <b>Step 2: Selection of the response functions to be used in practice</b> .....	<b>11</b>
5.3 <b>Step 3: Routine calibration with a working-reference gas mixture</b> .....	<b>13</b>
5.4 <b>Step 4: Calculation of non-normalized component mole fractions</b> .....	<b>13</b>
5.5 <b>Step 5: Calculation of non-normalized component standard deviations</b> .....	<b>13</b>
5.6 <b>Step 6: Calculation of normalized component mole fractions</b> .....	<b>15</b>
5.7 <b>Step 7: Calculation of normalized component standard deviations</b> .....	<b>15</b>
5.8 <b>Step 8: Calculation of uncertainty and repeatability of the results</b> .....	<b>16</b>
5.9 <b>Relationship between ISO 6974-2 and ISO 6976</b> .....	<b>16</b>
<b>Annex A (informative) Critical values of <math>t</math></b> .....	<b>17</b>
<b>Annex B (informative) Example</b> .....	<b>18</b>
<b>Annex C (informative) Relative response factors (<math>K</math>)</b> .....	<b>26</b>
<b>Bibliography</b> .....	<b>27</b>

## Introduction

This part of ISO 6974 describes the data processing for the "tailored" analysis of natural gas.

This part is to be used in conjunction with part 1 of ISO 6974 which gives the guidelines for "tailored" analysis.

Any method of analysis, either one of those in part 3 of ISO 6974 and subsequent parts or another method of choice can only be applied in conjunction with parts 1 and 2 of ISO 6974.

The calculation of the composition of the gas using response curves, a working-reference gas mixture and relative response factors are described in part 1 of ISO 6974, while the elaboration of these formulae is described in this part of ISO 6974.

The working-reference gas mixture and the gas sample are analysed with the same analytical system under the same set of conditions. Components not measured by this method will influence the accuracy of the method and should therefore be known.

If no working-reference gas mixture is used for the regular calibration of the analytical system, a number of equations given in this part of ISO 6974 will change. Such changes are indicated for each of these equations.

Once the working ranges of the components have been defined, an evaluation is carried out to determine whether components are to be considered as:

- main components or groups of components to be analysed using direct measurement (directly measured components);
- components or groups of components to be analysed using indirect measurement, as a function of a different, reference component in the calibration gas (indirectly measured components);
- components that are not measured and whose mole fraction can be assumed to be constant (components not measured).

The sum of the mole fractions of the main components, the indirect components and the fixed components is equal to 1.

## 1 Scope

This part of ISO 6974 describes the data processing for the tailored analysis of natural gas. It includes the determination of the measuring system characteristics and the statistical approach to data handling and error calculation with the aim of defining the uncertainty in the mole fractions of the component measured.

This part of ISO 6974 is only applicable in conjunction with part 1 of ISO 6974.

## 2 Normative references

The following normative documents contain provisions which, through reference in this text, constitute provisions of this part of ISO 6974. For dated references, subsequent amendments to, or revisions of, any of these publications do not apply. However, parties to agreements based on this part of ISO 6974 are encouraged to investigate the possibility of applying the most recent editions of the normative documents indicated below. For undated references, the latest edition of the normative document referred to applies. Members of ISO and IEC maintain registers of currently valid International Standards.

ISO 6974-1, *Natural gas — Determination of composition with defined uncertainty by gas chromatography — Part 1: Guidelines for tailored analysis.*

ISO 6976, *Natural gas — Calculation of calorific values, density, relative density and Wobbe index from composition.*

## 3 Terms and definitions

For the purposes of this part of ISO 6974, the following terms and definitions apply.

### 3.1

#### **response**

output signal of the measuring system for a component that is measured as peak area or peak height

NOTE Response is expressed in counts.

### 3.2

#### **uncertainty**

estimate attached to a measurement result which characterizes the range of values within which the true value is asserted to lie

NOTE In general, the uncertainty of measurements comprises many components. Some of these components may be estimated on the basis of statistical distribution of the results of series of measurements and can be characterized by experimental standard deviation. The estimates of other components can only be based on experience or other information.