



SLOVENSKI STANDARD

SIST EN ISO 15796:2008

01-oktober-2008

Analiza plinov - Ėtudija in doloŹenje biasa (ISO 15796:2005)

Gas analysis - Investigation and treatment of analytical bias (ISO 15796:2005)

Gasanalyse - Untersuchung und Behandlung von systematischen Abweichungen (ISO 15796:2005)

Analyse des gaz - Investigation et traitement des biais analytiques (ISO 15796:2005)

Ta slovenski standard je istoveten z: EN ISO 15796:2008

ICS:

71.040.40	Kemijska analiza	Chemical analysis
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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 15796

August 2008

ICS 71.040.40

English Version

**Gas analysis - Investigation and treatment of analytical bias
(ISO 15796:2005)**

Analyse des gaz - Investigation et traitement des biais
analytiques (ISO 15796:2005)

Gasanalyse - Untersuchung und Behandlung von
systematischen Abweichungen (ISO 15796:2005)

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Foreword

The text of ISO 15796:2005 has been prepared by Technical Committee ISO/TC 158 "Analysis of gases" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 15796:2008 by Technical Committee CEN/SS N21 "Gaseous fuels and combustible gas" the secretariat of which is held by CMC.

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of an identical text or by endorsement, at the latest by February 2009, and conflicting national standards shall be withdrawn at the latest by February 2009.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

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INTERNATIONAL STANDARD

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Gas analysis — Investigation and treatment of analytical bias

Analyse des gaz — Investigation et traitement des biais analytiques

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO 15796 was prepared by Technical Committee ISO/TC 158, *Analysis of gases*.

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Introduction

Traceability is considered as one of the key items of quality assurance in gas analysis. In general, it is defined by the existence of unbroken chains of comparisons, relating the analytical result to acknowledged standards of measurement. More specifically, an analytical result is considered traceable if, by way of these comparisons, it has been demonstrated to be free of significant bias, significance referring to the specified uncertainty of the result.

As a rule, traceability is not demonstrated individually for a single analytical result but for a defined analytical procedure with specified ranges of analyte concentration and matrix composition. An analytical procedure is considered traceable if it has been demonstrated to be free of significant bias, or if significant bias has been corrected, by measurement on representative samples of known traceable composition. These may be samples of appropriate reference gas mixtures. Alternatively, other representative samples may be analysed in parallel using an accepted reference procedure.

This International Standard provides generic methods for demonstrating, or establishing, traceability of analytical procedures using reference gas mixtures or reference analytical procedures, implementing principles laid out in ISO 14111 ^[1] and ISO/TS 14167 ^[2], and respecting the principles of the *Guide to the Expression of Uncertainty in Measurement* (GUM) ^[3].

In this International Standard, the term “concentration” is used for two different purposes:

- as a general term for quantities measured in gas composition analysis, replacing the term “content” (see ISO 7504 ^[4]);
- as a generic substitute for any of the specific quantities measured in gas composition analysis such as the mass concentration or the mole fraction of a specified analyte (see ISO 7504 ^[4]).

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Gas analysis — Investigation and treatment of analytical bias

1 Scope

This International Standard specifies generic methods for detecting and correcting bias (systematic errors) of analytical procedures for the analysis of gases, using reference gas mixtures or reference analytical procedures, as well as for estimating the correction uncertainty.

The main sources of (and parameters affecting) bias of analytical procedures are instrumental drift (time) and matrix interferences (matrix composition). Moreover, bias normally varies with analyte concentration. This International Standard therefore establishes protocols for

- detecting and correcting drift for an analytical system of limited stability,
 - investigating and handling bias of a stable analytical system for a specified range of sample composition,
- which are intended to be used in method development and method validation studies, either separately or sequentially.

This International Standard specifies procedures for two options, applicable to systematic effects, as follows:

- a) tracing the observed pattern of deviations and correcting for their effect,
- b) averaging over their effects and increasing the uncertainty,

where normally the first option entails lower uncertainty at the expense of higher effort.

For the convenience of the user, the methods specified in this International Standard are described for procedures of composition analysis, i.e. procedures for measuring the concentration of a specified analyte in a gas mixture. However, they are equally applicable to measurements of physico-chemical properties of a gas or gas mixture relevant to gas analysis, and translation into this subject field is straightforward.

2 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

2.1

bias

estimate of systematic error

NOTE Since the true value of a measurand cannot be known exactly, systematic errors cannot be determined exactly but have to be estimated using reference values.

2.2

correction

procedure by which the uncorrected result of a measurement is adjusted to compensate for systematic error

NOTE 1 Since systematic errors cannot be determined exactly, a correction can never be complete.

NOTE 2 In the VIM [5], the term correction is used with a different meaning.