
**Natural gas — Determination
of composition and associated
uncertainty by gas chromatography —
Part 3:
Precision and bias**

*Gaz naturel — Détermination de la composition et de l'incertitude
associée par chromatographie en phase gazeuse —*

Partie 3: Fidélité et biais

iteh.com
(<https://standards.iteh.ai>)
Document Preview

[ISO 6974-3:2018](https://standards.iteh.ai/catalog/standards/iso/8b1ad2b9-7afa-47c1-946c-eb2391058857/iso-6974-3-2018)

<https://standards.iteh.ai/catalog/standards/iso/8b1ad2b9-7afa-47c1-946c-eb2391058857/iso-6974-3-2018>



iTeh Standards
(<https://standards.iteh.ai>)
Document Preview

[ISO 6974-3:2018](https://standards.iteh.ai/catalog/standards/iso/8b1ad2b9-7afa-47c1-946c-eb2391058857/iso-6974-3-2018)

<https://standards.iteh.ai/catalog/standards/iso/8b1ad2b9-7afa-47c1-946c-eb2391058857/iso-6974-3-2018>



COPYRIGHT PROTECTED DOCUMENT

© ISO 2018

All rights reserved. Unless otherwise specified, or required in the context of its implementation, no part of this publication may be reproduced or utilized otherwise in any form or by any means, electronic or mechanical, including photocopying, or posting on the internet or an intranet, without prior written permission. Permission can be requested from either ISO at the address below or ISO's member body in the country of the requester.

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Fax: +41 22 749 09 47
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

	Page
Foreword	iv
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Symbols	4
5 Principle	4
6 Reference precision values	4
7 Practical applications	5
8 Bias	6
Annex A (informative) Proficiency scheme data evaluation	7
Bibliography	11

iTeh Standards
(<https://standards.itih.ai>)
Document Preview

[ISO 6974-3:2018](https://standards.itih.ai/catalog/standards/iso/8b1ad2b9-7afa-47c1-946c-eb2391058857/iso-6974-3-2018)

<https://standards.itih.ai/catalog/standards/iso/8b1ad2b9-7afa-47c1-946c-eb2391058857/iso-6974-3-2018>

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular, the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2 (see www.iso.org/directives).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

For an explanation of the voluntary nature of standards, the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the World Trade Organization (WTO) principles in the Technical Barriers to Trade (TBT) see www.iso.org/iso/foreword.html.

This document was prepared by Technical Committee ISO/TC 193, *Natural gas*, Subcommittee SC 1, *Analysis of natural gas*.

This second edition cancels and replaces the first edition (ISO 6974-3:2000), which has been technically revised.

A list of all parts in the ISO 6974 series can be found on the ISO website.

Any feedback or questions on this document should be directed to the user's national standards body. A complete listing of these bodies can be found at www.iso.org/members.html.

Natural gas — Determination of composition and associated uncertainty by gas chromatography —

Part 3: Precision and bias

1 Scope

This document describes the precision that can be expected from the gas chromatographic method that is set up in accordance with ISO 6974-1. The stated precision provides values for the magnitude of variability that can be expected between test results when the method described in ISO 6974-1 is applied in one or more competent laboratories. This document also gives guidance on the assessment of bias.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC 17025, *General requirements for the competence of testing and calibration laboratories*

3 Terms and definitions

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

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <https://www.iso.org/obp>
- IEC Electropedia: available at: <http://www.electropedia.org/>

3.1

measurement precision

closeness of agreement between indications or measured quantity values obtained by replicate measurements on the same or similar objects under specified conditions

Note 1 to entry: Measurement precision is usually expressed numerically by measures of imprecision, such as standard deviation, variance, or coefficient of variation under the specified conditions of measurement.

Note 2 to entry: The 'specified conditions' can be, for example, repeatability conditions of measurement, intermediate precision conditions of measurement, or reproducibility conditions of measurement (see ISO 5725-1).

Note 3 to entry: Measurement precision is used to define measurement repeatability, intermediate measurement precision, and measurement reproducibility.

Note 4 to entry: Sometimes "measurement precision" is erroneously used to mean measurement accuracy.

[SOURCE: JCGM 200:2012, 2.15]

3.2 error of measurement

measured quantity value minus a reference quantity value

Note 1 to entry: The concept of 'measurement error' can be used both

- a) when there is a single reference quantity value to refer to, which occurs if a calibration is made by means of a measurement standard with a measured quantity value having a negligible measurement uncertainty or if a conventional quantity value is given, in which case the measurement error is known, and
- b) if a measurand is supposed to be represented by a unique true quantity value of a set of true quantity values of negligible range in which case the measurement error is not known

Note 2 to entry: Measurement error should not be confused with production error or mistake.

[SOURCE: JCGM 200:2012, 2.16]

3.3 systematic measurement error

component of measurement error that in replicate measurements remains constant or varies in a predictable manner

Note 1 to entry: A reference quantity value for a systematic measurement error is a true quantity value, or a measured quantity value of a measurement standard of negligible measurement uncertainty, or a conventional quantity value.

Note 2 to entry: Systematic measurement error, and its causes, can be known or unknown. A correction can be applied to compensate for a known systematic measurement error.

Note 3 to entry: Systematic measurement error equals measurement error minus random measurement error.

[SOURCE: JCGM 200:2012, 2.17]

3.4 measurement bias

estimate of a systematic measurement error [ISO 6974-3:2018](https://standards.iteh.ai/catalog/standards/iso/8b1ad2b9-7afa-47c1-946c-eb2391058857/iso-6974-3-2018)

<https://standards.iteh.ai/catalog/standards/iso/8b1ad2b9-7afa-47c1-946c-eb2391058857/iso-6974-3-2018>
[SOURCE: JCGM 200:2012, 2.18]

3.5 laboratory bias

difference between the expectation of the test results from a particular laboratory and an accepted reference value

[SOURCE: ISO 5725-1:1994, 3.9]

3.6 random measurement error

component of measurement error that in replicate measurements varies in an unpredictable manner

Note 1 to entry: A reference quantity value for a random measurement error is the average that would ensue from an infinite number of replicate measurements of the same measurand.

Note 2 to entry: Random measurement errors of a set of replicate measurements form a distribution that can be summarized by its expectation, which is generally assumed to be zero, and its variance.

Note 3 to entry: Random measurement error equals measurement error minus systematic measurement error.

[SOURCE: JCGM 200:2012, 2.19]