BS ISO 7504:2015



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Gas analysis — Vocabulary

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National foreword

This British Standard is the UK implementation of ISO 7504:2015. It supersedes BS ISO 7504:2001 which is withdrawn.

The UK participation in its preparation was entrusted to Technical Committee PTI/15, Natural Gas and Gas Analysis.

A list of organizations represented on this committee can be obtained on request to its secretary.

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ISBN 978 0 580 77140 8

ICS 01.040.71; 71.040.40

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This British Standard was published under the authority of the Standards Policy and Strategy Committee on 31 May 2015.

Amendments issued since publication

Date	Text affected

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INTERNATIONAL STANDARD

ISO 7504

Third edition
2015-05-15

Gas analysis — Vocabulary

Analyse des gaz — Vocabulaire

Reference number
ISO 7504:2015(E)

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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.

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 on the meaning of ISO specific terms and expressions related to conformity assessment, as well as information about ISO's adherence to the WTO principles in the Technical Barriers to Trade (TBT), see the following URL: Foreword — Supplementary information.

The committee responsible for this document is ISO/TC 158, *Analysis of gases*.

This third edition cancels and replaces the second edition (ISO 7504:2001), which has been technically revised for alignment with the terminology used in other International Standards, including ISO/IEC Guide 98-3 and ISO/IEC Guide 99:2007.

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Gas analysis — Vocabulary

1 Scope

This International Standard defines terms related to gas analysis, with the main focus on terms related to calibration gas mixtures for use in gas analysis and gas measurements. It does not cover terms which relate only to specific applications.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO/IEC Guide 98-3:2008, *Uncertainty of measurement — Part 3: Guide to the expression of uncertainty in measurement (GUM:1995)*

ISO/IEC Guide 99:2007, *International vocabulary of metrology — Basic and general concepts and associated terms (VIM)*

ISO 10715:1997, *Natural gas — Sampling guidelines*

3 Terms relating to general concepts

Terms used in the field of gas analysis that are well defined by either ISO/IEC Guide 98-3 or ISO/IEC Guide 99 are included in Annex A.

3.1
homogeneity
state of a gas mixture wherein all of its *components* (3.3) are distributed uniformly throughout the volume occupied by the gas mixture

3.2
stability
attribute of a gas mixture, under specified conditions, to maintain its *composition* (3.5) within specified uncertainty (Annex A) limits for a specified period of time (*maximum storage life* (7.5))

3.3
component
chemical entity at a defined physical state present in a material or in a mixture

3.4
content
amount-of-substance fraction (3.5.1.1), *mass fraction* (3.5.1.2), *volume fraction* (3.5.1.3), *amount-of-substance concentration* (3.5.2.1), *mass concentration* (3.5.2.2), *volume concentration* (3.5.2.3) of a *component* (3.3) in a gas or gas mixture

Note 1 to entry: See ISO 14912[7] for further information about this concept.

EXAMPLE 1 The hydrogen content in a mixture of hydrogen and nitrogen, expressed as an *amount-of-substance fraction* (3.5.1.1), is $x(H_2) = 0{,}1$.

EXAMPLE 2 The content of sulfur dioxide in air at p = 101,325 kPa and T = 288,15 K, expressed as a *mass concentration* (3.5.2.2), is $\gamma(SO_2) = 1\ mg/m^3$.

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3.5
composition
identity and *content* (3.4) of each *component* (3.3) that constitute a particular gas mixture

3.5.1 Fractions

3.5.1.1
amount-of-substance fraction
mole fraction
x_B, y_B
quotient of the amount of substance of a component B and the sum of the amounts of substance of all *components* (3.3) of the gas mixture

[SOURCE: ISO 80000-9:2009, 9-14]

3.5.1.2
mass fraction
w_B
quotient of the mass of a component B and the sum of the masses of all *components* (3.3) of the gas mixture

[SOURCE: ISO 80000-9:2009, 9-12]

3.5.1.3
volume fraction
φ_B
quotient of the volume of a component B and the sum of the volumes of all *components* (3.3) of the gas mixture before mixing, all volumes referring to the pressure and the temperature of the gas mixture

[SOURCE: ISO 80000-9:2009, 9-15]

3.5.2 Concentrations

3.5.2.1
amount-of-substance concentration
mole concentration
c_B
quotient of the amount of substance of a component B and the volume of the gas mixture

[SOURCE: ISO 80000-9:2009, 9-13]

3.5.2.2
mass concentration
γ_B
quotient of the mass of a component B and the volume of the gas mixture

[SOURCE: ISO 80000-9:2009, 9-11.2]

3.5.2.3
volume concentration
σ_B
quotient of the volume of a component B before mixing and the volume of the gas mixture, both volumes referring to the same pressure and the same temperature

Note 1 to entry: The volume concentration and the *volume fraction* (3.5.1.3), both referring to the same pressure and the same temperature, have identical values if, and only if, the sum of the component volumes and the volume of the whole gas mixture are identical.

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