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Gas analysis — Handling of calibration gases and gas mixtures — Guidelines

Analyse des gaz — Mise en oeuvre des gaz et des mélanges de gaz pour étalonnage — Lignes directrices

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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).

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For an explanation on 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 the following URL: www.iso.org/iso/foreword.html

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

This second edition cancels and replaces the first edition (ISO 16664:2004), which has been technically revised. The major changes are the following:

— Figures 1 and 5 have been revised to more clearly depict the arrangements;

— several references and terminological entries have been updated.

Introduction

This document uses the terms “calibration gas” for both gas mixtures and pure gases as the limiting case of gas mixtures.

The quality of calibration gases in cylinders as certified by producers is defined by

a) the correct analyte content;

b) a known uncertainty which is appropriate for its intended use;

c) the stability;

d) the homogeneity.

During its utilization period, the quality of calibration gases is influenced by

— storage conditions at the manufacturer’s and user’s sites;

— transport conditions;

— modes of calibration gas withdrawal and transfer;

— the transfer system employed.

Gas analysis — Handling of calibration gases and gas mixtures — Guidelines

SAFETY PRECAUTIONS — National and international safety regulations concerning storage, use and transportation of pure gases and gas mixtures are to be followed in addition to this document.

1 Scope

This document describes factors that may influence the composition of pure gases and homogeneous gas mixtures used for calibration purposes. This document only applies to gases or gas mixtures that are within the "utilization period". It provides the following guidelines for the handling and use of calibration gas mixtures:

— storage of calibration gas cylinders;

— calibration gas withdrawal from cylinders;

— transfer of calibration gas from cylinders to the point of calibration.

It also outlines a method of assessing the stability of a gas mixture, taking into account the gas composition uncertainty given on the certificate and the user's measurement uncertainty.

2 Normative references

There are no normative references in this document.

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:

— IEC Electropedia: available at http://www.electropedia.org/

— ISO Online browsing platform: available at http://www.iso.org/obp

3.1
calibration gas
pure gas or gas mixture used for calibration

3.2
calibration gas mixture
gas mixture of known *stability* (3.9) and *homogeneity* (3.4) whose composition is well established for use in the calibration or verification of a measuring instrument or for the validation of a measurement

Note 1 to entry: Calibration gas mixtures are measurement standards (Annex A) as defined in ISO/IEC Guide 99:2007.

[SOURCE: ISO 7504:2015, 5.1]

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

[SOURCE: ISO 7504:2015, 3.3]