



# SLOVENSKI STANDARD SIST EN ISO 6145-1:2019

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**Analiza plinov - Priprava kalibracijskih plinskih zmesi z uporabo dinamičnih metod  
- 1. del: Splošni vidiki (ISO 6145-1:2019)**

Gas analysis - Preparation of calibration gas mixtures using dynamic methods - Part 1:  
General aspects (ISO 6145-1:2019)

Gasanalyse - Herstellung von Kalibriergasgemischen mit Hilfe von dynamische  
Verfahren - Teil 1: Kalibrierverfahren (ISO 6145-1:2019)

Analyse des gaz - Préparation des mélanges de gaz pour étalonnage à l'aide de  
méthodes dynamiques - Partie 1 : Aspects généraux (ISO 6145-1:2019)

**Ta slovenski standard je istoveten z: EN ISO 6145-1:2019**

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71.040.40      Kemijska analiza      Chemical analysis

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EUROPEAN STANDARD

EN ISO 6145-1

NORME EUROPÉENNE

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English Version

## Gas analysis - Preparation of calibration gas mixtures using dynamic methods - Part 1: General aspects (ISO 6145-1:2019)

Analyse des gaz - Préparation des mélanges de gaz  
pour étalonnage à l'aide de méthodes dynamiques -  
Partie 1 : Aspects généraux (ISO 6145-1:2019)

Gasanalyse - Herstellung von Kalibriergasgemischen  
mit Hilfe von dynamische Verfahren - Teil 1:  
Kalibrierverfahren (ISO 6145-1:2019)

This European Standard was approved by CEN on 1 September 2019.

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**CEN-CENELEC Management Centre: Rue de la Science 23, B-1040 Brussels**

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## European foreword

This document (EN ISO 6145-1:2019) has been prepared by Technical Committee ISO/TC 158 "Analysis of gases" in collaboration with Technical Committee CEN/SS N21 "Gaseous fuels and combustible gas" the secretariat of which is held by CCMC.

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of an identical text or by endorsement, at the latest by April 2020, and conflicting national standards shall be withdrawn at the latest by April 2020.

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

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INTERNATIONAL  
STANDARD

ISO  
6145-1

Third edition  
2019-09

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**Gas analysis — Preparation of  
calibration gas mixtures using  
dynamic methods —**

**Part 1:  
General aspects**

**iTeh STANDARD PREVIEW**  
*Analyse des gaz — Préparation des mélanges de gaz pour étalonnage  
à l'aide de méthodes dynamiques —  
Partie 1: Aspects généraux*  
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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](http://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](http://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 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](http://www.iso.org/iso/foreword.html).

This document was prepared by Technical Committee ISO/TC 158, *Gas analysis*.

This third edition cancels and replaces the second edition (ISO 6145-1:2003), which has been technically revised. The main changes compared to the previous edition are as follows.

- The techniques for the preparation of gas mixtures are described in an abbreviated manner since there is no need to repeat the text and formulae from each of the different parts of the ISO 6145 series. However, a summary table ([Table 1](#)) presenting the advantages and limitations of each method has been introduced.
- Recommendations regarding the handling of the dynamic mixing systems and quality considerations have been added.
- The methods and instruments to calibrate a dynamic system have changed and are better described.
- The calculations to obtain composition and uncertainties are more detailed, and the different ways of mixing gases (volume flow rates or mass flow rates) have been taken into account.
- Clauses on certificates ([7.4](#)) and verification ([Clause 10](#)) have been added.

A list of all parts in the ISO 6145 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](http://www.iso.org/members.html).

## ISO 6145-1:2019(E)

### Introduction

This document is one of a series of standards which describes the various dynamic methods for the preparation of calibration gas mixtures.

Several techniques are available and the choice between them is decided based on the desired gas composition range, the consistency of equipment with the application and the required level of uncertainty. This document aids with making an informed choice by listing all the advantages and limitations of the methods.

The main techniques used for the preparation of gas mixtures are:

- a) piston pumps;
- b) continuous injection;
- c) capillary;
- d) critical orifices;
- e) thermal mass-flow controllers;
- f) diffusion;
- g) saturation;
- h) permeation;
- i) electrochemical generation.

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In dynamic methods, a gas A is introduced at a known constant volume or mass flow rate into a known constant flow rate of a complementary gas B. Gases A and B can be either pure gases or gas mixtures. The preparation process can be continuous (such as mass flow controllers, permeation tube) or pseudo-continuous (such as piston pump).

The dynamic preparation techniques produce a continuous flow of calibration gas mixtures into the analyser but do not generally allow the build-up of a reserve by storage under pressure.