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SLOVENSKI STANDARD
SIST EN ISO 6145-6:2017

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Nadomešča:
SIST EN ISO 6145-6:2008

Analiza plinov - Priprava kalibracijskih plinskih zmesi z uporabo dinamičnih volumetričnih metod - 6. del: Kritične šobe (ISO 6145-6:2017)

Gas analysis - Preparation of calibration gas mixtures using dynamic methods - Part 6: Critical flow orifices (ISO 6145-6:2017)

Gasanalyse - Herstellung von Kalibriergasgemischen mit Hilfe von dynamisch-volumetrischen Verfahren - Teil 6: Kritische Düsen (ISO 6145-6:2017)

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Analyse des gaz - Préparation des mélanges de gaz pour étalonnage à l'aide de méthodes volumétriques dynamiques - Partie 6: Orifices de débit critiques (ISO 6145-6:2017)

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Ta slovenski standard je istoveten z: EN ISO 6145-6:2017

ICS:

71.040.40	Kemijska analiza	Chemical analysis

SIST EN ISO 6145-6:2017 **en,fr,de**

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EUROPEAN STANDARD
NORME EUROPÉENNE
EUROPÄISCHE NORM

EN ISO 6145-6

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Supersedes EN ISO 6145-6:2008

English Version

Gas analysis - Preparation of calibration gas mixtures using dynamic methods - Part 6: Critical flow orifices (ISO 6145-6:2017)

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European foreword

This document (EN ISO 6145-6:2017) has been prepared by Technical Committee ISO/TC 158 “Analysis of gases”.

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of an identical text or by endorsement, at the latest by February 2018, and conflicting national standards shall be withdrawn at the latest by February 2018.

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INTERNATIONAL STANDARD

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Third edition
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Gas analysis — Preparation of calibration gas mixtures using dynamic methods —

Part 6: Critical flow orifices

Analyse des gaz — Préparation des mélanges de gaz pour étalonnage à l'aide de méthodes volumétriques dynamiques — Partie 6: Orifices de débit critiques

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Foreword

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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, on 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.

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

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This third edition cancels and replaces the second edition (ISO 6145-6:2003) which has been technically revised.

A list of all parts in the ISO 6145 series can be found on the ISO website.

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

Part 6: Critical flow orifices

1 Scope

This document specifies a method for the dynamic preparation of calibration gas mixtures containing at least two gases (usually one of them is a complementary gas) from pure gases or gas pre-mixtures using critical flow orifices systems.

The method applies principally to the preparation of mixtures of non-reactive gases that do not react with any of the materials forming the gas circuit inside the critical flow orifices system or auxiliary equipment. It has the merit of allowing multi-component mixtures to be prepared as readily as binary mixtures if an appropriate number of critical flow orifices are used.

By selecting appropriate combinations of critical flow orifices, a dilution ratio of 1×10^4 is achievable.

Although it is more particularly applicable to the preparation of gas mixtures at atmospheric pressure, the method also offers the possibility of preparing calibration gas mixtures at pressures greater than atmospheric. The upstream pressure will need to be at least two times higher than downstream pressure.

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The range of flow rates covered by this document extends from 1 ml/min to 10 l/min.

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 6143, *Gas analysis — Comparison methods for determining and checking the composition of calibration gas mixtures*

ISO 7504, *Gas analysis — Vocabulary*

ISO 9300, *Measurement of gas flow by means of critical flow Venturi nozzles*

ISO 12963, *Gas analysis — Comparison methods for the determination of the composition of gas mixtures based on one- and two-point calibration*

ISO 16664, *Gas analysis — Handling of calibration gases and gas mixtures — Guidelines*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 9300, ISO 7504 and the following 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

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3.1
critical flow orifice
orifice for which the geometrical configuration and conditions of use are such that the flow rate at the throat is *critical* (3.12)

3.2
wall pressure tap
orifice pierced in a pipework wall in such a way that the orifice edge on the inside pipework wall is flattened off

Note 1 to entry: This pressure tap is set up so that the pressure in the orifice equals the static pressure at this point of the circuit pipework.

3.3
static pressure
actual pressure of a gas stream, which can be measured by connecting a pressure gauge to a wall pressure tap

Note 1 to entry: This document uses only absolute pressure values.

3.4
stagnation pressure
pressure that would be found in a gas if the flowing gas stream was isentropically slowed down to zero velocity

Note 1 to entry: This document uses only absolute pressure values.

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3.5
stagnation temperature
temperature that would be found in a gas if the flowing gas stream was isentropically slowed down to zero velocity

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Note 1 to entry: This document only uses absolute temperature values.

3.6
mass flow rate
q_m
mass of gas per unit of time passing through the orifice

3.7
molar flow rate
q_n
amount of substance of gas per unit of time passing through the orifice

3.8
volume flow rate
q_V
volume of gas per unit of time passing through the orifice

3.9
throat Reynolds number
Re
dimensionless parameter calculated from the gas flow rate and dynamic viscosity under critical flow orifice inlet stagnation conditions

Note 1 to entry: The characteristic dimension is taken as the throat diameter at stagnation conditions. The throat Reynolds number is given by the formula:

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