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Analysis of natural gas — Biomethane — Determination of amines content

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National foreword

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Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Reference conditions **2**
5 Principle **2**
6 Reagents and equipment **2**
7 Sampling **3**
8 Preparation of the calibration tubes **3**
9 Analysis **4**
9.1 Thermal desorption 4
9.2 Program temperature of the GC separation 4
9.3 Sample analysis 4
9.4 Quantification method 4
10 Performance characteristics **5**
11 Calculations **5**
12 Test report **6**
Annex A (informative) **Characteristics of the amines to be quantified** **7**
Bibliography **8**

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 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*.

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.

Introduction

This document was developed in response to biomethane specifications such as EN 16723 (all parts)[7]. In other regions, other specifications can apply for biomethane.

In the process of biogas upgrading into biomethane, alkanolamines are used for removing of sulphur-containing components and carbon dioxide. Due to this reason, trace level of these components can be present in biomethane. This method is suited for the detection of these components as well as the determination of their concentration. To inject biomethane into natural gas grids and to use it as an automotive fuel, it needs to meet specifications. For amines the maximum limit value in biomethane is set as 10 mg/m^3 is set in EN 16723 (all parts)[7]. Other specifications can state other thresholds.

TECHNICAL SPECIFICATION **ISO/TS 2610:2022**

Analysis of natural gas — Biomethane — Determination of amines content

1 Scope

This document specifies the determination of the concentration of alkanolamines in biomethane. The measurement method involves thermal desorption gas chromatography with flame ionization and/or mass spectrometry detectors (TD-GC-MS/FID). The described method is specifically developed for the analysis of five amine compounds, namely:

— monoethanolamine (MEA);

— diglycolamine (DGA);

— diethanolamine (DEA);

— *N*-methyldiethanolamine (MDEA);

— piperazine (PZ).

Information about the compounds is given in Annex A.

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 10715, *Natural gas — Sampling guidelines*

ISO 14532, *Natural gas — Vocabulary*

ISO 16000-6, *Indoor air — Part 6: Determination of organic compounds (VVOC, VOC, SVOC) in indoor and test chamber air by active sampling on sorbent tubes, thermal desorption and gas chromatography using MS or MS FID*

ISO 19229, *Gas analysis — Purity analysis and the treatment of purity data*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14532 and the following 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 https://www.electropedia.org/

3.1
amine
chemical compound consisting nitrogen atoms bound to hydrogen and/or carbon atoms having the general formula R_3N

[SOURCE: ISO/TR 27912:2016, 3.5]