
Analysis of natural gas — Biomethane — Determination of amines content

*Analyse du gaz naturel — Biométhane — Détermination de la teneur
en amines*



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Foreword

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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)^[2]. 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/m³ is set in EN 16723 (all parts)^[2]. Other specifications can state other thresholds.

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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]