

საქართველოს სტანდარტი

სსკ: 71.060

ბუნებრივი გაზი - გაზის ნიმუშის აღება

საინფორმაციო მონაცემები

1 მიღებულია და დაშვებულია გამოქმედდეს: სსიპ-საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს გენერალური დირექტორის 04/06/2024 წლის № 38 განკარგულებით

2 მიღებულია „თავფურცლის“ თარგმნის მეთოდით: სტანდარტიზაციის საერთაშორისო ორგანიზაციის (ისო) სტანდარტი ისო 10715:2022 „ბუნებრივი გაზი - გაზის ნიმუშის აღება“

3 ნაცვლად სსტ ისო 10715:2008 - გაზი ბუნებრივი. სახელმძღვანელო მითითებები სინჯების აღებისათვის

4 რეგისტრირებულია: სსიპ-საქართველოს სტანდარტებისა და მეტროლოგიის ეროვნული სააგენტოს რეესტრში: 25/07/2024 წლის №268-1.3-038417

წინამდებარე სტანდარტის ნებისმიერი ფორმით გავრცელება სააგენტოს ნებართვის გარეშე აკრძალულია

INTERNATIONAL STANDARD

ISO 10715

Second edition
2022-10

Natural gas — Gas sampling

Gaz naturel — Échantillonnage de gaz

საინფორმაციო ნაწილი. სრული ტექსტის სანახავად შეიძინეთ სტანდარტი.



Reference number
ISO 10715:2022(E)

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Published in Switzerland

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საინფორმაციო ნაწილი. სრული ტექსტის სახასიათოდ შეიძინეთ სტანდარტი.

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, *Natural gas analysis*, in collaboration with the European Committee for Standardization (CEN) Technical Committee CEN/TC 238, *Test gases, test pressures and categories of appliances*, in accordance with the Agreement on technical cooperation between ISO and CEN (Vienna Agreement).

This second edition cancels and replaces the first edition (ISO 10715:1997), which has been technically revised.

The main changes are as follows:

- This new edition has placed a significant relevance on regular service, maintenance and validation of installed sample systems which previously have not been given proper attention. Sample systems, or at least the fixed/installed portion of them, have all too often been installed and forgotten without realization that through use they become more and more contaminated leading to distortions of the composition of the gas being sampled.
- Introduction of new sampling devices.

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

The composition, quality, and properties of natural gas vary according to amongst others its source, level of processing, natural mixing at interconnection points, storage facilities, blending stations, fluctuating demand for some of its derivatives such as LPG (Liquefied Petroleum Gases), and increasingly the need to transport unconventional and renewable gases in the same network etc.

The variations that occur are closely monitored and controlled to ensure safety of the general public as well as operational staff, plant, equipment and the gas infrastructures in general. Additionally and commercially critical the energy content of the gas differs with these variations and is very accurately monitored for billing and fiscal purposes because of the very large sums of money involved.

The variations that occur can be best collectively grouped under the generic term “Gas Quality” which is subsequently referred to as GQ in this document.

For monitoring and controlling GQ, samples are taken at many and various stages along the way and analysed. Such samples are taken under many different process parameters with a need to always ensure that any gas that is subsequently analysed for such monitoring purposes is truly representative of the bulk.

Methods of measuring GQ are well specified in numerous ISO standards as are the means of calibrating such measuring instruments, however all those measurements and calibrations are all but futile if the samples used for making such measurements are not representative.

This document provides means to ensure sampling systems and sampling processes are designed, located, installed, operated, and maintained such that samples obtained are representative of the bulk to which they are attributed. It also specifies comprehensive information on the way that samples can be contaminated, altered, modified or degraded and methods, means and procedures for ensuring that the sample remains representative from the start of the sampling process to the point where the sample is presented to the analytical device.