SLOVENSKI STANDARD
SIST EN ISO 13686:2013

01-september-2013

Nadomešča:
SIST EN ISO 13686:2005

Zemeljski plin - Specificiranje kakovosti (ISO 13686:2013)

Natural gas - Quality designation (ISO 13686:2013)

Erdgas - Bestimmung der Beschaffenheit (ISO 13686:2013)

Gaz naturel - Désignation de la qualité (ISO 13686:2013)

Ta slovenski standard je istoveten z: **EN ISO 13686:2013**

ICS:

75.060	Zemeljski plin	Natural gas

SIST EN ISO 13686:2013 **en**

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Natural gas - Quality designation (ISO 13686:2013)

Gaz naturel - Désignation de la qualité (ISO 13686:2013)

Erdgas - Bestimmung der Beschaffenheit (ISO 13686:2013)

This European Standard was approved by CEN on 29 May 2013.

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EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

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Foreword

This document (EN ISO 13686:2013) has been prepared by Technical Committee ISO/TC 193 "Natural gas".

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of an identical text or by endorsement, at the latest by December 2013, and conflicting national standards shall be withdrawn at the latest by December 2013.

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The text of ISO 13686:2013 has been approved by CEN as EN ISO 13686:2013 without any modification.

INTERNATIONAL STANDARD

ISO 13686

Second edition
2013-06-15

Natural gas — Quality designation

Gaz naturel — Désignation de la qualité

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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. www.iso.org/directives

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Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 193, *Natural gas*.

This second edition cancels and replaces the first edition (ISO 13686:1998), which has been technically revised.

Introduction

The need for an International Standard concerning the designation of natural gas quality was a basic reason for the establishment of ISO/TC 193 in 1989. Standardization of the designation of quality is specifically stated in the scope of ISO/TC 193. Natural gas, supplying 20 % of the world's primary energy, is likely to increase its market share greatly. Yet there is currently no generally accepted definition of natural gas quality.

To meet this need, it was decided that a general statement of the parameters (i.e. components and properties) recommended should be established and that the resulting International Standard would not specify values of, or limits for, these parameters.

Furthermore, it was decided that general-purpose natural gas transmitted to local distribution systems (LDS), referred to as "natural gas", should be the first consideration. Thus, this International Standard was developed. Informative annexes are attached as examples of actual natural gas quality specifications that already exist.

This International Standard does not impose any quality restrictions on raw gas transported via pipelines or gathering systems to processing or treating facilities.

It should be understood that this International Standard covers natural gas at the pipeline level prior to any treatment by LDS for peakshaving purposes. This covers the vast majority of the natural gas that is sold in international trade and transmitted for custody transfer to local distribution systems.

Natural gas — Quality designation

1 Scope

This International Standard specifies the parameters required to describe finally processed and, where required, blended natural gas. Such gas is referred to subsequently in this text simply as "natural gas".

The main text of this International Standard contains a list of these parameters, their units and references to measurement standards. Informative annexes give examples of typical values for these parameters, with the main emphasis on health and safety.

In defining the parameters governing composition, physical properties and trace constituents, consideration has also been given to existing natural gases to ensure their continuing viability.

The question of interchangeability is dealt with in Annex A (see Clause A.2).

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 6326-1, *Natural gas — Determination of sulfur compounds — Part 1: General introduction*

ISO 6326-3, *Natural gas — Determination of sulfur compounds — Part 3: Determination of hydrogen sulfide, mercaptan sulfur and carbonyl sulfide sulfur by potentiometry*

ISO 6326-5, *Natural gas — Determination of sulfur compounds — Part 5: Lingener combustion method*

ISO 6327, *Gas analysis — Determination of the water dew point of natural gas — Cooled surface condensation hygrometers*

ISO 6570, *Natural gas — Determination of potential hydrocarbon liquid content — Gravimetric methods*

ISO 6974-1, *Natural gas — Determination of composition and associated uncertainty by gas chromatography — Part 1: General guidelines and calculation of composition*

ISO 6974-2, *Natural gas — Determination of composition and associated uncertainty by gas chromatography — Part 2: Uncertainty calculations*

ISO 6974-3, *Natural gas — Determination of composition with defined uncertainty by gas chromatography — Part 3: Determination of hydrogen, helium, oxygen, nitrogen, carbon dioxide and hydrocarbons up to C8 using two packed columns*

ISO 6974-4, *Natural gas — Determination of composition with defined uncertainty by gas chromatography — Part 4: Determination of nitrogen, carbon dioxide and C1 to C5 and C6+ hydrocarbons for a laboratory and on-line measuring system using two columns*

ISO 6974-5, *Natural gas — Determination of composition and associated uncertainty by gas chromatography — Part 5: Isothermal method for nitrogen, carbon dioxide, C1 to C5 hydrocarbons and C6+ hydrocarbons*

ISO 6974-6, *Natural gas — Determination of composition and associated uncertainty by gas chromatography — Part 6: Determination of helium, oxygen, nitrogen, carbon dioxide and C1 to C10 hydrocarbons using capaillary columns*

ISO 6975, *Natural gas — Extended analysis — Gas-chromatographic method*

ISO 6976:1995, *Natural gas — Calculation of calorific values, density, relative density and Wobbe index from composition*

ISO 6978-1, *Natural gas — Determination of mercury — Part 1: Sampling of mercury by chemisorption on iodine*

ISO 6978-2, *Natural gas — Determination of mercury — Part 2: Sampling of mercury by amalgamation on gold/platinum alloy*

ISO 10101-1, *Natural gas — Determination of water by the Karl Fischer method — Part 1: Introduction*

ISO 10101-2, *Natural gas — Determination of water by the Karl Fischer method — Part 2: Titration procedure*

ISO 10101-3, *Natural gas — Determination of water by the Karl Fischer method — Part 3: Coulometric procedure*

ISO 11541, *Natural gas — Determination of water content at high pressure*

ISO 13443, *Natural gas — Standard reference conditions*

ISO 14532, *Natural gas — Vocabulary*

ISO 15970:2008, *Natural gas — Measurement of properties — Volumetric properties: density, pressure, temperature and compression factor*

ISO 15971:2008, *Natural gas — Measurement of properties — Calorific value and Wobbe index*

ISO 18453, *Natural gas — Correlation between water content and water dew point*

ISO 19739, *Natural gas — Determination of sulfur compounds using gas chromatography*

ISO 23874, *Natural gas — Gas chromatographic requirements for hydrocarbon dewpoint calculation*

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO 14532 and the following apply.

3.1
natural gas
gaseous fuel obtained from underground sources and consisting of a complex mixture of hydrocarbons, primarily methane, but generally also including ethane, propane and higher hydrocarbons in much smaller amounts

Note 1 to entry: It also includes some inert gases, such as nitrogen and carbon dioxide, plus minor amounts of trace constituents.

Note 2 to entry: Natural gas remains in the gaseous state under the temperature and pressure conditions normally found in service. It is produced by processing raw gas or from liquefied natural gas and, if required, blended to give a gas suitable for direct use. As pipeline quality natural gas, it can then be transmitted within a local distribution system, within a country, or across national borders. It is subject to contractual requirements between buyer and seller, and in some cases to national or state requirements as to quality (see Clause A.1).

3.2
liquefied natural gas
natural gas which, after processing, has been liquefied for storage or transportation purposes

Note 1 to entry: Liquefied natural gas is revaporized and introduced into pipelines for transmission and distribution as natural gas.

3.3
substitute natural gas
manufactured or blended gas with properties which make it interchangeable with natural gas

Note 1 to entry: Substitute natural gas is sometimes called synthetic natural gas.

Note 2 to entry: This also includes gases manufactured by thermal process from biomass.

3.4
raw gas
unprocessed gas taken from well heads through gathering lines to processing facilities

3.5
local distribution system
gas mains and services which supply natural gas directly to consumers

3.6
gas quality
attribute of natural gas by its composition (major components, minor components and trace components) and its physical properties (calorific value, Wobbe index, compression factor, relative density and dew points)

3.7
reference conditions
standard reference conditions of temperature, pressure and humidity (state of saturation) to be used for measurements and calculations carried out on natural gases, natural gas substitutes and similar fluids in the gaseous state

Note 1 to entry: Standard reference conditions are denoted by the subscript "s": p_s = 101,325 kPa; T_s = 288,15 K.

Note 2 to entry: Adapted from ISO 13443.

3.8
calorific value
amount of heat which would be released by the complete combustion in air of a specified quantity of gas, in such a way that the pressure at which the reaction takes place remains constant, and all the products of combustion are returned to the same specified temperature as that of the reactants

Note 1 to entry: It is divided into two types: superior calorific value and inferior calorific value.

Note 2 to entry: Both superior and inferior calorific values, which differ by the heat of condensation of water formed by combustion, can be specified on a molar, mass or volumetric basis. For the volumetric basis the pressure and temperature shall be stated at standard reference conditions.

Note 3 to entry: Calorific values can also be stated as dry or wet, depending on the water vapour content of the gas prior to combustion.

Note 4 to entry: The effect of water vapour on the calorific values, either directly measured or calculated, is described in Annex F of ISO 6976:1995.

Note 5 to entry: Normally, the calorific value is expressed as the superior, dry value specified as a volumetric basis under standard reference conditions.

Note 6 to entry: Adapted from ISO 6976.

3.8.1
superior calorific value
amount of heat that would be released by the complete combustion with oxygen of a specified quantity of gas, in such a way that the pressure p_1 at which the reaction takes place remains constant, and all the products of combustion are returned to the same specified temperature t_1 as that of the reactants, all of these products being in the gaseous state except for water, which is condensed to the liquid state at t_1

Note 1 to entry: Adapted from ISO 6976.