

**Natural gas - Measurement of properties - Calorific value
and Wobbe index (ISO 15971:2008)**

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NATIONAL FOREWORD

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English Version

Natural gas - Measurement of properties - Calorific value and Wobbe index (ISO 15971:2008)

Gaz naturel - Mesurage des propriétés - Pouvoir calorifique et indice de Wobbe (ISO 15971:2008)

Erdgas - Messung der Eigenschaften - Wärmewerte und Wobbe-Index (ISO 15971:2008)

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Foreword

The text of ISO 15971:2008 has been prepared by Technical Committee ISO/TC 193 "Natural gas" of the International Organization for Standardization (ISO) and has been taken over as EN ISO 15971:2014.

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of an identical text or by endorsement, at the latest by September 2014, and conflicting national standards shall be withdrawn at the latest by September 2014.

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Endorsement notice

The text of ISO 15971:2008 has been approved by CEN as EN ISO 15971:2014 without any modification.

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Introduction

The amount of energy delivered by a flowing natural gas is often determined as the product of the volume delivered and the calorific value per unit volume of the gas. It is, therefore, important to have available standardized methods of determining the calorific value. In many cases, it is possible to calculate the calorific value of natural gas, with sufficient accuracy, given the composition (see ISO 6976). However, it is also possible, and sometimes a preferred alternative, to measure calorific value using any one of several techniques that do not require a compositional analysis. The methods currently in use, and the many factors that it is necessary to address in the selection, evaluation, performance assessment, installation and operation of a suitable instrument, are detailed herein. The measurement of the Wobbe index, a property closely related to calorific value, is discussed briefly in an informative annex, but is not considered in detail in the normative parts of this International Standard.

Natural gas — Measurement of properties — Calorific value and Wobbe index

1 Scope

This International Standard concerns the measurement of calorific value of natural gas and natural gas substitutes by non-separative methods, i.e. methods that do not involve the determination of the gas composition nor calculation from it. It describes the principles of operation of a variety of instruments in use for this purpose, and provides guidelines for the selection, evaluation, performance assessment, installation and operation of these.

Calorific values can be expressed on a mass basis, a molar basis or, more commonly, a volume basis. The working range for superior calorific value of natural gas, on the volume basis, is usually between 30 MJ/m³ and 45 MJ/m³ at standard reference conditions (see ISO 13443). The corresponding range for the Wobbe index is usually between 40 MJ/m³ and 60 MJ/m³.

This International Standard neither endorses nor disputes the claims of any commercial manufacturer for the performance of an instrument. Its central thesis is that fitness-for-purpose in any particular application (defined in terms of a set of specific operational requirements) can be assessed only by means of a well-designed programme of experimental tests. Guidelines are provided for the proper content of these tests.

2 Normative references

The following referenced documents are indispensable for the application 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 6976:1995, *Natural gas — Calculation of calorific values, density, relative density and Wobbe index from composition*

ISO 14532: 2001, *Natural gas — Vocabulary*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1 Calorific value and Wobbe index

3.1.1

superior calorific value

amount of heat that would be released by the complete combustion in air of a specified quantity of gas (on a molar, mass or volume basis), in such a way that the pressure, p , at which the reaction takes place remains constant and all the products of combustion are returned to the same specified temperature, T , as that of the reactants, all of these products being in the gaseous state, except for water formed by combustion, which is condensed to the liquid state at T

See ISO 6976.