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STANDARD

10101-1

First edition 1993-10-01

Corrected and reprinted 1995-12-15

Natural gas — Determination of water by the Karl Fischer method —

Part 1: Introduction

Gaz naturel — Dosage de l'eau par la méthode de Karl Fischer — Partie 1: Introduction



Reference number ISO 10101-1:1993(E) This is a preview of "ISO 10101-1:1993". Click here to purchase the full version from the ANSI store.

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.

Draft International Standards adopted by the technical committees are circulated to the member bodies for voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 10101-1 was prepared by Technical Committee ISO/TC 193, *Natural gas*, Sub-Committee SC 1, *Analysis of natural gas*.

ISO 10101 consists of the following parts, under the general title *Natural* gas — Determination of water by the Karl Fischer method:

- Part 1: Introduction
- Part 2: Titration procedure
- Part 3: Coulometric procedure

Annex A of this part of ISO 10101 is for information only.

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International Organization for Standardization

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Printed in Switzerland

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Natural gas — Determination of water by the Karl Fischer method —

Part 1: Introduction

WARNING — Local safety regulations must be taken into account, when the equipment is located in hazardous areas. Due to the toxicity and odour of pyridine, the user should ensure that there is adequate ventilation.

1 Scope

This part of ISO 10101 specifies general requirements for the determination of water in natural gas using the Karl Fischer method. ISO 10101-2 and ISO 10101-3 specify two individual methods of determination, a titration procedure and a coulometric procedure, respectively.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this part of ISO 10101. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this part of ISO 10101 are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 6712:1982, Gas analysis — Sampling and transfer equipment for gases supplying an analytical unit.

ISO 10101-2:1993, Natural gas — Determination of water by the Karl Fischer method — Part 2: Titration procedure.

ISO 10101-3:1993, Natural gas — Determination of water by the Karl Fischer method — Part 3: Coulometric procedure.

3 Principle

Reaction of water present in the test sample with iodine and sulfur-dioxide in a pyridine/methanol mixture (Karl Fischer reagent).

3.1 Principle of the first method (ISO 10101-2)

A measured volume of gas is passed through a cell containing a relatively small volume of absorbent solution. Water in the gas is dissolved in the absorbent solution and subsequently titrated with Karl Fischer reagent, the endpoint being detected voltametrically.

3.2 Principle of the second method (ISO 10101-3)

A measured volume of gas is passed through a cell containing anhydrous, previously titrated, anodic solution. The iodine required for the titration of the dissolved water is coulometrically produced from the iodide present in the solution by the reaction

 $2l^- \rightarrow l_2 + 2e^-$

4 Reactions and interferences

 $CH_3OH + SO_2 + R_3N \rightarrow$ [R₃NH]SO₃CH₃