TECHNICAL REPORT

ISO/TR 11150

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Natural gas — Hydrocarbon dew point and hydrocarbon content

Gaz naturel — Point de rosée d'hydrocarbure et teneur en hydrocarbure

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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.

International Standards are drafted in accordance with the rules given in the ISO/IEC Directives, Part 2.

The main task of technical committees is to prepare International Standards. 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.

In exceptional circumstances, when a technical committee has collected data of a different kind from that which is normally published as an International Standard ("state of the art", for example), it may decide by a simple majority vote of its participating members to publish a Technical Report. A Technical Report is entirely informative in nature and does not have to be reviewed until the data it provides are considered to be no longer valid or useful.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights.

ISO/TR 11150 was prepared by Technical Committee ISO/TC 193, *Natural gas*, Subcommittee SC 1, *Analysis of natural gas*.

Introduction

With Resolution 6 at its Prague meeting in 2004, ISO/TC 193/SC 1, *Analysis of natural gas*, decided to publish a Technical Report on guidance for various International Standards on hydrocarbon dew point and hydrocarbon content.

The main purpose of this Technical Report is to explain to the wider gas community the complex issues behind the natural gas property called hydrocarbon dew point on the application of various International Standards on these subjects.

Natural gas — Hydrocarbon dew point and hydrocarbon content

1 Scope

This Technical Report describes the various means of estimating hydrocarbon dew point and hydrocarbon content of natural gas.

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

ISO 6570:2001, *Natural gas — Determination of potential hydrocarbon liquid content — Gravimetric methods*

ISO 6974 (all parts), *Natural gas — Determination of composition with defined uncertainty by gas chromatography*

ISO 7504:2001, *Gas analysis — Vocabulary*

ISO 10715:1997, *Natural gas — Sampling guidelines*

ISO 14532:2001, *Natural gas — Vocabulary*
Technical Corrigendum:2002

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

3 Background

Hydrocarbon dew point is often a requirement of gas quality specifications in sales contracts where gas is traded or crosses international borders. It can also be quoted in health and safety legislation. It is usually specified as a temperature at a defined pressure or over a range of pressures above which no hydrocarbon condensation will occur. It may alternatively be expressed as a maximum amount of hydrocarbon liquid which may condense under specific pressure and temperature conditions.

Under certain conditions, higher hydrocarbons present in natural gas or similar gases may condense and the condensate formed can cause difficulties in the operation of gas transport and distribution systems. Phase behaviour in hydrocarbon mixtures such as natural gas is highly non-ideal. More ideal behaviour, such as that of water in air, or, indeed, in natural gas, gives a dew point temperature which continually increases with pressure. Retrograde behaviour, which affects hydrocarbon mixtures, produces dew point temperatures which have a maximum value at an intermediate pressure. Figure 1 shows a typical phase diagram.