INTERNATIONAL STANDARD

ISO 23219

First edition
2022-07

Natural gas — Format for data from gas chromatograph analysers for natural gas — XML file format

Gaz naturel — Format pour les données des analyseurs de chromatographie en phase gazeuse pour le gaz naturel — Format de fichier XML

Reference number
ISO 23219:2022(E)

ISO copyright office
CP 401 • Ch. de Blandonnet 8
CH-1214 Vernier, Geneva
Phone: +41 22 749 01 11
Email: copyright@iso.org
Website: www.iso.org

Published in Switzerland

Contents

Page

Foreword ..... **iv**
Introduction ..... **v**
1 Scope **1**
2 Normative references **1**
3 Terms and definitions **1**
4 Basic instructions **1**
5 General comments to keywords and units **2**
Annex A (normative) **<iso23219> XML tags** **4**
Annex B (informative) **Example of a gas certificate** **11**
Annex C (informative) **Example of gas composition and properties** **13**
Annex D (informative) **Example of gas analysis** **17**
Annex E (informative) **Software suitable for XML file processing** **21**
Annex F (informative) **International Chemical Identifier (InChI)** **25**
Bibliography **27**

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).

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. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received (see www.iso.org/patents).

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

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, *Analysis of natural gas*.

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

There are multiple suppliers of gas chromatograph analysers for measurement of natural gas composition. If correctly set up, there is no reason to prefer any one in particular, since they give comparable results. However, the situation gives rise to a variety of methods of reporting data, which can create confusion over the use of such data for off-line calculation of properties or evaluation of analyser performance.

Therefore, a uniform method of data presentation, independent of the source of the analyser, as presented in this document is considered valuable.

Natural gas — Format for data from gas chromatograph analysers for natural gas — XML file format

1 Scope

This document specifies a text file format - XML file format - for reporting natural gas analysis results and other data relevant to natural gas. The file name is applicable when it includes the extension of .XML (case insensitive).

The XML file format is useful for output from ISO 6974-1[1] for composition and ISO 6974-2[2] for uncertainty, for input for ISO 6976[3] and for input for ISO 10723[4] for performance evaluation. Typically these would be the gas composition as provided on an analysis certificate, or results from a performance evaluation that would be read into an Excel spreadsheet for data processing.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements 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 8601, *Date and time — Representations for information interchange — Part 1: Basic rules*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

— ISO Online browsing platform: available at https://www.iso.org/obp

— IEC Electropedia: available at https://www.electropedia.org/

4 Basic instructions

The following steps shall be obeyed to come to a correct XML representation:

a) Unambiguous, reasonably concise, non-proprietary, and since the chemical formula is part of the InChI it is often clear what the component is. The alternative of using Chemical Abstracts Registry Number (CAS RN) is not so understandable and is proprietary.

b) Attributes in tags should be avoided, e.g. not <amount unit=”mol%”>1,2</amount> but <amount><value>1,2</value><unit>mol%</unit></amount>

c) The XML should have some checksum (at the end), e.g. CRC-16 check (hexadecimal) sum as displayed by ZIP programs, at the end of the file as an XML comment, e.g. <!--D86A3640-->. This is not intended for security purposes, merely as a confidence check that the file contents have not been corrupted.

d) Date and time are tagged <date_time> and use the convention specified in ISO 8601, e.g. <date_time>2018-07-10T13:59:00+01</date_time>

   This data may be used for

   — date and time of sample registration,