



**International
Standard**

ISO 8174

**Ethylene and propylene for
industrial use — Determination
of trace oxygenates — Gas
chromatographic method**

**Second edition
2026-10**

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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.

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).

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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 47, *Chemistry*.

This second edition cancels and replaces the first edition (ISO 8174:1986), which has been technically revised.

The main changes are as follows:

- title revised;
- scope expanded to be applicable for the determination of methanol, dimethyl ether, methyl *tert*-butyl ether, acetaldehyde, ethanol, propan-2-ol, acetone, and butanone and the determination of acetonitrile has been deleted. The test method has been improved to be suitable for ethylene and propylene with oxygenate concentrations greater than 0,5 mL/m³;
- in [Clause 4](#), the method principle regarding the analysis procedure has been revised;
- in [Clause 5](#), the preparation of gas standard for calibration has been revised;
- in [Clause 6](#), chromatographic columns have been modified from packed columns to capillary columns and a gas sampling device has been added. The contents related to recording and vaporization devices have been revised. [Figure 1](#) representative of the typical chromatogram has been displayed;
- in [Clauses 7, 9](#) and [10](#), the content related to sampling, the absorption devices and the concentration operation of original standard and actual samples have been deleted;
- in [Clauses 9, 10](#) and [11](#), the procedure of calibration and sample determination have been revised;
- in [Clause 12](#), the expression of results has been revised;
- in [Clause 13](#), the method precision and bias have been reinvestigated.

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.

Ethylene and propylene for industrial use — Determination of trace oxygenates — Gas chromatographic method

1 Scope

This document specifies a gas chromatographic method for the determination of trace amounts of oxygenated compounds in ethylene and propylene (propene) for industrial use.

This document is applicable to ethylene and propylene having methanol, dimethyl ether, methyl *tert*-butyl ether, acetaldehyde, ethanol, propan-2-ol, acetone, and butanone concentrations greater than 0,5 mL/m³.

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 7382, *Ethylene for industrial use — Sampling in the liquid and the gaseous phase*

ISO 8563, *Propylene and butadiene for industrial use — Sampling in the liquid phase*

3 Terms and definitions

No terms and definitions are listed in this document.

ISO and IEC maintain terminology 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 Principle

Under the conditions specified in this document, gaseous (or liquid vaporized) sample is introduced into the chromatographic column by carrier gas through a gas sampling device. Each oxygenated compound is separated and detected using a hydrogen flame ionization detector (FID). The peak area of oxygenates are recorded and the quantification is carried out by external standard method.

5 Reagents and materials

WARNING — The following gases are under high pressure or highly flammable, and appropriate safety precautions shall be exercised during use.

5.1 Methanol

Methanol used for preparing the gas standard has a purity more than 99,0 % (mass fraction).

5.2 Dimethyl ether

Dimethyl ether used for preparing the gas standard has a purity more than 99,0 % (mass fraction).