
International Standard  8174

INTERNATIONAL ORGANIZATION FOR STANDARDIZATION • МЕЖДУНАРОДНАЯ ОРГАНИЗАЦИЯ ПО СТАНДАРТИЗАЦИИ • ORGANISATION INTERNATIONALE DE NORMALISATION

**Ethylene and propylene for industrial use —
Determination of acetone, acetonitrile, propan-2-ol and
methanol — Gas chromatographic method**

Éthylène et propylène à usage industriel — Dosage de l'acétone, de l'acétonitrile, du propanol-2 et du méthanol — Méthode par chromatographie en phase gazeuse

First edition — 1986-06-15

JUL 14 1986

UDC 661.716.2 : 543.544

Ref. No. ISO 8174-1986 (E)

Descriptors : industrial products, chemical compounds, ethylene, propylene, chemical analysis, determination of content, acetone, acetonitrile, propan-2-ol, methanol, chromatographic analysis.

Foreword

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International Standard ISO 8174 was prepared by Technical Committee ISO/TC 47, *Chemistry*.

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Ethylene and propylene for industrial use — Determination of acetone, acetonitrile, propan-2-ol and methanol — Gas chromatographic method

1 Scope and field of application

This International Standard specifies a gas chromatographic method for the determination of acetone, acetonitrile, propan-2-ol and methanol in ethylene and propylene (propene) for industrial use.

The method is applicable to products having acetone, propan-2-ol and methanol concentrations greater than 1 mg/kg, and acetonitrile concentrations greater than 10 mg/kg.

2 References

ISO 6377, *Light olefins for industrial use — Determination of impurities by gas chromatography — General considerations.*

ISO 7382, *Ethylene for industrial use — Sampling in the liquid and the gaseous phase.*¹⁾

ISO 8563, *Propylene and butadiene for industrial use — Sampling in the liquid phase.*¹⁾

3 Principle

Passage of a gaseous test portion through water to absorb acetone, acetonitrile, propan-2-ol and methanol, and subsequent gas chromatographic analysis of the aqueous solution, using a flame ionization detector, and comparison of the peaks obtained, with those derived from an external standard.

4 Reagents and materials

During the analysis, use only reagents of recognized analytical grade and only distilled water or water of equivalent purity.

4.1 Nitrogen, having a water content less than 5 ml/m³.

4.2 Air, compressed, dry.

4.3 Acetone.

4.4 Propan-2-ol.

4.5 Methanol.

4.6 Acetonitrile.

4.7 Standard mixture, aqueous solution containing 20 mg of each impurity to be determined per litre.

5 Apparatus

5.1 Absorption train (see figure 1), comprising

- a flow meter capable of measuring flow rates between 5 and 100 l/h;
- three absorption flasks (A, B and C) with sintered glass discs (see figure 2);
- a gas meter, graduated every 10 ml.

5.2 Water bath, capable of being controlled between 0 and 5 °C.

5.3 Vaporization device (see ISO 6377, clause 4).

5.4 Chromatograph, fitted with a flame ionization detector, which will yield a peak height of at least five times the noise level at concentrations for each of the impurities as given in clause 1.

5.4.1 Injection device (see ISO 6377, sub-clause 3.2), permitting the introduction of a test portion of 2 µl constant to within ± 1 %.

1) At present at the stage of draft.