

INTERNATIONAL STANDARD

ISO
7941

First edition
1988-08-01



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

ANSI International Doc 0801

Commercial propane and butane — Analysis by gas chromatography

Propanes et butanes commerciaux — Analyse par chromatographie en phase gazeuse

This is a preview of "ISO 7941:1988". [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 approval before their acceptance as International Standards by the ISO Council. They are approved in accordance with ISO procedures requiring at least 75 % approval by the member bodies voting.

International Standard ISO 7941 was prepared by Technical Committee ISO/TC 28, *Petroleum products and lubricants*.

Users should note that all International Standards undergo revision from time to time and that any reference made herein to any other International Standard implies its latest edition, unless otherwise stated.

Commercial propane and butane — Analysis by gas chromatography

WARNING: Safety precautions — When testing LPG it is essential to observe suitable safety precautions and any regulations applicable to installations, apparatus and storage. Particular attention shall be given to the following.

- a) LPG can cause serious burns from the cold, and the liquid should not be allowed to contact the skin. When sampling LPG, goggles and gloves must be worn.
- b) Discharge of LPG can give rise to static electricity and it is essential to connect containers to "earth" prior to and during discharge.

If hydrogen is used as a carrier gas, special safety precautions shall be taken. More particularly, the hydrogen line shall be carefully tested for leaks, especially in the oven.

1 Scope and field of application

This International Standard specifies a gas chromatographic method for the quantitative determination of hydrocarbons in liquefied petroleum gas (LPG), excluding components whose concentrations are below 0,1 % (*m/m*). It is applicable to the analysis of propane, butane and their commercial mixtures, which may include saturated and unsaturated C₂, C₃, C₄ and C₅ hydrocarbons. It does not apply to "on-line" chromatography.

2 References

ISO 565, *Test sieves — Woven metal wire cloth, perforated plate and electroformed sheet — Nominal sizes of openings.*

ISO 4257, *Liquefied petroleum gases — Method of sampling.*¹⁾

3 Principle

Physical separation by gas chromatography. Identification of the components by passing a standard reference mixture or pure hydrocarbons through the column, or by comparison with relative retention volumes of typical chromatograms. Calculation of concentrations of components by measuring peak areas and applying correction factors.

4 Definitions

4.1 correction factor: A factor applied to account for the fact that equal amounts of different components produce unequal signals in the detector.

4.2 peak: The portion of the chromatogram recording the detector response while a component is eluted from the column.

4.2.1 peak area: The area bounded by the peak and the baseline.

4.2.2 peak height: The distance between the peak maximum and the baseline.

4.2.3 peak width: The segment of the baseline intercepted by the tangents drawn at the inflection point of each side of the peak.

The **peak width at half height** is the segment of a line drawn parallel to the baseline at half the peak height which is intercepted by the peak sides.

If the baseline is seen to be sloping from the horizontal, both measurements are of the projection of these segments onto the horizontal axis.

4.2.4 peak resolution: The extent to which the peaks of two components overlap or are separated. It is expressed by means of the equation in 6.3.3. Values below 1 imply overlapping; values above 1 imply separation of the components.

4.3 Retention

4.3.1 adjusted retention time [or volume]: The time elapsed [or the volume of gas emerged from the column] between the moment of elution of unretained components (e.g. air or methane) and the moment of elution of the component in question, both referring to peak maxima.

1) To be published.