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International Standard 6378

H-25-05

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

Butadiene for industrial use — Determination of hydrocarbon impurities — Gas chromatographic method

Butadiène à usage industriel — Dosage des impuretés hydrocarbonées — Méthode par chromatographie en phase gazeuse

First edition — 1981-10-15

UDC 661.715.3 : 543.544 **Ref. No. ISO 6378-1981 (E)**

Descriptors : industriall products, butadienes, chemical analysis, determination of content, impurities, hydrocarbons, gas chromatographic analysis.

Price based on 7 pages

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Foreword

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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.

International Standard ISO 6378 was developed by Technical Committee ISO/TC 47, *Chemistry*, and was circulated to the member bodies in October 1979.

It has been approved by the member bodies of the following countries :

Austria	Hungary	Portugal
Belgium	India	Romania
China	Italy	South Africa, Rep. of
Czechoslovakia	Korea, Rep. of	Switzerland
France	Netherlands	USSR
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No member body expressed disapproval of the document.

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Butadiene for industrial use — Determination of hydrocarbon impurities — Gas chromatographic method

1 Scope and field of application

This International Standard specifies a gas chromatographic method for the determination of hydrocarbon impurities in butadiene for industrial use.

The method is applicable to the determination of the impurities listed in annex B and principally to the determination of

— acetylene (ethyne) ($CH \equiv CH$) at concentrations greater than 5 ml/m³;

— propyne ($CH \equiv C - CH_3$) at concentrations greater than 5 ml/m³;

— 1-butyne ($CH \equiv C - CH_2 - CH_3$) at concentrations greater than 5 ml/m³;

— 3-buten-1-yne ($CH \equiv C - CH = CH_2$) at concentrations greater than 5 ml/m³;

— 1,2-butadiene ($CH_2 = C = CH - CH_3$) at concentrations greater than 10 ml/m³.

2 Reference

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

3 Principle

Selection of a gas chromatography column allowing the separation of the impurities to be determined.

Passage of a gaseous test portion through the column, detection by flame ionization and comparison of the peaks obtained with those derived from an external standard.

4 Materials

4.1 Carrier gas

Nitrogen or helium of the best available commercial quality, having oxygen and water contents each less than 5 ml/m³.

4.2 Standards

Prepare (or obtain) standard mixtures such that the concentration of each impurity to be determined is within the concentration limits which are encountered in the product to be analysed.

5 Apparatus

Ordinary laboratory apparatus and

5.1 Chromatograph

Use a gas chromatograph complying with the requirements specified below and 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.

5.1.1 Injection device (see ISO 6377), permitting the introduction into the column of a test portion of about 1 ml, constant to within ± 1 %.

5.1.2 Columns

A number of columns which have been found suitable are described in annex A. Use, according to the desired aim, one of these columns, or several of them in succession, or any other columns giving satisfactory separation.

5.1.3 Detector, flame ionization type.

5.1.4 Recorder, having a response time, on the normal scale, of 2 s or less and a noise level less than 0,1 % on this scale.

6 Preparation of sample

See ISO 6377.

7 Procedure

7.1 Preparation of the apparatus

Select a column suitable for the determination to be performed and condition it by keeping it for at least 12 h at a temperature at least 20 °C higher than the operating temperature, using a carrier gas flow rate equal to that to be used in the analysis.

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