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International Standard



5521

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**Fruits, vegetables and derived products — Qualitative method for the detection of sulphur dioxide**

*Fruits, légumes et produits dérivés — Méthode qualitative de recherche du dioxyde de soufre*

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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 5521 was developed by Technical Committee ISO/TC 34, *Agricultural food products*, and was circulated to the member bodies in June 1979.

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

Australia	Germany, F. R.	New Zealand
Austria	Hungary	Philippines
Brazil	India	Poland
Bulgaria	Israel	Portugal
Canada	Kenya	Romania
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Czechoslovakia	Malaysia	Spain
Egypt, Arab Rep. of	Mexico	Thailand
France	Netherlands	Yugoslavia

No member body expressed disapproval of the document.

# Fruits, vegetables and derived products — Qualitative method for the detection of sulphur dioxide

## 1 Scope and field of application

This International Standard specifies a qualitative method for the detection of free or bound sulphur dioxide in fruits, vegetables and derived products.

The method is applicable to products having sulphur dioxide contents of 2 mg or more per kilogram (or per litre).

For products containing garlic or onion, see clause 6.

## 2 Principle

### 2.1 Free sulphur dioxide

After acidification of the test portion, decolouration by the liberated gaseous sulphur dioxide of a starch indicator paper, previously coloured blue by a trace of iodine vapour.

### 2.2 Bound sulphur dioxide

Addition of alkali to the test portion, followed by the procedure described in 2.1.

## 3 Reagents

All reagents shall be of recognized analytical quality. The water used shall be distilled water or water of at least equivalent purity, recently boiled.

### 3.1 Starch, approximately 5 g/l solution.

During preparation, boil the solution for 10 min.

The solution will keep only for a few days.

### 3.2 Starch paper.

Dip a white filter paper, of close texture, into the starch solution (3.1) three times and dry in an oven at 30 °C after each impregnation. Cut into strips of 2 cm × 5 cm.

### 3.3 Potassium iodide, approximately 1 g/l solution (free from iodate).

### 3.4 Iodine, approximately 12 g/l solution.

### 3.5 Phosphoric acid, approximately 50 % (m/m) solution, $\rho_{20} = 1,34$ g/ml.

### 3.6 Sodium hydroxide, approximately 40 g/l solution.

## 4 Apparatus

Usual laboratory apparatus, not otherwise specified, and in particular :

### 4.1 Flasks, of clear glass, of capacity 150 ml, and having wide mouths and ground necks.

### 4.2 Ground glass stoppers, to fit the flasks (4.1).

## 5 Procedure

### 5.1 Preparation of starch indicator paper

Immediately before use, wet a strip of starch paper (3.2) with two drops of the potassium iodide solution (3.3) and attach it to the bottom of a glass stopper (4.2), for example by means of adhesive tape. Place a few millilitres of the iodine solution (3.4) in one of the flasks (4.1). Insert the stopper (the starch paper shall be suspended in the air space above the iodine). Leave for 5 to 10 s. A clearly visible pale blue colour will develop on the starch indicator paper which has to be used immediately.

### 5.2 Test portion

Place in another flask (4.1) about 20 ml of the product to be analysed (in the case of liquid products) or about 20 g of finely comminuted product (in the case of solid products) suspended in 20 ml of water.

### 5.3 Detection of free sulphur dioxide

#### 5.3.1 Acidify the test portion with a few drops of the phosphoric acid solution (3.5).

#### 5.3.2 Immediately close the flask by means of the stopper with the starch indicator paper, prepared as described in 5.1, attached. In the presence of traces of sulphur dioxide [2 mg per kilogram (or per litre)] the indicator paper will be decolorized in less than 5 min.

#### 5.4 Detection of bound sulphur dioxide

5.4.1 In the absence of free sulphur dioxide, make the test portion alkaline by adding the sodium hydroxide solution (3.6) in slight excess. Allow to stand for 5 min and acidify with sufficient phosphoric acid solution (3.5).

NOTE — The volume of phosphoric acid solution required will be approximately 1/13 of the volume of sodium hydroxide solution used.

5.4.2 Proceed as specified in 5.3.2.

#### 6 Note on procedure

Products containing garlic or onion release a substance capable of decolorizing the starch indicator paper when treated with the sodium hydroxide. Thus, they may be erroneously considered to contain bound sulphur dioxide.

However, the technique specified in 5.3 for the detection of free sulphur dioxide may be used without error for these products.

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