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ALINORM 66/25  
October 1966

JOINT FAO/WHO PROGRAM ON FOOD STANDARDS  
CODEX ALIMENTARIUS COMMISSION  
Fourth Session, Rome, 7 - 14 November 1966

REPORT OF THE SECOND SESSION OF THE JOINT ECE/CODEX  
ALIMENTARIUS GROUP OF EXPERTS ON STANDARDIZATION OF  
QUICK (DEEP) FROZEN FOODS

1. The Joint ECE/Codex Alimentarius Group of Experts on Standardization of Quick (Deep) Frozen Foods held its second session in Geneva from 5-9 September 1966.
2. Delegates from the following countries participated in the meeting:- Austria, Belgium, Bulgaria, Denmark, Federal Republic of Germany, France, Italy, Netherlands, Poland, Romania, Spain, Sweden, Switzerland, Turkey, United Kingdom and the United States of America.
3. Also present were observers from the Organization for Economic Cooperation and Development (OECD), the Association Européenne des Exploitations Frigorifiques (AEEF), and the Organisation de l'Industrie des Fruits et Légumes surgelés of the European Economic Community.

Election of Officers

4. Mr. R. Linden (Belgium) and Mr. W. Orłowski (Poland) were re-elected Chairman and Vice-Chairman respectively of the Joint Group of Experts. The Secretariat was drawn from ECE, FAO and WHO.

Working Papers

5. The Group had before it the following documents:  
Report of the first session of the Joint ECE/Codex Alimentarius Group of Experts on Standardization of Quick-Frozen Foods. AGRI/WP.1/394.  
United Kingdom proposed draft Standard for Quick (Deep) Frozen Foods. AGRI/WP.1/443.  
Proposals of the Netherlands as to (1) Draft General Standard for Quick-Frozen Fruits and Vegetables and (2) Draft Specific Standard (Quick-Frozen Peas). AGRI/WP.1/458.  
Draft standard for quick-frozen strawberries. AGRI/WP.1/394  
Draft standard for quick-frozen peas. AGRI/WP.1/456.

Revised draft standard for quick-frozen spinach. AGRI/WP.1/459.

Revised draft standard for quick-frozen raspberries. AGRI/WP.1/448.

Revised draft standard for quick-frozen Brussels sprouts. AGRI/WP.1/457.

Draft standard for quick-frozen peaches. AGRI/WP.1/460.

Draft standard for quick-frozen bilberries. AGRI/WP.1/449.

Proposed test procedure for checking temperature of frozen foods. AGRI/WP.1/461.

Proposed procedure for checking net weights of frozen foods. AGRI/WP.1/462.

Proposed test procedure for enzyme inactivation of frozen vegetables. AGRI/WP.1/463.

Proposed sampling plans for processed fruits and vegetables including frozen foods. AGRI/WP.1/464.

Cooking procedure for frozen products. AGRI/WP.1/465.

Guide-lines of International Institute of Refrigeration. AGRI/WP.1/466.

Italian Paper on Packaging. AGRI/WP.1/Conf.Room Doc. No.106.

Draft standard for quick-frozen cauliflowers. AGRI/WP.1/Conf.Room.Doc.No.107.

Italian Paper on Labelling. AGRI/WP.1/Conf.Room.Doc.No.108.

#### Recommended Change in Working Procedure

6. The Group of Experts agreed to implement for a trial period the recommendation of the Codex Alimentarius Commission that draft standards should be submitted, at a suitably advanced stage of development, to governments for comment between sessions.

#### Recommended Terms of Reference

7. The Group of Experts adopted the following terms of reference:

"The Joint ECE/Codex Alimentarius Group of Experts on the Standardization of Quick (Deep) Frozen Foods will be responsible for general principles, definitions, a framework of individual standards for quick (deep) frozen food products and for the actual elaboration of standards for quick (deep) frozen food products not specifically allotted by the Commission to another Codex Committee, such as Fish and Fishery Products, Meat and Meat Products, and Poultry and Poultry Meat Products. Standards drawn up by Codex Commodity Committees for quick (deep) frozen foods should be in accordance with the general principles laid down by the Joint ECE/Codex Alimentarius Group of Experts on the Standardization of Quick (Deep) Frozen Foods and should, at an appropriate stage, be referred to it for coordination purposes".

#### Draft General Standard for Quick (Deep) Frozen Foods

8. The Group of Experts considered document AGEI/WP.1/443 submitted by the delegation of the United Kingdom. It was agreed that Annex I of that document as amended by the Group and set out in Annex I to this document, should be submitted to governments for comments and should also serve as a basis for

the work of Codex Commodity Committees responsible for the development of standards for frozen food products specifically allotted to them. The general comments of the International Institute of Refrigeration, set out in AGRI/ WP.1/466, greatly facilitated the revision of Annex I, referred to above.

The following points were brought out in the discussion:

Concerning the definition, the delegations of Bulgaria, Denmark, the Netherlands, Poland, Switzerland and the U.S.A. reserved their position on the last sentence in para. 1. The delegation of Italy reserved its position because of the absence in the definition of a reference to a 3°C tolerance. It was noted that in the "Agreement on special equipment for the transport of perishable foodstuffs and on the use of such equipment for the international transport of some of those foodstuffs", done at Geneva on 15 January 1962, the term "surgelé" is rendered as "deep-frozen". Concerning "Transportation" (para. 5.2) the delegation of the United States of America did not agree with this paragraph. Concerning "Distribution" (para. 5.3), the Swedish delegation suggested that it be stated that the equipment shall maintain the products at an average temperature of -18°C calculated over a period of 30 days, but never rising above -15°C. The delegation of France suggested that the refrigerated equipment referred to above be equipped with a thermometer. It was decided that governments should be asked to consider how best the provisions of the draft General Standard can be implemented.

9. Recommended Scheme for Future Work

In addition to the above General Standard, which is applicable to all quick (deep) frozen foods, general standards should be developed for specific groups of quick (deep) frozen products, such as Fruits and Vegetables, which will contain provisions common to the group of products and which will in consequence, only be referred to, and not repeated in the individual product standard. In this way, individual product standards will contain only such provisions as are specific to the product concerned.

10. Draft Standard for Quick (Deep) Frozen Strawberries

The draft standard set out in Annex II was, subject to the following comments, agreed to by the Group of Experts.

The Italian delegation requested that the standard should provide for strawberry puree intended for direct consumption, but the meeting considered that this product did not come within the scope of the standard being elaborated. The same delegation also requested that ascorbic acid be permitted as an additive. The delegation of the Federal Republic of Germany reserved its position with regard to the types of sizes as laid down in AGRI/WP.1/394. Governments were requested to comment on the time needed for quick (deep) freezing strawberries in syrup. In addition, governments were requested to submit their views as to a figure for an overall tolerance. The matter of a minimum amount for sugar content was discussed and governments were invited to comment on this point also.

11. Draft Standard for Quick (Deep) Frozen Peas

The draft standard set out in document AGRI/WP.1/456 was amended by the Group of Experts and the version approved by the majority is set out in Annex III to this report. The following should be borne in mind: Translation of the names for the two types of peas should not be literal but the appropriate equivalent term for the product should be used in the various languages. The delegation of Poland did not agree that a distinction should be made in the draft standard between the two types of peas and also disagreed with various other aspects of the draft standard. There was a difference of

opinion as to the rate of freezing appropriate for this product. There are various methods of freezing, for which the time to reach the final temperature of -18°C varies widely from a few seconds or minutes for nitrogen and belt freezing to several hours for plate and tunnel (blast) freezing in packages. In view of the foregoing, governments were invited to comment on what the time limit for rate of freezing should be. With respect to tolerances for defects, the United Kingdom delegation agreed to revise the table presented on this topic in collaboration with the delegation from the Federal Republic of Germany and the United States of America, and bearing in mind that the tolerances be also expressed in the metric system and in terms of percentage by weight (except extraneous vegetable material).

The method for the microscopic analysis for type used in paragraph 3.3.3 in Annex III is detailed in AGRI/WP.1/458 Part II, Annex I. It was agreed that it would be useful to take account of the sizing scheme suggested in the draft standard for canned peas, elaborated by the Codex Committee of Processed Fruits and Vegetables, and governments were asked to comment on this, bearing in mind the fact that in the draft standard on canned peas governments were requested to comment on the feasibility of having only three size groups. The delegation of the United States of America suggested that sizing on a weight basis is the most convenient, and the meeting concurred with their view that the percentage tolerance figures needed further study.

#### 12. Labelling

The Group of Experts had before it, in French only, AGRI/WP.1/108 containing the proposals of the Italian delegation on labelling. These proposals were examined briefly in order to determine what provisions specific to quick (deep) frozen foods should appear (in outline only at this stage) in the General Standard for Quick (deep) Frozen Foods. It was agreed that the following points were specific to all quick (deep) frozen foods:

- indication that the product has been quick (deep) frozen;
- code marking of the product as to date of production;
- instructions for keeping and use (e.g. thawing, cooking);
- net weight.

It is possible that in individual standards the above points will have to be laid down in detail; The standards to be sent to governments for comments will contain, at this stage, the requirements for labelling elaborated by the Codex Committee on Food Labelling,

#### 13. Packaging

The Group of Experts had before it AGRI/WP.1/106 containing proposals of the Italian delegation for the packaging of quick (deep) frozen foods, in French only. It was agreed to postpone discussion of this subject until the next session, and that in the meantime the Italian proposals will be circulated.

#### 14. Government Comments

The Group of Experts agreed that the draft General Standard for Quick (Deep) Frozen Foods and the draft standards for Quick (Deep) Frozen Strawberries and Peas were at a sufficiently advanced stage to be sent out to governments for comment at Step 3 of the Procedure of the Codex Alimentarius Commission. This means that the Group of Experts will have before it at its next meeting the government comments referred to. The

General Standard will be sent to other Codex Commodity Committees working on quick (deep) frozen foods, for coordination purposes.

15. Future Work

The following programme of future work was agreed tot

- i) Examination of government comments on the draft General Standard for all quick (deep) frozen foods as well as on the draft standards for quick (deep) frozen strawberries and peas.
- ii) The draft standards for individual quick (deep) frozen fruits and vegetables to be harmonized by the Secretariat on the basis of the draft standards for quick (deep) frozen strawberries and peas.
- iii) Draft General Standard for quick (deep) frozen fruits and vegetables to be elaborated by the Secretariat, on the basis of a) the draft General Standard for quick (deep) frozen fruits and vegetables drawn up by the delegation of the Netherlands (AGRI/WP.1/458), and b) the features which the draft standards for individual quick (deep) frozen fruits and vegetables have in common with each other.
- iv) The Italian proposals for the packaging of quick (deep) frozen foods (AGRI/WP.1/Conf.Doc.No.106) to be circulated and observations to be invited thereon.
- v) Draft General Standard for the labelling of quick (deep) frozen foods to be elaborated in detail by the Secretariat.
- vi) Proposals regarding quality control, sampling, test procedures, methodology, etc. to be submitted by the delegation of the United States of America.
- vii) Draft standard for quick (deep) frozen sour cherries in sugar to be elaborated by the delegation of Italy in collaboration with the delegation of Romania and draft standard for quick (deep) frozen broccoli to be elaborated by the delegation of the United States of America.

The Group of Experts expressed its appreciation of the important scientific work being carried out by the International Institute of Refrigeration and of its close collaboration with the Group.

Proposed Draft Provisional  
GENERAL STANDARD  
for  
QUICK (DEEP) FROZEN FOODS  
Submitted to governments for Comments  
at STEP 3  
of the Procedure for the Elaboration of Standards of the  
Codex Alimentarius Commission  
by the  
JOINT ECONOMIC COMMISSION FOR EUROPE/CODEX ALIMENTARIUS  
GROUP OF EXPERTS ON THE STANDARDIZATION OF QUICK (DEEP) FROZEN  
FOODS

1. Definition

Quick (deep) frozen foods are those which, complying with the conditions laid down hereafter, have been subjected to a freezing process in appropriate equipment to reduce their temperature within a prescribed time limit to -18 C or lower at the centre of the product and which are continuously retained at this low temperature up to the time of final marketing. When a product or group of products requires a specific freezing speed, the time of freezing and the temperature to be reached will be specified in the individual product standard. Unless otherwise stated in the individual product standard, the freezing time shall be 3 hours or less.

2. Raw Material

The raw material which is to be quick (deep) frozen shall be wholesome, suitable for the freezing process and such that the final product at least meets the minimum requirements laid down in the appropriate individual product standard.

3. Treatment prior to quick (deep) freezing

The preliminary processes necessary for quick (deep) freezing such as washing, dewatering, sorting, sizing, trimming, slicing, blanching, formulating cooking, and possibly packaging shall be carried out quickly with the maximum care under good hygienic conditions, taking into account any storage or conditioning which is required. The product shall be subjected as soon as possible after these processes have been completed to a freezing process as described in paragraph 1. under 'Definition'.

4. General Hygiene Requirements

The General Principles of Food Hygiene as elaborated by the Codex Committee on Food Hygiene shall be followed. If a Code of Hygienic Practices has been elaborated for a given product or group of products, this Code should also be followed. This applies in particular to the paragraphs 2 and 3 above.

## 5. Storage, Transportation and Distribution

### 5.1 Storage

The cold stores in which quick (deep) frozen products are stored must ensure that the product is maintained at a temperature of -18°C or lower, or at whatever lower temperature may be specified in the individual product standards, with the minimum of fluctuation below those temperatures.

### 5.2 Transportation

The transport of quick (deep) frozen products shall be carried out in equipment maintaining the temperature of the product at -18°C (0°F). Any rises that may take place in the temperature of the products during transport and unloading should only be in special circumstances and be limited to very brief periods, but the temperature of the products should never be higher than -15°C.

### 5.3 Distribution

The distribution (including local transport) of quick (deep) frozen products and their sale in the appropriate refrigerated equipment should ensure that the product is kept at a temperature of -18°C or lower. The display of quick (deep) frozen products in such equipment should be limited to a relatively short period.

## 6. Refreezing

(i) Products shall not be sold as quick (deep) frozen if, after preparation and final quick (deep) freezing for sale to the consumer, they have become thawed even partially and have then been refrozen.

(ii) Paragraph 6(i) is not intended to prohibit the recognized practice of thawing certain products under controlled conditions for further industrial processing but such products shall comply with at least the minimum requirements laid down in the appropriate individual product standard.

## 7. Packaging

(To be developed, taking into account Italian proposals (AGRI/WP.1/Conf.Room.Doc. No.106) and comments to be submitted thereon).

## 8. Labelling

(i) Products to which the standard applies shall be subject to the general provisions laid down by the Codex Committee on Food Labelling and subsequently approved by the Commission. These provisions will cover name of food; listing of ingredients; net contents; name and address of manufacturer, packer, distributor, importer, exporter, or vendor; country of origin (when its absence results in deception); coding as to date (desirable), size, location and presentation of mandatory information (still under discussion).

(ii) (Supplementary general provisions for quick (deep) frozen food to be developed along the lines indicated in paragraph 12 of the report).

## 9. Methods of Analysis and Sampling

(To be developed later in connexion with Quality Inspection).

10. Food Additives

Additives used in the preparation of quick (deep) frozen foodstuffs shall be specified in the standards after approval by the competent Codex Committees.

11. Pesticide and other Residues

Such residues present in quick (deep) frozen foodstuffs shall not exceed the level of tolerance laid down by the competent Codex Committees.

12. Sphere of Application

This general standard shall apply to all quick (deep) frozen products sold for human consumption and shall be supplemented by any additional provisions specified for individual quick (deep) frozen products, or groups of products.



Proposed Draft Provisional  
STANDARD  
for  
QUICK (DEEP) FROZEN STRAWBERRIES  
Submitted to governments for Comments  
at STEP 3  
of the Procedure for the Elaboration of Standards of the  
Codex Alimentarius Commission  
by the  
JOINT ECONOMIC COMMISSION FOR EUROPE/CODEX ALIMENTARIUS  
GROUP OF EXPERTS ON THE STANDARDIZATION OF QUICK (DEEP) FROZEN  
FOODS

1. Definition of Product

(i) Nature of Product

This standard applies to quick (deep) frozen strawberries (*Fragaria grandiflora* L. and *Fragaria vesca* L.).

(ii) Designation or Presentation

Quick (deep) frozen strawberries may be presented sized or unsized, and prepared only with or without pure sugars (as defined by the Codex Committee on Sugars), or the syrups of such sugars to the exclusion of all other ingredients in the following forms:

(a) Whole

(b) Halves

(c) Sliced

Strawberries may be presented as free-flowing or non free-flowing.

II. Composition

(i) Strawberries prepared with dry sugars

For this product the formulation shall consist of not more than 25% by weight of dry sugars based on ingoing weights of ingredients.

(ii) Strawberries with syrup

(a) Syrup Strength

Not less than 40% weight in weight of sugar.

(b) Quantity of Syrup

The amount of syrup used shall be no more than that required to cover the fruits and fill the spaces between them.

(iii) Additives

None permitted.

III. Characteristics

(i) Raw material

(ii) Treatments

(iii) General Hygiene Requirements

The provisions of the general standard apply except as regards the freezing speed for strawberries in syrup where the process may be such that the temperature of the Strawberries is reduced to -18°C at a slower rate than that stipulated in the general standard.

IV. Minimum Requirements for End Product

Quick (deep) frozen strawberries must be:

- intact if whole, and not materially disintegrated or smashed if in halves or sliced,
- clean and may contain no more sand and earth than is technically unavoidable,
- practically free from stalks, calyces, leaves and other extraneous vegetable material,
- practically free from disease, insect bites or other blemishes,
- suitably mature,
- normally developed and, if whole, of the shape typical of the variety,
- of a colour, taste and smell, typical of the variety,
- when presented as free-flowing, practically free from being stuck to one another and not icy.

V. Sizing

For whole strawberries of *Fragaria grandiflora* L. when size graded, each package must contain strawberries belonging to the same size group. Quick (deep) frozen strawberries should be sized by measuring the diameter of the equatorial section and classified into the following three size groups:

- (i) from 15 mm to 25 mm – small
- (ii) from 25 mm to 35 mm - medium
- (iii) 35 mm and above - large.

VI. Tolerances

- (a) Not more than 10% by weight of fruit belonging to other similar varieties.
- (b) Not more than 5 stalks or parts of stalks longer than 3 mm by count per 500 grams of the finished product.
- (c) Not more than 5 cm<sup>2</sup> of calyces, leaves and similar extraneous vegetable material per 500 grams of the finished product.

- (d) Not more than 5% by weight of blemished fruit in halves or slices and not more than 10% by weight in whole strawberries.
- (e) Not more than 10% by weight of strawberries may have 25% or more of the surface area uncoloured. Within this tolerance, not more than 1% by weight of the strawberries may be completely uncoloured.
- (f) Not more than 10% by weight of whole strawberries may be broken or smashed.
- (g) Not more than 0.05% by weight of ash insoluble in hydrochloric acid.
- (h) [Limits for pesticide residues to be inserted - as determined by the Codex Committee on Pesticide Residues.]
- (i) For whole strawberries (*Fragaria grandiflora* L.) when size graded, not more than 10% by weight of fruit belonging to adjacent size-groups but having a diameter of not less than 12 mm.

VII. Packaging

[To be developed in the General Standard]

VIII. Labelling

In addition to the provisions on labelling in the General Standard for Quick (Deep) Frozen Foods, the following specific provisions shall apply:

- (a) The name of the product is Strawberries except for *Fragaria vesca* where the name is Wild Strawberries.
- (b) A statement of style, e.g. whole, halved, sliced or free flowing.
- (c) A statement of packing medium, e.g. "with sugar" or "with sugar syrup".
- (d) A statement of size in the case of whole strawberries which have been size graded.

IX. Sampling

[To be developed]

Proposed Draft Provisional  
STANDARD  
for  
QUICK (DEEP) FROZEN PEAS  
Submitted to governments for Comments  
at STEP 3  
of the Procedure for the Elaboration of Standards of the  
Codex Alimentarius Commission  
by the  
JOINT ECONOMIC COMMISSION FOR EUROPE/CODEX ALIMENTARIUS  
GROUP OF EXPERTS ON THE STANDARDIZATION OF QUICK (DEEP) FROZEN  
FOODS

1. Definition of Product

1.1 Nature of Product

This standard applies to peas in the quick (deep) frozen state, prepared from the seeds of fresh peas of wrinkled and round seeded varieties of the *Pisum sativum* L.

1.2 Types

1.2.1 Garden peas (Sweet Green Peas) prepared from varieties, seeds of which are usually wrinkled in the mature dry condition. These peas have generally a more dark green colour and a sweet taste.

1.2.2 Continental peas (Petits pois) prepared from varieties, seeds of which are usually round in the mature dry condition. These peas have generally a light green colour and a distinct pea flavour in the cooked state.

1.3 Presentation

Quick (Deep) frozen peas may be presented either sized or unsized.

2. Characteristics

2.1 Raw material

2.2 Treatment

2.3 General Hygiene Requirements

The provisions of the general standard apply;

N.B. Please see relevant comments on Treatment in Paragraph 11.

### 3. Minimum Requirements for End Product

#### 3.1 Organoleptic Characteristics

After thawing or cooking by boiling as the case may be quick (deep) frozen peas must

- be practically free of damage by insects or disease
- be clean, practically free of grit or silt
- have the characteristic colour and flavour of the variety.
- be free from objectionable flavours and odours
- conform to tests for physical defects (to be elaborated).

#### 3.2 Tolerances

[To be developed]

#### 3.3 Analytical Characteristics

3.3.1 Deep frozen peas must be catalase negative by the specified method.

3.3.2 The alcohol-insoluble solids contents as determined by the method specified in Appendix A to this standard must not exceed:

for Garden Peas (Sweet Green Peas) - 19%

for Continental Peas (Petits Pois) - 23% (subject to further examination)

These figures refer to minimum quality;

3.3.3 Microscopical analysis of types.

#### 3.4 Ingredients and additives

##### 3.4.1 Ingredients

The following are permitted subject to precise indication on the label;

Pure sugars as defined by the Codex Committee on Sugars;

Salt;

Other seasonings.

##### 3.4.2 Additives

Only natural flavourings are permitted.

### 4. Sizing

4.1 When labelled as size graded, each package of quick (deep) frozen peas must contain peas of the same size group. Sizing is determined by the maximum diameter of the peas in accordance with the following groups:

| <u>Size</u> | <u>Continental Peas (Petit<sub>s</sub> Pois)</u> |
|-------------|--|
| 1.          | up to 7.5 mm                                     |
| 2.          | from 7.5 mm to 8.2 mm                            |
| 3.          | from 8.2 mm to 8.75 mm                           |
| 4.          | from 8.75 mm to 9.3 mm                           |
| 5.          | 9.3 mm and above                                 |

4.2 Mixtures of two or more sizes are permitted subject to the declaration required under Part 6 of this standard.

4.3 Tolerance for Sizing

When size graded not more than 10% by number or weight belonging to the adjacent larger size groups and not more than 1% of the next adjacent larger size group.

(Size grades for garden peas (sweet green peas) to be developed later - see par. 11 of report)

5. Packaging

(To be developed in the General Standard for all quick (deep) frozen foods).

6. Labelling

In addition to the provisions on labelling in the General Standard for Quick (Deep) Frozen Foods, the following specific provisions shall apply:

- (a) the name of the product is [Quick (Deep) Frozen] Peas.
- (b) a statement of type, e.g. Garden (Sweet Green) Peas.
- (c) a statement of size in the case of products which have been size graded.
- (d) a statement as to seasonings added.

7. Sampling

Sampling for defects, analysis and size grading shall be carried out in accordance with the general sampling plan to appear in the General Standard for Quick (Deep) Frozen Foods, which is being studied by the Codex Committee on Methods of Analysis and Sampling, and it will be subject to any general provisions laid down by that Committee.

## APPENDIX A

### DETERMINATION OF ALCOHOL-INSOLUBLE SOLIDS

#### Alcohol - insoluble solids

The alcohol-insoluble solids in peas consist mainly of insoluble carbohydrates and protein. The amount present is used as a guide to maturity.

#### Reagents

Methylated spirit

Ethanol: - 8% v/v

#### Apparatus

Buchner funnel

Whatman No.1 filter paper: 9 cm. diameter

A Macerator or Blender

(e.g. Atomix or Turmix)

Process: Weigh 250 grs. peas into the Atomix, add 250 ml. distilled water and macerate to a smooth paste. Weigh 20 grs of the paste into a 250 ml. groundnecked flask, add 120 ml. methylated spirit and reflux on the steam bath for 30 minutes. Filter with suction on a small Buchner funnel through a weighed 9 cm. No.1 Whatman filter paper. The paper should be larger than the base of the funnel and should be folded up at the circumference to facilitate subsequent removal without loss of solids. Wash the solids with 80% ethanol until the washings are colourless. Remove the filter paper with residue from the funnel and dry in an air oven for 2 hours at +100°C (+212°F). Cool for 30 minutes in a desiccator and weigh. Deduct the dried weight of a similar filter paper from this to obtain weight of dry residue.

#### Calculation

Let: Weight (in grams) of dry residue      ...    ...    ...    = w  
Alcohol-insoluble solids%    ...    ...    ...    ...    ...    ...    = 10 w