

Methods of

Test for agricultural food products —

**Part 1: Determination of crude fibre
content (general method)**

UDC 664:633/635:543.868

Cooperating organizations

The Food and Agriculture Standards Committee, under whose direction this British Standard was prepared, consists of representatives from the following:

- Agricultural Co-operation and Marketing Services
- Agricultural Research Council (Meat Research Institute)
- British Food Manufacturing Industries Research Association
- British Industrial Biological Research Association Ltd.
- Campden Food Preservation Research Association
- Consumer Standards Advisory Committee of BSI
- Department of Agriculture and Fisheries for Scotland
- Department of Agriculture (Government of Northern Ireland)
- Department of Industry (Laboratory of the Government Chemist)*
- Flour Milling and Baking Research Association*
- Food Manufacturers' Federation Incorporated*
- Institute of Brewing
- Local Authorities Co-ordinating Body of Trading Standards
- Ministry of Agriculture, Fisheries and Food
- National Farmers' Union
- National Farmers' Union of Scotland
- Tobacco Advisory Council

The organizations marked with an asterisk in the above list, together with the following, were directly represented on the Technical Committee entrusted with the preparation of this British Standard:

- Agricultural Research Council (Rowett Research Institute)
- United Kingdom Tea Association

This British Standard, having been prepared under the direction of the Food and Agriculture Standards Committee, was published under the authority of the Board of BSI and comes into effect on 30 November 1981

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National foreword

This Part of this British Standard has been prepared under the direction of the Food and Agriculture Standards Committee. It is identical with ISO 5498 “*Agricultural food products — Determination of crude fibre content — General method*” published in 1981 by the International Organization for Standardization (ISO), and prepared by Technical Committee 34, Agricultural food products. It is intended to publish further Parts of this British Standard as other methods are agreed internationally and given UK approval.

Terminology and conventions. The text of the International Standard has been approved as suitable for publication as a British Standard without deviation. Some terminology and certain conventions are not identical with those used in British Standards; attention is especially drawn to the following. Wherever the words “International Standard” appear, referring to this standard, they should be read as “British Standard”.

The comma has been used throughout as a decimal marker. In British Standards it is current practice to use a full point on the baseline as the decimal marker.

Cross-reference

International Standard	Corresponding British Standard
ISO 6541:1981	BS 6215 <i>Methods of test for agricultural food products</i> Part 2:1981 <i>Determination of crude fibre content</i> (modified Scharrer method) (Identical)

The technical committee has reviewed the provisions of ISO 3310-1:1990, referred to in 7.2, and has decided that they are acceptable for use in conjunction with this standard. BS 410:1986 “*Specification for test sieves*” is related to ISO 3310-1.

Additional information

Water. Water complying with the requirements of BS 3978 “*Water for laboratory use*” is suitable for use.

Dietary fibre. The method described in this British Standard is not suitable for the determination of dietary fibre.

With regard to Annex B, the use of asbestos is now deprecated for health reasons. In the UK the procedure using asbestos as a filter aid described in B.2 and B.4 should be disregarded.

NOTE Correct sampling requires most careful attention. Emphasis cannot therefore be too strongly placed on the necessity of obtaining a truly representative sample. Careless or inaccurate practices could lead to misunderstanding and possible unwarranted financial adjustment. Samples should be obtained in accordance with the British Standard, if any, relevant to the product concerned. In the case of animal feeding stuffs, attention is drawn to The Feeding Stuffs (Sampling and Analysis) Regulations 1982 which provide guidance and which are to be followed for legislative purposes.

A British Standard does not purport to include all the necessary provisions of a contract. Users of British Standards are responsible for their correct application.

Compliance with a British Standard does not of itself confer immunity from legal obligations.

Summary of pages

This document comprises a front cover, an inside front cover, pages i and ii, pages 1 to 8, an inside back cover and a back cover.

This standard has been updated (see copyright date) and may have had amendments incorporated. This will be indicated in the amendment table on the inside front cover.

0 Introduction

There are numerous methods for the determination of the crude fibre content of agricultural food products and, for a given method, numerous variants are used according to the products analysed, or, for the same product, from laboratory to laboratory.

This International Standard therefore fulfils a need for harmonization. It specifies a method of general application based on the Weende method, which is the most commonly used, and basically involves acid treatment followed by alkaline treatment.

Studies carried out have demonstrated the need to specify precisely the conditions for the acid and alkaline treatments and to describe the various procedures used for separating the insoluble matter. These procedures are described in Annex B.

1 Scope

This International Standard specifies a conventional method for the determination of the crude fibre content of agricultural food products.

2 Field of application

The method is intended for general application; however, it may be necessary, in certain individual cases, to choose a more appropriate method, particularly in the case of yeasts and products containing less than 1 % of crude fibre for which the method described in ISO 6541 shall be used.

3 Reference

ISO 6541, *Agricultural food products — Determination of crude fibre content — Modified Scharrer method*.

4 Definition

crude fibre content

conventionally, the whole of the substances which are insoluble and combustible under the operating conditions described in this International Standard the crude fibre content is expressed as a percentage by mass, referred either to the product as received or to the dry matter content of the product

NOTE In French, the term “indice d’insoluble dit cellulosique” has been adopted for “crude fibre” rather than the alternative “cellulose brute”.

5 Principle

After any necessary grinding and defatting, boiling with sulphuric acid solution of standard concentration, and separation and washing of the insoluble residue.

Boiling this residue with sodium hydroxide solution of standard concentration, then separation, washing, drying and weighing of the insoluble residue, and determination of the loss in mass on incineration.

6 Reagents and materials

All reagents shall be of recognized analytical quality and the water used shall be distilled water or water of at least equivalent purity.

6.1 Sulphuric acid, standard volumetric solution, $c(1/2 \text{ H}_2\text{SO}_4) = 0,255 \pm 0,005 \text{ mol/l}$ (corresponding to 12,5 g of sulphuric acid per litre of solution).

6.2 Sodium hydroxide, standard volumetric solution, $c(\text{NaOH}) = 0,313 \pm 0,005 \text{ mol/l}$ (corresponding to 12,5 g of sodium hydroxide per litre of solution).

This solution shall be as free as possible from carbonates.

6.3 Acetone, or 95 % (V/V) *ethanol*, or *methanol*, or *propan-2-ol*.

6.4 Extraction solvent:

Technical grade *n*-hexane, or light petroleum (having a boiling range between 40 and 60 °C), or diethyl ether, or another solvent or mixture of solvents more suitable for the extraction of fatty substances from certain products to be analysed.

6.5 Hydrochloric acid, 0,5 mol/l solution (in the case of products rich in carbonates). (See 11.1.)

6.6 Filter aid (in cases where the separation techniques described in clauses B.2 or B.3 of Annex B are used).

6.7 Anti-foam agent, if necessary, known to have no effect on the results.

6.8 Anti-bumping agent, if necessary, resistant to attack under the test conditions or known to have no effect on the results.