INTERNATIONAL STANDARD

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Cereals, pulses and derived products — Enumeration of bacteria, yeasts and moulds

Céréales, légumineuses et produits dérivés — Dénombrement des bactéries, levures et moisissures

Reference number
ISO 7698:1990(E)

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 voting. Publication as an International Standard requires approval by at least 75 % of the member bodies casting a vote.

International Standard ISO 7698 was prepared by Technical Committee ISO/TC 34, *Agricultural food products*.

Annex A of this International Standard is for information only.

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Introduction

The enumeration of bacteria, yeasts and moulds in cereals, pulses and their derived products enables determination of their micro-organisms content and/or, depending on the objective, determination of the nature of the microflora present. The objective may be, for example, to determine the quality in terms of hygiene of a lot, to study the dynamic progression of a microflora in order to evaluate the efficiency of a particular type of storage, or to evaluate the impact of a physical or chemical treatment on the microflora.

In this type of analysis, which is usually carried out on ground products, fragments of thallus are taken into account, but it is the fungal spores in particular that are enumerated, and more so where the species present are highly sporulating. This method constitutes an effective means of following the progression of micro-organisms (in cereals, pulses and derived products) of a particular evolutionary series provided that the identification of those species which allow the evolution to be followed has been carried out. Under these conditions, which relate more to experimentation than to the testing of unknown lots, the values given by the enumeration correlate quite well with those given by more technological criteria (e.g. fat acidity and germinative capacity).

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Cereals, pulses and derived products — Enumeration of bacteria, yeasts and moulds

1 Scope

This International Standard specifies a method for the enumeration of bacteria, yeasts and moulds in cereals, pulses and their immediate derived products (flour, semolina, bran, etc.).

It takes into account the standards giving general guidance, notably ISO 7954[1], prepared by subcommittee 9, *Microbiology*, of ISO/TC 34, *Agricultural food products*.

Reference should be made to ISO 7218[2] for the good laboratory practice for microbiological examinations.

NOTE 1 Owing to the nature of yeasts and moulds, the enumeration is subject to certain imprecisions.

2 Normative references

The following standards contain provisions which, through reference in this text, constitute provisions of this International Standard. At the time of publication, the editions indicated were valid. All standards are subject to revision, and parties to agreements based on this International Standard are encouraged to investigate the possibility of applying the most recent editions of the standards indicated below. Members of IEC and ISO maintain registers of currently valid International Standards.

ISO 950:1979, *Cereals — Sampling (as grain)*.

ISO 2170:1980, *Cereals and pulses — Sampling of milled products*.

ISO 6887:1983, *Microbiology — General guidance for the preparation of dilutions for microbiological examination*.

3 Definitions

For the purposes of this International Standard, the following definitions apply.

3.1 bacteria: Mesophilic micro-organisms, either aerobic or facultatively anaerobic, which at 30 °C develop within and on the surface of an agar medium, under the conditions described in this International Standard.

3.2 yeasts: Mesophilic aerobic micro-organisms which, at 25 °C using mycological agar medium under the conditions described in this International Standard, either

a) on the surface of the medium, develop matt or shiny round colonies usually having a regular outline and a more or less convex surface, or

b) within the medium, develop round, lenticular, colonies.

3.3 moulds: Mesophilic aerobic filamentous micro-organisms which, on the surface of mycological agar medium under the conditions described in this International Standard, usually develop flat or fluffy spreading colonies often with coloured fruiting or sporing structures.

4 Principle

4.1 Preparation of duplicated poured plates of each of the two specified culture media (5.3.1 and 5.3.2) containing a specified quantity of an initial suspension.

Preparation, using decimal dilutions of the initial suspension, of other plates under the same conditions.