



BSI Standards Publication

Cereals — Vocabulary

National foreword

This British Standard is the UK implementation of EN ISO 5527:2015. It is identical to ISO 5527:2015. It supersedes BS 5939:1995, which is now withdrawn.

The UK participation in its preparation was entrusted to Technical Committee AW/4, Cereals and pulses.

A list of organizations represented on this committee can be obtained on request to its committee manager.

Contractual and legal considerations

This publication has been prepared in good faith, however no representation, warranty, assurance or undertaking (express or implied) is or will be made, and no responsibility or liability is or will be accepted by BSI in relation to the adequacy, accuracy, completeness or reasonableness of this publication. All and any such responsibility and liability is expressly disclaimed to the full extent permitted by the law.

This publication is provided as is, and is to be used at the recipient's own risk.

The recipient is advised to consider seeking professional guidance with respect to its use of this publication.

This publication is not intended to constitute a contract. Users are responsible for its correct application.

© The British Standards Institution 2022
Published by BSI Standards Limited 2022

ISBN 978 0 539 21255 6

ICS 01.040.67; 67.060

Compliance with a British Standard cannot confer immunity from legal obligations.

This British Standard was published under the authority of the Standards Policy and Strategy Committee on 28 February 2015.

Amendments/corrigenda issued since publication

Date	Text affected
28 February 2022	Supersession information updated in National foreword.

English Version

Cereals - Vocabulary (ISO 5527:2015)

Céréales - Vocabulaire (ISO 5527:2015)

Getreide - Vokabular (ISO 5527:2015)

This European Standard was approved by CEN on 5 December 2014.

CEN members are bound to comply with the CEN/CENELEC Internal Regulations which stipulate the conditions for giving this European Standard the status of a national standard without any alteration. Up-to-date lists and bibliographical references concerning such national standards may be obtained on application to the CEN-CENELEC Management Centre or to any CEN member.

This European Standard exists in three official versions (English, French, German). A version in any other language made by translation under the responsibility of a CEN member into its own language and notified to the CEN-CENELEC Management Centre has the same status as the official versions.

CEN members are the national standards bodies of Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and United Kingdom.



EUROPEAN COMMITTEE FOR STANDARDIZATION
COMITÉ EUROPÉEN DE NORMALISATION
EUROPÄISCHES KOMITEE FÜR NORMUNG

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Contents

Page

Foreword	3
----------------	---

Foreword

This document (EN ISO 5527:2015) has been prepared by Technical Committee ISO/TC 34 "Food products" in collaboration with Technical Committee CEN/TC 338 "Cereal and cereal products" the secretariat of which is held by AFNOR.

This European Standard shall be given the status of a national standard, either by publication of an identical text or by endorsement, at the latest by August 2015, and conflicting national standards shall be withdrawn at the latest by August 2015.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CEN [and/or CENELEC] shall not be held responsible for identifying any or all such patent rights.

According to the CEN-CENELEC Internal Regulations, the national standards organizations of the following countries are bound to implement this European Standard: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

Endorsement notice

The text of ISO 5527:2015 has been approved by CEN as EN ISO 5527:2015 without any modification.

Contents

Page

Foreword	v
Introduction	vi
1 Scope	1
2 Terms and definitions	1
2.1 General terms.....	1
2.2 Terms relating to physiology	11
2.3 Terms relating to morphology	12
2.4 Terms relating to technology of cereals	15
2.5 Terms relating to cereal products.....	19
2.6 Terms relating to test and sampling methods.....	22
Bibliography	28

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.

The procedures used to develop this document and those intended for its further maintenance are described in the ISO/IEC Directives, Part 1. In particular the different approval criteria needed for the different types of ISO documents should be noted. This document was drafted in accordance with the editorial rules of the ISO/IEC Directives, Part 2, www.iso.org/directives.

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. ISO shall not be held responsible for identifying any or all such patent rights. Details of any patent rights identified during the development of the document will be in the Introduction and/or on the ISO list of patent declarations received, www.iso.org/patents.

Any trade name used in this document is information given for the convenience of users and does not constitute an endorsement.

The committee responsible for this document is ISO/TC 34, *Food Products*, Subcommittee SC 4, *Cereals and pulses*.

This third edition cancels and replaces the second edition (ISO 5527:1995), which has been technically revised.

Introduction

In this edition of ISO 5527, the terms and definitions have been stored in the Online Browsing Platform (OBP) (<http://www.iso.org/obp>), where they can be browsed free of charge by members of the public (but not downloaded) in the following languages: English, French, German and Spanish.

The PDF version of ISO 5527 also contains the terms and definitions in Chinese.

Cereals — Vocabulary

1 Scope

This International Standard defines terms relating to cereals.

NOTE 1 In addition to terms used in English and French, two of the three official ISO languages, this document gives the equivalent terms in Spanish, German and Chinese; these are published under the responsibility of the member bodies for Argentina (IRAM), Germany (DIN) and China (SAC) and are given for information only. Only the terms and definitions given in the official languages can be considered as ISO terms and definitions.

The terms are given under the following subheadings:

- [2.1](#) General terms
- [2.2](#) Terms relating to physiology
- [2.3](#) Terms relating to morphology
- [2.4](#) Terms relating to technology of cereals
- [2.5](#) Terms relating to cereal products
- [2.6](#) Terms relating to test and sampling methods

NOTE 2 See ISO 5526[6] for a list of principal cereal species with their botanic names and common names.

2 Terms and definitions

2.1 General terms

2.1.1

blight

fungus disease of cereals

2.1.2

bread-making cereals

cereals that are suitable for making bread and other products

EXAMPLE Wheat, rye, triticale.

2.1.3

bulk store

large store in which grain is stored unpackaged in large quantities

2.1.4

bunted grain

grains filled with a fetid smelling dust comprising the spores of bunts

2.1.5

cereals

grains of plants, usually cultivated, belonging to the *Poaceae* family

Note 1 to entry: A list of these plants is given in ISO 5526.[6]

2.1.6

consignment

physical quantity of grain on offer, dispatched or received at one time, and covered by a particular contract or shipping document

Note 1 to entry: A consignment may be composed of one or more lots.

2.1.7

cultivar

variety

unique and uniform member of a species of plant (except for hybrid species) that retains its characteristics from generation to generation through its natural mode of reproduction

2.1.8

damaged grain

whole kernel which is distinctly discoloured or damaged by water, insects, heat or any other causes

2.1.9

ear cockle

nematode seed gall having a blackish brown colouration and containing a mass of small dried-up nematode worms of the species *Anguina tritici*, which become active when immersed in water

Note 1 to entry: This term does not apply to batches of grain containing seeds of corn or purple cockle (*Lychnis githago* Scop. or *Agrostemma githago* L.).

2.1.10

ergot

sclerotium of the fungus *Claviceps purpurea* which may infect wheat but mostly rye

Note 1 to entry: Sclerotia develop in the ear instead of a seed. Sclerotia contain more than 40 poisonous ergot alkaloids.

2.1.11

extraneous matter

fraction consisting of inorganic extraneous matter and organic extraneous matter

2.1.12

foreign grain

seeds, other than cereals, present in the sample or in the lot under consideration

2.1.13

fracture

surface presented by the endosperm of a broken grain, which can be either mealy, semi-vitreous or vitreous in appearance

2.1.14

fusarium-contaminated grain

grain of which the pericarp is contaminated by mycelia of *Fusarium* spp

Note 1 to entry: Such grain has a slightly scalded, shrivelled appearance and shows diffuse spots, with badly delimited contours, of pink and/or white colouration.

2.1.15

grains attacked by pests

grains which show damage owing to attack by rodents, insects, mites or other pests

2.1.16

harmful seed

toxic seed

seeds which, if present in quantities above a certain limit, may have a toxic, harmful, damaging or dangerous effect on health, organoleptic properties or technological performance

2.1.17

heat damaged grain

resulting from the effect of heat, grain with a chestnut to black colouration, and of which a section of the endosperm is yellowish-grey or brownish black

2.1.18

hidden infestation

those insects which are present within individual grains because either they are at juvenile stages and have developed from eggs laid inside the grains or they have entered the interior of individual grains through cracks or other damage, usually to feed

Note 1 to entry: Hidden infestation is not normally apparent upon first examination of the sample.

2.1.19

impurities

damaged grains and all organic and inorganic materials other than cereals grains

Note 1 to entry: The impurities comprise four main categories as follows: damaged grains; other cereals; extraneous matter; harmful and/or toxic seeds, bunted grains and ergot.

2.1.20

impurity of animal origin

matter of animal origin (eggs, larvae, nymphs or adults of insects and their fragments, rodent hairs and their fragments, mites and their fragments) separated from the product under specified conditions

2.1.21

infestation

pest species

live insect and mite species which, during some stage(s) of their life cycle, are capable of causing damage to the grain

2.1.22

initial observed infestation

those free-living insects that are immediately apparent to the eye when the sample is first examined

2.1.23

mealy fracture

fracture surface of endosperm that is completely loose in texture and starchy in appearance

2.1.24

moth

species of the order *Lepidoptera* (*Heterocera*), which are less brightly coloured than butterflies and fly mainly at night

Note 1 to entry: Butterflies (*Rhophalocera*) and moths (*Heterocera*) belong to the same order *Lepidoptera*, but butterflies are not encountered in grain storage.

2.1.25

mouldy grains

grains with moulds visible to the naked eye on 50 % of the surface and/or inside the kernel

2.1.26

packed unit

quantity of grain or milled product packed in a bag or a retail pack

2.1.27

pericarp damage

primary type of damage that causes kernel to be non-whole, consisting of cracks, cuts, abrasions, and chips or pieces of missing endosperm

2.1.28

bran

milling fraction obtained from removal of outer layer of cereals

2.1.29

seed grain

grain intended for sowing

2.1.30

semi-vitreous fracture

fracture surface of endosperm that is partly mealy and partly vitreous in appearance

2.1.31

shrivelled grain

shrunken grains

grains which are poorly filled, light and thin, whose build-up of reserves has been halted due to physiological or pathological factors

2.1.32

small grains

sound grains of small size which pass through a sieve of a particular aperture size

2.1.33

spring cereals

varieties (cultivars) of cereals which are planted in the spring and which flower in the same spring

2.1.34

sprouted grain

grains in which the radicle or plumule is clearly visible to the naked eye

Note 1 to entry: Sprouted grains of cereals (soft wheat, durum wheat, rye and triticale) are not always taken into account as such, but according to the α -amylase activity which results from their presence and which is expressed as the falling number.

2.1.35

stress crack

tiny fissure inside a kernel starting near the centre and extending outward through the vitreous endosperm but which does not extend all the way outward to the pericarp

2.1.36

total damaged kernels

kernels and pieces of grain kernels that are badly ground damaged, weather damaged, damaged by fungi, insect bored, frost damaged, germ damaged, sprout damaged, or otherwise materially damaged

2.1.37

vitreous fracture

fracture surface of endosperm that is completely compact and translucent in appearance

2.1.38

vitreous grain

whole sound grain having a natural translucent appearance

Note 1 to entry: These are not considered to be impurities.

2.1.39

waxy cereals

<wheat, barley, maize, rice, sorghum> cereal with starch composed almost entirely of amylopectine

2.1.40

weevily grain

grain attacked by grain weevil (*Sytophilus granarius*)

Note 1 to entry: The weevil lays eggs in stored grain, the larvae feed inside the grain.

2.1.41

winter cereals

varieties (cultivars) of cereals which are planted in the autumn and which flower in the next spring

Note 1 to entry: Flowering occurs only if plants are subjected to certain natural and artificial conditions of vernalization usually involving cold treatment, which occurs naturally if planted before winter frost.

2.1.42

barley

fruit of the cereal crop *Hordeum vulgare* belonging to the *Poaceae* family

2.1.42.1

feed barley

barley whose grains are used for feeding animals

2.1.42.2

highland barley

hulless barley

naked barley

mutant caryopsis of cultivated barley belonging to the *Poaceae* family which easily separates from the glume

2.1.42.3

malting barley

barley having certain characteristics (physical, chemical, germinative and others) which enable it to be converted to malt

2.1.43

foxtail millet

millet in husk

caryopsis of cultivated cereal crop that belongs to the *Poaceae* family

Note 1 to entry: The husk of the caryopsis can be red, orange, yellow, white, purple or black in colour; its fruit is oval, yellow in colour, and may be non-glutinous or glutinous.

2.1.44

corn

maize

fruit cereal crop, usually cultivated, belonging to the *Poaceae* family, often tooth-shaped, triangular and almost rounded, usually yellow or white in colour

2.1.44.1

baby corn

form of corn for human consumption whose young ears are harvested when silks become visible

2.1.44.2

dent corn

form of corn whose mature kernel has the shape of a horse's tooth with a depression in the crown

2.1.44.3

field corn

corn whose mature grains — the common commodity corn, mostly flint and dent types — are mainly used for animal feed either directly or as part of a pre-processed feed

2.1.44.4

flint corn

form of corn whose mature kernel has a smooth, vitreous, appearance and a rather round shape

2.1.44.5

flour corn

kind of corn whose kernels are composed largely of soft starch instead of vitreous starch

2.1.44.6

genetically modified corn

GMO

maize obtained by using recombinant DNA technology, able to transfer specific genes from one organism (e.g. animals, plants, microorganisms) to another, in order to give it one or several new characteristics

2.1.44.7

maize hardness

amount of vitreous endosperm in the kernel relative to the amount of floury endosperm present in the maize kernel

2.1.44.8

pop corn

form of corn whose mature kernels have the ability to pop during rapid cooking because of the build-up of internal pressure during rapid heating

2.1.44.9

sweet corn

form of corn whose kernels have so much sugar and so little starch that they are wrinkled and translucent when dried

2.1.44.10

waxy corn

glutinous corn

type of corn which contains less than 5 % mass fraction amylose on dry matter, the rest being amylopectin

2.1.45

rice

fruits of *Oryza sativa* or *Oryza glaberrima*, of the family *Poaceae*

2.1.45.1

abdominal white rice

white belly

head rice with the opaque portion at the ventral surface or the same side of the embryo

2.1.45.2

aromatic rice

fragrant rice

scented rice

rice varieties containing a natural aromatic odour different to other rice varieties which especially appears after cooking

2.1.45.3

brown rice

cargo rice

hulled rice

husked rice

loonzain rice

paddy from which the husk only has been removed

Note 1 to entry: The processes of husking and handling may result in some loss of bran.

Note 2 to entry: For convenience and classification purposes, this entry is identical to that of [2.5.3.1](#).

2.1.45.4

chalky kernel

head rice (except waxy rice) whose whole surface has an opaque and floury appearance

2.1.45.5

chip

part of kernel which passes through a test sieve complying with ISO 5223,^[5] and having round apertures of diameter 1,4 mm

2.1.45.6

damaged kernel

head rice showing evident deterioration due to moisture, pests, disease or other causes.

2.1.45.7

extra well-milled rice

husked rice obtained by milling in such a way that all of the husk and almost all of the embryo have been removed

2.1.45.8

genetically modified rice

rice obtained by using recombinant DNA technology, able to transfer specific genes from one organism (e.g. animals, plants, microorganisms) to another, in order to give it one or several new characteristics

2.1.45.9

glutinous rice

waxy rice

type of rice whose kernels have a white and opaque appearance

Note 1 to entry: The starch of waxy rice consists almost entirely of amylopectin. After cooking, the kernels tend to stick together.

2.1.45.10

grain chalkiness

head rice whose a part of the endosperm is not translucent (except waxy rice)

2.1.45.11

head rice

whole kernel or portion of kernel with a length greater than or equal to three-quarters of the average length of the test sample kernels

2.1.45.12

hull

husk

envelope, flowering glumes and glumes, which encloses the whole kernel

2.1.45.13

immature rice kernel

head rice which is unripe and badly developed

2.1.45.14

large broken kernel

part of kernel with a length less than three-quarters but greater than one-half of the average length of the test sample kernels

2.1.45.15

long-grain glutinous rice

fruits of long-grain and glutinous paddy rice, which generally is oval or long and thin in shape and whose kernels have a white and opaque appearance

Note 1 to entry: The starch of waxy rice consists almost entirely of amylopectin. The kernels have a tendency to stick together after cooking.

2.1.45.16

long-grain non-glutinous rice

fruit of non-glutinous paddy rice, generally is oval or long and thin in shape, and has relative low stickiness and high expansibility

2.1.45.17

medium broken kernel

part of kernel with a length less than or equal to one-half but greater than one-quarter of the average length of the test sample kernels

2.1.45.18

medium to short-grain non-glutinous rice

fruit of medium to short-grain non-glutinous paddy rice, which kernel generally is oval or round type in shape

2.1.45.19

milled rice

white rice

husked rice from which almost all of the bran and embryo have been removed by milling

2.1.45.20

non-glutinous rice

non-waxy rice

type of rice having a translucent endosperm whose starch contains amylopectin and amylose

Note 1 to entry: The more amylose non-glutinous rice contains, the more sticky it is after cooking.

2.1.45.21

paddy rice

rough rice

fruits of cultivated paddy rice, including its husk and caryopsis, as harvested

2.1.45.22

parboiled rice

husked or milled rice processed from paddy or husked rice that has been soaked in water and subjected to a heat treatment so that the starch is fully gelatinized followed by a drying process

2.1.45.23

partly gelatinized kernel

parboiled rice which is not fully gelatinized and shows an endosperm white and opaque areas

2.1.45.24

peck

pecky kernel

head rice or broken kernel of parboiled rice of which more than one quarter of the surface is dark brown or black in colour due to the parboiling process or rice which has brown/black colouration due to bacterial or fungal diseases

2.1.45.25

red kernel

head rice having red bran

2.1.45.26

red streaked rice

head rice or broken kernel rice with red streaks of length greater than or equal to half of the kernel length

2.1.45.27

short-grain glutinous rice

fruits of short-grain and glutinous paddy, which generally is oval in shape, varieties of rice whose kernels have a white and opaque appearance

Note 1 to entry: The starch of waxy rice consists almost entirely of amylopectin. The kernels have a tendency to stick together after cooking.

2.1.45.28

small broken kernel

part of kernel with a length less than a quarter of the average length of the test sample kernels

2.45.29

well milled rice

husked rice with most of the husk and the embryo removed by milling

2.1.45.30

white back rice

husked rice whose dorsal surface located on the opposite side of the embryo is partially chalky

2.1.45.31

white core rice

husked rice partially chalky at the centre part of the endosperm

2.1.45.32

whole kernels

grains without any broken part or piece of grains having a length greater than or equal to nine-tenths of the average length of test sample kernels

Note 1 to entry: Average length: arithmetic mean of the test sample kernels that are not immature or malformed and without any broken parts.

2.1.46

wheat

straw cereal crop sown in winter or spring

Note 1 to entry: The mature plant is characterized by a spike and grain is a naked caryopsis more or less red or white and ovoid.

2.1.46.1

alternative wheat

late autumn wheat, en GB

winter wheat, en GB

wheat sown equally well during the autumn or winter

2.1.46.2

blending wheat

wheat with special characteristics, mixed in small quantities to others to produce flour better suited for its intended purpose

2.1.46.3

bread wheat

bread-making wheat

common wheat which has the appropriate physical, chemical, rheological and other properties for a bread product (such as leavened bread)

2.1.46.4

wheat broken grains

grains in which part of the endosperm is exposed, or grains without germ

2.1.46.5

durum wheat shrivelled grains

shrivelled (shrunken), light, thin whole grains, in which accumulation of nutritive elements is finished owing to physiological and pathological influences, and which pass through a specific sieve for each species of grain

2.1.46.6

feed wheat

wheat whose grains are used for feeding animals

2.1.46.7

genetically modified wheat

wheat obtained by using recombinant DNA technology, able to transfer specific genes from one organism (e.g. animals, plants, microorganisms) to another, in order to give it one or several new characteristics

2.1.46.8

hard wheat

wheat with kernels having a high hardness criterion

2.1.46.9

medium hard wheat

wheat with medium gluten content, and a medium hard texture

2.1.46.10

mottled grains

sick grains

sick wheats

grains which show, at places other than on the germ itself, colourations between brown and brownish-black, including in the crease

Note 1 to entry: Sick wheat is not considered to be an impurity except for durum wheat.

2.1.46.11

non-wholly-vitreous grain

partly vitreous grain

grain which is partially vitreous

Note 1 to entry: This expression is used to indicate a defect affecting durum wheat.

2.1.46.12

smutty grains

grains coloured on the outside by the presence of spores of smuts (*Ustilago* spp.)

Note 1 to entry: Smutty grains should not be confused with grains simply soiled with earth or dust. This distinction can only be made by microscope.

Note 2 to entry: Spores are often clustered in the hairs of wheat brush.

2.1.46.13

bunted grains

grains coloured on the outside by the presence of brown-black spores of bunt (*Tilletia* spp.)

Note 1 to entry: Both *Tilletia foetida* and *Tilletia caries* can cause common (stinking) bunt, which is sometimes characterized by a fishy odour.

Note 2 to entry: Spores are often clustered in the brush hairs of wheat.

2.1.46.14

soft wheat

wheat with low gluten content, and a soft, floury endosperm ratio of not less than 70 % mass fraction; in general, it is suitable for cake, biscuit, and low-volume breads

2.2 Terms relating to physiology

2.2.1

dormancy

natural state of suspended growth and metabolism of a viable seed which does not germinate when placed under normal or optimal conditions of light, temperature and moisture

2.2.2

enzyme

biocatalyst and protein substance produced by living cells which catalyses a biochemical reaction in living organism

2.2.3

germ

shoot

sprout

resulting plantule when a dormant seed undergoes the process of germination

Note 1 to entry: The radicle and the plumule are visible at this stage.

Note 2 to entry: See also 2.3.1.17.

2.2.4

germination

physiological activity which precedes plant growth

Note 1 to entry: All the events which occur when the seed passes from dormancy to active growth of a new plantlet.

Note 2 to entry: The visible end result of this activity, the protrusion of the radicle and plumule, is referred to as "sprouting".

Note 3 to entry: The terms "germination" and "sprouting" are not synonyms.

2.2.5

germinative capacity

ability of a grain to germinate, or number of grains that can potentially germinate (e.g. once the seed has move out of dormancy), under experimentally defined conditions which do not include any limitation of duration of germination

Note 1 to entry: Germinative capacity is expressed as the percentage of grains germinating.

2.2.6

germinative force

germinative energy

ability of a grain to germinate, or number of grains that do germinate, under experimentally defined conditions at a given time

Note 1 to entry: Germinative force is expressed as the percentage of grains germinating at a given time.

2.2.7

grain brightness

"lustrous" external appearance of grain which has not been discoloured or damaged by adverse weather conditions, by pests or by unsuitable conditions of storage

2.2.8

maturity

state of a grain when physiologically fully developed and stable after the maturation period

2.2.9

physiological maturity

stage when a cereal kernel has maximum accumulation of dry mass, i.e. when a black layer becomes visible at the base of the kernel

Note 1 to entry: This matter is not visible for all maize kernels. It is generally absent for other straw cereals.

2.2.10

respiration

oxidative process occurring within living cells by which the chemical energy of organic molecules is released in a series of metabolic steps involving the consumption of oxygen and the liberation of carbon dioxide and water

2.3 Terms relating to morphology

2.3.1 General terms

2.3.1.1

aleurone grains

protein bodies

granules present in the cells of the aleurone layer, composed principally of globulin-type proteins, and containing phytin and mineral constituents

2.3.1.2

aleurone layer

proteinaceous layer

outermost, highly differentiated, proteinaceous layer(s) of the endosperm

2.3.1.3

amylopectin

polysaccharide constituent of starch, the macromolecules of which have glucose units linked in a branched structure

2.3.1.4

amylose

polysaccharide constituent of starch, the macromolecules of which have glucose units linked in a predominantly linear structure

2.3.1.5

awn

bristle-like extension of the glume or lemma of certain cereals

2.3.1.6

beard

brush

brush of grain

tuft of very short hairs at the non-germ end of the caryopsis of certain cereals

2.3.1.7

birefringence

maltose cross

characteristic of cereal starch observed through a microscope under polarized light

2.3.1.8

cotyledon

first leaf of the embryo as a seed sprouts

2.3.1.9

crease

longitudinal depression of variable depth and width or ventral furrow, situated on the ventral side (the side opposite the embryo of the grain) of certain cereal grains

Note 1 to entry: It is absent in the case of many cereals, but in wheat it may reach two-thirds of the thickness of the grain.

2.3.1.10

cross cells

cross-cell layer

outer of the two cellular layers which together comprise the endocarp, the longer side of which is perpendicular to the main axis of the grain

2.3.1.11

cuticle

pellicule covering the epidermis

2.3.1.12

embryo

living organism, which develops from a seed

2.3.1.13

endosperm

tissue containing reserve substances in cereal grains

Note 1 to entry: "Endosperm" is a botanical term, the technological term "kernel" is close to "endosperm", but not synonymous, and it means that part of the starchy grain obtained after removing the envelopes.

2.3.1.14

epicarp

exocarp, the outer layer of skin on a seed

2.3.1.15

epidermis

outermost cellular layer, generally covered by a cuticle

2.3.1.16

flowering glume

part of the plant comprising the lemma and the palea which wraps directly every flower of *Poaceae*

Note 1 to entry: Lemma is the lower of the two bracts enclosing the flower of *Poaceae*. Palea is the upper of the two bracts enclosing the flower of *Poaceae*.

2.3.1.17

germ

that part of the grain which develops into a young plant

Note 1 to entry: The embryo and the scutellum are parts of the germ.

Note 2 to entry: See also 2.2.3.

2.3.1.18

glume

bract which covers and protects a spikelet

2.3.1.19

hull

pericarp

thin covering which encloses the whole kernel, glume, and grain husks

2.3.1.20

husk

leaf-like sheaths which enclose the ear

2.3.1.21

hyaline layer

refractive zone between the testa and the aleurone layer

2.3.1.22

lemma

lower glume of the *Poaceae* flower

Note 1 to entry: The lower of the two bracts enclosing the flower in the spikelet of grasses.

2.3.1.23

longitudinal cells

epidermal cells having their longer sides parallel to the main axis of the grain

2.3.1.24

palea

upper bract that with the lemma encloses the flower in the spikelet of grasses

2.3.1.25

pigment

any colouring matter in the cells and tissues of plants

2.3.1.26

scutellum

complex tissue in the shape of a shield which separates the embryo from the endosperm

2.3.1.27

seed-coat

testa

true seed-coat layer(s) of the caryopsis, fused between the pericarp and the nucellar epidermis (hyaline layer)

Note 1 to entry: The seed coat is cuticularized and may contain a pigmented layer.

2.3.1.28

spike

pistillate or female inflorescence originated from the axillary bud apices

2.3.1.29

straw

dry stems and leaves of cereal crop, left after the grains have been removed by threshing, usually used as low quality feed-component

2.3.1.30

tassel

branched staminate or male inflorescence arises from the shoot apical meristem and located at the tip of the main stem

2.3.2 Terms specific to corn

2.3.2.1

black layer

hilar layer

layer of dense cells situated at the tip cap of the corn kernel on its cob which is laid down by the mature kernel and appear as a dark brown spot

2.3.2.2

cob

term indicating the organ formed by an axis carrying the grains of corn

2.3.2.3

silk

elongated style originated from ovary and protruded over the tip of a young ear corn at anthesis

2.4 Terms relating to technology of cereals

2.4.1 General terms

2.4.1.1

aeration of grain

operation consisting of introducing air into a mass of grain using a flow rate which is adequate to achieve or maintain levels of temperature and humidity required for satisfactory storage

2.4.1.2

bin

compartment of a silo, large container or an enclosed space intended for storing grain in bulk

2.4.1.3

bolting

sieving

sifting

separation of particles according to their size, by means of a sieve having apertures of known size

Note 1 to entry: The term “bolting” was formerly used predominantly to describe the separation of flour from the products of grinding, and is still used in the United Kingdom and in France.

2.4.1.4

dockage

waste material which is removed from grains as it is being processed before milling

2.4.1.5

gelatinization

loss of the native crystalline organization of a starch granule when it is heated above a particular temperature in an aqueous medium

2.4.1.6

grading

operation consisting of identifying then separating batches of cereals according to their appearance and physical condition or according to one of their special (chemical, technological) characteristics

2.4.1.7

grain drying

operation which consists of reducing the moisture content of a mass of grain by various processes (hot-air drying, ventilation, dehumidification, etc.)

2.4.1.8

grain silo

individual storage unit consisting of one or more bins with an installation for handling grain

2.4.1.9

lot

identified quantity of material from which a sample can be taken and analysed to determine one (or several) characteristic(s)

2.4.1.10

pearling

process of removing husk or outer seed coat by abrasion

2.4.1.11

plansifter

sifting machine consisting of a number of superimposed sieves gyrating together in a horizontal plane, for sustained grading of all milling product

2.4.1.12

preliminary cleaning

pre-cleaning

brief cleaning before storage, during which coarse impurities and dust are removed by dry mechanical methods (sifting and ventilation)

2.4.1.13

retrogradation

crystallization of gelatinized starch and water mixture during cooling

2.4.1.14

screenings

losses on cleaning, composed mainly of small-sized and broken grains

2.4.1.15

sieve

device for the purpose of sieving, consisting of a medium mounted in a frame

Note 1 to entry: For test sieves, see ISO 2395.[\[4\]](#)

2.4.1.16

sieve-cleaning brush

self-propelling brush underneath the sieve of a plansifter and of a purifier which frees the sieve apertures of obstructing particles

2.4.1.17

spontaneous heating

abnormal rise in temperature produced naturally in a grain mass as a result of bad storage conditions

2.4.2 Terms specific to wheat

2.4.2.1

bran

outer layers or seed coat of the wheat grain

Note 1 to entry: This term can also be used for rice.

2.4.2.2

bran brush

bran duster

bran finisher

machine for removing particles of endosperm, not detached by the breaking process, from the bran coats

2.4.2.3

break flour

flour produced by the break rolls as the grain passes through the break system of the milling process

2.4.2.4

break middling

mixture of particles of pure endosperm and endosperm with adhering bran (composite particles produced by break rolls as the grain passes through the break system of the milling process)

2.4.2.5

break system

stage in the milling process where the grain is broken open and treated on successive rolls to separate the endosperm from the bran coat

2.4.2.6

breaking

fragmentation, principally by shearing by means of fluted rollers, during the first part of the milling process

2.4.2.7

brushing

operation of mechanically cleaning a surface (of grain, grain covering or sieve) by means of a brush

2.4.2.8

centrifugal

reel

bolting device with a cylindrical or prismatic rotor covered with a sieving cloth of known aperture size

2.4.2.9

flour enrichment

further addition of a substance that is already present in the flour but not in sufficient amounts to meet the nutritional requirements, usually refers to vitamins, minerals or amino acids

2.4.2.10

flour yield

amount of flour obtained by a particular mill and milling method

Note 1 to entry: Flour yield is expressed as a percentage.

2.4.2.11

germinal brush

grain brush

machine used principally at the end of cleaning to remove impurities adhering to the surface of grain

2.4.2.12

grain separator

wheat cleaning machine that removes both larger and finer foreign material

2.4.2.13

granulation

coarseness or fineness of the flour

Note 1 to entry: In baking, pasta or biscuit technology, the particle size and size distribution pertain to the flour end-use value.

2.4.2.14

gravity table

wheat cleaning machine that removes foreign material of similar size and shape as the wheat on the base of density

2.4.2.15

grinding mill

device used to carry out fragmenting operations

Note 1 to entry: The grinding mills most commonly used in flour milling are roller mills, although hammer mills, pin mills, etc., are also used.

2.4.2.16

middlings

particles of the outer layers or seed coat of the wheat grain, extracted from the bread flour system which have yet to be ground into flour

2.4.2.17

milling

process to remove the hull and parts or all of the bran from cereals; grinding grain into flour

2.4.2.18

milling yield

amount of utilizable milled products produced in the course of milling

2.4.2.19

reduction system

section of the wheat milling process that grinds purified granular endosperm particles into flour by utilizing a succession of grinding and sifting passages

2.4.2.20

roller mill

machine generally comprising two pairs of rollers arranged symmetrically, used for grinding cereals and reducing them to flour and milling by-products

Note 1 to entry: Each pair of rollers is independent, and the surfaces of the rollers can be either fluted to separate the endosperm from the bran (breaking), or smooth to reduce the endosperm fragments to flour (reduction).

2.4.2.21

second clear

part of flour obtained at the end of the milling process mainly composed of protein layer and little pieces of bran and germ and flour

2.4.2.22

semolina

product milled, usually from durum wheat, to coarse but uniform granulation, to make pasta products

2.4.2.23

shorts

mixture of small pieces of bran and fibrous material remaining after the flour has been extracted from the wheat

2.4.2.24

sizing

section of the wheat milling process that removes small parts of bran and germ attached to endosperm particles; this is achieved by light grinding, sifting, and purification

2.4.2.25

tail end

final stages of the milling process where the last particles of flour are extracted

2.4.2.26

yellow pigment content

essential quality factor of raw materials for the production of pasta, defined as the content of extractable carotenoids of the endosperm

Note 1 to entry: Yellow pigment content is expressed as milligrams of β -carotene per 100 g of dry matter.

2.4.3 Terms relating specifically to rice

2.4.3.1

coefficient of water absorption

ratio of the mass of rice after cooking to the mass of the same rice before cooking

2.4.3.2

dehusk

removing the husk from seeds

2.4.3.3

elastic recovery

tendency of grain of cooked rice to return to its initial form, once the stress to which it has been subjected is released

Note 1 to entry: Elastic recovery is expressed as a percentage.

2.4.3.4

firmness

resistance to extrusion of cooked rice

2.4.3.5

gelatinization

hydration process conferring the jelly-like state typical of the coagulated colloids, which are named "gels", on kernels

2.4.3.6

gelatinization temperature

temperature at which about 90 % of the starch granules have swelled irreversibly

2.4.3.7

gelatinization time

time necessary for 90 % of the kernels to pass from their natural state to the gel state

2.4.3.8

milling

removing almost all of the bran and embryo from husked rice using a machine

2.4.3.9

paddy table

grain cleaning machine that removes foreign material that has different density

2.4.3.10

swelling

thickness of grains of rice after cooking

Note 1 to entry: Swelling is expressed in millimetres.

Note 2 to entry: Swelling is the increase in volume of the rice during cooking. It can be measured as the increase in thickness of the grain by determining the thickness of the rice before and after cooking. Measurements of thickness after various cooking times give a curve indicating the course of swelling.

2.5 Terms relating to cereal products

2.5.1 General terms

2.5.1.1

bakery

place where the manufacture of baked products (including bread) is carried out and where such products may be sold

2.5.1.2

composite flour

flour made by blending wheat flour with other cereals flour (varying amounts)

2.5.1.3

dry gluten

residue obtained from wet gluten dried according to specified conditions

2.5.1.4

flour

finely milled wheat endosperm with a particle size of less than 250 µm

2.5.1.5

flour improver

substance added to flour to facilitate the manufacture of specific baked products

2.5.1.6

gluten

visco-elastic proteinaceous material formed when flour and water are mixed into a dough, and which may be isolated by washing which eliminates the starchy endosperm particles and cell walls as well as the soluble proteins

Note 1 to entry: In some countries, the term “gluten” stands for “wheat gluten” and glutes from other cereals are called maize gluten, rice gluten, etc.

2.5.1.7

ready-to-eat cereals

flaked, puffed, shredded, crushed, or granular products made from wheat, maize or rice, although oats and barley are also used; may be enriched with vitamins, minerals, sugar, syrup, honey, etc.

2.5.1.8

softening of gluten

weakening of gluten

reduction in the firmness of gluten

2.5.1.9

wet gluten

visco-elastic substance, composed principally of two protein fractions (gliadin and glutenin) in a hydrated form

2.5.2 Terms relating specifically to wheat

2.5.2.1

bleaching of flour

destruction of flour pigments by the addition of substances having a specific oxidizing action

2.5.2.2

bulgur

food product resulting from a three-stage treatment of wheat (mainly *Triticum durum*) consisting of a pre-cooking stage followed by drying and coarse crushing and, finally, partial decortication

2.5.2.3

wheat flour

main final product of wheat milling cleared of the husk and of the germ

2.5.2.4

wholemeal

whole grain flour (whole grain grist) for example made of wheat, from which nothing has been removed (gran, seed) and nothing has been added and which, therefore, includes nearly all or all components of the wheat in its natural proportions

2.5.3 Terms relating specifically to rice

2.5.3.1

brown rice

cargo rice

hulled rice

husked rice

loonzain rice

paddy from which the husk only has been removed

Note 1 to entry: The processes of husking and handling may result in some loss of bran.

Note 2 to entry: For convenience and classification purposes, this entry is identical to that of [2.1.45.3](#).

2.5.4 Terms relating specifically to corn

2.5.4.1

corn and cob meal

corn ear chops

ground ear corn

milled product of whole corn ears

2.5.4.2

corn chop

corn meal

ground corn

corn grain ground without removing the germ or any part of the kernel

2.5.4.3

corn flour

flour milled from corn

2.5.4.4

corn grits

main final products of corn dry milling

2.5.4.5

corn oil

oil extracted from corn germ isolated by wet milling or dry milling

2.5.4.6

cracked corn

corn of which the kernels are broken into several pieces

2.5.4.7

dry milling

obtaining the maximum yield of grits; while making the minimum amount of flour, and recovering the maximum amount of germ in the flour of large particles with the maximum oil content

Note 1 to entry: Dry milling may or may not include de-germing as a preliminary step.

2.5.4.8

flaked maize

product made from maize, which has been treated with steam, rolled and dried; highly digestible, rich in starch

2.5.4.9

maize gluten

corn gluten feed

animal feeding stuffs, high in protein, and obtained after maize has been milled after starch extraction

2.5.4.10

wet milling

milling operation which is primarily performed by steeping kernels in water for the purpose of the isolation and recovery of starch

2.5.5 Terms relating to other cereals

2.5.5.1

husked kaoliang

milled sorghum

main final products of sorghum milling

2.6 Terms relating to test and sampling methods

2.6.1 General terms

2.6.1.1

aggregate sample

composite sample

aggregation and homogenization of two or more samples, taken independently within a given lot

2.6.1.2

alkali digestibility test

alkali test

method to differentiate the susceptibility of raw milled rice grains to alkali digestion after being steeped in a $(17 \pm 0,5)$ g/l KOH solution at room temperature or at 30 °C for 23 h and measurement of the degree of starch spreading using a seven-point scale; spreading values correspond to starch gelatinization temperature

2.6.1.3

breaking susceptibility test

test for the potential for kernel fragmentation or breakage when subjected to impact forces

2.6.1.4

crude protein content

quantity of crude protein obtained from the nitrogen content as determined by applying an appropriate factor depending on the type of cereal or pulse

2.6.1.5

ethanol soluble protein test

test for measuring the denaturation of protein at high temperature

2.6.1.6

floater test

one of the methods used to measure hardness in which the number of kernels floating in a 1,275 relative density solution of sodium nitrate or other suitable chemicals

2.6.1.7

flowing product

product to be sampled moving through a conveying system, or in free-fall from a spout or chute

2.6.1.8

grain elongation ratio during cooking

lengthwise expansion of cooked rice calculated from the ratio of the average length of cooked grains over that of raw milled grains

2.6.1.9

homogenization

thorough blending by mechanical or manual means so that contaminants and physical properties are evenly distributed throughout the aggregate or laboratory sample

2.6.1.10

increment

amount of material taken at one time at each individual sampling point throughout a lot

2.6.1.11

mass per hectolitre

ratio of the mass of a cereal to the volume it occupies after being poured into a container under well-defined conditions

Note 1 to entry: Mass per hectolitre is expressed in kilograms per hectolitre at a given moisture content.

Note 2 to entry: Mass per hectolitre is not synonymous with density (mass/volume), but is *packing density*, which allows for edge effects incurred at the contact points of the measuring vessel.

2.6.1.12

laboratory sample

sample prepared by homogenizing and dividing the aggregate sample for sending to the laboratory and intended for inspection or testing

2.6.1.13

liveliness

ability of one strand of pasta to slide smoothly over another, which depends on the degree of strand to strand adhesion

Note 1 to entry: Liveliness is applicable only to pasta in the form of long strands.

Note 2 to entry: Liveliness depends on the geometry of the product, the stickiness of the surface and the firmness of the pasta.

2.6.1.14

moisture content

loss of mass fraction of water undergone by the product under specified conditions

Note 1 to entry: Moisture content is expressed as a percentage mass fraction.

2.6.1.15

nitrogen content

quantity of nitrogen determined after application of a specified procedure

2.6.1.16

optimum cooking time

time after which a continuous white line visible at the centre of a strand of pasta during cooking disappears, as determined by crushing using a crushing plate in the case of long, solid stands of pasta (e.g. spaghetti) or by cutting the stand at right angles with a blade in the case of short, hollow strands of pasta (e.g. macaroni)

Note 1 to entry: By convention, the white line is considered to have disappeared when it is visible only as a row of dots.

2.6.1.17

Pekar test

test of flour characteristics made by comparing the colour (and brightness) of a flour against a standard sample; each sample is placed side by side on a flat rectangular, black-stained piece of wood, pressed down to a smooth surface and compared with the standard

2.6.1.18

purifier

machine with one to three layers or decks of sieves set in an oscillating frame; its principle is based on sizing and density to separate a mixture of pure endosperm, composite pieces of endosperm and bran, and branny material

2.6.1.19

rheological properties

physical properties of dough such as elasticity, extensibility and resistance to deformation

2.6.1.20

sampling

act of drawing or constituting a sample

2.6.1.21

sampling error

part of uncertainty of a given characteristic due to the heterogeneity of its distribution and the deficiencies (supposed known and accepted) of the sampling plan

2.6.1.22

starch release

release of starch from pasta during cooking in water, indicating the state of surface breakdown of the pasta

Note 1 to entry: The amount of starch released can be assessed by means of a tactile investigation which estimates the tackiness of the surface to the touch.

2.6.1.23

surface condition

condition of surface disintegration of cooked pasta; it can be assessed visually using reference photographs

2.6.1.24

tetrazolium germination test

viability test, predictor of seed viability on the basis of their relative respiration rate when hydrated

2.6.1.25

turbidity test

test for measuring the denaturation of water-soluble and saline-soluble proteins

2.6.1.26

warm germination test

cold germination test

tests performed for determining the ability of seeds to germinate under specific environmental conditions

2.6.2 Terms relating specifically to rice

2.6.2.1

husked rice yield

amount of husked rice obtained from paddy

2.6.2.2

milled head rice yield

amount of milled head rice obtained from paddy or husked rice

2.6.2.3

milled rice yield

amount of milled rice (head rice and those grains which are considered as head rice, broken kernels and chips) obtained from paddy or husked rice

2.6.3 Terms relating specifically to wheat

2.6.3.1

alveogram

diagram obtained by means of an alveograph

2.6.3.2

alveograph

apparatus for measuring the visco-elastic properties of doughs made from wheat flour

2.6.3.3

amylogram

diagram obtained by means of an amylograph

2.6.3.4

amylograph

apparatus used to determine the viscosity of a flour and water slurry when the starch is gelatinized by heating, through a temperature predetermined cycle

2.6.3.5

amylograph viscosity

maximum viscosity reached by a suspension of flour and water which is gelatinized by heating under set conditions

2.6.3.6

Brabender unit

BU

unit that indicates the viscosity of starch paste measured by a Brabender Visco-amylograph

Note 1 to entry: Brabender Visco-amylograph refers to a product available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of this product. Other equipment may be used if it can be shown to give comparable results.

2.6.3.7

Brabender Visco-amylograph

rotational instrument which permits continuous determination of viscosity during cooking and cooling the starch paste

Note 1 to entry: Brabender Visco-amylograph refers to a product available commercially. This information is given for the convenience of users of this International Standard and does not constitute an endorsement by ISO of this product. Other equipment may be used if it can be shown to give comparable results.

2.6.3.8

consistency

resistance of a dough to being mixed in a farinograph at a specified constant speed

Note 1 to entry: Consistency is expressed in arbitrary units (farinograph units, FU).

2.6.3.9

dough test

test made on dough to obtain information on the bread-making quality of the flour or to determine the effects of ingredients or additives

2.6.3.10

extensibility

physical property of dough related to stretching or increasing in size without breaking when stretched

2.6.3.11

extensogram

diagram obtained by means of an extensograph

2.6.3.12

extensograph

apparatus for the determination of the resistance to extension and also the extensibility of doughs made from wheat flour

2.6.3.13

falling number

FN

total time required to activate a viscometer stirrer and allow it to fall a predetermined distance through an aqueous gel prepared from heating a mixture of flour or semolina and water in a viscometer tube, and which is undergoing liquefaction due to attack by the amylases

Note 1 to entry: Falling number is expressed in seconds.

Note 2 to entry: Time is counted from immersion of viscometer tube in the water bath.

2.6.3.14

falling number Hagberg test

rapid screening test for grain soundness (no sprouting)

2.6.3.15

farinogram

diagram obtained by means of a farinograph

2.6.3.16

farinograph

apparatus for the determination of changes in water absorption and dough-mixing characteristics of wheat flours, as a function of time

2.6.3.17

liquefaction number

LN

result of a simple calculation to convert the falling number into a value used to estimate the composition of mixtures of grain, flour or semolina necessary to produce a sample of the required falling number

Note 1 to entry: LN values, unlike falling numbers, are additive.

2.6.3.18

sedimentation index

number indicating the volume of the sediment obtained under specified conditions from a suspension of test flour, prepared from the wheat, in a solution of lactic acid and propan-2-ol

Note 1 to entry: Sedimentation index is expressed in millilitres.

Note 2 to entry: The sedimentation index is determined by the Zeleny test.

2.6.3.19

undersize fraction of semolina

by convention, the percentage of semolina which passes through the sieve specified for a given semolina

2.6.3.20

valorigram

diagram obtained by means of a valorigraph

2.6.3.21

valorigraph

apparatus for the determination of the water absorption of wheat flours and for estimation of the consistency of doughs made from them

2.6.3.22

visco-elastic index

ten times the ratio of the mean value of the elastic recovery to the difference between the mean value of firmness and 100

Bibliography

- [1] *Grains and oilseeds (handling, marketing, processing)*. Winnipeg, MB: Canadian International Grains Institute, Fourth Edition, 1993
- [2] KENT N.L. *Technology of cereals: An introduction for students of food science and agriculture*. Oxford: Pergamon, Third Edition, 1983, 221 p.
- [3] STEPHENS A. ed. *Dictionary of agriculture*. London: A & C Black, Third Edition, 2006
- [4] ISO 2395, *Test sieves and test sieving — Vocabulary*
- [5] ISO 5223, *Test sieves for cereals*
- [6] ISO 5526, *Cereals, pulses and other food grains — Nomenclature*

Sommaire

Page

Avant-propos	iv
Introduction	v
1 Domaine d'application	1
2 Termes et définitions	1
2.1 Termes généraux.....	1
2.2 Termes relatifs à la physiologie.....	12
2.3 Termes relatifs à la morphologie.....	13
2.4 Termes relatifs à la technologie des céréales.....	16
2.5 Termes relatifs aux produits céréaliers.....	22
2.6 Termes relatifs aux méthodes d'essai et d'échantillonnage.....	24
Bibliographie	31

Avant-propos

L'ISO (Organisation internationale de normalisation) est une fédération mondiale d'organismes nationaux de normalisation (comités membres de l'ISO). L'élaboration des Normes internationales est en général confiée aux comités techniques de l'ISO. Chaque comité membre intéressé par une étude a le droit de faire partie du comité technique créé à cet effet. Les organisations internationales, gouvernementales et non gouvernementales, en liaison avec l'ISO participent également aux travaux. L'ISO collabore étroitement avec la Commission électrotechnique internationale (IEC) en ce qui concerne la normalisation électrotechnique.

Les procédures utilisées pour élaborer le présent document et celles destinées à sa mise à jour sont décrites dans les Directives ISO/IEC, Partie 1. Il convient, en particulier de prendre note des différents critères d'approbation requis pour les différents types de documents ISO. Le présent document a été rédigé conformément aux règles de rédaction données dans les Directives ISO/IEC, Partie 2 www.iso.org/directives.

L'attention est appelée sur le fait que certains des éléments du présent document peuvent faire l'objet de droits de propriété intellectuelle ou de droits analogues. L'ISO ne saurait être tenue pour responsable de ne pas avoir identifié de tels droits de propriété et averti de leur existence. Les détails concernant les références aux droits de propriété intellectuelle ou autres droits analogues identifiés lors de l'élaboration du document sont indiqués dans l'Introduction et/ou dans la liste des déclarations de brevets reçues par l'ISO (voir www.iso.org/brevets).

Les appellations commerciales éventuellement mentionnées dans le présent document sont données pour information, par souci de commodité, à l'intention des utilisateurs et ne sauraient constituer un engagement.

Le comité chargé de l'élaboration du présent document est l'ISO/TC 34, *Produits alimentaires*, Sous-comité SC 4, *Céréales et légumineuses*.

Cette troisième édition annule et remplace la deuxième édition (ISO 5527:1995), qui a fait l'objet d'une révision technique.

Introduction

Dans cette édition de l'ISO 5527, les termes et définitions ont été stockés dans la Plateforme de consultation en ligne (OBP) (<http://www.iso.org/obp>), sur laquelle ils peuvent être consultés gratuitement (mais pas téléchargés) dans les langues suivantes : anglais, français, allemand et espagnol.

La version PDF de l'ISO 5527 contient également les termes et définitions en chinois.

Céréales — Vocabulaire

1 Domaine d'application

La présente Norme internationale définit une liste de termes concernant les céréales.

NOTE 1 En plus des termes employés en anglais et en français, deux des trois langues officielles de l'ISO, le présent document fournit les équivalents en espagnol, en allemand et en chinois ; ceux-ci sont publiés sous l'égide des organismes membres pour l'Argentine (IRAM), l'Allemagne (DIN) et la Chine (SAC), et sont donnés à titre indicatif uniquement. Seuls les termes et définitions fournis dans les langues officielles peuvent être considérés comme des termes et définitions de l'ISO.

Les termes sont répertoriés selon la classification suivante :

[2.1](#) Termes généraux

[2.2](#) Termes relatifs à la physiologie

[2.3](#) Termes relatifs à la morphologie

[2.4](#) Termes relatifs à la technologie des céréales

[2.5](#) Termes relatifs aux produits céréaliers

[2.6](#) Termes relatifs aux méthodes d'essai et d'échantillonnage

NOTE 2 Voir dans l'ISO 5526[6] la liste des principales espèces de céréales avec leurs noms botaniques et leurs noms communs.

2 Termes et définitions

2.1 Termes généraux

2.1.1

rouille

maladie fongique des céréales

2.1.2

céréales panifiables

céréales convenant à la fabrication du pain et autres produits

EXEMPLE Blé, seigle, triticales.

2.1.3

installation de stockage

grand entrepôt dans lequel de grandes quantités de grains non emballés sont entreposées

2.1.4

grain carié

grain rempli de poussières d'odeur fétide comprenant les spores des caries

2.1.5**céréales**

graines issues de plantes généralement cultivées, appartenant à la famille des *Poaceae*

Note 1 à l'article: la liste de ces plantes est donnée dans l'ISO 5526.[6]

2.1.6**livraison**

quantité physique de grains disponible, expédiée ou reçue en une seule fois dans le cadre d'un contrat ou d'un document de transport particulier

Note 1 à l'article: une livraison peut être composée d'un ou de plusieurs lots.

2.1.7**cultivar****variété**

population unique et uniforme d'une espèce végétale (sauf hybrides) qui conserve ses caractéristiques de génération en génération par son mode naturel de reproduction

2.1.8**grain endommagé**

grain entier présentant une décoloration ou une détérioration apparente provoquée par l'humidité, les insectes, la chaleur ou toute autre cause

2.1.9**grain niellé**

galle des graines ayant une coloration brun noirâtre et contenant une masse de petits vers nématodes de l'espèce *Anguina tritici* sous forme desséchée et qui redeviennent actifs lorsqu'ils sont immergés dans l'eau

Note 1 à l'article: ce terme ne s'applique pas aux lots de grains contenant des graines de maïs ou de nielle des blés (*Lychnis githago* Scop. ou *Agrostemma githago* L.).

2.1.10**ergot**

sclérote du champignon *Claviceps purpurea* qui peut infecter le blé mais surtout le seigle

Note 1 à l'article: à l'article : Les sclérotés se développent sur l'épi à la place du grain. Les sclérotés contiennent plus de 40 alcaloïdes toxiques de l'ergot.

2.1.11**matière étrangère**

fraction comprenant les matières étrangères organiques et inorganiques

2.1.12**graines étrangères**

grains autres que des céréales présents dans l'échantillon ou le lot considéré

2.1.13**cassure**

surface que présente l'endosperme d'un grain cassé qui peut être d'aspect farineux, mitadiné ou vitreux

2.1.14**grain fusarié**

grain dont le péricarpe est contaminé par le mycélium du *Fusarium* spp

Note 1 à l'article: un tel grain paraît légèrement échaudé, ridé et porte des taches diffuses aux contours mal délimités, de coloration rose et/ou blanche.

2.1.15**grains attaqués par les ravageurs**

grains présentant une détérioration due à l'attaque de rongeurs, d'insectes, d'acariens ou autres prédateurs

2.1.16**graines nuisibles****graines toxiques**

graines qui, lorsqu'elles sont présentes en quantité supérieure à une valeur donnée, peuvent avoir une incidence toxique, nuisible, dommageable ou dangereuse sur la santé, les propriétés organoleptiques ou les performances technologiques

2.1.17**grain chauffé**

résultant de l'effet de la chaleur, grain avec une coloration châtain à noire et dont une section de l'endosperme est jaune-gris ou brun-noir

2.1.18**infestation cachée**

insectes présents à l'intérieur des grains, soit parce qu'ils sont à un stade juvénile qui s'est développé après le dépôt d'un œuf dans le grain, soit parce qu'ils ont pénétré à l'intérieur d'un grain à la faveur de fissures ou d'autres dommages, généralement pour s'y nourrir

Note 1 à l'article: l'infestation cachée n'est normalement pas apparente au premier examen de l'échantillon.

2.1.19**impuretés**

grains endommagés et toutes les matières organiques et inorganiques autres que des grains de céréales

Note 1 à l'article: Les impuretés incluent quatre catégories principales : grains endommagés ; autres céréales ; matière étrangère ; graines nuisibles et/ou toxiques ; grains cariés et ergot.

2.1.20**impureté d'origine animale**

matière d'origine animale (œufs, larves, nymphes ou adultes d'insectes et leurs fragments, poils de rongeurs et leurs fragments, acariens et leurs fragments), séparée du produit selon des conditions spécifiques

2.1.21**infestation****espèces ravageuses**

espèces vivantes d'insectes et d'acariens qui, au cours de certains stades de leur cycle de vie, sont capables de causer des dommages aux grains

2.1.22**infestation initiale observée**

insectes vivants qui sont immédiatement visibles à l'œil nu au premier examen de l'échantillon

2.1.23**cassure farineuse**

surface de cassure de l'endosperme qui est entièrement de texture friable et dont l'aspect est farineux

2.1.24**mites**

espèce de l'ordre des *lépidoptères* (*Heterocera*), moins colorée que les papillons et volant principalement la nuit

Note 1 à l'article: papillons (*Rhopalocera*) et mites (*Heterocera*) appartiennent au même ordre des *lépidoptères*, mais les papillons ne sont pas rencontrés dans les grains stockés.

2.1.25**grains moisiss**

grains avec des moisissures visibles à l'œil nu sur 50 % de la surface et/ou à l'intérieur de l'amande

2.1.26**unité préconditionnée**

quantité de grains ou d'un produit de mouture emballée dans un sachet ou sous forme d'une unité de vente

2.1.27**dommage au péricarpe**

type principal de dommage produisant des grains brisés, tel que fissures, coupures, abrasions ou perte de fragments ou de morceaux d'endosperme

2.1.28**son**

fraction de la mouture obtenue lors de l'enlèvement de la couche externe des céréales

2.1.29**graines de semence**

graines destinées aux semis

2.1.30**cassure mitadinée**

surface de cassure de l'endosperme, d'aspect à la fois farineux et vitreux

2.1.31**grain échaudé****grain mal développé**

grain mal rempli, léger et aminci, dont l'accumulation de réserves a été arrêtée en raison de facteurs physiologiques ou pathologiques

2.1.32**petits grains**

grains sains de petite taille passent au travers d'un tamis d'ouverture de maille déterminée

2.1.33**céréales de printemps**

variétés (cultivars) de céréales semées au printemps et fleurissant le même printemps

2.1.34**grain germé**

grain dont on voit nettement, à l'œil nu, la radicule ou la plumule

Note 1 à l'article: les grains germés (blé tendre, blé dur, seigle, triticale) ne sont pas pris en considération en tant que tels, mais par l'activité α -amylasique, exprimée en indice de chute, qui résulte de leur présence.

2.1.35**fracture de stress**

petite fissure dans un grain qui prend son origine près du centre et s'étend vers l'extérieur à travers l'endosperme vitreux mais qui n'atteint pas la couche externe du péricarpe

2.1.36**grains endommagés totaux**

grains et morceaux de grains qui sont endommagés par le contact avec le sol, le climat, les moisissures, les insectes, le gel, la germination sur épi ou non, ou endommagés matériellement d'autres façons

2.1.37**cassure vitreuse**

surface de cassure de l'endosperme qui est tout à fait compact et d'aspect translucide

2.1.38**grain vitreux**

grain entièrement sain, ayant un aspect naturel translucide

Note 1 à l'article: les grains vitreux ne sont pas considérés comme des impuretés.

2.1.39**céréale waxy**

<blé, orge, maïs, riz, sorgho> céréale dont l'amidon est presque entièrement constitué d'amylopectine

2.1.40**grain charançonné**

grain attaqué par le charançon des grains (*Sytophilus granarius*)

Note 1 à l'article: le charançon dépose ses œufs dans les grains entreposés de sorte que les larves se nourrissent de l'intérieur du grain.

2.1.41**céréales d'hiver**

variétés (cultivars) de céréales semées en automne et fleurissant au printemps suivant

Note 1 à l'article: la floraison n'intervient que si les plantes sont soumises à certaines conditions naturelles ou artificielles de vernalisation, généralement à une basse température ; cette condition est remplie naturellement lorsque les céréales sont semées avant les premiers froids de l'hiver.

2.1.42**orge**

fruit de la céréale *Hordeum vulgare* appartenant à la famille des *Poaceae*

2.1.42.1**orge fourragère**

orge dont les grains sont utilisés pour l'alimentation des animaux

2.1.42.2**orge nue**

caryopse mutant d'orge cultivée qui appartient à la famille des *Poaceae*, qui se sépare aisément de la glume

2.1.42.3**orge de brasserie**

orge répondant à certaines caractéristiques (physiques, chimiques, germinatives et autres) qui permettent sa transformation en malt

2.1.43**millet des oiseaux**

caryopse de céréale cultivée appartenant à la famille des *Poaceae*

Note 1 à l'article: l'enveloppe du caryopse peut être rouge, orangée, jaune, blanche, pourpre ou noire ; son fruit ovale et jaune peut être glutineux ou non glutineux.

2.1.44**maïs**

fruit d'une céréale habituellement cultivée, appartenant à la famille des *Poaceae*, souvent en forme de dent, en triangle, avec une forme presque ronde, généralement de couleur jaune ou blanche

2.1.44.1**maïs nain**

type de maïs pour la consommation humaine et dont les jeunes épis sont récoltés quand les soies deviennent visibles

2.1.44.2**maïs denté**

type de maïs dont le grain mature a la forme d'une dent de cheval et une dépression sur la couronne

2.1.44.3**maïs de champs**

maïs dont les grains matures – le maïs commun, surtout les types corné et denté – sont surtout employés pour l'alimentation animale, soit directement soit comme partie d'un produit pré-transformé

2.1.44.4**maïs corné**

type de maïs dont le grain mature a une apparence lisse et vitreuse et une forme plutôt ronde

2.1.44.5**maïs amidonnier**

type de maïs dont les grains sont surtout composés d'amidon farineux plutôt que d'amidon vitreux

2.1.44.6**maïs génétiquement modifié****OGM**

maïs obtenu par une technique de recombinaison de l'ADN permettant de transférer des gènes sélectionnés d'un organisme (par exemple animaux, plantes, microorganismes) à un autre afin de lui conférer une ou plusieurs nouvelles caractéristiques

2.1.44.7**dureté du maïs**

quantité d'endosperme vitreux dans le grain de maïs par rapport à la quantité d'endosperme farineux

2.1.44.8**maïs à pop corn****grain à maïs soufflé**

type de maïs dont le grain mature a la capacité d'éclater lorsqu'il est rapidement chauffé, ceci en raison d'une augmentation de la pression interne

2.1.44.9**maïs sucré****maïs doux**

type de maïs dont les grains contiennent beaucoup de sucre et peu d'amidon et qui lorsqu'ils sont séchés, deviennent ridés et translucides

2.1.44.10**maïs cireux****maïs glutineux****maïs waxy**

type de maïs contenant moins de 5 % en fraction massique d'amylose sur matière sèche, le reste étant de l'amylopectine

2.1.45**riz**

fruits d'*Oryza sativa* ou *Oryza glaberrima*, de la famille des *Poaceae*

2.1.45.1**riz à ventre blanc**

grain de riz considéré comme entier dont la partie opaque est située sur la face ventrale ou du même côté que l'embryon

2.1.45.2**riz aromatique**

variétés de riz contenant une odeur aromatique naturelle différente des autres variétés de riz, qui apparaît particulièrement après leur cuisson

2.1.45.3**riz cargo****riz complet****riz décortiqué**

riz paddy uniquement débarrassé de sa balle

Note 1 à l'article: les processus de décortiquage et de manutention peuvent entraîner la perte d'une partie du son.

Note 2 à l'article: pour des raisons de commodité et de classification, cet article est identique à celui du [2.5.3.1](#).

2.1.45.4**grain crayeux**

grain considéré comme entier (à l'exception du riz gluant), dont la totalité de la surface présente un aspect opaque et farineux

2.1.45.5**fragment**

partie de grain passant au travers d'un tamis de contrôle conforme à l'ISO 5223,^[5] et ayant des trous ronds de 1,4 mm de diamètre