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Rice — Specification

Riz — Spécifications

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Foreword

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The main task of technical committees is to prepare International Standards. 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.

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ISO 7301 was prepared by Technical Committee ISO/TC 34, *Food products*, Subcommittee SC 4, *Cereals and pulses*.

This third edition cancels and replaces the second edition (ISO 7301:2002), which has been technically revised.

Rice — Specification

1 Scope

This International Standard gives the minimum specifications for rice (*Oryza sativa* L.) which is subject to international trade. It is applicable to the following types: husked rice and milled rice, parboiled or not, intended for direct human consumption. It is neither applicable to other products derived from rice, nor to waxy rice (glutinous rice).

2 Normative references

The following referenced documents are indispensable for the application of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

ISO 712, *Cereals and cereal products — Determination of moisture content — Reference method*

3 Terms and definitions

For the purposes of this document, the following terms and definitions apply.

3.1
paddy
paddy rice
rough rice
rice retaining its husk after threshing

3.2
husked rice
brown rice
cargo rice
paddy from which the husk only has been removed

NOTE The processes of husking and handling may result in some loss of bran.

3.3
milled rice
white rice
husked rice from which almost all of the bran and embryo have been removed by milling

3.3.1
undermilled rice
milled rice obtained by milling husked rice, but not to the degree necessary to meet the requirements of well-milled rice

3.3.2
well-milled rice
milled rice obtained by milling husked rice in such a way that most of the bran and part of the embryo have been removed

3.3.3
extra-well-milled rice
milled rice obtained by milling husked rice in such a way that almost all of the bran and the embryo have been removed

3.4
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

3.5
waxy rice
glutinous rice
varieties of rice whose kernels have a white and opaque appearance

NOTE The starch of waxy rice consists almost entirely of amylopectin. The kernels have a tendency to stick together after cooking.

3.6
whole kernel
husked or milled kernel without any broken part, or part of kernel with a length greater than or equal to nine-tenths of the **average length** (3.12) of the test sample kernels

NOTE See Figure 1.

3.7
head rice
whole kernel (3.6) or part of kernel with a length greater than or equal to three-quarters of the **average length** (3.12) of the test sample kernels

NOTE See Figure 1.

3.8
large broken kernel
part of kernel with a length less than three-quarters but greater than one-half of the **average length** (3.12) of the test sample kernels

NOTE See Figure 1.

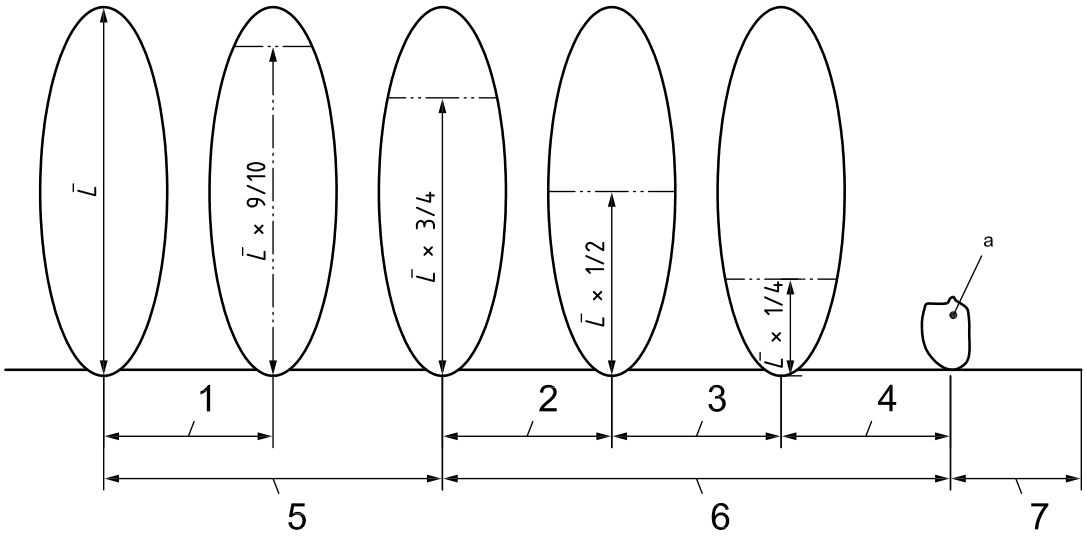
3.9
medium broken kernel
part of kernel with a length less than or equal to one-half but greater than one-quarter of the **average length** (3.12) of the test sample kernels

NOTE See Figure 1.

3.10
small broken kernel
part of kernel with a length less than or equal to one-quarter of the **average length** (3.12) of the test sample kernels but which does not pass through test sieve with round apertures having diameter 1,4 mm

NOTE See Figure 1.

3.11
chip
part of kernel which passes through a test sieve complying with ISO 5223[1], and with round apertures having diameter 1,4 mm



Key

1	whole kernel (3.6)	5	head rice (3.7)
2	large broken kernel (3.8)	6	broken kernel
3	medium broken kernel (3.9)	7	chips (3.11)
4	small broken kernel (3.10)	$\bar{L}$	average length

[a] Not passing through a test sieve with round apertures having diameter 1,4 mm.

Figure 1 — Size of kernels, broken kernels and chips

3.12
average length
$\bar{L}$
arithmetic mean of the length of the test sample kernels that are not immature or malformed and without any broken parts

NOTE 1 See definition of **immature kernel** or **malformed kernel** (3.16)

NOTE 2 Calculation of the average length is given in A.4.3.2.

3.13
extraneous matter
inorganic and organic components other than whole or broken kernels of rice

3.13.1
inorganic extraneous matter
inorganic components, such as stone, sand and dust

3.13.2
organic extraneous matter
extraneous matter including edible and non-edible

3.13.2.1
edible organic extraneous matter
extraneous matter, such as bran, non-toxic foreign seeds, flour lumps, and other food

3.13.2.2
non-edible organic extraneous matter
extraneous matter, including husks, pieces of straw, and impurities of animal origin, such as dead insects and their fragments

3.14
heat-damaged kernel
head rice or broken kernel that has changed its normal colour as a result of microbiological heating

NOTE This category includes kernel that is yellow to dark yellow in the case of non-parboiled rice and orange to dark orange in the case of parboiled rice, due to a microbiological alteration.

3.15
damaged kernel
head rice or broken kernel showing evident deterioration due to moisture, pests, disease or other causes, but excluding **heat-damaged kernels** (3.14)

3.16
immature kernel
malformed kernel
head rice or broken kernel which is unripe or badly developed

3.17
chalky kernel
head rice or broken kernel of non-parboiled rice, except **waxy rice** (3.5), whose whole surface has an opaque and floury appearance

3.18
red kernel
head rice or broken kernel having a red bran covering more than one-quarter of its surface

3.19
red-streaked kernel
head rice or broken kernel with red bran streaks of length greater than or equal to one-half of the **average length** (3.12), but where the surface covered by these red streaks is less than one-quarter of the total surface

3.20
partly gelatinized kernel
head rice or broken kernel of parboiled rice which is not fully gelatinized and shows a distinct white opaque area

3.21
peck
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

4 Specifications

4.1 General, sensory and health specifications

Kernels of rice, husked or milled, broken or not, shall be sound, clean and free from foreign odours or odour which indicates deterioration. They shall also be free from toxic or any harmful matter.

The level of additives and pesticides and other contaminants shall not exceed the maximum limits permitted by the national regulations of the country of destination or, in their absence, by CAC/MRL 1[8] and associated database, CAC/MRL 2[9], and CAC/MRL 3[10] (developed by FAO/WHO Codex Alimentarius).

Living insects which are visible to the naked eye shall not be present.

4.2 Physical and chemical specifications

4.2.1 The mass fraction of moisture shall be not greater than 15,0 %.

NOTE Lower moisture contents can be required for certain destinations depending on the climate, duration of transport and storage. For further details, see ISO 6322-1[2], ISO 6322-2[3], and ISO 6322-3[4].

4.2.2 The physical specifications shall be determined in accordance with the method specified in Annex A and shall not exceed the limits given in Table 1.

4.3 Contract specifications

All commercial contracts shall show clearly the:

a) total percentage of broken kernels permitted, classified according to the agreed categories, and the relative proportion of each category;

b) total percentage permitted, not exceeding the maximum values for the specifications detailed in Table 1, determined in accordance with the method described in Annex A.

If the contract deals with a specific kind of rice or a specific variety of rice, in order to evaluate the homogeneity of the lot, the contract can specify both the average length and its related coefficient of variation, determined according to A.4.3.2 and A.4.3.3, respectively.

Specifications shall be determined in accordance with the method described in Annex A.

5 Test methods

The moisture content shall be determined in accordance with ISO 712.

The other tests shall be carried out using the methods specified in Annexes A and B.

6 Packaging

The packaging material shall not transmit any smell or taste and shall not contain substances which may damage the product or constitute a health risk. If bags are used, they shall be clean, sufficiently strong and well stitched or sealed.

Table 1 — Contract specifications

Specification (definition reference)	Husked rice non-parboiled	Milled rice non-parboiled	Husked rice parboiled	Milled rice parboiled
Inorganic extraneous matter (3.13.1), % mass fraction	0,5	0,5	0,5	0,5
Organic extraneous matter (3.13.2), % mass fraction	1,0	0,5	1,0	0,5
Paddy (3.1), % mass fraction	2,5	0,3	2,5	0,3
Husked rice non-parboiled (3.2), % mass fraction	—	1,0	1,0	1,0
Milled rice non-parboiled (3.3), % mass fraction	1,0	—	1,0	1,0
Husked rice parboiled (3.2, 3.4), % mass fraction	1,0	1,0	—	1,0
Milled rice parboiled (3.3, 3.4), % mass fraction	1,0	1,0	1,0	—
Chip (3.11), % mass fraction	0,1	0,1	0,1	0,1
Heat-damaged kernel (3.14), % mass fraction	2,0[a]	2,0	2,0[a]	2,0
Damaged kernel (3.15), % mass fraction	4,0	3,0	4,0	3,0
Immature or malformed kernel (3.16), % mass fraction	8,0	2,0	8,0	2,0
Chalky kernel (3.17), % mass fraction	5,0[a]	5,0	—	—
Red kernel and red-streaked kernel (3.18, 3.19), % mass fraction	12,0[b]	12,0	12,0[b]	12,0
Partly gelatinized kernel (3.20), % mass fraction	—	—	11,0[a]	11,0
Peck (3.21), % mass fraction	—	—	4,0	2,0
Waxy rice (3.5), % mass fraction	1,0[a]	1,0	1,0[a]	1,0

— Not applicable.

[a] After milling.

[b] Only full red husked (cargo) rice is considered here.

Annex A
(normative)

Methods of analysis for rice specifications

A.1 Principle

Manual separation and weighing of the broken kernels and of the categories in Table 1.

A.2 Apparatus

A.2.1 **Sample divider**, conical sampler or multiple-slot sampler with a distribution system.

EXAMPLE Sample divider specified in ISO 24333[6].

A.2.2 **Test sieve**, with round apertures of diameter 1,4 mm, ISO 5223[1].

A.2.3 **Tweezers**, **scalpel**, and **paintbrush**.

A.2.4 **Small bowls**.

A.2.5 **Balance**, capable of being read to the nearest 0,01 g.

A.2.6 **Tray**, or other means, coloured in contrast with the colour of the rice to be evaluated.

A.2.7 **Micrometer**, or other measuring device not deforming the kernels, capable of being read to the nearest 0,01 mm.

A.3 Sampling

Sampling is not part of the method specified in this International Standard. A recommended sampling method is given in ISO 24333[6].

It is important the laboratory receive a truly representative sample which has not been damaged or changed during transport or storage.

A.4 Procedure

A.4.1 General

Note if an odour, particular or foreign to rice, is detected, as well as the presence of all anomalies.

Verify the presence of living or dead insects by visual examination and report their number.

A.4.2 Preparation of the test sample

Weigh and carefully mix the laboratory sample to make it as homogeneous as possible. Then reduce it, if necessary, using a sample divider (A.2.1) to obtain a test sample of about 800 g.