

DEPARTMENT OF AGRICULTURE

STD No. G-7

AGRICULTURAL PRODUCT STANDARDS ACT, 1990 (ACT No. 119 OF 1990)
STANDARDS AND REQUIREMENTS REGARDING
CONTROL OF THE EXPORT OF WHEAT

The Executive Officer: Agricultural Product Standards has stipulated under section 4(3)(a)(ii) of the Agricultural Product Standards Act, 1990 (Act No. 119 of 1990), the standards regarding the quality and food safety of wheat and the requirements regarding the packing, marking and labeling thereof.

STD. No. G-7

STANDARDS AND REQUIREMENTS REGARDING CONTROL OF THE EXPORT
OF WHEAT AS STIPULATED BY
GOVERNMENT NOTICE No. R.1983 OF 23 AUGUST 1991

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Definitions

1. In these standards and requirements any word or expression to which a meaning has been assigned in the Act, shall have that meaning and --

"amber glossy and flinty kernels" means all kernels of durum wheat of which the endosperm is not white and mealy, or partly white and mealy and which have a glossy and flinty appearance;

"bag" means a bag manufactured from --

- (a) jute or phormium or a mixture of jute and phormium; or
- (b) polypropylene that complies with SABS specification CKS632;

"bulk container" means any vehicle or container in which bulk wheat is stored or transported;

"chemical residues" means residues of agricultural remedies which in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947), are permissible for the treatment of pests and diseases and which do not exceed the prescribed maximum residue limit;

"consignment" means --

- (a) a quantity of wheat of the same class, which belongs to the same owner, delivered at any one time under cover of the same consignment note, delivery note or receipt note, or delivered by the same vehicle or bulk container, or loaded from the same bin of a grain elevator into a ship's hold or railway truck or road truck; or
- (b) in the case where a quantity referred to in paragraph (a), is subdivided into different grades, each such quantity of each of the different subclasses or grades;

"container" means a bag or a bulk container;

"cultivar list" means the list of cultivars determined from time to time by the Executive Officer: Agricultural Product Standards and which is obtainable from the Executive Officer: Agricultural Product Standards, Private Bag X258, Pretoria, 0001 or www.nda.agric.za;

"damaged kernels" means wheat kernels and pieces of wheat kernels --

- (a) which have been damaged by insects;

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- (b) which have been distinctly discoloured (orange-brown, dark brown or black) by external heat or as a result of heating caused by internal fermentation in wheat with an excessive moisture content, excluding wheat kernels in respect of which the discolouration is confined to the germ end;
- (c) which are immature and have a distinctly green colour; and
- (d) in which germination has proceeded to such an extent that the skin covering the embryo has been broken or the developing rootlets are clearly visible;

"ergot sclerotia" means the sclerotia of the fungus *Claviceps purpurea*; and "ergot" has a corresponding meaning;

"falling number" means the time in seconds according to Hagberg - Perten as a measure of the degree of Alpha-Amylase Activity in grain and flour;

"field fungi infected kernels" means wheat kernels that are visibly infected with fungi, and that --

- (a) clearly have greyish brush-ends that are discoloured as a whole; or
- (b) have a dull, lifeless, chalky or pinkish and shrunken appearance as a result of *Fusarium* infection;

"foreign matter" means all material excluding wheat, other grain and unthreshed ears;

"heavily frost-damaged wheat" means --

- (a) blistered wheat kernels which have been damaged by severe frost during the milk to soft dough stage and which is characterised by the kernels being fairly plump but covered entirely with small blisters extending into the crease, excluding --
 - (i) kernels in which blistering is confined to the back of the kernel; and
 - (ii) immature wrinkled kernels in which wrinkling has been caused by frost while the kernels were still immature; and
- (b) wheat kernels (flaked) which have a slightly flaked-off bran coat due to frost: Provided that evidence of frost damage is present and that the bran coat had not been rubbed off due to handling;

"hectolitre mass" means the mass in kilogram per hectolitre;

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"insect" in relation to wheat, means any live insect that is injurious to stored grain irrespective of the stage of development of that insect;

"inspector" means the Executive Officer or an officer under his or her control or an Assignee or an employee of an Assignee;

"noxious seeds" means the seeds or pieces of seeds of plant species that may represent a hazard to human or animal health when consumed, including seeds of *Convolvulus spp.*, *Crotalaria spp.*, *Datura spp.*, *Ipomoea purpurea*, *Lolium temulentum*, *Ricinus communis* or *Xanthium spp.*;

"other grain" means the kernels or pieces of kernels of barley, oats, triticale, maize, rye and sorghum;

"prescribed remedies" means agricultural remedies which in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947), are permissible for the treatment of pests and diseases;

"release", with regard to wheat, means the loading of wheat from the grain elevator or bulk container into a ship's hold;

"ship's hold" means one or more cargo spaces into which wheat is released;

"storage facility" means any warehouse, silo or other place where wheat intended for export, is stored;

"screenings" means all material that passes through a standard sieve contemplated in item 22(3);

"stinking smut infection" means wheat that --

- (a) is infected with *Tilletia spp.* with the exception of wheat infected with *Tilletia indica*; or
- (b) has an unmistakable stinking smut odour; or
- (c) contains wheat kernels that are smeared with stinking smut; or
- (d) contains more than four stinking smut balls (or pieces of balls equal to four stinking smut balls) per 100 g of wheat;

"storage fungi infected kernels" means wheat kernels that are visibly infected with fungi, and that show --

- (a) blue, green, blackish or yellow fungal growth anywhere on the kernel; or

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(b) visible mould beneath the bran;

"the Act" means the Agricultural Product Standards Act, 1990 (Act No. 119 of 1990);

"unthreshed ears" means ears and pieces of ears of wheat, barley, triticale and rye that still contain seeds; and

"wheat" means the kernels of the species *Triticum aestivum* (bread wheat and biscuit wheat), *Triticum durum* (durum wheat), *Triticum polonicum* (durum wheat) and *Triticum turgidum* (durum wheat).

Scope

2. These standards and requirements shall relate to wheat in respect of which an approval for the export thereof is required in terms of section 4 of the Act.

Requirements for approval

3. (1) An approval referred to in section 4 of the Act may be issued in respect of a consignment of wheat if --

- (a) the wheat has been classified in accordance with the classes set out in item 4 and comply with the standards for classes set out in item 5;
- (b) the wheat has been graded in accordance with the grades set out in item 6;
- (c) the wheat complies with the standards for grades set out in item 7;
- (d) the containers in which the wheat concerned is packed, where applicable, comply with the requirements set out in item 8;
- (e) approval has been granted for the release of the wheat into a ship's hold in accordance with the requirements set out in items 30 and 31;
- (f) the wheat is packed in accordance with the packing requirements set out in item 9;
- (g) the containers concerned are marked in accordance with the marking requirements set out in items 10 and 11;
- (h) the samples for inspection are taken in accordance with the methods set out in items 12, 13 and 14;
- (i) the samples are inspected in accordance with the methods set out in items 15, 16 and 17;
- (j) the consignment concerned is inspected in accordance with the methods set out in items 18 to 31;
- (k) the results obtained after an inspection are interpreted in accordance with the requirements set out in item 32;

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- (l) confirmation has been received that the Standards regarding food hygiene and food safety programmes for regulated agricultural food products of plant origin intended for export have been met;
 - (m) the consignment concerned has been presented for inspection in accordance with the Regulations Regarding Control of the Export of Wheat; and
 - (n) an inspector, after an inspection in terms of the said regulations, has found that the provisions of these standards and requirements have been complied with in respect of that consignment.
- (2) The Executive Officer may grant written exemption, entirely or partially, to any person on such conditions as he or she may deem necessary, from the provisions of subitem (1).

QUALITY AND FOOD SAFETY STANDARDS

Classes of wheat

4. The classes of wheat are --
- (a) Class Bread Wheat;
 - (b) Class Biscuit Wheat; and
 - (c) Class Durum Wheat;

Standards for classes

5. (1) Notwithstanding the provisions of subitems (2), (3) and (4), all consignments of wheat must --
- (a) be free from any toxins, chemicals or other substances which render it unfit for human or animal consumption or processing into or utilisation thereof as food or feed;
 - (b) contain not more noxious seeds or ergot sclerotia than permitted in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972);
 - (c) be free from mould infected, sour and rancid other grain, foreign matter and any other matter;
 - (d) be free from any odour, taste or colour not typical of undamaged and sound wheat;
 - (e) contain no chemical residues which exceed the prescribed maximum residue limit: Provided that --
 - (i) if the prescribed maximum residue limit of an importing country is lower than is permissible in terms of the Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947), the prescribed maximum residue limit of the importing country shall be complied with; and
 - (ii) the Executive Officer may grant permission for wheat with a higher maximum residue limit, to be exported to countries where this higher residue limit is permissible: Provided that the export documents are accordingly endorsed with the name of the importing country;

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- (f) contain not more than 10 microgram per kilogram aflatoxin of which not more than 5 microgram per kilogram may be aflatoxin B1: Provided that --
 - (i) if the prescribed maximum aflatoxin limit of an importing country is lower than is permissible, the prescribed maximum aflatoxin limit of the importing country shall be complied with; and
 - (ii) the Executive Officer may grant permission for wheat with a higher maximum aflatoxin content to be exported to countries where this higher aflatoxin limit is permissible: Provided that the export documents are accordingly endorsed with the name of the importing country;
 - (g) be free from live insects irrespective of whether such insects occur in, on or among the wheat, in or on bags containing wheat in or on a bulk container: Provided that a consignment which is rejected due to insect infestation may be presented for inspection again, after fumigation with prescribed remedies and in accordance with acknowledged methods;
 - (h) be free from stinking smut infection;
 - (i) have a moisture content not exceeding 13 per cent; and
 - (j) comply with the requirements for plant injurious organisms of phytosanitary importance as determined by the Director of the Directorate Plant Health.
- (2) A consignment of wheat shall be classified as Class Bread Wheat if it --
- (i) consists of at least 95 per cent (m/m) of one or more of the bread wheat cultivars specified in the cultivar list; and
 - (ii) complies with the standards for Grade 1, Grade 2, Grade 3, Grade 4 or Utility Grade set out in item 7.
- (3) A consignment of wheat shall be classified as Class Biscuit Wheat if it --
- (a) consists of at least 95 per cent (m/m) of one or more of the biscuit wheat cultivars specified in the cultivar list; and
 - (b) complies with the standards for Grade 1 or Grade 2 set out in item 7.

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- (4) A consignment of wheat shall be classified as Class Durum Wheat if it --
- (a) consists of at least 95 per cent (m/m) of one or more of the durum wheat cultivars specified in the cultivar list; and
 - (b) complies with the standards for Super Grade, Grade 1 or Grade 2 set out in item 7.

Grades of wheat

6. The grades for the different classes of wheat shall be as follows:

- (a) Class Bread Wheat --
 - (i) Grade 1;
 - (ii) Grade 2;
 - (iii) Grade 3;
 - (iv) Grade 4; and
 - (v) Utility Grade.
- (b) Class Biscuit Wheat --
 - (i) Grade 1; and
 - (ii) Grade 2.
- (c) Class Durum Wheat --
 - (i) Super Grade;
 - (ii) Grade 1; and
 - (iii) Grade 2.

Standards for grades of wheat

7. (1) Subject to the provisions of subitems (2), (3) and (4), a consignment of wheat shall be graded as --

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- (a) Super Grade, in the case of Durum wheat, if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 2 of the said table opposite the deviation concerned;
 - (b) Grade 1 if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 3 of the said table opposite the deviation concerned;
 - (c) Grade 2 if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 4 of the said table opposite the deviation concerned;
 - (d) Grade 3 if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 5 of the said table opposite the deviation concerned;
 - (e) Grade 4 if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 6 of the said table opposite the deviation concerned; and
 - (f) Utility Grade if the nature of deviation, specified in column 1 of Table 1 of the Annexure, in that consignment does not exceed the percentage specified in column 7 of the said table opposite the deviation concerned.
- (2) (a) The minimum hectolitre masses for the different grades, in the case of Class Bread Wheat, are as follows:
- (i) Grade 1 - 77 kg;
 - (ii) Grade 2 - 76 kg;
 - (iii) Grade 3 - 74 kg;
 - (iv) Grade 4 - 72 kg; and
 - (v) Utility Grade - 70 kg.

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- (b) The minimum hectolitre masses for different grades in the case of Class Durum Wheat and Class Biscuit Wheat are as follows:
 - (i) Super Grade - 79 kg;
 - (ii) Grade 1 - 76 kg; and
 - (iii) Grade 2 - 74 kg.
- (3) (a) Grade 1, Grade 2 and Grade 3 shall, in the case of Class Bread Wheat and Super Grade, Grade 1 and Grade 2, in the case of Class Durum Wheat, have a minimum falling number value of not less than 250 seconds;
- (b) Grade 4 shall, in the case of Class Bread Wheat, have a minimum falling number value of not less than 200 seconds.
- (c) Utility Grade shall, in the case of Class Bread Wheat, have a minimum falling number value of not less than 150 seconds;
- (d) Notwithstanding the provisions of paragraph (a), wheat shall be deemed to comply with the requirements of the paragraph concerned if it deviates with not more than 30 seconds lower than the minimum prescribed for Super Grade, in the case of Durum Wheat, Grade 1, Grade 2 and Grade 3 as the case may be.
- (4) Class Durum Wheat shall, --
 - (a) in the case of Super Grade, contain --
 - (i) a minimum of 14 per cent protein determined on a 12 per cent moisture basis; and
 - (ii) a minimum of 90 per cent amber glossy and flinty kernels;
 - (b) in the case of Grade 1, contain --
 - (i) a minimum of 13 per cent protein determined on a 12 per cent moisture basis; and
 - (ii) a minimum of 80 per cent amber glossy and flinty kernels; and

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- (c) in the case of Grade 2, contain --
 - (i) a minimum of 12 per cent protein determined on a 12 per cent moisture basis; and
 - (ii) a minimum of 70 per cent amber glossy and flinty kernels.

(5) The minimum protein content determined on a 12 per cent moisture basis for the different grades, in the case of Class Bread Wheat, shall be as follows:

- (a) Grade 1 - 12 per cent;
- (b) Grade 2 - 11 per cent;
- (c) Grade 3 - 10 per cent;
- (d) Grade 4 - 9 per cent; and
- (e) Utility Grade - 8 per cent.

REQUIREMENTS FOR CONTAINERS

General

8. (1) A container, excluding a ship's hold, railway truck or road truck and storage facility, which contains wheat intended for export shall be suitable, intact (excluding holes made by a grain probe in the case of bags), clean, dry and odourless.

(2) Subject to the provisions of subitem (1) a bag which contains wheat intended for export shall --

- (a) be new;
 - (b) be strong enough for the conveyance of the maximum mass of wheat that can be accommodated in that bag;
 - (c) not be stained by any colouring matter or be impregnated by any liquid capable of imparting stains, excluding normal discolouration due to exposure to the sun;
 - (d) not impart a foreign taste or colour or any substance which may be injurious to human health to the wheat; and
 - (e) in the case of the bags that are re-used, be of such a material that the bags can be cleaned and disinfected prior to re-use.
- (3) A ship's hold into which wheat intended for export is released, shall --
- (a) not transmit to wheat any harmful substance that may be injurious to human health;
 - (b) apparently be free from insects; and
 - (c) reasonably be free from pieces of grain or any other material that may harbour insects.
- (4) A storage facility or railway truck or road truck shall --
- (a) not transmit to wheat any harmful substance that may be injurious to human health;
 - (b) apparently be free from insects; and

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- (c) reasonably be free from pieces of grain or any other material that may harbour insects:

Provided that an inspector may order the exporter or agent to clean, treat or fumigate a contaminated storage facility or railway truck or road truck.

PACKING REQUIREMENTS

General

9. (1) Wheat of different classes and grades shall be packed in different containers.
- (2) Bags shall be properly closed.

MARKING REQUIREMENTS

Particulars

10. Each container or the accompanying export documents of a consignment of wheat shall be marked or endorsed with --

- (a) the product name;
- (b) the class and grade of the wheat;
- (c) the name and address of the exporter or packer: Provided that if the name and address concerned are indicated in a code, such code shall be registered with the Executive Officer; and
- (d) the country of origin.

Prohibited particulars

11. No wording, illustration or other device of expression which constitutes a misrepresentation or which, directly or by implication creates a misleading impression of the contents shall appear on a container which contains wheat.

SAMPLING

Taking of sample

12. (1) An inspector shall for the purpose of these standards and requirements draw a representative random sample of wheat in the following manner:

- (a) In the case of wheat which is exported in bags, small quantities of wheat shall be drawn in such a manner, from a number of bags which is at least equal to the square root of the total number of bags in the consignment, that the samples drawn will be representative of the whole consignment. These samples shall be collected in a container and mixed thoroughly.
- (b) In the case of wheat which is exported in bulk --
 - (i) samples of wheat presented in bulk containers excluding grain elevators, shall be drawn at each hatch or from at least six different places, chosen at random throughout the depth of the consignment with a bulk grain probe in such a manner that the samples drawn shall be representative of the contents of the bulk container. The collective sample from each bulk container shall be mixed thoroughly and kept separate for each bulk container for further examination and shall have a total mass of at least 10 kg; and
 - (ii) samples of wheat which are loaded from a grain elevator into a ship's hold or railway or road truck, shall be drawn at regular intervals at the outflow of the shipping bins on to the conveyor belts in such a manner that the samples drawn shall be representative of the consignment which is loaded. Each separate sample shall be mixed thoroughly before further examination and the collective sample shall have a total mass of at least 10 kg.

(2) An inspector may at any time draw samples of wheat from any part of a grain elevator.

Deviating sample

13. If an inspector should notice during the course of drawing the random samples or during the inspection that any of the quantities of wheat taken from any bag or portion of a bulk container are obviously inferior to, or differ from the samples drawn from the remainder of the bags or other parts of the bulk container, the inspector shall draw samples only out of such bags or portion of a bulk container with the inferior or differing wheat, place them in a container and mix thoroughly. Samples drawn in this manner shall, in the application of these standards and requirements, be considered as deviating samples and the inspection results shall be based only on samples drawn from the containers of the deviating portion.

Obtainment of a working sample

14. A working sample shall be obtained by dividing the random or deviating sample of the consignment according to the ICC (International Association for Cereal Chemistry) 101 (Approved 1960) method.

INSPECTION METHODS

Assessment of containers, packaging and presentation

15. An inspector shall visually examine the consignment and the sample from the consignment to determine if the containers, packaging and presentation comply with the prescribed requirements.

Verification of markings

16. An inspector shall visually examine the containers in the consignment and the sample from the consignment to verify compliance to the marking requirements by --

- (a) satisfying him or herself whether the containers are marked as prescribed; and
- (b) checking the accuracy of the declarations during inspection.

Verification of biological and chemical contamination

17. An inspection shall verify compliance to the levels of biological and chemical contaminations by sampling and submitting samples for analysis of only certain consignments according to a risk based plan.

Determination of undesirable odours, harmful substances and noxious seeds, live insects and plant injurious organisms of phytosanitary importance

18. (1) A consignment of wheat or a sample of a consignment of wheat shall sensorially be assessed or chemically analysed in order to determine whether it --

- (a) contains a substance or seeds that renders the wheat unfit for human or animal consumption or for processing into or for utilisation as food or feed;
- (b) has a musty, sour, rancid or other undesirable odour: Provided that a working sample of unscreened wheat that is ground in a grain mill to a fine meal may be used for the determination concerned;
- (c) contains any live insects; and
- (d) contains plant injurious organisms of phytosanitary importance.

(2) The results of the determinations in subitem (1) represent the finding in respect of the consignment with regard to the presence of the factors thus determined.

Determination of class

19. The class of a consignment of wheat shall be determined as follows:
- (a) Obtain a working sample of at least 500 g and screen the working sample in the manner prescribed in item 22.
 - (b) Take at least 100 g of the screened wheat and remove all other grain, unthreshed ears and foreign matter by hand.
 - (c) Obtain two working samples of at least 25 g each after all other grain, unthreshed ears and foreign matter have been removed and separate the different cultivars.
 - (d) Determine the mass of each of the cultivars concerned and express the mass thus determined as a percentage of the mass of the two working samples concerned.
 - (e) If the percentages of the two working samples obtained in paragraph (d) differ by more than 0,5 per cent an additional determination shall be performed on another 500 g working sample and the provisions of paragraphs (a), (b), (c) and (d) shall *mutatis mutandis* apply to the additional sample taken.
 - (f) Determine the average of the percentages obtained in paragraph (d) or (e), as the case may be.
 - (g) Such average represents the percentage of the particular cultivar in the consignment.
 - (h) Determine the sum of the percentages of all cultivars that, according to the cultivar list, belong to the same class.

Determination of the hectolitre mass

20. (1) The hectolitre mass shall be determined by the Two-level funnel method.
- (2) The standard apparatus for this method is the following:
- (a) Any laboratory mass meter with an accuracy of 0,1 g or a four-in-one mass meter.
 - (b) A bucket with an internal height of 123 mm and a capacity of 500 ml.

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- (c) A two-level funnel apparatus consisting of the following:
 - (i) A conical funnel with a swing shutter at the narrow end, a height of 226 mm, a top diameter of 91,4 mm and a shutter hole diameter of 28,5 mm.
 - (ii) A solid, oval-shaped metal base with a small platform at each end of its long axis and with a metal rod screwed vertically into the base equidistant between the centres of the two platforms.
 - (iii) A metal arm of which one end is attached to the funnel and the other end is fitted over the metal rod around which it can be rotated.
 - (d) A wooden scraper 10 mm thick, 40 mm wide and at least 100 mm long and of which at least one edge shall be well rounded, but not worn.
- (3) The hectolitre mass is determined as follows:
- (a) Place the entire apparatus on a hard, smooth, level surface, not subject to jarring or shaking.
 - (b) Fill the funnel with unscreened wheat taken from the sample of the consignment and level off the wheat by scraping off the excess: Provided that a clean sample, that is free from other grain, unthreshed ears, screenings and foreign matter shall be used if grading is conducted on a clean basis.
 - (c) Place the bucket onto the higher platform of the base so that the centre of the bucket is directly below that of the funnel shutter, the distance from the shutter opening to the top of the bucket is approximately 30 mm and the bucket rests firmly on the platform.
 - (d) Open the funnel shutter with a quick swing so that the wheat fills the bucket and overflows on all sides.
 - (e) Swing the funnel away from the bucket without disturbing the bucket in any way.

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- (f) The surplus wheat shall then be scraped off with a scraper by holding the bucket firmly with one hand and placing the scraper gently but firmly on the edge of the bucket and scraping the surplus off with one firm scrape straight across the rim of the bucket: Provided that when a scraper with a round as well as a wedged edge is used, only the round edge may be used for scraping.
- (g) Pour the contents of the bucket into the pan of the mass meter, which has been zeroed or balanced, as the case may be, and determine the hectolitre mass thereof: Provided that if a mass meter not calibrated for hectolitre mass is used, the following formula shall be used to calculate the hectolitre mass:
- $$\text{Hectolitre mass} = \frac{\text{Mass (g) of wheat in a 500 ml bucket}}{5}$$
- (h) Repeat the procedure with the same sample: Provided that if the two readings differ, the test shall be repeated on an additional sample and the provisions of paragraphs (a) to (g) shall apply *mutatis mutandis* to such additional sample.

Determination of the percentage amber glossy and flinty kernels

21. (1) The percentage amber glossy and flinty kernels shall, in the case of Class Durum Wheat, be determined by means of a kernel-cutter as follows:
- (a) Fill the cup of the kernel-cutter (knife in open position) with Class Durum Wheat from which all foreign matter, screenings and broken kernels have been removed and shake it in order to fill the 50 holes with kernels.
- (b) Close the cup with one hand in such a manner that the wheat does not spill out and use the other hand to cut the kernels with the knife.
- (c) Open the kernel-cutter and calculate the percentage mealy kernels by adding 1 per cent for each kernel with one or more mealy spots and 2 per cent for each kernel of which half or more is mealy.
- (d) Repeat the procedure described in paragraphs (a), (b) and (c) three times and calculate the average of the three determinations.
- (e) Subtract the average obtained in paragraph (d) from hundred.

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- (f) Such percentage represents the percentage amber glossy and flinty kernels in the consignment.

(2) The kernel-cutter referred to in subitem (1), must be capable of simultaneously cutting 50 kernels broadwise.

Determination of moisture content

22. (1) The moisture content of a consignment of wheat may be determined using any suitable method: Provided that the results thus obtained are in accordance ($\pm 0,3$ per cent) with the results obtained by the 72 hour air-oven method at 103°C as described in subitem (2).

(2) The moisture content of wheat kernels shall according to the 72 hour air-oven method at 103°C be determined as follows:

- (a) Use apparatus prescribed according to AACC method 44-15A number 3 to 6.
- (b) Weigh two or more empty dishes and lids and note the mass to 0,0001 g (D).
- (c) Weigh approximately 15 g unground wheat kernels into each dish and note the mass to 0,0001 g (A).
- (d) Cover the dishes with lids.
- (e) Place the dishes on a single shelf (do not stack) in an oven which had been preheated to 103 \pm 1°C. When placing the dishes in the oven, open the dishes and place the lids next to the dishes.
- (f) Start timing when the oven has regained the required temperature.
- (g) Place the lids on the dishes after 72 hours and remove the dishes from the oven one by one and place them immediately in a desiccator (do not stack).
- (h) Let the dishes cool in the desiccator for 45 to 60 minutes.
- (i) Remove the dishes from the desiccator one by one, weigh (B) and calculate the loss in mass (A - B).

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- (j) Use the following equation to determine moisture percentage:

Calculation

$$\text{Equation : \% moisture} = \frac{(A - B)}{C} \times 100$$

A = sample mass before drying including mass of dish and lid.

B = sample mass after drying including mass of dish and lid.

C = sample mass before drying excluding mass of dish and lid before drying (A-D).

- (k) If the results of the replication differ by more than 0,2%, repeat, on new samples, steps (a), (b), (c), (d), (e), (f), (g), (h), (i) and (j).

Determination of protein content

23. The percentage of protein of a consignment of wheat may be determined according to any suitable method: Provided that --

- (a) the determination shall be conducted on a sample which had been sifted using a 1,786 mm screen from which other grain, unthreshed ears and foreign matter had been removed by hand; and
- (b) the results thus obtained are in accordance ($\pm 0,3$ per cent) with the results obtained by the Dumas Combustion Analysis method [AACC (American Association of Cereal Chemists) Method 46/30/1995].

Determination of falling number in wheat

24. (1) The falling number of a consignment of wheat may be determined according to any suitable method: Provided that --

- (a) the determination shall be conducted on a sample which had been sifted using a 1,786 mm screen and from which other grain, unthreshed ears and foreign matter had been removed by hand; and
- (b) the results thus obtained are in accordance (± 5 per cent) with the results obtained by the ICC (International Association for Cereal Chemistry) Standard No. 107/1 Approved: 1968, Revised: 1995 method.

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(2) If the falling number of a consignment of wheat is determined according to the ICC (International Association for Cereal Chemistry) Standard No. 107/1 Approved: 1968, Revised: 1995 method, --

- (a) the sampling and determination of moisture content in the mentioned method shall be replaced with the manner prescribed in items 12 and 19 respectively; and
- (b) only the altitude corrected values shall be used;

(3) If the falling number of a consignment of wheat is, in the case of Super Grade, Grade 1 or Grade 2, below 250 seconds, or in the case of Utility Grade below 150 seconds, and before a consignment is downgraded --

- (a) an additional determination of falling number shall be done on the same working sample;
- (b) the average falling number shall be determined;
- (c) an additional determination on another working sample, shall be done if the average of the falling number is still below the minimum for the grade concerned; and
- (d) the average of all the readings shall be regarded as the falling number of the consignment.

Determination of percentage screenings

25. (1) The percentage screenings in a consignment of wheat shall be determined as follows:

- (a) Obtain two working samples of at least 500 g each.
- (b) Place each sample on a standard sieve referred to in subitem (3) and screen the sample by moving the sieve 50 strokes to and fro, alternately away from and towards the operator of the sieve, in the same direction as the long axes of the slots of the sieve. Move the sieve, which rests on a table or other suitable smooth surface, 250 mm to 460 mm away from and towards the operator with each stroke. The prescribed 50 strokes must be completed within 50 to 60 seconds: Provided that the screening process may also be performed in some or other container or an automatic sieving apparatus.
- (c) Determine the mass of the material that has passed through the sieve and express that mass as a percentage of the total mass of the two working samples concerned.

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- (d) If the percentages of the two working samples differ by more than 0,5 per cent an additional determination shall be performed on another working sample and the provisions of paragraphs (a), (b) and (c) shall *mutatis mutandis* apply to the additional working sample.
- (e) Determine the average of the percentages obtained in paragraph (c) or (d), as the case may be.
- (f) Such average represents the percentage screenings in the consignment.

(2) Prior to the determination of any grading factor that is conducted on a sifted sample the sifted sample shall be mixed thoroughly: Provided that all material that does not pass through the sieve shall represent the sifted sample.

(3) A standard sieve is a hand sieve which consists of a slotted, stainless steel sieve with a thickness of 1,0 mm, mounted in durable plastic, with apertures 1,8 mm wide and 12,7 mm long, which fits into an aluminium pan with a solid bottom, and has an inner diameter of 300 mm and an outer diameter of 302,5 mm.

Determination of the percentage heavily frost-damaged wheat

26. The percentage heavily frost-damaged kernels in a consignment of wheat shall be determined as follows:

- (a) Obtain two working samples of at least 25 g each of a screened sample.
- (b) Remove all heavily frost-damaged kernels by hand and determine the mass of the heavily frost-damaged kernels in each of the two working samples concerned.
- (c) Express the mass thus determined as a percentage of the total mass of the two working samples concerned.
- (d) If the percentages of the two working samples differ by more than 0,5 per cent an additional determination shall be performed on another working sample and the provisions of paragraphs (a), (b) and (c) shall *mutatis mutandis* apply to the additional working sample.
- (e) Determine the average of the percentages obtained in paragraph (c) and, if applicable, paragraph (d).
- (f) Such average represents the percentage heavily frost-damaged kernels in the consignment concerned.

Determination of the percentages other grain and unthreshed ears

27. The percentage other grain and unthreshed ears in a consignment of wheat shall be determined as follows:

- (a) Obtain two working samples of at least 50 g each from a screened sample.
- (b) Remove all other grain and unthreshed ears by hand and determine the mass of the other grain and unthreshed ears in each of the two working samples concerned.
- (c) Express the mass thus determined as a percentage of the total mass of the two working samples concerned.
- (d) If the percentages of the two working samples differ by more than 0,5 per cent an additional determination shall be performed on another working sample and the provisions of paragraphs (a), (b) and (c) shall *mutatis mutandis* apply to the additional working sample.
- (e) Determine the average of the percentages obtained in paragraph (c) and, if applicable, paragraph (d).
- (f) Such average represents the percentage other grain and unthreshed ears in the consignment concerned.

Determination of the percentage foreign matter

28. The percentage foreign matter in a consignment of wheat is determined as follows:

- (a) Obtain two working samples of at least 100 g each from a screened sample.
- (b) Remove all foreign matter by hand and determine the mass of the foreign matter in each of the two working samples concerned.
- (c) Express the mass thus determined as a percentage of the total mass of the two working samples concerned.
- (d) If the percentages of the two working samples differ by more than 0,5 per cent an additional determination shall be performed on another working sample and the provisions of paragraphs (a), (b) and (c) shall *mutatis mutandis* apply to the additional working sample.
- (e) Determine the average of the percentages obtained in paragraph (c) and, if applicable, paragraph (d).

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- (f) Such average represents the percentage foreign matter in the consignment concerned.

Determination of the percentage damaged kernels.

29. The percentage damaged kernels in a consignment of wheat shall be determined as follows:

- (a) Obtain two working samples of at least 25 g each of a screened sample for the determination of damaged kernels, other than heat-damaged kernels.
- (b) Remove all damaged kernels, other than heat damaged kernels, by hand and determine the mass of the damaged kernels, other than heat damaged kernels, in each of the two working samples concerned.
- (c) Express the mass thus determined as a percentage of the total mass of the two working samples concerned.
- (d) If the percentages of the two working samples differ by more than 0,5 per cent an additional determination shall be performed on another working sample and the provisions of paragraphs (a), (b) and (c) shall *mutatis mutandis* apply to the additional working sample.
- (e) Determine the average of the percentages obtained in paragraph (c) and, if applicable, paragraph (d).
- (f) Determine the sum of the percentages obtained in paragraph (e) and item 27(f).
- (g) Such sum represents the percentage damaged kernels in the consignment concerned.

Determination of the percentage heat-damaged kernels

30. The percentage heat-damaged kernels in a consignment of wheat shall be determined as follows:

- (a) Obtain two working samples of at least 100 g each from a screened sample.
- (b) Remove all heat-damaged kernels by hand and determine the mass of the heat-damaged kernels in each of the two working samples concerned. Kernels from an additional working sample may also be sensorially assessed (by smelling and tasting the kernels) to confirm suspicion of heat damage.

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- (c) Express the mass thus determined as a percentage of the total mass of the two working samples concerned.
- (d) If the percentages of the two working samples differ by more than 0,2 per cent an additional determination shall be performed on another working sample and the provisions of paragraphs (a), (b) and (c) shall *mutatis mutandis* apply to the additional working sample.
- (e) Determine the average of the percentages obtained in paragraph (c) and, if applicable, paragraph (d).
- (f) Such average represents the percentage heat-damaged kernels in the consignment concerned.

Determination of percentage field and storage fungi infected kernels

31. The percentage field fungi infected kernels and storage fungi infected kernels in a consignment of wheat shall be determined as follows:

- (a) Obtain two working samples of at least 25 g each from a screened sample.
- (b) Remove all field fungi infected kernels and storage fungi infected kernels by hand and determine the mass of the field fungi infected kernels and storage fungi infected kernels in each of the working samples concerned.
- (c) Express the mass of field fungi infected kernels and storage fungi infected kernels determined respectively as a percentage of the total mass of the working sample concerned.
- (d) If the percentages of the working samples differ by more than 0,2 per cent, an additional determination shall be performed on another working sample and the provisions of paragraphs (a), (b) and (c) shall *mutatis mutandis* apply to the additional working sample.
- (e) Determine the average of the percentages of field fungi infected kernels and storage fungi infected kernels, respectively obtained in paragraph (c) or (d) as the case may be.
- (f) Such average represents the percentage of field fungi infected kernels and storage fungi infected kernels respectively in the consignment concerned.

INTERPRETATION OF RESULTS

General

32. (1) No consignment may be rejected before a further two analyses are made from an additional sample obtained from the same or an additional random sample: Provided that the average of the results of all such analyses shall be regarded as the result in respect of the consignment concerned.

(2) An inspector shall, if he has taken a deviating sample by virtue of item 13, reject the consignment if the average results of at least two analyses of the deviating sample do not comply with the requirements which are prescribed in items 4, 5, 6 and 7.

RELEASE OF WHEAT

Application for release

33. An application for an approval for the release of wheat shall, in the case where one or more cargo spaces of the ship are to be filled to capacity with such wheat, be directed in writing by the exporter or agent to the inspector.

Approval of release

34. (1) An inspector issues a certificate as approval of the release of wheat if the inspector finds that the ship's hold complies with the requirements in item 8(3).

(2) If an inspector finds that the ship's hold does not comply with the requirements in item 8(3), the inspector shall --

- (a) issue a certificate to that effect;
- (b) re-inspect the ship's hold after the relevant ship's hold has been cleaned, treated or fumigated; and
- (c) issue a certificate as an approval for the release of wheat if he or she has found during the re-inspection that the ship's hold complies with the requirements in item 8(3).

(3) An inspector may at his discretion re-inspect the ship's hold if the release of wheat into the ship's hold occurs more than 96 hours after the approval of the ship's hold.

(4) The granting of approval for the release of wheat shall not serve as an assurance that the ship's hold is free of insects that could infest wheat in that ship's hold.