

DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

NO. 43

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AGRICULTURAL PRODUCT STANDARDS ACT, 1990
(ACT No. 119 OF 1990)REGULATIONS RELATING TO THE GRADING, PACKING AND MARKING OF
DURUM WHEAT INTENDED FOR SALE IN THE REPUBLIC OF SOUTH AFRICA

The Minister of Agriculture, Forestry and Fisheries acting under section 15 of the Agricultural Product Standards Act 119 of 1990, has

- (a) made the regulations in the Schedule;
- (b) determined that the said regulations shall come into operations on the date of publication; and
- (c) read together with section 3(1) of the said Act, repealed the Regulations published by Government Notice No. R1184 of 17 December 2010.

SCHEDULE

Definitions

1. Unless the context otherwise indicates, any word or expression in these regulations 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 do have a glossy and flinty appearance;

"**animal filth**" means dead rodents, dead birds and dung;

"**bag**" means a bag manufactured from --

- (a) jute or phormium or a mixture of jute and phormium; or
- (b) polypropylene that complies with SANS specification CKS632 1246:2012;

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

"**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 or from a ship's hold; 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 grades.

"**container**" means a bag or bulk container;

"**damaged wheat**" means wheat --

- (a) which have been damaged by insects;
- (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 sprouts and/or 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 wheat**" means wheat of which the kernels are visibly infected with fungi, and that --

- (a) clearly have greyish brush-ends that are discoloured as a whole; or where field fungi growth is present from the brush-ends into the crease; and
- (b) have a dull, lifeless, chalky or pinkish and shrunken appearance as a result of *Fusarium* infection.

"**foreign matter**" means all matter excluding wheat, other grain and unthreshed ears. Coal, dung, glass and metal shall not be present in the consignment concerned;

"**heavily frost-damaged wheat**" means --

- (a) wheat 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;
- (b) kernels 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;

"**insect**" means any live grain insect that is injurious to stored grain irrespective of the stage of development of that insect;

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

"**poisonous seeds**" means the seeds or bits of seeds of plant species that may in terms of the Food-stuffs, Cosmetics and Disinfectants Act 54 of 1972 represent a hazard to human or animal health when consumed, including seeds of *Argemone mexicana*, *Convolvulus spp.*, *Crotalaria spp.*, *Datura spp.*, *Ipomoea purpurea*, *Lolium temulentum*, *Ricinus communis* or *Xanthium spp.*;

"**protein content**" means the percentage protein in wheat on a 12% moisture basis;

"**screenings**" means all material that passes through the standard sieve;

"**standard sieve**" means a slotted sieve --

- (a) with a flat bottom of metal sheet of 1,0 mm thickness with apertures 12,7 mm long and 1,8 mm wide with rounded ends. The spacing between the slots in the same row must be 2,43 mm wide and the spacing between the rows of slots must be 2,0 mm wide. The slots must be alternately orientated with a slot always opposite the solid inter segment of the next row of slots;
- (b) of which the upper surface of the sieve is smooth;
- (c) with a round frame of suitable material with an inner diameter of between 300 mm and 310 mm maximum and at least 50 mm high; and
- (d) that fits onto a tray with a solid bottom and must be at least 20 mm above the bottom of the tray.

"**stinking smut infection**" means wheat that is infected with *Tilletia spp.* with the exception of wheat infected with *Tilletia indica* (karnal bunt). Wheat is considered to be infected by stinking smut if one or more of the following characteristics are present--

- (a) has an unmistakable stinking smut odour; or
- (b) contains wheat kernels that are smeared with stinking smut; or
- (c) 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 wheat**" means wheat that are visibly infected with fungi, and that show --

- (a) blue, green, blackish or yellow fungal growth anywhere on the kernel; or
- (b) visible mould beneath the bran.

"**the Act**" means the Agricultural Product Standards Act 119 of 1990;

"**unthreshed ears**" means ears and bits of ears of wheat, barley, triticale and rye that still contain seeds that are completely covered with glumes; and

"**wheat**" means the kernels and pieces of kernels of the species *Triticum durum*, *Triticum polonicum* and *Triticum turgidum*.

Restrictions on sale of wheat

- 2. (1) No person shall sell a consignment of wheat in the Republic of South Africa --
 - (a) unless the wheat is sold according to the classes set out in regulation 3;
 - (b) unless the wheat complies with the standards for the classes set out in regulation 4;
 - (c) unless the wheat, where applicable, complies with the grades of wheat and the standards for grades set out in regulations 5 and 6 respectively;
 - (d) unless the wheat is packed in accordance with the packing requirements set out in regulation 7;

- (e) unless the containers or sale documents, as the case may be, are marked in accordance with the marking requirements set out in regulation 8; and
- (f) if such wheat contains a substance that renders it unfit for human consumption or for processing into or utilisation thereof as food or feed.

(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 sub-regulation (1).

PART I

QUALITY STANDARDS

Classes of wheat

3. The classes of wheat are --

- (a) Durum Wheat; and
- (b) Other Wheat.

Standards for classes

4. (1) Notwithstanding the provisions of sub-regulations (2) and (3) a consignment of wheat shall --

- (a) be free from any toxin, chemical or any other substance that renders it unsuitable for human consumption or for processing into or utilisation thereof as food or feed and may not exceed the permissible deviations regarding aflatoxin in terms of the Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972;
- (b) not contain more poisonous seeds or ergot sclerotia than permitted in terms of the Foodstuffs, Cosmetics and Disinfectants Act 54 of 1972;
- (c) be free from organisms of phytosanitary importance as determined in terms of the Agricultural Pest Act 36 of 1983;
- (d) be free from mould infected, sour and rancid other grain, foreign matter;
- (e) be free from any undesired odour, taste or colour not typical of undamaged and sound wheat;
- (f) be free from animal filth;
- (g) be free from stones, glass, metal, coal or dung;
- (h) with the exception of Class Other Wheat, be free from insects;
- (i) with the exception of Class Other Wheat, be free from stinking smut infection; and
- (j) with the exception of Class Other Wheat, have a moisture content not exceeding 13 percent.

(2) A consignment shall be classified as Durum Wheat if --

- (a) the wheat in the consignment consists of at least 95 percent (m/m) of one or more of durum wheat seeds

- (b) it complies with the standards for Grade 1, Grade 2, Grade 3 or Grade 4 as set out in regulation 6.

(3) A consignment of wheat shall be classified as Class Other Wheat if it does not comply with the standards for Durum Wheat.

Grades of wheat

5. (1) The grades for Durum Wheat shall be as follows:

- (a) Grade 1.
- (b) Grade 2.
- (c) Grade 3; and
- (d) Grade 4.

(2) No grades are determined for Class Other Wheat.

Standards for grades of wheat

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

- (a) 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 2 of the said table opposite the deviation concerned.
- (b) 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 3 of the said table opposite the deviation concerned.
- (c) 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 4 of the said table opposite the deviation concerned.
- (d) Grade 4 if the nature of the 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.

(2) The minimum hectolitre masses for different grades are as follows:

- (a) Grade 1 - 79 kg.
- (b) Grade 2 - 77 kg.
- (c) Grade 3 - 76 kg; and
- (d) Grade 4 - 72 kg.

(3) (a) Grade 1, grade 2, grade 3 and grade 4 shall have a minimum falling number value of not less than 300 seconds.

- (b) Notwithstanding the provision 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 Grade 1, Grade 2, Grade 3 and Grade 4 as the case may be.
- (4) Durum Wheat shall --
- (a) in the case of Grade 1, contain--
- (i) a minimum of 12 percent protein; and
- (ii) a minimum of 85 percent amber glossy and flinty kernels.
- (b) in the case of Grade 2, contain --
- (i) a minimum of 11 percent protein; and
- (ii) a minimum of 75 percent amber glossy and flinty kernels.
- (c) in the case of Grade 3, contain --
- (i) a minimum of 10 percent protein; and
- (ii) a minimum of 60 percent amber glossy and flinty kernels.
- (d) in the case of Grade 4, contain --
- (i) a minimum of 9 percent protein; and
- (ii) a minimum of 50 percent amber glossy and flinty kernels.

PART II

PACKING AND MARKING REQUIREMENTS

Packing requirements

7. Wheat of different grades shall be packed in different containers, or stored separately.

Marking requirements

8. (1) Every container or the accompanying sale documents of a consignment of wheat shall be marked or endorsed by means of appropriate symbols specified in sub-regulation (2), with --
- (a) the class of the wheat; and
- (b) the grade.
- (2) The symbols referred to in sub-regulation (1) shall appear in the order of class and grade.
- (3) The symbols used to indicate the different --
- (a) classes shall be --
- (i) D in the case of Durum Wheat; and
- (ii) O in the case of Other Wheat;
- (b) grades shall be --
- (i) 1 in the case of Grade 1;

- (ii) 2 in the case of Grade 2;
- (iii) 3 in the case of Grade 3, and
- (iv) 4 in the case of Grade 4.

PART III

SAMPLING

Taking of sample

9. (1) A sample of a consignment of wheat shall --
- (a) in the case of wheat delivered in bags and subject to regulation 10, be obtained by sampling at least ten per cent of the bags, chosen from that consignment at random, with a bag probe: Provided that at least 25 bags in a consignment shall be sampled and where a consignment consists of less than 25 bags, all the bags in that consignment shall be sampled; and
 - (b) in the case of wheat delivered in bulk and subject to regulation 10, be obtained by sampling that consignment throughout the whole depth of the layer, in at least six different places, chosen at random in that bulk quantity, with a bulk sampling apparatus.
- (2) The collective sample obtained in sub-regulation (1) (a) or (b) shall --
- (a) have a total mass of at least 10 kg; and
 - (b) be thoroughly mixed by means of dividing before further examination.
- (3) If it is suspected that the sample referred to in sub regulation (1) (a) is not representative of that consignment, an additional five per cent of the remaining bags, chosen from that consignment at random, shall be emptied into a suitable bulk container and sampled in the manner contemplated in sub regulation (1) (b).
- (4) If it is suspected that the sample referred to in sub regulation (1) (b) is not representative of that consignment, an additional representative sample shall be obtained by using an alternative sampling pattern, apparatus or method.
- (5) A sample taken in terms of these regulations shall be deemed to be representative of the consignment from which it was taken.

Sampling if contents differ

10. (1) If, after an examination of the wheat taken from different bags in a consignment in terms of regulation 9(1)(a), it appears that the contents of those bags differ substantially --
- (a) the bags concerned shall be placed separately;
 - (b) all the bags in the consignment concerned shall be sampled with a bag probe in order to do such separation; and
 - (c) each group of bags with similar contents in that consignment shall for the purposes of these regulations be deemed to be a separate consignment.

(2) If, after the discharge of a consignment of wheat in bulk has commenced, it is suspected that the consignment could be of a class or grade other than that determined by means of the initial sampling, the discharge shall immediately be stopped and the part of the consignment remaining in the bulk container as well as the wheat already in the hopper shall be sampled anew with a bulk sampling apparatus or by catching at least 20 samples, by means of a suitable container, at regular intervals throughout the whole offloading period from the stream of wheat flowing in bulk.

Working sample

11. A working sample is obtained by dividing the representative sample of the consignment according to the latest revision of the ICC (International Association for Cereal Science and Technology) 101/1 method.

PART IV

DETERMINATION OF OTHER SUBSTANCES

Determination of undesirable odours and harmful substances

12. A consignment of wheat or a sample of a consignment of wheat shall be sensorial assessed or chemically analysed in order to determine whether --

- (a) it contains a substance that renders the wheat unfit for human consumption or for processing into or for utilisation as food or feed, such as poisonous seeds, stones, glass, metal, coal or dung; and
- (b) it 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.

PART V

DETERMINATION OF CLASS, HECTOLITRE MASS, AMBER GLOSSY AND FLINTY KERNELS, MOISTURE CONTENT, PROTEIN CONTENT AND FALLING NUMBER

Determination of class

13. 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 regulation 19.
- (b) Take at least 100 g of the screened wheat and remove all other grain, unthreshed ears and foreign matter by hand.
- (c) Obtain a working sample 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 combined mass of all of the cultivars that belong to the same class and express the mass thus determined as a percentage of the mass of the working sample.
- (e) Such percentage represents the percentage of all the cultivars that belong to the same class in the consignment.

Determination of the hectolitre mass

14. The hectolitre mass of a consignment of unscreened wheat may be determined by any suitable instrument: Provided that the instrument complies with and has been calibrated to, the specifications detailed in ISO (International Organization for Standardization) 7971-3.

Determination of the percentage amber glossy and flinty kernels

15 (1) The percentage amber glossy and flinty kernels shall be determined by means of a kernel-cutter as follows:

- (a) Fill the cup of the kernel-cutter (knife in open position) with 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 percent for each kernel of which half or more is mealy.
- (d) Subtract the percentage obtained in paragraph (c) from hundred.
- (e) Such percentage represents the percentage amber glossy and flinty kernels in the consignment.

(2) The kernel-cutter referred to in sub-regulation (1), must be capable of simultaneously cutting 50 kernels broad wise.

Determination of moisture content

16. The moisture content of a consignment wheat may be determined by any suitable method: Provided that the results thus obtained is in accordance with the maximum permissible deviation for a class 1 moisture meter as detailed in ISO (International Organization for Standardization) 7700/1 based on the results of the 72 hour, 103°C oven dried method [the latest revision of the AACCI (American Association for Cereal Chemists International) Method 44-15A].

Determination of protein content

17. 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 screen with the same apertures as the standard sieve and from which other grain, un threshed ears and foreign matter had been removed by hand; and
- (b) the results thus obtained are in accordance ($\pm 0,3$ percent) with the results obtained by the Dumas Combustion Analysis Method [the latest revision of the AACCI (American Association for Cereal Chemists International) Method 46/30].

Determination of falling number in wheat

18. (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 screen with the same apertures as the standard sieve and from which other grain, un threshed ears and foreign matter had been removed by hand; and

- (b) the results thus obtained are in accordance (± 5 percent) with the results obtained by the latest revision of the ICC (International Association for Cereal Science and Technology) No.107/1 Method.
- (2) If the falling number of a consignment of wheat is determined according to the latest revision of the ICC (International Association for Cereal Science and Technology) No. 107/1 method, --
- (a) the sampling in the mentioned method shall be replaced with the manner prescribed in regulation 9; and
 - (b) only the altitude corrected value shall be used.

PART VI

DETERMINATION OF PERCENTAGE DEVIATIONS

Determination of percentage screenings

19. The percentage screenings in a consignment of wheat shall be determined as follows:
- (a) Obtain a working sample of at least 500 g.
 - (b) Place the sample on the standard sieve 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 it as a percentage of the mass of the working sample.
 - (d) Such percentage represents the percentage screenings in the consignment.

Determination of the percentage heavily frost-damaged wheat

20. The percentage heavily frost-damaged wheat in a consignment of wheat shall be determined as follows:
- (a) Obtain a working sample of at least 25 g of a screened sample.
 - (b) Remove all heavily frost-damaged kernels by hand and determine the mass thereof.
 - (c) Express the mass thus determined as a percentage of the mass of the working sample.
 - (d) Such percentage represents the percentage heavily frost-damaged wheat in the consignment concerned.

Determination of the percentages other grain and unthreshed ears

21. The percentage other grain and unthreshed ears in a consignment of wheat shall be determined as follows:
- (a) Obtain a working sample of at least 50 g from a screened sample.
 - (b) Remove all other grain and unthreshed ears by hand and determine the mass thereof.
 - (c) Express the mass thus determined as a percentage of the mass of the working sample.

- (d) Such percentage represents the percentage other grain and unthreshed ears in the consignment concerned.

Determination of the percentage foreign matter

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

- (a) Obtain a working sample of at least 100 g from a screened sample.
- (b) Remove all foreign matter by hand and determine the mass thereof.
- (c) Express the mass thus determined as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage foreign matter in the consignment concerned.

Determination of the percentage damaged wheat

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

- (a) Obtain a working sample of at least 25 g of a screened sample.
- (b) Remove all damaged kernels by hand and determines the mass thereof.
- (c) Express the mass thus determined as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage damaged wheat in the consignment concerned.

Determination of the percentage heat-damaged wheat

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

- (a) Obtain a working sample of at least 100 g from a screened sample.
- (b) Remove all heat-damaged kernels by hand and determine the mass thereof. Kernels from an additional working sample may also be sensorially assessed (by smelling and tasting the kernels) to confirm suspicion of heat damage.
- (c) Express the mass thus determined as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage heat-damaged wheat in the consignment concerned.

Determination of percentage field fungi infected wheat

25. The percentage field fungi infected wheat in a consignment of wheat shall be determined as follows:

- (a) Obtain a working sample of at least 25 g from a screened sample.
- (b) Remove all field fungi infected kernels by hand and determine the mass thereof.
- (c) Express the mass thus determined as a percentage of the mass of the working sample.
- (e) Such percentage represents the percentage of field fungi infected wheat in the consignment concerned.

Determination of percentage storage fungi infected wheat

26. The percentage storage fungi infected wheat in a consignment of wheat shall be determined as follows:

- (a) Obtain a working sample of at least 100 g from a screened sample.
- (b) Remove all storage fungi infected kernels by hand and determine the mass thereof.
- (c) Express the mass thus obtained as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage storage fungi infected wheat in the consignment concerned.

PART VII

Offence and penalties

27. Any person who contravenes or fails to comply with any provision of these regulations shall be guilty of an offence and upon conviction be liable to a fine of not exceeding R50 000 or to imprisonment for a period not exceeding two years, or to both that fine or imprisonment.

ANNEXURE

TABLE 1

STANDARDS FOR GRADES OF DURUM WHEAT

Nature of deviation	Maximum percentage permissible deviation (m/m)			
	Grade 1	Grade 2	Grade 3	Grade 4
1	2	3	4	5
(a) Heavily frost-damaged kernels	5	5	5	5
(b) Field fungi infected kernels	2	2	2	2
(c) Storage fungi infected kernels	0,5	0,5	0,5	0,5
(d) Screenings	3	3	3	3
(e) Other grain and unthreshed ears	1	1	1	1
(f) Gravel, stones, and turf	0,5	0,5	0,5	0,5
(g) Foreign matter including gravel, stones, and turf: Provided that such deviations are individually within the limits specified in item (f)	1	1	1	1
(h) Heat-damaged kernels	0,2	0,3	0,5	0,7
(i) Damaged kernels, including heat-damaged kernels: Provided that such deviations are individually within the limit specified in item (h) and provided further that the minimum falling number value prescribed in regulation 6(3) for the grade concerned is at least complied with.	2	2	2	2
(j) Deviations in items (d), (e), (g) and (i) collectively: Provided that such deviations are individually within the limits of the said items.	5	5	5	5