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## DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

NO. R. 1339

07 DECEMBER 2018

 AGRICULTURAL PRODUCT STANDARDS ACT, 1990  
 (ACT No. 119 OF 1990)

 REGULATIONS RELATING TO THE GRADING, PACKING AND MARKING OF POPCORN KERNELS  
 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, 1990 (Act No. 119 of 1990);

- (a) made the regulations set out in the Schedule; and
- (b) determined that the said regulations shall come into operation twelve months after date of publication.

## SCHEDULE

**Definitions**

1. In these regulations any word or expression to which a meaning has been assigned in the Act shall have that meaning and, unless the context otherwise indicates --

“**animal filth**” means dead rodents, dead birds and dung;

“**address**” means a physical address in the Republic of South Africa and includes the street or road number or name, and the name of the town, village or suburb and, in the case of a farm, the name or number of the farm and of the magisterial district in which it is situated;

“**bulk quantity**” means a quantity of more than 10 kg of popcorn kernels, whether sold in containers or in loose quantities;

“**bulk container**” means a grain truck, any vehicle or container in which bulk of popcorn kernels are stored or transported;

“**broken kernel**” means a popcorn kernel of which a portion thereof is broken;

“**butterfly popcorn kernels**” means popped kernels which are irregular in shape and have number of protruding wings;

“**coffee stained popcorn kernels**” means popcorn kernels with a shiny brown colour that occurs anywhere on the pericarp of the popcorn kernel;

“**consignment**” means -

- (a) a quantity of popcorn kernels of the same grade, 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
- (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 other suitable packing unit in which popcorn kernels in retail or bulk quantities are packed;

“**defective kernels**” means broken kernels and insect damaged kernels;

- “discoloured popcorn kernels”** means popcorn kernels that as a result of environmental conditions are more than 25% discoloured on both sides of the kernel, excluding coffee stained popcorn kernels, oxidation stained popcorn kernels and pinked popcorn kernels;
- “expansion ratio”** means the total popped volume (cc) expressed as a ratio of the mass (g) of the working samples;
- “foreign matter”** means all materials other than popcorn kernels, animal filth, glass, coal or metal;
- “insect”** means any insect which is injurious to stored grain, irrespective of the stage of development of the insect;
- “insect damaged kernel”** means a kernel that is in any way damaged by a pest insect;
- “inspector”** means the Executive Officer or an officer under his control, or an Assignee or suitably qualified employee of an Assignee;
- “main panel”** means that part of the label or container bearing the trade mark, trade name or brand name in greatest prominence and any other part of the label or container bearing the trade mark, trade name or brand name in equal prominence;
- “mushroom popcorn kernels”** means popped kernels which are ball-shaped with few wings;
- “other coloured popcorn kernels”** means popcorn kernels or pieces of popcorn kernels of which the endosperm as a result of genetic (characteristics) composition have another colour than yellow, excluding pinked popcorn kernels and discoloured popcorn kernels;
- “oxidation stained popcorn kernels”** means popcorn kernels with a shiny light brown colour that are discoloured from the crown and not from the tip cap;
- “pinked popcorn kernels”** means kernels and pieces of kernels of which the pericarp or part thereof is shaded red or pink in colour;
- “poisonous seeds”** means seeds or part of seeds of a plant species that may in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972) represent a hazard to human or animal health when consumed, including seeds of *Argemone mexicana* L., *Convolvulus* spp., *Crotalaria* spp., *Datura* spp., *Ipomoea* spp., *Lolium temulentum*, *Ricinus communis* or *Xanthium* spp.;
- “popcorn kernels”** means the threshed seed of the plant *Zea mays everta*;
- “retail quantity”** means a quantity of 10 kg or less of popcorn kernels, irrespective of whether sold in containers or in loose quantities;
- “tester”** means the Metric Weight Volume Tester developed to determine the potential expansion of popcorn; and
- “the Act”** means the Agricultural Product Standards Act, 1990 (Act No. 119 of 1990).

**Scope of Regulations**

2. These regulations are the minimum standard applicable to popcorn kernels that are destined for sale in the Republic of South Africa but does not include --

- (a) popcorn which are packed in microwave packaging; or
- (b) ready to eat popped popcorns.

**Restriction on the sale of Popcorn Kernels**

3. (1) No person shall sell a consignment of popcorn kernels in the Republic of South Africa --
- (a) unless the popcorn kernels are sold according to the grades set out in regulations 5;
  - (b) unless the popcorn kernels complies with the standards for the grades set out in regulations 6;
  - (c) unless the popcorn kernels are packed in containers and in the manner prescribed in regulations 7;
  - (d) unless the popcorn kernels are marked with the particulars and in the manner prescribed in regulations 8, 9, 10; and 11;
  - (e) if the popcorn kernels contain a substance that has thus been prescribed as a substance that it should not contain;
  - (f) if the popcorn kernels are packed in a container or in such a manner that has thus been prescribed as a container or a manner in which it shall not be packed; and
  - (g) if the popcorn kernels are marked with particulars or in such a manner that has thus been prescribed as particulars or manner in which it shall not be marked.

(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 Popcorn Kernels**

4. Popcorn kernels shall be classified as either --
- (a) Mushroom popcorn; or
  - (b) Butterfly popcorn.

**Grades of Popcorn Kernels**

5. (1) Popcorn kernels of Class Butterfly shall be graded as Grade Premium, Grade B1 and Grade B2;
- (2) Popcorn kernels of Class Mushroom shall be graded as Grade M1 and Grade M2.

**Standards for grades of Popcorn Kernels**

6. A consignment of popcorn kernels that is graded as Grade premium, Grade B1, Grade B2, Grade M1 and Grade M2 shall --

- (1) (a) be free from a musty or other undesired odour;
- (b) not exceed the permissible deviations regarding toxins, chemicals or other substances that renders it unfit for human or animal consumption as prescribed in terms of Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972);
- (c) have a moisture content not exceeding 15 per cent;
- (d) be free from insects;
- (e) be free from poisonous seeds: Provided that a consignment of popcorn kernels in bulk quantities may contain poisonous seeds to the extent permitted in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972);
- (f) be free from animal filth, coal, glass and metal.

(2) Subject to the provisions of sub regulations (1) all grades of popcorn mentioned in regulation 5, shall not exceed the maximum percentage of permissible deviation as determined in the Table in the Annexure for each grade.

(3) All grades of popcorn kernels shall be of such quality with an expansion ratio (cc/g) of:

Butterfly popcorn		Mushroom popcorn	
Grades	Expansion ratio	Grades	Expansion ratio
Premium Grade	39 - 42 cc/g	Grade M1	29 - 32 cc/g
Grade B1	36 - 38 cc/g	Grade M2	26 - 28 cc/g
Grade B2	30 - 35 cc/g		

**PART II****PACKING AND MARKING REQUIREMENTS****Requirements for containers**

7. (1) The containers in which popcorn kernels are packed shall --
- (a) be manufactured from a material that --
    - (i) will protect the contents thereof against contamination; and
    - (ii) will not impart any undesirable flavour or odour to the contents thereof.
  - (b) be so strong that they will not tear or break during normal storage, handling and transport practices;
  - (c) be whole, with the exception of grain probe marks: Provided that grain probe marks will not be permissible in the case of popcorn kernels in retail quantities, notwithstanding the

presence of micro-perforations which allow for air release in retail form-fill and seal packaging;

- (d) be clean;
- (e) be closed properly in a manner permitted by the nature thereof; and
- (f) in the case of popcorn in retail quantities, be previously unused for any purpose.

**Marking of containers in which popcorn kernels in retail quantities are packed**

8. (1) (a) Subject to the provisions of paragraph (b) a container in which popcorn kernels are sold in retail quantities shall be marked with –

- (i) name of the product;
- (ii) class indication; and
- (iii) country of origin.

(b) Any illustration on the container shall be an accurate representation of the contents, especially as far as colour and type of popcorn kernels are concerned.

(2) Each container in which popcorn kernels in retail quantities are sold shall be marked with–

- (a) the name and address of the packer of those popcorn kernels as required by regulation 10; and
- (b) the net mass of the popcorn kernels packed therein.

(3) The particulars referred to in sub regulations (1) and (2) shall be indicated in detached letters and figures that are clearly legible.

(4) The provisions of this regulation shall *mutatis mutandis* apply to particulars that are indicated on an outer container in which one or more separate containers of popcorn kernels intended for sale in the retail trade are packed, if such outer container is not transparent.

**Marking of containers in which popcorn kernels are packed in bulk quantities**

9. (1) Subject to the provisions of sub regulation (2), each container containing popcorn kernels in bulk, shall be marked clearly and legibly with block letters on the container itself, or on a label affixed to the container, with the following particulars:

- (a) the name of the product shown at least as popcorn kernels;
- (b) class indication;
- (c) the grade of the popcorn kernels: Provided that the grade may be omitted if the popcorn kernels have not been graded yet, or in the case of imported popcorn kernels destined for any other purpose other than sale;
- (d) a lot identification;
- (e) the country of origin;
- (f) the name and address of the packer of those popcorn kernels as required by regulation: Provided that the lot identification and the name and address of the packer may be replaced by an identification mark, if such identification mark is clearly identifiable with the accompanying sales documents; and

(g) the net mass of the popcorn kernels packed in more than 10kg therein.

(2) The country of origin may in the case of popcorn kernels destined for further processing or packing be omitted, if the country of origin is indicated on the accompanying sales documents.

**Indications of packer**

10. (1) The name of the packer of popcorn kernels that is marked on the container shall –

- (a) consist of the initials and surname or trade name of the packer or, in the case of imported popcorn kernels in retail quantities, the importer concerned; and
- (b) be preceded by the expression "Packed by" or, in the case of popcorn kernels imported into the Republic in the containers in which they are to be sold in the retail trade, be preceded by the expression "Imported by".

(2) The address as contemplated in regulation 8 (2) (a) and 9 (1) (f) of the packer of popcorn kernels shall be marked on such container immediately after the particulars referred to in subregulation (1).

(3) If popcorn kernels are packed on behalf of a person –

- (a) the particulars referred to in subregulation (1) (a) shall be replaced by the initials and surname or trade name of the person on whose behalf those popcorn kernels have been packed;
- (b) such initials and surname or trade name shall be preceded by the expression "packed for";
- (c) the address of such person shall be indicated in the place of the address referred to in subregulation (2);
- (d) such address shall be marked on a container immediately after the particulars referred to in paragraph (a); and
- (e) the particulars referred to in subregulations (1) and (2) may in addition thereto be marked on a container.

**Restricted particulars**

11. No word, mark, illustration, depiction or any other method of expression that constitutes a misrepresentation, or directly or by implication creates or may create a misleading impression regarding the quality, nature or grade of popcorn kernels shall appear on a container in which popcorn kernels are packed, or on a label attached to such container.

**PART III****SAMPLING****General**

12. (1) A sample of a consignment shall for the purpose of the application of these regulations be obtained by --

- (a) in the case of popcorn kernels in retail quantities packed in containers,
  - (i) randomly taking from the number of containers concerned, at least the applicable number of containers mentioned in column 2 of Table 2; and
  - (ii) sampling each such container by hand in the manner set out in regulation 13: Provided that if the contents per container is 1 kg or less, the total contents of all the chosen containers will be taken as sample.
- (b) in the case of popcorn kernels in retail quantities that are kept for sale in loose quantities, obtaining a sample by hand in the manner contemplated in regulation 13;
- (c) in the case of popcorn kernels in bulk quantities --
  - (i) sampling each bag in that consignment with a grain probe as contemplated in regulation 14 or by hand as contemplated in regulation 13 if it consists of 100 bags or less; or
  - (ii) by otherwise sampling at least 10 per cent of the bags in that consignment chosen at random, but with a minimum of 100 bags, with a grain probe as contemplated in regulation 14 or by hand as contemplated in regulation 13.

(2) A sample taken in terms of this regulation is considered to be representative of the consignment from which it was obtained.

**Sampling by hand**

13. The sampling of a consignment by hand shall be done as follows:

- (a) Open the containers in the consignment that have to be sampled.
- (b) Insert the open washed hands wearing a clean new latex glove into such container or the loose quantity concerned, close the hand into a fist and thereafter withdraw it evenly.
- (c) Place the material enclaspd by the hand in a suitable collecting tray.
- (d) Repeat the procedure described in paragraph (b) alternately at various depths in the containers or loose quantities concerned, and place the material thus removed in the collecting tray referred to in paragraph (c).
- (e) Take more or less equal quantities or material from each container that is sampled.
- (f) Thoroughly mixes the material thus obtained and divide it by means of a sample divider to obtain a sample of at least 4 kg of material.

**Sampling by means of a grain probe**

14. (1) The sampling of consignment of popcorn kernels with a bag probe shall be done as follows:
- (a) Insert the tapered end of the grain probe upwards at an angle of approximately 30 degrees with the horizontal line and with the aperture thereof downwards, into each bag chosen from that consignment, until the end of the probe is approximately in the centre of such bag.
  - (b) Turn the grain probe through approximately 180 degrees on the longitudinal axis thereof so that the aperture thereof is at the top.
  - (c) Extract the grain probe with a slight shaking movement and diminishing speed from the bag concerned to ensure that a relatively even and increasing flow of beans is maintained through the aperture thereof closer to the side of the bag.
  - (d) Place the material contained in the grain probe in a suitable container.
  - (e) Repeat the procedure described in subparagraphs (a), (b) and (c) alternately at various depths of alternate bags and place the material thus removed in the container referred to in subparagraph (d).
  - (f) Take approximately equal quantities of material from each bag that is sampled.
  - (g) Thoroughly mixes the material thus obtained and divide it by means of a sample divider to obtain a sample of at least 4 kg.
- (2) A grain probe referred to in subregulation (1) shall –
- (a) be long enough so that the end thereof will reach the centre of a bag being sampled; and
  - (b) consist of a cylindrical tube with a tapered end and an aperture close to the end.

**Sampling if contents differ**

15. If it appears from an examination of the popcorn kernels in bulk quantities taken in accordance with regulation 12 from different bags in a consignment, that the contents of those bags differ conspicuously--
- (a) the respective bags shall be separated from each other;
  - (b) all the bags in the consignment concerned shall be sampled in order to make such classification and separation; and
  - (c) each group of bags of a particular grade in the consignment concerned shall for the purposes of these regulations be deemed to be a separate consignment.

**Obtaining a working sample**

16. 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.



**PART IV**  
**INSPECTION METHODS**

***Determination of undesirable odours and harmful substances***

17. A consignment of popcorn kernels or a sample of a consignment of popcorn kernels shall be sensorially assessed or chemically analysed in order to determine --

- (a) whether it has a musty, sour, rancid or other undesirable odour: Provided that a working sample of unscreened popcorn kernels that is ground in a grain mill to a fine meal may be used for the determination concerned.

***Determination of animal filth, glass, metal, coal, poisonous seed and insect content***

18. A sample of a consignment shall be sensorially assessed and sorted by hand in order to determine whether the sample has animal filth, glass, metal, coal, poisonous seed and insect content.

***Determination of stones***

19. The percentage of stones in a consignment of popcorn kernels shall be determined as follows:

- (a) Obtain a working sample of at least 200 g popcorn kernels from either a random or a deviating sample, as the case may be.
- (b) Sort the working sample in such a manner that the stones are retained.
- (c) Determine the mass of the stones so obtained and expresses it as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage of stones in the consignment.

***Determination of percentage of foreign matter***

20. The percentage of foreign matter in a consignment of popcorn kernels shall be determined as follows:

- (a) Obtain a working sample of at least 200 g popcorn kernels from either a random or a deviating sample, as the case may be.
- (b) Sort the working sample in such a manner that the foreign matter is retained.
- (c) Determine the mass of the foreign matter so obtained and expresses it as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage of foreign matter in the consignment.

***Determination of percentage of insect damaged kernels***

21. The percentage of insect damaged kernels in a consignment of popcorn kernels is determined as follows:

- (a) Obtain a working sample of at least 200 g popcorn kernels from either a random or a deviating sample, as the case may be, after the foreign matter and poisonous seeds have been removed.
- (b) Sort the working sample in such a manner that the insect damaged kernels are retained.
- (c) Determine the mass of the insect damaged kernels and express it as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage of insect damaged kernels in the consignment.

***Determination of percentage of broken kernels***

22. The percentage of broken kernels in a consignment of popcorn kernels determined as follows:

- (a) Obtain a working sample of at least 200 g popcorn kernels from either a random or a deviating sample, as the case may be, after the foreign matter, undesirable/poisonous seeds and insect damaged kernels have been removed.
- (b) Sort the working sample in such a manner that the broken kernels are retained.
- (c) Determine the mass of the broken kernels and express it as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage of broken kernels in the consignment.

***Determination of percentage of other coloured popcorn kernels***

23. The percentage of other coloured popcorn in a consignment of popcorn kernels determined as follows:

- (a) Obtain a working sample of at least 200 g popcorn kernels from either a random or a deviating sample, as the case may be, after the foreign matter, undesirable/poisonous seeds and insect damaged kernels have been removed.
- (b) Sort the working sample in such a manner that other coloured popcorn kernels are retained.
- (c) Determine the mass of other coloured popcorn kernels and express it as a percentage of the mass of the working sample.
- (d) Such percentage represents the percentage of other coloured popcorn kernels in the consignment.

**Determination of volume of popped popcorn kernels obtained (expansion ratio)**

24. The volume of popped popcorn kernels are determined as follows with an industrial Standard Metric Weight/Volume Tester:

- (a) Obtain three working samples (regulation 16) of 250 g of raw popcorn kernels after all foreign matter and poisonous seeds have been removed. Label one as "warm up sample" and the other two as "Sample A" and "Sample B".
- (b) Set the power of the Metric Weight/Volume Tester at 1400 watts and the temperature at 240°C ( $\pm$  480°F), add the 118 g of oil while the pot is still cold.
- (c) When the popping pan reaches a temperature of 240°C, add the 250 g of popcorn kernels.
- (d) Determine the volume of popped popcorn kernels after completion of the popping process, as well as of the time that has to pass afterwards as prescribed in the directions for use of the apparatus, the popped volume is determined in a cylinder of 13 cm in diameter and calibrated to provide a reading in cc/g.
- (e) The average volumes of sample A and sample B, will represents the popped popcorn kernels of a consignment.

**Determination of popping percentage**

25. The popping percentage of a consignment of popcorn kernels, if so requested, is determined as follows:

- (a) Take the popped popcorn kernels obtained in sample A or sample B in regulation 24 as a working sample.
- (b) Sort the working sample in such a manner that the popcorn kernels which have not popped are retained and determine the mass thereof.
- (c) Express the mass determined in paragraph (b) as a percentage of the mass of the working sample of raw popcorn kernels prescribed in paragraph (a) of regulation 24.
- (d) Subtract the percentage determined in paragraph (c) from 100.
- (e) The percentage thus obtained represents the popping percentage of the popcorn kernels in the consignment concerned.

**Determination of other classes of popcorn kernels**

26. The percentage of other classes in a consignment of popcorn kernels, if so requested, is determined as follows:

- (a) Take the popped popcorn kernels obtained in regulation 24 as a working sample.
- (b) Sort the working sample in such a manner that the popped popcorn kernels of other classes are retained and determine the mass thereof.
- (c) Express the mass determined in paragraph (b) as a percentage of the mass of the working sample of raw popcorn kernels prescribed in paragraph (a) of regulation 24.
- (d) Subtract the percentage determined in paragraph (c) from 100.
- (e) The percentage thus obtained represents the percentage of other classes of popcorn kernels in the consignment concerned.

***Determination of kernel count per 10 g***

27. The kernel count per 10 g in a consignment of popcorn kernels, if so requested, is determined as follows:

- (a) Obtain three working samples of 10 g each, after all poisonous seeds, foreign matter, broken kernels and insect damaged kernels have been removed.
- (b) Count the number of kernels in each of the working samples and determine the average of the three working samples.
- (c) Such average represents the kernel count per 10 g of a consignment of popcorn kernels.

**PART V**

**MOISTURE CONTENT**

***Determination of moisture content***

28. The moisture content of a consignment of popcorn kernels may be determined according to any suitable method: Provided that the result thus obtained is in accordance with the maximum permissible deviation for a class 1 moisture meter as detailed in ISO 7700/2, based on results of the 72 hour, 103°C oven dried method (AACC Method 44/15A/1981).

**OFFENCE AND PENALTIES**

29. 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 or imprisonment for a period not exceeding two years, or to both the fine and imprisonment in accordance with section 11 of the Act.

## ANNEXURE A

TABLE 1

## MAXIMUM PERCENTAGE (%) PERMISSIBLE DEVIATIONS (M/M) FOR POPCORN KERNELS

Nature of defect	Grades of Popcorn				
	Premium	B1	B2	M1	M2
(a) Other coloured popcorn kernels	2%	3%	5%	3%	5%
(b) Other classes of popcorn kernels	2%	3%	3%	3%	3%
(c) Defective popcorn kernels					
(i) Broken kernels	1%	1.5%	2%	1.5%	2%
(ii) Insect damaged	0.5%	0.7%	0.9%	0.7%	0.9%
(d) Stones	*	0.1%	0.1%	0.1%	0.1%
(e) Foreign matter	0.3%	0.3%	0.5%	0.3%	0.5%
(f) Deviations in paragraphs (a), (b), (c) and (d): Provided that such deviations are individually within the specified limits	2%	3%	5%	3%	5%

\*No Allowance

TABLE 2

## FREQUENCY OF SAMPLING

Number of containers comprising quantity of Popcorn kernels 1	Minimum number of containers to be selected at random 2
Less than 10	2
11 to 50	4
More than 50	6