
REGULATIONS RELATING TO THE GRADING, PACKING AND MARKING OF SORGHUM INTENDED FOR SALE IN THE REPUBLIC OF SOUTH AFRICA ARE REGULATED BY THE AGRICULTURE PRODUCT STANDARD ACT 1990 (ACT 119 OF 1990) AND IS STIPULATED IN GOVERNMENT GAZETTE NO R 15 OF 08/01/2016

1. DEFINITIONS

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 indicates otherwise:

- 1.1 **"animal filth"** means dead rodents, dead birds and dung;
- 1.2 **"another group"** - in relation to:
 - 1.2.1 sorghum of class GM means sorghum that has a dark testa; and
 - 1.2.2 sorghum of class GH, means sorghum that does not have a dark testa;
- 1.3 **"dark testa"** - means the testa layer of the sorghum that contains tannins of the condensed type;
- 1.4 **"consignment"** – means
 - 1.4.1 a quantity of sorghum of the same class, which belongs to the same owner, delivered at any 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 the ship's hold;
 - 1.4.2 in the case where a quantity referred to in paragraph 1.4.1 is subdivided into different grades, each such quantity of each of the different grades;
- 1.5 **"the Act"** - means the Agricultural Product Standards Act, 1990 (Act 119 of 1990);
- 1.6 **"insect"** - means a live insect that is injurious to stored sorghum, irrespective of the stage of development of the insect;
- 1.7 **"small kernel sorghum"** - means whole sorghum kernels that pass through a standard sieve;
- 1.8 **"cultivar list"** - means the list of cultivars determined from time to time by the Executive Officer: Agriculture Product Standards and which is obtainable from the Executive Officer Agriculture Product Standards, Private Bag X343, Pretoria, 0001;
- 1.9 **"unthreshed sorghum"** - means sorghum or pieces of sorghum still partially covered by glumes;

1.10 **“poisonous seeds”** - means the seeds or bits of seeds of plant species that may represent a hazard to human or animal health when consumed, including seeds of: *Argemone Mexicana* L. (Mexican Poppy), *Convolvulus-Species* (Field Bindweed), *Crotalaria-Species* (Wild Lucerne), *Datura-Species* (Thorn Apple), *Ipomoea Purpurea* Roth. (Morning Glory), *Lolium Temulentum* (Darnel) *Ricinus Communis* (Caster oil) *Xanthium Strumarium* (Cockle Bur) and *Xanthium Spinosum* (Bur weed);

1.11 **“sorghum”** - means the threshed ripe seed of the plants *Sorghum Bicolor* (L.) Moensch, but excludes broom sorghum, hay sorghum or cane sorghum;

1.12 **“foreign matter”** - means any matter or substance other than sorghum;

1.13 **“weather-stained sorghum”** - means sorghum kernels of which more than one-third of the surface of the pericarp is distinctly discoloured by the weather, but does not include sorghum kernels with purple anthocyanic blotches in or on the pericarp;

1.14 **“white sorghum”** - means sorghum of which the pericarp does not display any shades of brown, red or yellow irrespective of any purple anthocyanic blotches in or on the pericarp;

1.15 **“standard sieve”** is a slotted sieve-

with a flat bottom of metal sheet of 1,00 mm thickness with rectangular slots of 12,7 mm in length and 1,8 mm in width 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 directly opposite the solid inter segment of the adjacent row of slots;

of which the upper surface of the sieve is smooth;

with a circular frame of suitable material with an inner diameter of at least 300 mm and maximum 310 mm and at least 50 mm high;

that fits onto a tray with a solid bottom and must be at least 20 mm above the bottom of the tray.

2. DEFECTIVE SORGHUM

- 2.1 pieces of sorghum and/or broken sorghum kernels;
- 2.2 sorghum that is affected by fungi or diseases;
- 2.3 sorghum of which the embryo skin is cracked due to germination;
- 2.4 sorghum that has a green colour or shows other signs of immaturity;
- 2.5 sorghum that has been damaged by insects, rodents, cold, heat or in any other manner, but does not include weather-stained sorghum.

3. CLASSES OF SORGHUM

Sorghum must for the purpose of the application of these Regulations, must be grouped in the following classes:

- 3.1 GM (malt class sorghum);
- 3.2 GH (high tannin sorghum); and
- 3.3 Class Other Sorghum. (sorghum that does not comply with abovementioned three classes).

4. STANDARDS FOR CLASSES

4.1 A consignment of sorghum must be classified as Class GM-sorghum if it:

- 4.1.1 consists of malt sorghum that does not have a dark testa;
- 4.1.2 is of a GM cultivar as specified in the cultivar list; and
- 4.1.3 complies with the standards for the grade of class GM-sorghum as set out in regulation 6.

4.2 A consignment of sorghum shall be classified as class GH-sorghum if it:

- 4.2.1 consists of malt sorghum that has a dark testa;
- 4.2.2 is of a GH-cultivar as determined in the cultivar list; and
- 4.2.3 complies with the standards for grades for class GH-sorghum as set out in regulation 6.

4.3 A consignment of sorghum must be classified as class Other Sorghum if it:

does not comply with the standards for class GM and class GH-sorghum.

5. GRADES OF SORGHUM

Sorghum of a class specified in table 1 must for the purpose of the applications of these Regulations be graded, in the following grades:

TABLE 1
PERMISSIBLE PERCENTAGE (%) DEFECTS IN SORGHUM

Sorghum which by application of these Regulations, cannot be graded as one of the above grades, must be graded as class Other Sorghum.

1	2	3	4	5	6
	Maximum extent to which defects are permissible in percentages				
NATURE OF DEFECT	Grade GM1	Grade GM2	Grade GM3	Grade GH1	Grade GH2
Foreign matter	1.5	2.0	3.0	1.5	3.0
Unthreshed sorghum	4.0	6.0	12.0	4.0	20.0
Defective sorghum	3.0	10.0	20.0	3.0	20.0
Small kernel sorghum	8.0	10.0	20.0	8.0	20.0
Total of defective- and small kernel sorghum	10.0	10.0	20.0	10.0	20.0
Sorghum of another group	4.0	6.0	10.0	4.0	*
Sorghum of a white colour	4.0	6.0	*	4.0	*
Total sorghum of another group and sorghum of a white group	6.0	10.0	*	6.0	*
Weather stained sorghum	50.0	50.0	75.0	50.0	75.0
* No specification	*	*	*	*	*

6. STANDARDS FOR GRADES

A consignment of sorghum can be graded as a grade indicated in Regulation 5, if the consignment complies with the following requirements;

- 6.1 all grades of sorghum must be of the same class, except otherwise indicated in table 1;
- 6.2 be free from black discolouration as a result of smut and may not contain 10- or more smut balls or portions of smut balls which are collectively equivalent to 10- or more smut balls per 100 g of sorghum;
- 6.3 be free from a musty-, sour- or other undesirable smell;
- 6.4 be free from any substances that renders it unsuitable for human- or animal consumption, or for processing into or utilisation thereof as food or feed;
- 6.5 contains not more poisonous seeds than permitted in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act 54 of 1972) as amended; and
The following poisonous seeds are commonly found in grain and render the grain unfit for human consumption:

Argemone Mexicana L. (Mexican Poppy), *Convolvulus-Species* (Field Bindweed), *Crotalaria-Species* (Wild Lucerne), *Datura-Species* (Thorn Apple), *Ipomoea Purpurea Roth.* (Morning Glory), *Lolium Temulentum* (Darnel) *Ricinus Communis* (Caster oil) *Xanthium Strumarium* (Cockle Bur) and *Xanthium Spinosum* (Bur weed);

to determine the presence of poisonous seeds in sorghum, a representative sample of 1 kg must be taken and thoroughly screened over a 1.8 mm slotted sieve. The number of poisonous seeds if any on top- and below the sieve, should be collected and carefully counted.

THE ACT ON FOODSTUFFS, COSMETICS AND DISINFECTANTS ACT, 1972

(ACT 54 OF 1974) (Regulation R1225 of 04 October 2002) determines that the following tolerances for the presence of poisonous seeds in agricultural product (maize) will be applicable:

- 6.5.1 seeds of *Crotalaria-Species*, *Datura-species* or *Ricinus Communis*, **one (1) seed** in a representative sample of **1 000g (1 kg)**;
- 6.5.2 seeds of *Argemone Mexicana L.*, *Convolvulus-Species*, *Ipomoea Purpurea Roth.*, *Lolium temulentum* and *Xanthium-Species*, **seven (7) seeds** in a representative sample of **1 000g (1 kg)**; and
- 6.5.3 where an agricultural product intended for sale as human consumption, contains poisonous seeds in excess of the tolerances allowed in paragraphs 6.5 and if the product is to undergo sifting or any other cleaning process to reduce the amount of poisonous seeds before sale thereof the Regulation must only apply after sifting, or any other cleaning process has taken place;
- 6.6 be free from insects injurious to grain, irrespective of the stage of development;
- 6.7 must have moisture content of not more than 14 %;
- 6.8 grades GM1, GM2, GM3, GL2, GH1 and GH2 must not exceed the permissible deviations specified in columns 2, 3, 4, 5 and 6 of the Table in the Annexure, respectively with regards to the nature of deviation specified in column 1 of the said table; and
- 6.9 the presence of the purple anthocyanic blotches in- or on the outer pericarp, must not be taken into consideration when determining the grade of a consignment of sorghum.

7. DETERMINATION OF CLASS- AND PRESENCE OF SMUT, UNACCEPTABLE SMELLS, HARMFUL SUBSTANCES, POISONOUS SEEDS AND INSECTS

A sample of a consignment of sorghum must be sensorally assessed or chemically analyzed in order to determine:

- 7.1 the class thereof;
- 7.2 if it is blackened by smut or contains smut balls;
- 7.3 if it has a musty-, sour- or unacceptable smell;
- 7.4 if it contains any substance that renders it unsuitable for human consumption, or for processing into food or feed;
- 7.5 if it contains any poisonous seeds;

7.6 if it contains any live insects; and

7. moisture does not exceed 14 %.

8. DETERMINATION OF FOREIGN MATTER CONTENT

The percentage of foreign matter in a consignment of sorghum, must be determined as follows:

8.1 prepare a working sample by measuring 100 g of material from the sample of the consignment;

8.2 remove all foreign matter by hand from the working sample and determine the mass thereof;

8.3 express the mass thus determined, as a percentage of 100 g; and

8.4 such percentage will represent the percentage of foreign matter in the consignment concerned.

9. DETERMINATION OF UNTHRESHED SORGHUM CONTENT

The percentage of unthreshed sorghum in a consignment of grain sorghum, must be determined as follows:

9.1 prepare a working sample by measuring 50 g of material from the sample from which all foreign matter has been removed;

9.2 remove all unthreshed sorghum by hand from the working sample and determine the mass thereof;

9.3 express the mass thus determined as a percentage of 50 g; and

9.4 such percentage must represent the percentage of unthreshed sorghum in the consignment concerned.

10. DEFECTIVE SORGHUM- AND SMALL KERNEL SORGHUM CONTENT

The percentages of defective sorghum and small kernel grain sorghum in a consignment of sorghum, must be determined as follows:

10.1 prepare a working sample by measuring 50 g of material from a sample from which all foreign matter and unthreshed sorghum have been removed;

10.2 place the working sample on a standard sieve;

10.3 screen the working sample of 25 to 30 seconds by performing 30 movements of the slotted sieve and collecting tray on an even horizontal surface and along the longitudinal axis of the slots of the sieve provided that each such movement consists of a forward and backward movement of between 200 and 300 mm each;

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- 10.4 remove all defective sorghum kernels from those portions of the working sample that respectively remains in or on the slotted sieve and were collected in the collecting tray and determine the joint mass thereof;
 - 10.5 express the mass thus determined, as a percentage of 50 g;
 - 10.6 such percentage will represent the percentage of defective sorghum in the consignment concerned;
 - 10.7 determine the mass of the material that remained in the collecting tray after the removal of the defective grain sorghum kernels in terms of paragraph 10.3;
 - 10.8 express the mass thus determined as a percentage of 50 g; and
 - 10.9 such percentage represents the percentage small kernel sorghum in the specific consignment.

11. DETERMINATION OF GRAIN SORGHUM CONTENT OF ANOTHER GROUP

The percentage of sorghum of another group in a consignment of sorghum, must be determined as follows:

- 11.1 prepare a working sample by measuring 25 g of material from the sample from which all foreign matter, unthreshed sorghum, defective grain sorghum and small kernel sorghum have been removed;
- 11.2 remove all grain sorghum of another group by hand from the working sample and determine the mass thereof;
- 11.3 express the mass thus determined, as a percentage of 25 g; and
- 11.4 such percentage will represent the percentage of sorghum of another group in the consignment concerned.

12. DETERMINATION OF WHITE SORGHUM CONTENT

The percentage of sorghum of a white colour in a consignment of sorghum, must be determined as follows:

- 12.1 prepare a working sample by measuring 25 g material from the sample from which all foreign matter, unthreshed sorghum, defective sorghum and small kernel sorghum have been removed;
- 12.2 remove all the sorghum of a white colour by hand from the working sample and determine the mass thereof;
- 12.3 express the mass thus determined, as a percentage of 25 g; and
- 12.4 such percentage must represent the percentage of grain sorghum of a white colour in the consignment concerned.

13. DETERMINATION OF WEATHER-STAINED SORGHUM CONTENT

The percentage of weather-stained sorghum in a consignment must be determined as follows:

- 13.1 prepare a working sample by measuring 10 g of material from the sample from which all foreign matter, unthreshed sorghum, defective sorghum and small kernel sorghum have been removed;
- 13.2 remove all the weather-stained sorghum by hand from the working sample and determine the mass thereof;
- 13.3 express the mass thus determined, as a percentage of 10 g; and
- 13.4 such percentage must represent the percentage of weather-stained sorghum in the consignment concerned.

GRADING TABLE

Class

Grading factors	1	2	3	4	Total	Grade
Foreign matter						
Unthreshed sorghum						
Defective sorghum						
Small kernel sorghum						
Total of defective and small kernel sorghum						
Sorghum of another group						
Sorghum of a white group						
Total of a white group and another group						
Weather stained sorghum						

Final grade