

# GOVERNMENT NOTICES

## GOEWERMENTSKENNISGEWINGS

### DEPARTMENT OF AGRICULTURE, FORESTRY AND FISHERIES

### DEPARTEMENT VAN LANDBOU, BOSBOU EN VISSERYE

No. R. 963

30 November 2012

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

#### REGULATIONS RELATING TO THE GRADING, PACKING AND MARKING OF CITRUS FRUIT INTENDED FOR SALE IN THE REPUBLIC OF SOUTH AFRICA

The Minister of Agriculture, Forestry and Fisheries has, under section 15 of the Agricultural Product Standards Act, 1990 (Act No. 119 of 1990) -

- (a) made the regulations in the Schedule;
- (b) determined that the said regulations shall come into operation on date of publication; and
- (c) read together with section 3(2) of the said Act, repealed the regulations published by Proclamation No. R. 61 of 1973, Government Notices Nos. R. 1137 of 13 June 1975, R. 1829 of 26 September 1975, R. 804 of 4 May 1976, R. 2245 of 3 December 1976, R. 1147 of 24 June 1977, R. 627 of 28 March 1980, R. 996 of 13 May 1983, R. 602 of 30 March 1984 and R. 1169 of 15 June 1984 with effect from the date of commencement.

#### SCHEDULE

##### *Definitions*

1. In these regulations, unless inconsistent with the text, any word or expression to which a meaning has been assigned by the Act, shall have that meaning, and --

"**albedo**" means the spongy white tissue on the inside of the rind of citrus fruit;

"**Arthropoda**" means any stage in the life cycle of an invertebrate member of the Animal Kingdom that is bilaterally symmetrical with a segmented body; with jointed limbs that are paired and a chitinous external skeleton;

"**blemish**" means any external defect on the surface of the citrus fruit which detrimentally affects the appearance of the citrus fruit;

"**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;

"**citrus fruit**" means grapefruit, kumquats, lemons, limes, oranges and Seville oranges, pummelos (Shaddocks) as well as soft citrus (easy peelers);

"**consignment**" means --

- (a) a quantity of citrus fruit of the same cultivar, belonging to the same owner, and delivered at the same time under cover of the same delivery note, consignment note or receipt note, or delivered by the same vehicle; or
- (b) in the case of a quantity of citrus fruit that is divided into different cultivars, classes, counts, count groups, pallet loads, trademarks or types of packaging, every quantity of each of the different cultivars, classes, counts, count groups, pallet loads, trademarks or types of packaging;

"**container**" means the immediate container in which citrus fruit are packed directly, the outer container in which prepacked units are packed and bulk containers, excluding prepacked units and shipping containers in which pallet loads are shipped;

"**count**" means the number of citrus fruit packed in a container;

"creasing" means a depression of --

- (a) at least one millimetre in depth, caused by a break in the albedo and of which the total length of the crease or creases, measured by a straight line, exceeds one-third of the circumference of the citrus fruit; and
- (b) less than one millimetre in depth, caused by a break in the albedo and of which the total length of the crease or creases, measured by a straight line, exceeds three-quarters of the circumference of the citrus fruit;

"decay" means a state of decomposition, fungus development, internal insect infestation or internal insect damage, with signs of tissue collapse or insect excrement, excluding insect puncture marks, which detrimentally affects the quality of the citrus fruit;

"diameter" means the equatorial diameter of a citrus fruit or, in the case of an elongated citrus fruit, the average of the equatorial and polar diameters thereof;

"equatorial diameter" means the largest diameter of a citrus fruit measured at right angles to the longitudinal axis thereof;

"flavedo" means the outer coloured part of the rind of citrus fruit which bears oil glands and pigments;

"Food business operator (FBO)" means the person or persons responsible for ensuring that the prescribed requirements of these standards are met within the food business under his or her control and include both the management of the food business as well as the person with overall authority on site or in the specific establishment;

"foreign matter" means any material that is not normally present in, on or between citrus fruit, excluding -

- (a) 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
- (b) wax which is used for the prevention of desiccation;

"granulated juice sac" means a dry and crystallised juice vesicle: Provided that a jelly-like juice vesicle is excluded;

"greening disease" means symptoms such as an abnormally dull green colour, lopsidedness or acorn-shape, an off-taste, abortive seeds, softness and a yellow discoloration around the stem end, which are characteristic of greening disease;

"hazard" means a biological, chemical or physical agent in or condition of, a food product with the potential to cause an adverse health effect;

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

"long stems" means stems that protrude more than two millimetres beyond the stem button or, in the case of sunken buttons protrude beyond the shoulder of the fruit by more than two millimetres;

"loose flap" means that more than one corner of a carton flap is loose;

"major" --

- (a) in relation to frost damage, granulation or drying out means that it can be observed in a citrus fruit at a depth as specified for each cultivar, measured from the inside of the albedo, in all the segments, or in two or more juice sacs, in all but two segments;
- (b) in relation to injuries, means --

- (i) cuts, splits or holes which penetrate the flesh of the citrus fruit;
  - (ii) penetration by insects or insect larvae into the flesh of the citrus fruit without any sign of tissue collapse or insect excrement or the presence of the insects or insect larvae; and
  - (iii) cracks or splits of the flavedo and albedo which exposes the flesh without penetration; and
- (c) in relation to endoxerosis in lemons, means the dark brown to black discoloration stage affecting the albedo and core of the lemons with or without tissue collapse and water saturation; and
- (d) in relation to water saturation means water saturation in the albedo and flavedo due to injuries, weak skin and skin cracks at flower end;

"**malformation**" means a deformity in the normal shape of citrus fruit and, in the case of oranges of navel cultivars, an excessively protruding navel;

"**minor**" means --

- (a) injuries around the button area as a result of the tearing out of the button thereby exposing the albedo;
- (b) frost damage, granulation and drying out that is of a lesser intensity than specified in the definition of "major" and also occurs from the inside of the albedo to a depth as specified for each cultivar; and
- (c) injuries, cuts, splits, holes or stings which have penetrated into the albedo but have not entered the flesh of the citrus fruit;

"**polar diameter**" means the diameter of a citrus fruit measured through the longitudinal axis thereof;

"**prepacked unit**" means any single packing unit for presentation as such to the consumer consisting of citrus fruit and the packaging into which the citrus fruit were put before being offered for sale;

"**scale**" means red and purple scale of which the diameter is at least one millimetre and mussel scale of which the length is at least one millimetre;

"**skin defects**" means a rough, coarse, thick or ribbed skin;

"**skin weakness**" means where the flavedo is stretched so thinly across a break in the albedo of the skin of a citrus fruit that a dark shadow of the break can clearly be seen beneath the flavedo;

"**suitable**" means to be suitable according to the opinion of the Executive Officer;

"**superficial fungal growth**" means black or grey fungus growth on the substrate on the surface of the skin where red scale has been removed, excluding fungus growth on the button or on scale, or sooty mould, sooty blotch, necrostoma, black spot or other types of fungus growth which may cause decay;

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

## PART I

### ***Control over the sale of citrus fruit***

2. (1) No person shall sell citrus fruit in the Republic of South Africa, other than imported citrus fruit referred to in sub regulation (3): --

- (a) unless the citrus fruit is sold according to the classes in regulation 3;
- (b) unless the citrus fruit complies with the standards for classes in regulation 4;

- (c) unless the containers in which such citrus fruit is presented for sale complies with the requirements prescribed in regulation 5;
- (d) provision concerning presentation as set out in regulation 10;
- (e) unless such citrus fruit is packed in a container and in the manner prescribed in regulations 6; 7; and 8;
- (f) unless such containers are marked with the particulars and in the same manner prescribed in regulation 11;
- (g) if the citrus fruit contains a substance prescribed as a substance which it may not contain according to Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947)
- (h) if the citrus fruit contains biological or chemical contaminants in quantities or at levels that the maximum limits prescribed in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972).

(2) Citrus fruit sold by vendors in streets (excluding retailers and supermarkets) and other public places are excluded from the stipulations in subregulation 2 (1) (a), (b), (c), (d), (e), and (f) Provided that if such citrus fruit is marked in terms of item 12, it shall be subjected to the aforementioned stipulations.

(3) Imported citrus fruit may be exempted from the provisions of subregulation (1), provided that the citrus fruits --

- (a) comply with either the Codex Alimentarius, UNECE (United Nations Economic Commission for Europe) or OECD (Organisation for Economic Co-operation and Development) standards;
- (b) are according to bilateral agreement accompanied by certificate issued by a relevant government authority responsible for quality control of fresh fruit and vegetables and in which it is certified that the quality of the citrus fruit as verified through inspection conforms to the relevant standard;
- (c) does not contain a substance prescribed as a substance which it may not contain according to Fertilizers, Farm Feeds, Agricultural Remedies and Stock Remedies Act, 1947 (Act No. 36 of 1947); and
- (d) does not contains biological or chemical contaminants in quantities or at levels that exceed the maximum limits prescribed in terms of the Foodstuffs, Cosmetics and Disinfectants Act, 1972 (Act No. 54 of 1972).

(3) The Executive Officer may grant written exemption, entirely or partially, to any person on such conditions as he or she deems necessary, from the provisions of subregulation (1).

## QUALITY STANDARDS

### *Classes for citrus fruits*

3. There are three classes of citrus fruit namely Class 1, Class 2 and Lowest Class.

### *Standards for classes*

4. (1) Citrus fruit shall--
- (a) be fit for human consumption; and

- (b) contain no chemical residues that exceed the prescribed maximum residue levels;
- (2) Citrus fruit shall comply with the specifications set out in Tables 1, 2, 3, 4, 5, and 6.
- (3) No consignment of citrus fruit classified as "Class 1" or "Class 2" or "Lowest Class" shall contain --
  - (a) any organisms which may be a source of danger to the human being; and
  - (b) Arthropoda infestation including the organisms which according to paragraph (a) do not form part of plant injurious organisms, excluding organisms which may be a source of danger to the human being, on more than 3% of the citrus fruit or three free live-Arthropoda per pallet load or part thereof in the consignment: Provided that it does not exceed a maximum of one Arthropoda per container.

### **General**

#### **Requirements for containers**

- 5. (1) Containers, excluding bulk containers, in which citrus fruit is packed shall --
  - (a) be clean, dry, suitable and undamaged;
  - (b) not impart a foreign taste or odour to the citrus fruit;
  - (c) be free from any visible sign of fungus growth;
  - (d) be free from Arthropoda infestation;
  - (e) be strong and rigid enough to ensure that the original shape be retained and not bulge out, dent in, break or tear, to the extent that citrus fruit are damaged or are at risk of being damaged, during normal storage, handling or transport; and
  - (f) consist of pockets, cartons or any other suitable packaging material.
- (2) Bulk containers in which citrus fruit are packed shall --
  - (a) be suitable, clean, dry and undamaged;
  - (b) be free from any visible signs of fungus growth; and
  - (c) be free from Arthropoda infestation.

### **PART II**

#### **PACKING REQUIREMENTS FOR CITRUS FRUIT**

- 6. (a) Only citrus fruit of the same quality, cultivar and size (if sized) shall be packed in the same container.
- (b) Class 1 citrus fruit in the same container must be uniform in colour.
- (c) Each container shall be packed firmly and to capacity.
- (d) Where more than one layer of citrus fruit is packed in any container the fruit in the top layer shall be representative of the entire contents of the container.
- (e) Citrus fruit shall be sized by diameter or weight: Provided that sizing shall be optional in the case of Class 2 and Lowest Class.
- (f) If citrus fruit is packed in prepacked units, such units shall be packed in a suitable manner in an outer container: Provided that the prepacked units are clean, dry, undamaged and suitable.

**Packing material**

7. If packing material is used inside the containers, such packing material shall be clean, dry, odourless and of a quality such as to avoid causing any external or internal damage to the citrus fruit.

**Stacking of containers on pallets**

8. If containers containing citrus fruit are palletised --

- (a) the pallet shall be clean, undamaged and suitable and not transmit to the citrus fruit any harmful substance or any substance that may be injurious to human health;
- (b) the containers shall be stacked firmly and square with each other and the pallet;
- (c) only containers of the same dimensions shall be stacked in the same layer on the pallet; and
- (d) the containers shall not be stacked upside-down on the pallet.

**Strapping of pallet loads**

- 9. (a) A pallet load of containers shall be strapped in a suitable manner; and
- (b) If containers without lids are being used, a suitable covering shall be placed on top of the pallet load of containers, before the pallet load is strapped.

**Provisions concerning presentation**

10. (1) Uniformity

(a) The contents of each package must be uniform and contain only citrus fruit of the same origin, variety, quality and size (if sized) and the same degree of ripeness. The visible part of the contents of the package must be representative of the entire contents except for mixed sizes and varieties; and

(b) If citrus fruit are packed to a specific count, the difference in diameter between the largest and the smallest citrus fruit in the same container shall not exceed the limits prescribed for the specific size reference as follows:

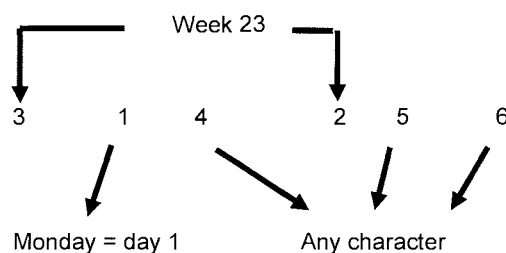
(aa) Lemons and limes	:	7 mm
(bb) Oranges or Seville oranges		
- Size reference 0 to 2	:	11 mm
- Size reference 3 to 6	:	9 mm
- Size reference 7 to 10	:	7 mm
(bb) Soft citrus		
- Size reference 1XXX to 4	:	11 mm
- Size reference 5 to 6	:	9 mm
- Size reference 7 to 10	:	7 mm

**PART III****MARKING REQUIREMENTS FOR CITRUS FRUIT**

11. (1) Each container containing citrus fruit shall be marked clearly, indelibly, legibly and not untidy, upside down or askew, in block letters and numerals on any visible short or long side of the lid or container, where lids are

not used, by printing, stamping or by means of specially designed labels, with the following particulars: Provided that in the case of cartons and bulk containers all particulars shall be grouped on the same side:

- (a) The expression "Grapefruit", "Pummelos", "Kumquats", "Lemons", "Limes", "Oranges" or "Seville oranges".
- (b) The appropriate cultivar.
- (c) The appropriate class in accordance with regulation 3.
- (d) The size reference as set out in Part 2 (excluding fruit for processing) for a specific type of citrus fruits preceded by the expression "Size code", "Size", "Size reference" or any other suitable term having a similar meaning: Provided that:
  - (aa) the lower and upper size reference shall be indicated if mixed sizes of fruit are packed in bulk containers; and
  - (bb) such a size reference shall be preceded by the expression "Size range" or any other suitable term having a similar meaning.
- (e) The number of fruit in each container (count) in the case of citrus fruit which are packed according to a specific count: Provided that such a count reference shall be preceded by the expression "Count".
- (f) The name and physical or postal address of the producer or owner of the contents of container.
- (g) The producer's code or the packhouse code (excluding imported citrus fruit) which is registered with the Executive Officer by the producer or packhouse, as the case may be: Provided that --
  - (i) the packhouse code shall be used if the origin of the citrus fruit cannot be traced back to the producer;
  - (ii) if a producer has more than one farm, each farm shall be registered separately; and
  - (iii) such code shall be preceded by the expression "Producer", "Packhouse", "Packer", "PUC", "PHC", "FBO" or any other suitable term having a similar meaning.
- (h) The country of origin.
- (i) Indication of date code on at least 90% of the containers and prepacked containers: Provided that only the following type of packing date shall be used:



The first and fourth figures used indicate the week. Digit one is the second figure and digit four the first figure of that week. Example: Week 23 would be indicated as: First digit 3 and fourth digit 4.

The second digit indicates the day of the week, e.g. Monday = 1.

The third, fifth and sixth characters can be used to ensure traceability of the product, e.g. identification of orchard, packing line, producer in the case of co-operative packing, etc.

- (2) If citrus fruit is packed in pockets, or re-usable containers, excluding cartons, the particulars required in subregulation (1)(b), (c), (e), (f) and (g) shall be indicated on labels which are specially designed for this purpose and which --

- (i) in the case of pockets, are affixed to the top ends of those pockets.
- (ii) in the case of re-usable containers, excluding cartons, fit into the slot specially affixed for this purpose.

- (3) If citrus fruit is packed in bulk containers, the particulars required in subregulation (1) (b), (c), (e), (f) and (g) shall be indicated on the two adjoining sides of the bulk containers by means of suitable stamps or labels specially designed for this purpose.

- (4) In the case of prepacked units of which the contents are not visible from the outside, the grade and cultivar shall appear on the outside of the container in block letters and numerals of at least 3 mm in height: Provided that the particulars may be omitted in the case of transparent prepacked units.

- (5) Subject to the provisions of subregulation (1), each outer container containing prepacked units shall be marked with an indication of the total number of prepacked units per outer container: Provided that if the total number of prepacked units is visible from the outside, it does not have to be indicated on the outer container.

- (6) If containers are marked by means of affixing labels thereupon, such labels shall be clean and securely attached and shall not be superimposed on other labels.

- (7) If citrus fruit is displayed for sale in loose quantities --

- (a) any quantity of a particular class, cultivar or count, as the case may be, shall not be displayed mixed with citrus fruit of any other class, count or cultivar; and for retail purposes, should different counts of the same class and cultivar be displayed simultaneously, the different counts may be displayed, provided they are grouped separately; and
- (b) if imported, the country of origin of the citrus fruit shall be indicated in clear, legible block letters on a notice board placed at the quantity of citrus fruit.

#### PROHIBITED PARTICULARS

12. No wording, illustration or other device of expression which constitutes a misrepresentation or which directly or by implication can create a misleading impression of the contents shall appear on a container which contains citrus fruit.

#### *Display*

13. (1) If citrus fruit in containers for sale is being displayed, such container shall be placed in such a manner to ensure that the prescribed markings on the containers or labels, as the case may be, are clearly visible.

- (2) If citrus fruit are displayed for sale other than in containers, --

- (a) any quantity thereof of a particular class, count or cultivar, as the case may be, shall not be so displayed mixed with citrus fruit of any other class, size group or cultivar; and
- (b) the class and cultivar of such quantity of citrus fruit shall be displayed in clear legible block letters of at least 10 mm in height on a notice board prominently placed at such quantity of citrus fruit.



## SAMPLING PROCEDURES

### *Obtaining a sample of consignment*

14. (1) An inspector shall draw at random for inspection purposes, a sample of a consignment citrus fruit as follows and shall be satisfied that the containers so drawn are representative of the consignment concerned:

- (i) In the case of citrus fruit packed in containers:
    - (aa) Select at random at least two per cent of the total number of containers: Provided that for the determination of the size, granulation and internal quality of the citrus fruit, a minimum of two per cent or 10 containers per consignment, whichever is the smallest, shall be examined.
    - (bb) Draw at random a sample consisting of 50 fruit from each such container: Provided that if a container contains less than 50 fruit, the entire contents of such a container shall be taken as a sample.
  - (ii) In the case of citrus fruit packed in bulk containers:
    - (aa) Draw at random from each consignment at least 25 per cent or two containers, whichever is the greatest, of the bulk containers concerned.
    - (bb) Draw at random from each bulk container three quantities of 50 fruit each, respectively from the middle and two opposite corners of the bulk container.
    - (cc) All three samples of 50 fruit shall be taken as the sample for the inspection.
- (2) (i) A sample obtained in terms of subregulation (1), depending on the type of container, shall be inspected in the manner as set out in item 10.
- (ii) The results of such an inspection shall apply to the whole consignment from which the sample concerned was obtained.

### *Deviating sample*

15. If an inspector should notice during the process of drawing the random sample or during the inspection, that some of the containers derived from any part of the pallet load, truck load or consignment contain fruit which are noticeably inferior to or differ from the contents of the containers which represent the remainder of the pallet load, truck load or consignment, the inspection result shall only be based on the containers derived from the deviating portion of the pallet load, truck load or consignment and further samples for inspection shall be drawn from this deviating portion.

## METHODS OF INSPECTION

### *Determination of number of scale (excluding kumquats)*

16. The number of scale per fruit in a consignment of citrus fruit shall be determined by examining each of the citrus fruit in the sample of the consignment in order to determine if the number of scale thereon exceeds the applicable limits specified in Table 3 for a specific type of citrus fruit.

### *Determination of granulation (excluding kumquats)*

17. (a) Granulation and drying out, whatever the cause, found anywhere in the citrus fruit, will be regarded as granulation.
- (b) Any suspected frost damage, granulation or drying out, shall be determined as follows:

- (i) Cut the citrus fruit at the stem end of the segments, rectangular to the longitudinal axis of the fruit, measured from the inside of the albedo, at the following depth:
  - (aa) All other citrus fruits : 6 mm
  - (bb) Pummelos (Shaddocks) : 12 mm
  - (cc) Valencias and Valencia types : 10 mm
- (ii) Then cut into the flesh of the fruit at any other side where frost damage, sunburn, granulation or drying out is suspected, to a depth of 6 millimetres, at right angles to the radius at this side: Provided that the presence of any granulated or dry juice vesicles at that depth is a sign of major granulation.
- (iii) This is to determine whether frost damage, granulation or drying out can be observed in the juice sacs of the segments at that depth.

***Determination of granulation in kumquats***

18. (a) Granulation and drying out, whatever the cause, found anywhere in the kumquats, will be regarded as major granulation.
- (b) Any kumquats with suspected frost damage, granulation or drying out, shall be cut equatorially in order to determine whether the aforementioned deviations can be observed in the juice sacs of the segments.

***Determination of juice requirements (excluding kumquats)***

19. The juice requirements of the citrus fruit in a consignment shall be determined as follows:
- (i) Draw at random from more than one container, as set out in item 14(1), a working sample of at least 12 fruit, which in opinion of the inspector are the most likely to have affected.
  - (ii) Determine the gross mass of the working sample obtained above.
  - (iii) Cut each fruit in the working sample in half at right angles to its longitudinal axis.
  - (iv) Press out the juice of the halved fruit as thoroughly as possible by using a suitable juice squeezer.
  - (v) Strain the juice thus obtained through two thicknesses of muslin into a wide mouth jug with a capacity of approximately one litre.
  - (vi) Twist the muslin in a tight ball and squeeze it until only damp pulp remains therein.
  - (vii) As soon as the liquid becomes thick and cloudy, pressure shall be stopped.
  - (viii) Determine the collective mass of the pressed-out halved fruit and the damp pulp in the muslin.
  - (ix) Determine the mass of the juice of the working sample by subtracting the mass determined in terms of subparagraph (viii), from the mass of the working sample.
  - (x) Express the mass thus calculated as a percentage of the mass of the working sample to determine the juice content.
  - (xi) Determine the brix content, acid content and the ratio between brix content to acid content in the manner set out in regulation 20 to 22.

- (b) If the juice requirements thus determined do not comply with the requirements set out in Table 6 for a specific type of citrus fruits--
- (i) the juice requirements of a further working sample shall be determined;
  - (ii) the average of the two determinations shall be calculated; and
  - (iii) such average shall represent the juice requirements of the consignment concerned.
- (c) If, during a determination referred to in paragraph (b), --
- (i) (aa) the average juice content is less than two per cent below the prescribed minimum;
  - (bb) the average ratio between total soluble solids content to acid content is less than 0,4 difference from the prescribed minimum; or
  - (cc) the average Brix content is less than 0,2 below the prescribed minimum;
  - (ii) the juice requirements of a further working sample, shall be determined;
  - (iii) the average of all the determinations shall be calculated; and
  - (iv) such average shall represent the juice requirements of the consignment concerned.
  - (v) If 66, 6 per cent of all the working samples comply with the requirements set out in Table 6 for a specific type of citrus fruits a consignment of citrus fruit shall be approved for export although the average does not comply.

***Determination of the Brix content (excluding kumquats and lemons)***

20. (a) The Brix content of the citrus fruits in a consignment shall be determined with --
- (i) a calibrated refractometer; or
  - (ii) a calibrated refractometer with automatic temperature correction.
- (b) The temperature of the juice sample should be similar to that of the refractometer being used to measure the Brix content.
- (c) Ensure that the refractometer is properly calibrated by a laboratory that is accredited to calibrate refractometers.
- (d) Ensure that the prism surface of the refractometer is clean by wiping the prism surface with moistened, soft paper, then dry the prism surface with a dry cloth.
- (e) Thoroughly stir the juice sample ensuring that no sediment remains at the bottom of the juice sample.
- (f) Using a non-metallic spoon, transfer a few drops of the well-stirred juice onto the prism surface of the refractometer, covering the prism surface.
- (g) Take the Brix reading on the refractometer.
- (h) Measure the juice temperature if a non-temperature compensating refractometer is used.
- (i) If a refractometer without automatic temperature correction is used, the particulars set out in Table 7 for a specific type of citrus fruits shall be used to convert the figure with due regard to the temperature of the juice.

- (j) Such converted figure shall represent the percentage total soluble solids content of the citrus fruit in the consignment concerned.

**Determination of the acid content (excluding kumquats)**

21. (a) The acid content of the citrus fruit in a consignment shall be determined as follows:
- (i) Use a 20 millilitre pipette to transfer 20 millilitres of the juice obtained in terms of regulation 20 into a glass titration flask with a capacity of approximately 300 millilitres.
  - (ii) (aa) Add five drops of phenolphthalein indicator, consisting of four grams phenolphthalein dissolved in 600 millilitres ethyl alcohol (95 per cent) plus 400 millilitres distilled water and sufficient decinormal sodium hydroxide solution to obtain a faint pink colour, to such juice; or  
(bb) should the juice be dark in colour add five drops of phenolphthalein indicator, consisting of five grams phenolphthalein dissolved in 80 millilitres ethyl alcohol (95 per cent) and filled up with ethyl alcohol to 100 millilitres, to such juice.
  - (iii) Titrate a 0,1562 N sodium hydroxide solution into such juice by means of a burette with a capacity of 50 millilitres calibrated in millilitres, until the acid in that juice is neutralised.
  - (iv) Determine how many millilitres of the solution concerned were used for such neutralising, and divide this figure by 20.
- (b) Such result shall represent the percentage acid content of the citrus fruit in the consignment concerned.

**Determination of the ratio of the Brix content to the acid contents (excluding kumquats)**

22. The ratio of the Brix content to the acid content of the citrus fruit in a consignment shall be determined by dividing the percentage obtained in terms of regulation 20, by the percentage obtained in terms of regulation 21.

**Determination of the diameter of fruit (excluding kumquats)**

23. (a) The diameter of the citrus fruit in a consignment shall be determined by the measuring of the equatorial diameter of each of the citrus fruit in the sample, by means of a measuring instrument calibrated in millimetres.
- (b) If the equatorial diameter of one or more of the citrus fruit (excluding lemons and soft citrus) thus measured does not comply with the requirements referred to in Table 3 for a specific type of citrus fruits --
- (i) both the polar and equatorial diameters of such fruit shall be measured;
  - (ii) the average of the two diameters for each fruit shall be determined; and
  - (iii) such average shall for the purpose of Table 3 for a specific type of citrus fruits be deemed to be the equatorial diameter of the fruit concerned.

**Determination of the flesh diameter of grapefruit**

24. (a) Determine both the flesh diameter and fruit diameter of the grapefruit which have been cut in half in terms of subregulation 19 (iii) by placing a measuring instrument calibrated in millimetres, at random on any half of each grapefruit in such a way that the measuring edge of the measuring instrument passes

through the longitudinal axis of the fruit.

- (b) If the flesh diameter of one or more of the 12 grapefruit in the working sample thus measured, does not comply with the requirements referred to in Table 3, the remaining grapefruit in the sample from which the working sample concerned was obtained, shall be cut in half at right angles to the longitudinal axis thereof and the fruit diameter and flesh diameter of each such fruit be measured as set out in paragraphs (a) and (c).
- (c) If, during a determination in terms of paragraph (a), the measuring edge of a measuring instrument --
  - (i) falls on an undeveloped segment, it shall be aligned to the nearest normal segment; or
  - (ii) falls on the edge of a segment, it shall be aligned to that part of the segment where the skin is the thinnest.

#### **Determination of the uniformity of fruit size (excluding kumquats and grapefruit)**

25. The difference in diameter between the largest and smallest citrus fruit in a sample shall be determined as follows:

- (a) Obtain the equatorial diameter of all the fruit in the sample as well as the polar diameter of the fruit, of which the polar diameter is more than the equatorial diameter of the said fruit in the sample.
- (b) The equatorial diameter thus obtained shall represent the diameter of the fruit concerned unless the polar diameter is more than the equatorial diameter, in which case the polar diameter shall represent the diameter of the fruit concerned.
- (c) Tabulate the diameter readings of the fruit in one millimetre gradings.
- (d) Determine the smallest number of fruit which falls outside the diameter and express such number as a percentage of the number of fruit in the sample concerned.
- (e) Such percentage shall represent the number of fruit in the sample which is not uniform in size.

#### **Determination of the length of kumquats**

26. The length of the kumquats in a consignment shall be determined by measuring each of the kumquats in the sample, by means of a measuring instrument calibrated in millimetres measuring from the shoulder next to the tip of the fruit.

#### **Determination of certain deficiencies**

- 27.
- (a) The extent to which a consignment of citrus fruits does not comply with the quality standards, excluding the quality standards already mentioned in regulation 16 to 28, shall be determined as follows:
    - (i) Examine each of the fruit in the working sample by sensory means in order to determine whether any deviations occur thereon or therein: Provided that any fruit with a suspected internal deficiency may be dissected to confirm the observation concerned.
    - (ii) Determine the respective number of fruit in the sample with each such deviation.
    - (iii) Express such numbers as percentages of the number of fruit in the sample.

- (b) Such percentages shall represent the extent to which those deviations occur in the consignment concerned.

#### **OFFENCE AND PENALTIES**

28. Any person who contravenes or fails to comply with the provisions of these regulations, shall be guilty of an offence and may upon conviction be liable to a fine or to imprisonment in terms of section 11 of Act No. 119 of 1990.

TABLE 1

## QUALITY STANDARDS

Quality factor		Class 1	Class 2	Lowest Class
1.	(a) Underdeveloped or out of season	Shall not occur	Shall not occur	-
	(b) Internal quality requirements (grapefruit, oranges and soft citrus)	As set out in Table 6	As set out in Table 6	-
2.	External blemishes	Shall not occur	Fairly free	-
3.	Colour	Uniform	Fairly uniform	-
4.	Frost damage, granulation and drying out	As set out in item 5 of Table 2	As set out in item 5 of Table 2	-

TABLE 2

## MAXIMUM PERMISSIBLE DEVIATIONS BY NUMBER

Quality factor	Class 1	Class 2	Lowest Class
1. Decay	1,5%: Provided that not more than one container or 10% of the containers in a sample, whichever is the greatest, contain not more than 5% of such fruit per container	1,5%: Provided that not more than one container or 10% of the containers in a sample, whichever is the greatest, contain not more than 5% of such fruit per container	<b>Fit for human consumption</b>
2. Factors which may cause decay			
(a) (i) Major injuries	3%	5%	-
(ii) Water saturation	2%	2%	-
(b) Minor injuries	5%	5%	-
(c) Skin weakness	5%	5%	-
(d) Deviations specified in paragraph (a) above and item 1 of this table collectively: Provided that such deviations shall individually be within the specified limits	3%	3%	-
(e) Deviations specified in paragraph (a), (b) and (c) above and item 1 of this table collectively; Provided that such deviations shall individually be within the specified limits	5%	5%	-
3. Greening disease	2,5%	2,5%	-
4. Superficial black fungus growth on scale residues	2,5%	2,5%	-
5. Frost damage, granulation and drying out			
(a) (i) Major granulation: Provided that if any consignment exceeds 2% major granulation a higher internal quality shall apply by increasing the minimum TSS by 0,5%	(i) 2% if major and minor granulation combined exceed 25%	(i) 2% if major and minor granulation combined exceed 25%	-
(ii) Navels	(ii) 5% if major and minor granulation combined do not exceed 25%	(ii) 5% if major and minor granulation combined do not exceed 25%	-
	2% if major and minor granulation combined do not exceed 25%: Provided that less than 50% of the navels may show minor granulation	2% if major and minor granulation combined do not exceed 25%: Provided that less than 50% of the navels may show minor granulation	



Quality factor	Class 1	Class 2	Lowest Class
(b) Minor frost damage, granulation and drying out: Provided that no major granulation is present	Permissible	Permissible	-
6. (a) Arthropoda infestation Occurrence of scale: No fruit shall contain more than twice the permitted number of scale per fruit with the exception of a tolerance of two fruit per consignment or 0,4% of the fruit examined whichever is the greater: Provided that the percentage of fruit with scale in excess of the number permitted per fruit, for the diameter concerned, does not exceed 2%	10%	10%	-
(b) Organisms which may be a source of danger to the human being	One of average per inspection sample	One of average per inspection sample	-
7. Blemishes, wilt, shrivelling, skin defects (skinburn, sunburn with drying out of flavedo and albedo, rough, coarse, thick, ribbed or ridged, creasing, other types of skin damage excluding injuries), malformation, bruises resulting in a soft flesh structure, underdeveloped or out of season, overripeness, hailmarks, oleocellosis and foreign matter	15%	20%	-
8. Too small flesh diameter in the case of grapefruit	5%	5%	-
9. Long stems	5%	5%	-
10. Colour	10%	10%	-
11. Absence of buttons	20%	20%	-
12. (a) Deviations from requirements for containers and packing requirements prescribed in regulations 5, 6, 7, and 9	10%	10%	-
(b) Incorrectly sealed flaps (excluding loose flaps)	5%	5%	-
(c) Loose flaps	Not permissible	Not permissible	-
13. Minimum diameter and uniformity in size			-
(a) Minimum diameter (too small)	10%	10%	
(b) Lack of uniformity in size in the same container	10%	10%	

Quality factor	Class 1	Class 2	Lowest Class
14. Deviations from marking requirements as prescribed in regulation 11 excluding date codes	Two containers per consignment	Two containers per consignment	-
15. Unpunched out ventilation holes	4%	4%	-
16. Absence of date codes	50%	50%	-
17. (a) Deviations not specified in items 1 to 8 of this table collectively, that affect the exterior appearance	10%	10%	-
(b) Deviations specified in paragraph (a) above and items 1 to 8 of this table collectively, that influence the external appearance: Provided that such deviations shall be individually within the specified limits: Provided further that the deviation for creasing for Class 2 be included in this collective 20%	15%	20%	-
18. Endoxerosis in case of Lemons			-
(a) Minor endoxerosis	5%	5%	-
(b) Major endoxerosis (dark brown to black)	1,5%	1,5%	-

NOTE: - No specifications

TABLE 3

**SIZE REFERENCES, DIAMETER REQUIREMENTS AND LIMITS FOR SCALE**

Kind of fruit	Size reference	Diameter (mm)	Maximum number of scale (All types collectively) per fruit (All classes)
Grapefruit	1	109 - 139	14
	2	100 - 119	13
	3	93 - 110	12
	4	88 - 102	11
	5	84 - 97	10
	6	81 - 93	9
	7	77 - 89	9
	8	73 - 85	8
	9	70 - 80	8
Pummelos (Shaddocks)	1	156 - 170	19
	2	148 - 162	18
	3	140 - 154	17
	4	132 - 146	16
	5	123 - 138	15
	6	116 - 129	14

Kind of fruit	Size reference	Diameter (mm)	Maximum number of scale (All types collectively) per fruit (All classes)
	7	110 - 118	13
Lemons	0	79 - 90	8
	1	72 - 83	8
	2	68 - 78	7
	3	63 - 72	6
	4	58 - 67	6
	5	53 - 62	5
	6	48 - 57	5
	7	45 - 52	4
Limes	1	58 - 67	4
	2	53 - 62	4
	3	48 - 57	4
	4	45 - 52	4
	5	42 - 49	4
Oranges and Seville- oranges	0	92 - 110	10
	1	87 - 100	10
	2	84 - 96	10
	3	81 - 92	9
	4	77 - 88	9
	5	73 - 84	8
	6	70 - 80	8
	7	67 - 76	7
	8	64-73	7
	9	62 - 70	6
	10	60 - 68	6
	11	58 - 66	5
	12	56 - 63	5
	13	53 - 60	5
Soft citrus	1 - xxx	78 and above	8
	1 - xx	67 - 78	7
	1 - x	63 - 74	7
	1	63 - 72	7
	2	58 - 69	6
	3	54 - 64	6
	4	50 - 60	6
	5	46 - 56	5
Soft citrus (continued)	6	43 - 52	5
	7	41 - 48	5
	8	39 - 46	4
	9	37 - 44	4
	10	25 - 42	4

## NOTE

\* Size below 45 mm refer only to Clementines

TABLE 4  
FLESH DIAMETER - GRAPEFRUIT AND POMELO'S

Fruit diameter (mm)	Minimum flesh diameter (mm) - All cultivars
70	56
71	56
72	57
73	57
74	58
75	59
76	59
77	60
78	61
79	61
80	62
81	63
82	63
83	64
84	64
85	65
86	66
87	67
88	67
89	68
90	69
91	70
92	70
93	71
94	72
95	72
96	73
97	74
98	74
99	75
100	76
101	77
102	77
103	78
104	79
105	80
106	80
107	81
108	82
109	83
110	83
111	83
112	84
113	85
114	85
115	86
116	87
117	88
118	88
119	89
120	90
121	90
122	91
123	91
124	91
125	92
126	92

Fruit diameter (mm)	Minimum flesh diameter (mm) - All cultivars
127	92
128	93
129	93
130	93
131	93
132	93
133	94
134	94
135	94
136	94
137	94
138	94
139	94

TABLE 5

## INTERNAL QUALITY REQUIREMENTS

Type of fruit	Minimum content for:			
	juice	Sugar: Acid Ratio	Brix	Acid
(a) (i) Grapefruit	40%	5,5:1	7,0 °B	-
(b) Pummelos (Shaddocks)	35%	9,0:1	9 °B	-
(c) Lemons	36%	-	-	-
(d) Limes	45%	-	-	-
(e) Oranges				
(i) Delta	48%	7,5:1	9,5°B	0,6
(ii) Midnight	48%	7,5:1	9,5°B	0,6
(iii) All other orange cultivars	42%	7,0:1	8,5 °B	0,6
(iv) Seville Oranges	45%	7,0:1	8,5 °B	0,65
(f) Soft citrus	48%	7,5:1	9,5°B	0,65

Note:

- No specifications

TABLE 6

**TEMPERATURE CORRECTION TABLE WHERE THE REFRACTOMETER IS  
USED AT TEMPERATURES OTHER THAN 20 °C**

Temp °C	Percentage of sugar										
	0	5	10	15	20	25	30	40	50	60	70
<b>Subtract from percentage of sugar</b>											
10	0.50	0.54	0.58	0.61	0.64	0.66	0.68	0.72	0.74	0.76	0.79
11	.46	.49	.53	.55	.58	.60	.62	.65	.67	.69	.71
12	.42	.45	.48	.50	.52	.54	.56	.58	.60	.61	.63
13	.37	.40	.42	.44	.46	.48	.49	.51	.53	.54	.55
14	.33	.35	.37	.39	.40	.41	.42	.44	.45	.46	.48
15	.27	.29	.31	.33	.34	.34	.35	.37	.38	.39	.40
16	.22	.24	.25	.26	.27	.28	.28	.30	.30	.31	.32
17	.17	.18	.19	.20	.21	.21	.21	.22	.23	.23	.24
18	.12	.13	.13	.14	.14	.14	.14	.15	.15	.16	.16
19	.06	.06	.06	.07	.07	.07	.07	.08	.08	.08	.08
<b>Add to percentage of sugar</b>											
21	0.06	0.07	0.07	0.07	0.07	0.08	0.08	0.08	0.08	0.08	0.08
22	.13	.13	.14	.14	.15	.15	.15	.15	.16	.16	.16
23	.19	.20	.21	.22	.22	.23	.23	.23	.24	.24	.24
24	.26	.27	.28	.29	.30	.30	.31	.31	.31	.32	.32
25	.33	.35	.36	.37	.38	.38	.39	.40	.40	.40	.40
26	.40	.42	.43	.44	.45	.46	.47	.48	.48	.48	.48
27	.48	.50	.52	.53	.54	.55	.55	.56	.56	.56	.56
28	.56	.57	.60	.61	.62	.63	.63	.64	.64	.64	.64
29	.64	.66	.68	.69	.71	.72	.72	.73	.73	.73	.73
30	.72	.74	.77	.78	.79	.80	.80	.81	.81	.81	.81