



**RWANDA
STANDARD**

**DRS
285**

Second edition

2020-mm-dd

(Reaffirmed yyyy-mm-dd)

**Hygienic practice for handling,
transportation and storage for
groundnuts— Code of practice**

ICS 67.060

Reference number

DRS 285: 2020

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Requests for permission to reproduce this document should be addressed to:

Rwanda Standards Board

P.O Box 7099 Kigali-Rwanda

KK 15 Rd, 49

Tel. +250 788303492

Toll Free: 3250

E-mail: info@rsb.gov.rw

Website: www.rsb.gov.rw

ePortal: www.portal.rsb.gov.rw

Contents	Page
Foreword	v
1 Scope	1
2 Normative references	1
3 Terms and definitions	1
4 Hygiene requirements in production/harvesting areas	2
4.1 Environmental hygiene in areas from which raw materials are derived	2
4.1.1 Unsuitable growing or harvesting areas	2
4.1.2 Protection from contamination by wastes	2
4.1.3 Irrigation control.....	2
4.1.4 Pest and disease control.....	2
4.2 Harvesting and production	2
4.2.1 General.....	2
4.2.2 Curing	3
4.2.3 Equipment and containers.....	3
4.2.4 Removal of obviously unfit materials.....	3
4.2.5 Protection of groundnuts (Peanuts) from contamination.....	3
4.3 Transportation.....	3
4.3.1 Conveyances	3
4.3.2 Handling procedures.....	4
4.4 Shelling plant.....	4
4.4.1 Purchasing of farmer's stock.....	4
4.4.2 Receiving and inspection.....	4
4.4.3 Unloading equipment and area.....	4
4.4.4 Pre-cleaning.....	5
4.4.5 Shelling and sizing	5
4.4.6 Sorting	5
4.4.7 Cleaning of special areas.....	5
5 Establishment: design and facilities	6
5.1 Location	6
5.2 Roadways and areas used by wheeled traffic.....	6
5.3 Buildings and facilities.....	6
5.3.1 General.....	6
5.3.2 In handling areas.....	6
5.4 Sanitary facilities	7
5.4.1 Water supply.....	7
5.4.2 Effluent and waste disposal.....	7
5.4.3 Changing facilities and toilets	7
5.4.4 Hand washing facilities in processing areas	8
5.4.5 Disinfection facilities.....	8
5.5 Lighting.....	8
5.6 Ventilation.....	8
5.7 Equipment and utensils	8
5.7.1 Materials	8
5.7.2 Sanitary design, construction and installation	9
6 Establishment: hygiene requirements.....	9
6.1 Maintenance	9
6.2 Cleaning and disinfection	9
6.3 Hygiene control programme	9

6.4	By products.....	10
6.5	Storage and disposal of waste	10
6.6	Exclusion of animals.....	10
6.7	Pest control	10
6.8	Storage of hazardous substances.....	10
6.9	Personal effects and clothing.....	11
7	Personnel hygiene and health requirements.....	11
7.1	Hygiene training	11
7.2	Medical examination	11
7.3	Communicable diseases.....	11
7.4	Injuries.....	11
7.5	Washing of hands	11
7.6	Personal cleanliness.....	11
7.7	Personal behaviour	12
7.8	Gloves.....	12
7.9	Visitors	12
8	Establishment: hygienic processing requirements.....	12
8.1	Raw material requirements.....	12
8.1.1	Acceptance criteria	12
8.1.2	Storage	12
8.2	Inspection and sorting.....	13
8.3	Prevention of cross-contamination.....	13
8.4	Use of water.....	13
8.5	Processing	14
8.6	Packaging.....	14
8.6.1	Lot identification	14
8.6.2	Processing and production records.....	15
8.7	Preservation of product.....	15
8.8	Storage and transport of end-product	15
8.8.1	General	15
8.8.2	Controlled storage conditions.....	15
8.9	Sampling and laboratory control procedures.....	16
8.10	End-product specifications	16

PUBLIC REVIEW

Foreword

Rwanda Standards are prepared by Technical Committees and approved by Rwanda Standards Board (RSB) Board of Directors in accordance with the procedures of RSB, in compliance with Annex 3 of the WTO/TBT agreement on the preparation, adoption and application of standards.

The main task of technical committees is to prepare national standards. Final Draft Rwanda Standards adopted by Technical committees are ratified by members of RSB Board of Directors for publication and gazettment as Rwanda Standards.

DRS 285 was prepared by Technical Committee RSB/TC 003, *Cereals, pulses, legumes and derived products*

This second edition cancels and replaces the first edition (RS 284: 2015), which has been technically revised.

Committee membership

The following organizations were represented on the Technical Committee on *Cereals, pulses, legumes and derived products* (RSB/TC 003) in the preparation of this standard.

Paragraph of participants

Rwanda Standards Board (RSB) – Secretariat

PUBLIC REVIEW

Hygienic practice for handling, transportation and storage for groundnuts— Code of practice

1 Scope

This Rwanda standard applies to groundnuts (peanuts). It contains the minimum requirements of hygiene for farm handling, transportation, storage, in-shell operations and commercial shelling. It covers all types and forms of raw, dried groundnuts (peanuts) in-shell and shelled.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

RS 184, *Requirements for hazard analysis critical control points*

ISO 542, *Oilseeds — Sampling*

ISO 664, *Oilseeds — Reduction of laboratory sample to test sample*

3 Terms and definitions

For the purposes of this standard, the following terms and definitions apply.

3.1

blows(pops)

in-shell nuts which are unusually light-weight due to extensive damage from physiological, mould, insect, or other causes and which can be removed, for example, by an air-separation process

3.2

curing

drying of in-shell groundnuts (peanuts) to a safe moisture level

3.3

farmer's stock groundnuts (peanuts)

in-shell groundnuts (peanuts) as they come from the farm, after separation from the vines by hand and/or mechanical means

3.4

safe water activity

water activity of in-shell and shelled groundnuts (peanuts) that will prevent growth of micro-organisms normal to the nut processing and storage environment

3.5

water activity

measure of free moisture in a product and is the water vapour pressure of the substance divided by the vapour pressure of pure water at the same temperature.

4 Hygiene requirements in production/harvesting areas

4.1 Environmental hygiene in areas from which raw materials are derived

4.1.1 Unsuitable growing or harvesting areas

Groundnuts should not be grown or harvested where the presence of potentially harmful substances can lead to an unacceptable level of such substances in the food.

4.1.2 Protection from contamination by wastes

Adequate precautions shall be taken to ensure that human and animal wastes are disposed of in such a manner as not to constitute a public health or hygiene hazard, and extreme care shall be taken to protect the products from contamination with these wastes. Vine and groundnuts waste should not be permitted to accumulate along with the harvested groundnut, in such a manner as to promote mould growth or to attract rodents or insects.

4.1.3 Irrigation control

Irrigation system and water used to grow groundnut shall not constitute health hazard to the consumer through the consumption of the product.

4.1.4 Pest and disease control

Control measures involving treatment with chemical, physical or biological agents shall be approved by the competent authority and should only be undertaken by or under direct supervision of personnel who have a thorough understanding of the potential hazards to health, particularly those which may arise from residues in the ground/groundnut product.

4.2 Harvesting and production

4.2.1 General

Methods and procedures associated with harvesting and production should be hygienic and such as not to constitute a potential health hazard or result in contamination of the product.

4.2.2 Curing

After being dug, pods shall be exposed for maximum rate of drying. This may be accomplished by turning the vines to leave the pods uppermost where they are away from the ground and exposed to sun and wind. Curing should be completed as rapidly as possible to a safe water activity so as to prevent growth of microorganisms, particularly moulds that produce aflatoxins. When curing by supplemental heat, excessive heat shall be avoided since this impairs the general quality of the nuts, e.g. splitting of kernels after shelling. Close checks of moisture content or water activity of lots of farmer's stock groundnuts should be maintained.

4.2.3 Equipment and containers

Equipment and containers used for harvesting and production shall be so constructed and maintained as not to constitute a hazard to health. Containers which are re-used should be of such material and construction as will permit easy and thorough cleaning. They should be cleaned and maintained clean and, where necessary, disinfected. Containers previously in contact with toxic materials shall not subsequently be used for holding groundnuts.

4.2.4 Removal of obviously unfit materials

Damaged or imperfect groundnuts and lots that contain any obvious contamination with human or animal wastes, insect infestation, decomposition, broken shells, embedded dirt, blows, or other defects to an extent which render them unfit for human consumption, shall be segregated during harvesting and production to the fullest extent practicable. Such separated unfit groundnuts shall be disposed of in such a place and in such a manner as to avoid contamination of sound nuts, water supplies, or other crops.

4.2.5 Protection of groundnuts (Peanuts) from contamination

Suitable precautions shall be taken to protect the nuts from contamination by domestic animals, rodents, birds, insects, mites and other arthropods, or other biological agents, or with chemical or other objectionable substances during handling and storage. The nuts shall be moved to suitable storage, or to the processing area for immediate processing, as soon as possible after harvesting or drying. Where nuts are likely to become infested with insects, mites (and other arthropods) during or after harvesting, suitable treatment such as fumigation or application of a pesticide spray shall be carried out as a preventive measure. Nuts shall be stored in covered containers, buildings, or under covering (e.g. pyramid stacking). Fumigation or spray methods and chemicals used shall be approved by the competent authority. High humidities which are conducive to proliferation of mould and elaboration of aflatoxins shall be avoided in storage areas in order to maintain groundnuts at a safe moisture level.

4.3 Transportation

4.3.1 Conveyances

4.3.1.1 Conveyances for transporting the harvested crop from the place of harvest or storage shall be adequate for the purpose intended and shall be of such material and construction as will permit thorough cleaning and treatment with pesticides and shall be so cleaned and maintained as not to constitute a source of contamination to the product. In addition, bulk transport such as ship or rail car shall be well ventilated with dry air to remove moisture resulting from respiration of the groundnuts and to prevent moisture condensation as the vehicle moves from warm to cool regions or from day to night.

4.3.1.2 Before loading, the conveyance shall be examined for cleanliness, insect infestation, dampness or unusual odours. If it is not fully enclosed, it shall have available a covering such as a tarpaulin to keep out the rain or other forms of water.

4.3.2 Handling procedures

All handling procedures should be such as to prevent the product from becoming contaminated. Extreme care should be taken in transporting groundnuts with an unsafe moisture level to prevent spoilage or deterioration.

4.4 Shelling plant

4.4.1 Purchasing of farmer's stock

Most of the damage may have already been done to the groundnuts during growing, harvesting, curing, handling and storage. A buyer for a shelling plant, whether located at the plant or at an outlying commission buying point, shall monitor the quality of ground nut lots offered to him, and with the Government advisory agencies assist farmers and suppliers in eliminating improper practices.

4.4.2 Receiving and inspection

4.4.2.1 Farmer's stock groundnuts received at the shelling plant shall be inspected on arrival. It is advisable to know the origin and history of each lot of groundnuts.

4.4.2.2 The general appearance of the groundnuts should be observed during the process of unloading. If the groundnuts are wet to the touch, insect infested, insect damaged, or contain an unusual amount of dirt, debris or other foreign material, they shall not be co-mingled with known good groundnuts. The vehicle which contains groundnuts should be set aside until a decision is made for their disposal. If possible, remove a sample from each lot, separate the "loose shelled" kernels and shell the remainder for groundnuts grade observation before an acceptance decision is made. Examine all loose shelled, damaged and under-sized kernels for possible presence of mould. If no external mould is seen, split the kernels to disclose possible hidden mould growth. Excessive mould or presence of mould resembling *A. flavus* warrants a chemical test for aflatoxin or rejection of the lot.

4.4.2.3 If the groundnuts are to be stored in a bulk warehouse or storage bin, the warehouse or bin shall be thoroughly cleaned of all debris and extraneous material and fumigated or otherwise treated with a pesticide before use, if necessary. Groundnuts shall not be stored in a warehouse containing any openings which may permit entrance of rodents or birds or which may have leaks in the roof or walls that can allow the rain to enter. The warehouse shall be checked frequently for leaks or infestation, both before and after filling. To prevent condensation drippage, warehouses shall be ventilated as, for example, by screening around tops or eaves.

4.4.3 Unloading equipment and area

Unloading equipment such as an unloading hopper, conveyor belt, bucket elevator, and dirt removing equipment shall be so designed as to prevent accumulation of debris. Only areas which can be easily inspected and cleaned shall be used for processing groundnuts. A programme of periodic cleaning together with preventive pest control measures shall be carried out. Groundnuts should be handled so as to avoid cracking or tearing of hulls which may permit damage to the kernels.

4.4.4 Pre-cleaning

The maximum possible amount of dust and dirt shall be removed from the farmer's stock groundnuts before they enter the shelling plant. The maximum possible amount of foreign material, loose shell, loose kernels, stones and blows shall be removed.

4.4.5 Shelling and sizing

4.4.5.1 All foreign material should be removed from the shelled groundnuts (using stoners, magnets, sorters, etc.). The shelled groundnuts shall be continuously inspected to determine whether the plant equipment is performing properly and the groundnuts are free of foreign material, damage and contamination. Any equipment adjustments indicated by the inspection shall be made promptly.

4.4.5.2 Once the shelled groundnuts are size graded, additional stoning should be done in order to remove small light stones, dirt balls and other foreign material which could not be removed in the farm stock stoners. Special care should be taken to avoid overloading size grading equipment.

4.4.6 Sorting

Sorting shall be done to remove the remaining debris and defective kernels. Foreign material and defective kernels (mouldy, discoloured, rancid, decayed, shrivelled, insect or otherwise damaged) shall be bagged separately and tagged as unsuitable for human or animal consumption. Containers of defective groundnuts shall be removed as soon as practicable from the processing room. Materials which carry the danger of contamination by aflatoxin, or which are contaminated shall be destroyed in accordance with the applicable regulation.

4.4.7 Cleaning of special areas

4.4.7.1 Boots or wells of elevators, canvas conveyor belts and pulleys accumulate groundnuts and ground nut material. Retained material shall be removed and those areas shall be cleaned and sprayed and/or fumigated as necessary to prevent insect and rodent infestation. Fumigation or spray methods and chemicals used should be approved by the competent authority.

4.4.7.2 Storage and surge hoppers shall be cleaned and sprayed between runs.

4.4.7.3 Every piece of machinery whether open or enclosed shall be cleaned of lodged material on a regular schedule.

4.4.7.4 The area immediately surrounding the plant shall be kept clean of all debris that might attract insects, rodents or birds and subjected to an adequate pest control programme.

4.4.7.5 Dry clean-up procedures should be utilized to avoid wet spots in which micro-organisms can propagate and contaminate contacted groundnuts kernels.

5 Establishment: design and facilities

5.1 Location

Establishments shall be located in areas which are free from objectionable odours, smoke, dust or other contaminants and are not subject to flooding.

5.2 Roadways and areas used by wheeled traffic

Such roadways and areas serving the establishment which are within its boundaries or in its immediate vicinity shall have a hard paved surface suitable for wheeled traffic. There shall be adequate drainage and provision should be made to allow for cleaning.

5.3 Buildings and facilities

5.3.1 General

5.3.1.1 Buildings and facilities shall be of sound construction and maintained in good repair.

5.3.1.2 Adequate working space shall be provided to allow for satisfactory performance of all operations.

5.3.1.3 The design shall be such as to permit easy and adequate cleaning and to facilitate proper supervision of food hygiene.

5.3.1.4 The buildings and facilities shall be designed to prevent the entrance and harbouring of pests and should minimize to the minimum possible the entry of environmental contaminants such as smoke, dust, etc.

5.3.1.5 Buildings and facilities shall be designed to provide separation, by partition, location or other effective means, between those operations which may cause cross-contamination.

5.3.1.6 Buildings and facilities shall be designed to facilitate hygienic operations by means of a regulated flow in the process from the arrival of the raw material at the premises to the finished product, and should provide for appropriate temperature conditions for the process and the product.

5.3.2 In handling areas

5.3.2.1 Floors shall be of water-proof, non-absorbent, washable, non-slip and non-toxic materials, without crevices, and shall be easy to clean and disinfect. Where appropriate, floors should slope sufficiently for liquids to drain to trapped outlets.

5.3.2.2 Walls, where appropriate, should be of water-proof, non-absorbent, washable and non-toxic material and should be light coloured. Up to a height appropriate for the operation they should be smooth and without crevices, and should be easy to clean and disinfect. Where appropriate, angles between walls, between walls and floors and between walls and ceilings should be sealed and curved to facilitate cleaning.

5.3.2.3 Ceilings shall be so designed, constructed and finished as to prevent the accumulation of dirt and minimize condensation, mould development and flaking, and should be easy to clean

5.3.2.4 Windows and other openings should be so constructed as to avoid accumulation of dirt and those which open shall be fitted with screens. Screens shall be easily movable for cleaning and kept in good repair. Internal window sills, if present, should be sloped to prevent use as shelves.

5.3.2.5 Doors shall have smooth, non-absorbent surfaces and, where appropriate they should be self-closing and close fitting.

5.3.2.6 Stairs, lift cages and auxiliary structures such as platforms, ladders and chutes shall be so situated and constructed as not to cause contamination to ground/groundnut product.

5.3.2.7 All overhead structures and fittings shall be installed in such a manner as to avoid contamination directly or indirectly of ground/groundnut product and raw materials by condensation and drip, and shall not hamper cleaning operations. They should be insulated, where appropriate, and be so designed and finished as to prevent the accumulation of dirt and to minimize condensation, mould development and flaking. They shall be easy to clean.

5.3.2.8 Living quarters, toilets and areas where animals are kept shall be completely separated from and should not open directly on to ground/ground product handling areas.

5.3.2.9 Where appropriate, establishments should be so designed that access can be controlled.

5.3.2.10 The use of material which cannot be adequately cleaned and disinfected, such as wood should be avoided unless its use would clearly not be a source of contamination.

5.4 Sanitary facilities

5.4.1 Water supply

5.4.1.1 An adequate supply of potable water with appropriate facilities for its storage, distribution and temperature control, should be available whenever necessary to ensure the safety and suitability of groundnut/groundnut product.

5.4.1.2 Non-potable water (for use in, for example, fire control, steam production, refrigeration and other similar purposes where it would not contaminate groundnut/groundnut products), shall have a separate system. Non-potable water systems shall be identified and shall not connect with, or allow reflux into, potable water systems.

5.4.2 Effluent and waste disposal

Establishments shall have an efficient effluent and waste disposal system which shall at all times be maintained in good order and repair. All effluent lines (including sewer systems) should be large enough to carry peak loads and shall be so constructed as to avoid contamination of potable water supplies.

5.4.3 Changing facilities and toilets

Adequate, suitable and conveniently located changing facilities and toilets shall be provided in all establishments. Toilets should be so designed as to ensure hygienic removal of waste matter. These areas should be well lit, ventilated and, where appropriate, heated and shall not open directly on to groundnut/groundnut products handling areas. Hand washing facilities, suitable hand-cleaning preparation

and suitable hygienic means of drying hands shall be provided for adjacent to toilets. Where hot and cold water are available mixing taps should be provided. Where paper towels are used, a sufficient number of dispensers and receptacles should be provided near to each washing facility. Taps of a non-hand operable type are desirable. Notices should be posted directing personnel to wash their hands after using the toilet.

5.4.4 Hand washing facilities in processing areas

Adequate and conveniently located facilities for hand washing and drying should be provided wherever the process demands. Where appropriate, facilities for hand disinfection should also be provided. Warm or hot and cold water and a suitable hand-cleaning preparation should be provided. Where hot and cold water are available mixing taps should be provided. There should be suitable hygienic means of drying hands. Where paper towels are used, a sufficient number of dispensers and receptacles should be provided adjacent to each washing facility. Taps of a non-hand operable type are desirable. The facilities should be furnished with properly trapped waste pipes leading to drains.

5.4.5 Disinfection facilities

Where appropriate, adequate facilities for cleaning and disinfection of working implements and equipment shall be provided. These facilities shall be constructed of corrosion-resistant materials capable of being easily cleaned, and should be fitted with suitable means of supplying hot and cold water in sufficient quantities.

5.5 Lighting

Adequate natural or artificial lighting shall be provided throughout the establishment. Lighting shall not be such that the resulting colour is misleading. The intensity should be adequate to the nature of the operation. Lighting fixtures should, where appropriate be protected to ensure that groundnut/groundnut products are not contaminated by breakages.

5.6 Ventilation

Adequate ventilation shall be provided to prevent excessive heat, steam condensation and dust and to remove contaminated air. The direction of the air flow shall never be from a dirty area to a clean area. Ventilation openings should be provided with a screen or other protecting enclosure of non-corrodible material. Screens shall be easily removable for cleaning.

5.7 Equipment and utensils

5.7.1 Materials

All equipment and utensils used in groundnut/groundnut products handling areas and which may contact groundnut/groundnut products shall be made of material which does not transmit toxic substances, odour or taste, is non-absorbent, is resistant to corrosion and is capable of withstanding repeated cleaning and disinfection. Surfaces should be smooth and free from pits and crevices. The use of wood and other materials which cannot be adequately cleaned and disinfected should be avoided except when their use would clearly not be a source of contamination.

5.7.2 Sanitary design, construction and installation

5.7.2.1 All equipment and utensils shall be so designed and constructed as to prevent hygienic hazards and permit easy and thorough cleaning and disinfection and, where practicable, be visible for inspection. Stationary equipment shall be installed in such a manner as to permit easy access and thorough cleaning.

5.7.2.2 Containers for inedible material and waste shall be leak-proof, constructed of metal or other suitable impervious material which shall be easy to clean or disposable and able to be closed securely.

5.7.2.3 Equipment and utensils used for inedible materials or waste shall be so identified and shall not be used for edible products.

5.7.2.4 All refrigerated spaces shall be equipped with temperature measurement or recording devices.

6 Establishment: hygiene requirements

6.1 Maintenance

The buildings, equipment, utensils and all other physical facilities of the establishment, including drains, shall be maintained in good repair and in an orderly condition. As far as practicable, rooms should be kept free from steam, vapour and surplus water.

6.2 Cleaning and disinfection

6.2.1 To prevent contamination of groundnut/groundnut products, all equipment and utensils shall be cleaned as frequently as necessary and disinfected whenever circumstances demand.

6.2.2 Adequate precautions shall be taken to prevent groundnut/groundnut products from being contaminated during cleaning or disinfection of rooms, equipment or utensils by water and detergents or by disinfectants and their solutions. Detergents and disinfectants shall be suitable for the purpose intended and shall be acceptable to the competent authority. Any residues of these agents on a surface which may come in contact with groundnut/groundnut products shall be removed by thorough rinsing with water, before the area or equipment is again used for handling groundnut/groundnut products.

6.2.3 Either immediately after cessation of work for the day or at such other times as may be appropriate, floors, including drains, auxiliary structures and walls of groundnut/groundnut products handling areas should be thoroughly cleaned.

6.2.4 Changing facilities and toilets shall be kept clean at all times.

6.2.5 Roadways and yards in the immediate vicinity of and serving the premises should be kept clean.

6.3 Hygiene control programme

A permanent cleaning and disinfection schedule shall be drawn up for each establishment to ensure that all areas are appropriately cleaned and that critical areas, equipment and material are designated for special attention. A single individual who should preferably be a permanent member of the staff of the establishment and whose duties should be independent of production shall be appointed to be responsible for the

cleanliness of the establishment. He shall have a thorough understanding of the significance of contamination and the hazards involved. All cleaning personnel shall be well-trained in cleaning techniques.

6.4 By products

By-products shall be stored in such a manner as to avoid contamination of groundnut/groundnut products. They shall be removed from the working areas as often as necessary and at least daily.

6.5 Storage and disposal of waste

Waste material shall be handled in such a manner as to avoid contamination of groundnut/groundnut products or potable water. Care should be taken to prevent access to waste by pests. Waste shall be removed from the groundnut/groundnut products handling and other working areas as often as necessary and at least daily. Immediately after disposal of the waste, receptacles used for storage and any equipment which has come into contact with the waste shall be cleaned and disinfected.

6.6 Exclusion of animals

Animals that are uncontrolled or that could be a hazard to health shall be excluded from establishments.

6.7 Pest control

6.7.1 There shall be an effective and continuous programme for the control of pests. Establishments and surrounding areas shall be regularly examined for evidence of infestation.

6.7.2 Should pests gain entrance to the establishment, eradication measures shall be instituted. Control measures involving treatment with chemical, physical or biological agents shall only be undertaken by or under direct supervision of personnel who have a thorough understanding of the potential hazards to health resulting from the use of these agents, including those hazards which may arise from residues retained in the product and shall be approved by the competent authority.

6.7.3 Pesticides should only be used if other precautionary measures cannot be used effectively. Before pesticides are applied, care shall be taken to safeguard all groundnut/groundnut products, equipment and utensils from contamination. After application, contaminated equipment and utensils shall be thoroughly cleaned to remove residues prior to being used again.

6.8 Storage of hazardous substances

6.8.1 Pesticides or other substances which may represent a hazard to health shall be suitably labelled with a warning about their toxicity and use. They should be stored in locked rooms or cabinets and the room shall be used only for that purpose and dispensed and handled only by authorized and properly trained personnel or by persons under strict supervision of trained personnel. Extreme care shall be taken to avoid contaminating groundnut/groundnut products.

6.8.2 Except when necessary for hygienic or processing purposes, no substance which could contaminate groundnut/groundnut products shall be used or stored in groundnut/groundnut products handling areas.

6.9 Personal effects and clothing

Personal effects and clothing shall not be deposited in groundnut/groundnut products handling areas.

7 Personnel hygiene and health requirements

7.1 Hygiene training

Managers of establishments should arrange for adequate and continuing training of all food handlers in hygienic handling of food and in personal hygiene so that they understand the precautions necessary to prevent contamination of food. Instruction should include relevant parts of this standard.

7.2 Medical examination

Persons who come into contact with food in the course of their work shall have a medical examination prior to their employment if the competent authority, acting on medical advice, considers that this is necessary, either because of epidemiological considerations, the nature of the food prepared in a particular establishment or the medical history of the prospective food handler. Medical examination of a food handler shall be carried out at other times when clinically or epidemiologically indicated.

7.3 Communicable diseases

The management shall take care to ensure that no person, while known or suspected to be suffering from, or to be a carrier of a disease likely to be transmitted through food or while afflicted with infected wounds, skin infections, sores or with diarrhoea, is permitted to work in any food handling area in any capacity in which there is any likelihood of such a person directly or indirectly contaminating food with pathogenic microorganisms. Any person so affected shall immediately report to the management.

7.4 Injuries

Any person who has a cut or wound shall not continue to handle food or food contact surfaces until the injury is completely protected by a waterproof covering which is firmly secured, and which is conspicuous in colour. Adequate first-aid facilities should be provided for this purpose.

7.5 Washing of hands

Every person, while on duty in a food handling area shall wash his hands frequently and thoroughly with a suitable hand-cleaning preparation under running potable water which shall comply with RS EAS 12. Hands shall always be washed before commencing work, immediately after using the toilet, after handling contaminated material and whenever else necessary. After handling any material which might be capable of transmitting disease, hands shall be washed and disinfected immediately. Notices requiring hand-washing should be displayed. There shall be adequate supervision to ensure compliance with this requirement.

7.6 Personal cleanliness

Every person engaged in a food handling area shall maintain a high degree of personal cleanliness while on duty, and should at all times while so engaged wear suitable protective clothing including head covering and footwear, all of which articles should be cleanable unless designed to be disposed of and shall be maintained

in a clean condition consistent with the nature of the work in which the person is engaged. Aprons and similar items shall not be washed on the floor. During periods where food is manipulated by hand, any jewellery that cannot be adequately disinfected shall be removed from the hands. Personnel shall not wear any insecure jewellery when engaged in food handling.

7.7 Personal behaviour

Any behaviour which could result in contamination of food, such as eating, use of tobacco, chewing (e.g. gum, sticks, betel nuts, etc.) or unhygienic practices such as spitting, shall be prohibited in food handling areas.

7.8 Gloves

Gloves, if used in the handling of groundnut/groundnut products, shall be maintained in a sound, clean and sanitary condition. The wearing of gloves does not exempt the operator from having thoroughly washed hands

7.9 Visitors

Precautions shall be taken to prevent visitors to groundnut/groundnut products handling areas from contaminating groundnut/groundnut products. These shall include the use of protective clothing. Visitors shall observe the provisions recommended in 6.9, 7.3, 7.4 and 7.7

8 Establishment: hygienic processing requirements

8.1 Raw material requirements

8.1.1 Acceptance criteria

8.1.1.1 Groundnuts shall not be accepted by the plant if known to contain decomposed, toxic, or extraneous substances which cannot be reduced to acceptable levels by normal plant procedures, sorting or preparation.

8.1.1.2 Special precautions shall be taken to reject nuts showing signs of insect damage or mould growth because of the danger of their containing mycotoxins such as aflatoxins. Aflatoxin test results shall be known before allowing lots of raw groundnuts to be processed.

8.1.1.3 Any lot of raw groundnuts with an unacceptable level of aflatoxins, which cannot be reduced to permitted levels by the available sorting equipment, shall not be accepted.

8.1.2 Storage

8.1.2.1 Raw materials stored on the plant premises shall be maintained under conditions that protect against contamination and infestation and minimize deterioration.

8.1.2.2 The warehouse should be of sound construction, in good repair and built and equipped so that it can provide suitable storage and adequate protection for groundnuts. All break, or openings in the walls, floors, around the windows and eaves or roof shall have been repaired. Screens should be used only in those areas of the building where moisture entry from precipitation cannot occur.

8.1.2.3 The building shall have sufficient ventilation to prevent accumulation of moisture where it can condense and wet the groundnuts. Provision shall be made in existing storages or at the design stage in new storages for gas tightness to permit in situ fumigation of peanuts.

8.1.2.4 Area with new concrete floors or walls should not be used for storage until it is absolutely certain that the new concrete is well-cured and free of excess water. If used, it is safest to use an approved plastic cover spread over the entire new concrete floor as a moisture barrier prior to use for groundnuts. However, other means of protecting the groundnuts against moisture from "sweating" of concrete can be used, such as stacking of containers on pallets.

8.1.2.5 Products which affect the storage life, quality or flavour of groundnuts shall not be stored in the same room or compartment as groundnuts.

8.2 Inspection and sorting

8.2.1 Prior to introduction into the processing line, or at a convenient point within it, raw materials shall be inspected, sorted or culled as required to remove unfit materials such as mouldy, discoloured, shrivelled, insect damaged or otherwise damaged groundnuts.

8.2.2 To remove mould-contaminated nuts effectively, sorting should be performed before and after blanching and roasting. Where splitting is part of the processing operation, nuts that resist splitting shall be removed. The effectiveness of sorting techniques shall be checked by regular aflatoxin analyses of the sorted groundnuts stream or of the finished product, or both.

8.2.3 Rejected groundnuts from the sorting procedure (pickouts) shall be destroyed or segregated from edible products. If they are to be used for crushing, they shall be separately bagged and tagged as unsuitable for direct human or animal consumption in their present state.

8.3 Prevention of cross-contamination

8.3.1 Effective measures shall be taken to prevent contamination of food material by direct or indirect contact with material.

8.3.2 Persons handling raw materials or semi-processed products capable of contaminating the end product shall not come into contact with any end-product unless and until they discard all protective clothing worn during the handling of raw materials or semi-processed products and they have changed into clean protective clothing.

8.3.3 If there is a likelihood of contamination, hands shall be washed thoroughly between handling products at different stages of processing.

8.3.4 All equipment which has been in contact with raw materials or contaminated material shall be thoroughly cleaned and disinfected prior to being used for contact with end-products.

8.4 Use of water

8.4.1 As a general principle only potable water as defined in RS EAS 12 shall be used in groundnut/groundnut products handling.

8.4.2 Non-potable water may be used with the acceptance of food safety manager for steam production, refrigeration, fire control and other similar purposes not connected with food. However, non-potable water may, with specific acceptance by food safety manager, be used in certain food handling areas provided this does not constitute a hazard to health.

8.4.3 Water re-circulated for re-use within an establishment should be treated and maintained in a condition so that no health hazard can result from its use. The treatment process shall be kept under constant surveillance. Alternatively, re-circulated water which has received no further treatment may be used in conditions where its use would not constitute a health hazard and not contaminate either the raw material or the end-product.

8.4.4 Re-circulated water shall have a separate distribution system which can be readily identified. The acceptance of food safety manager should be required for any treatment process and for the use of recirculated water in any food process.

8.5 Processing

8.5.1 Processing shall be supervised by technically competent personnel.

8.5.2 All steps in the production process, including packaging, should be performed without unnecessary delay and under conditions which can prevent the possibility of contamination, deterioration, or the development of pathogenic and spoilage microorganisms.

8.5.3 Rough treatment of containers shall be avoided to prevent the possibility of contamination of the processed product.

8.5.4 Methods of preservation and necessary controls should be such as to protect against contamination or development of a public health hazard and against deterioration within the limits of good commercial practice.

8.6 Packaging

8.6.1 All packaging material shall be stored in a clean and sanitary manner. The material shall be appropriate for the product to be packed and for the expected conditions of storage and shall not transmit to the product objectionable substances beyond the limits acceptable to the standards. The packaging material shall be sound and provide appropriate protection from contamination.

8.6.2 Product containers shall not have been used for any purpose which may lead to contamination of the product. Where practicable containers should be inspected immediately before use to ensure that they are in a satisfactory condition and where necessary cleaned and/or disinfected; when washed they shall be well drained before filling. Only packaging material required for immediate use should be kept in the packing or filling area.

8.6.3 Packing should be done under conditions that preclude the introduction of contamination into the product.

8.6.1 Lot identification

Each container shall be permanently marked in code or in clear to identify the producing factory and the lot. A lot is a quantity of food produced under identical conditions, all packages of which shall bear a lot number that

identifies the production during a particular time interval, and usually from a particular "line" or other critical processing unit.

8.6.2 Processing and production records

Permanent, legible and dated records of pertinent processing and production details should be kept concerning each lot. These records shall be retained for a period that exceeds the shelf life of the product, but unless a specific need exists they need not be kept for more than two years. Records shall also be kept of the initial distribution by lot.

8.7 Preservation of product

In-shell nuts or shelled nuts (nut meats) shall be stored at a safe moisture level. Finished products may be treated with antioxidants at levels approved by the Codex Alimentarius Commission and packed in gas tight containers under nitrogen or vacuum to protect quality and retard possible mould growth.

8.8 Storage and transport of end-product

8.8.1 General

Groundnuts shall be stored and transported under such conditions as to maintain the integrity of the container and the product within it. Carriers shall be clean, dry, weatherproof, free from infestation and sealed to prevent water, rodents or insects from reaching the peanuts. Groundnuts shall be loaded, held and unloaded in a manner that protects from damage or water. Well insulated carriers or refrigerated vehicles are recommended for transport when climatic conditions indicate such a need. Extreme care shall be taken to prevent condensation when unloading groundnuts from cold storage or from a refrigerated vehicle. In warm, humid weather, the groundnuts should be allowed to reach ambient temperature before exposure to external conditions. Groundnuts that have been spilled are vulnerable to contamination and should not be used for edible products. All products shall be stored in clean, dry buildings, protected from insects, mites and other arthropods, rodents, birds, or other vermin, chemical or microbiological contaminants, debris and dust.

8.8.2 Controlled storage conditions

8.8.2.1 Control of mould growth

8.8.2.1.1 An environment with a relative humidity between 55 % and 65 % should be maintained to protect quality and prevent mould growth. No groundnuts should be stored closer than 1 m from wall.

8.8.2.1.2 An active programme should be maintained to detect and control hazards from damp pallets, damp floors and walls, overhead moisture during storage, condensation, wet unloading and loading out condition, all conducive to moisture pick-up and mould. Growth of toxigenic moulds may be prevented by packing nut products that have been dried to a "safe water activity" or by storing at a temperature sufficiently low to prevent mould growth. Exposed nut products in storage may be maintained at or dried to a "safe water activity" by control of the relative humidity of the circulating air. Those who use refrigerated storage should be aware that the water activity of nuts increases with increased temperature; this fact should be taken into account when changing storage temperatures. If the storage temperature of groundnuts is changed, e.g., cold groundnuts transferred to an area of high humidity or vice versa, care should be taken to see that moisture does not condense on the groundnuts.

8.8.2.2 Control of infestation by insects, mites and other arthropods

8.8.2.2.1 Groundnuts should be stored in such a manner that infestation can be controlled by such methods as anaerobic or refrigerated storage or fumigation prior to storage.

8.8.2.2.2 Stored groundnuts shall be inspected regularly and, if infested, fumigated by appropriate methods. If necessary, they can be removed for fumigation. In this case the storage areas shall be separately cleaned and disinfected.

8.9 Sampling and laboratory control procedures

8.9.1 In addition to any control by the competent authority, it is desirable that each plant should have its own or contracted laboratory control of the hygienic quality of the nut products processed and of the pest control procedures. The amount and type of such control should vary with the different nut products as well as the needs of management. Such control should provide for rejection of all nuts that are unfit for human consumption and monitoring of the quality of the finished products.

8.9.2 Where appropriate, representative samples of the production should be taken to assess the safety and quality on the product and shall be done in accordance with ISO 542 and ISO 664.

8.9.3 Laboratory procedures used shall follow recognized or standard methods in order that the results may be readily interpreted.

8.10 End-product specifications

8.10.1 To the extent possible in good manufacturing practice the products shall be free from objectionable matter and shall not contain any substance in amounts which may represent a hazard to health.

8.10.2 When tested by appropriate methods of sampling and examination, and in additions to the specific product standard requirements, the products shall:

- a) be free from pathogenic micro-organisms in amounts which may represent a hazard to health; and
- b) not contain any substances originating from micro-organisms, particularly aflatoxin, in amounts which exceed the tolerances or criteria established by the relevant regulation.

8.10.3 The products shall comply with the provisions for food additives and contaminants laid down in Codex Commodity Standards and with maximum levels for pesticide residues recommended by the Codex Alimentarius Commission.

Bibliography

[1] RS 285: 2015 Hygienic practice for handling, transportation and storage for groundnuts— Code of practice, First edition

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