

## LEARNING FACILITATING MATERIALS

### NATIONAL PROFICIENCY LEVEL 2

### TRADE AREA: **CASHEW PROCESSING**

#### UNIT 6

### **MANUAL CASHEW KERNEL PROCESSING**



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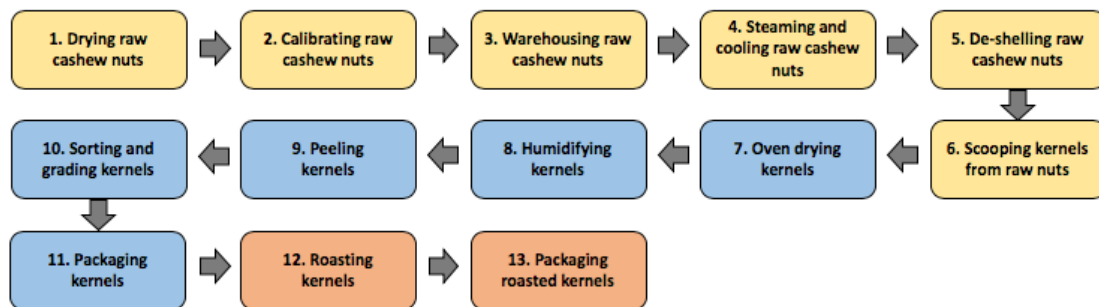


## UNIT INTRODUCTION

Welcome to Unit 6 of your learning journey in manual cashew kernel processing. This guide explains the main steps in the manual cashew kernel processing process.

The flow chart below shows the entire processing process in 13 steps and will guide you throughout this unit:

- Yellow: Raw cashew nut processing
- Blue: Cashew kernel processing
- Orange: Cashew kernel roasting



In this unit, you will learn about steps 9 to 13. The learning material covers five sub-units:

- 1) Peeling cashew kernel (Step 9)
- 2) Sorting and grading cashew kernel (Step 10)
- 3) Packaging cashew kernel (Step 11)
- 4) Roasting cashew kernel (Step 12)
- 5) Packaging roasted cashew kernel (Step 13)

Each sub-unit contains theoretical and practical exercises. Each module includes written materials, visuals as well as self-assessments to test your knowledge and skills.

The benefit of learning this information is to produce high-quality cashew kernels for the domestic and international market. The better the quality of your cashew kernels, the higher your processing margins! If you produce high-quality cashew kernels, you can build a stable customer base.

Even though, this learning material provides essential information on manual cashew kernel processing for National Proficiency Level 2, you should also look out for new information, innovations and technological advances during your practical work that expand your knowledge and skills.

Are you ready to start your cashew learning journey? Let's start!

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## ICONS



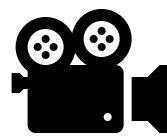
LEARNING  
OBJECTIVES



ATTENTION



PRACTICALS  
HANDS ON



WATCH VIDEO



SELF ASSESSMENT



WELL DONE!



TAKE A BREAK!

## ABBREVIATIONS

Here are some commonly used abbreviations.

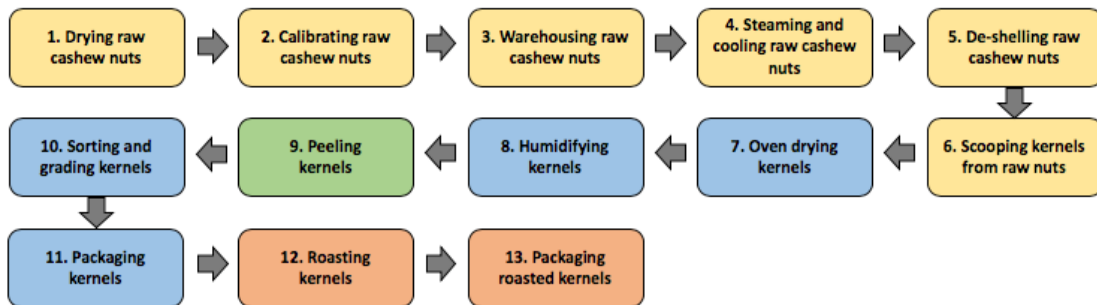
°C	Degree Celsius
CNSL	Cashew Nut Shell Liquide
g	Gram ( <i>1000 g = 1 kg</i> )
kg	Kilogram ( <i>1 kg = 1000 g</i> )
lb	Pound ( <i>1 Pound = 0,453592 kg</i> )
lbs	Pounds

## 1. DEMONSTRATE SKILLS FOR PEELING CASHEW KERNEL

### a) Explain peeling cashew kernel

Peeling is the process of removing the entire testa from the kernel. In the manual peeling process, you rub the heat-treated and humidified kernel gently between your fingers and the palm of your hands to remove the testa. If some parts of the testa are still attached to the kernel, use a knife to carefully scrape off the testa from the kernel.

The green field indicates the step of the processing process you are currently studying.



For more information on peeling cashew kernel, watch video on *Cashew Processing in Ghana* from Minute 2:18 to 2:44, watch video on *Cashew Nut Processing – Peace Corps Ghana* from Minute 3:37 to 3:53, watch video on *African cashew processing* from Minute 4:13 to 4:31.



Source: GIZ/ComCashew – Peeling cashew kernel with knife

**b) State the importance of peeling in cashew kernel processing**

The manual peeling process looks easy at first, but you must take a lot of care in order not to cut, scratch or damage the cashew kernel during the peeling process. Peeling is important because processors can maximize their revenues, if the peelers obtain the maximum yield of whole white cashew kernels.



Source: GIZ/ComCashew – Woman peeling cashew kernels

### c) State the factors to consider in peeling cashew kernel

It is essential that peelers work in a light room or under a lamp that provides enough light to enable them to remove the entire testa from the kernel. Gentle rubbing between the fingers or scraping of the testa with a blunt knife is the most effective way to remove the testa. Due to the unique shape of the cashew kernels, the peeling process is mostly done manually.



In peeling, avoid scratching of the kernel to avoid weight loss and breakage.



Source: GIZ/ComCashew – Peeling table in cashew processing factory

The success of manual and mechanised peelers in removing the testa without damaging the kernel largely depends on the:

- inherent peelability of the kernels
- efficiency of the thermal shock treatment to a moisture content of 4 - 5 %
- efficiency and experience of the workforce



Strict cleanliness in the peeling room and peeling facilities are very important.



All personnel must follow basic codes of hygiene and wash their hands with soap and disinfectant before peeling the cashew kernels and each time they leave the working desk.





After peeling, weigh your kernels. Register the weight of wholes, broken and bad kernels separately in a daily work sheet. This helps to monitor the quality of work done.

During peeling, cashew kernels are already separated into white wholes, scorched wholes, white pieces, scorched pieces, browns and rejects. The dust and very fine pieces are cleaned by a piece separator and used as ingredients in ice-cream toppings and bakeries products. The damaged nuts that cannot be peeled, together with the diseased brown pieces, are classified as rejects and are discarded. However, some are used as animal feed.



An experienced peeler can peel 20 – 25 kg of cashew kernels in an 8-hour shift.

Bonuses are often paid to highly efficient peelers.

#### d) State the uses of tools for peeling

Most factories use peeling machines combined with manual peeling:

- **Peeling machines** use friction and air pressure to remove the testa from the kernel.
  - The heat-treated and humidified kernels are fed into the peeling machine and passed through a rotating cylinder with brushes
  - The testa is then separated by blowing compressed air on the kernel



Source: <https://www.mktech.vn/products/automatic-cashew-peeling-machinery/>

- In manual peeling, the testa is removed by hand or with the help of a **small knife**.



Source: <https://www.medizinische-instrumente-may.de/set-6x-solingen-kuechenmesser-kleines-solinger-allzweckmesser-fuer-die-kueche-gemuesemesser-obstmesser-schaelmesser-gerade-schneide-edelstahl-rostfrei-gelbes-heft.html>



Mechanised peeling machines are unable to remove the entire testa from the kernel. Therefore, mechanised peeling is often combined with manual peeling to fully remove the testa.

The peeled kernels must be stored in **containers** to avoid:

- insect infestation
- mould growth
- rodent attack



Source: <https://www.globalindustrial.com/p/storage/bins-totes-containers/shipping-security/distribution-container-with-hinged-lid-27-1-2x16-3-4x12-1-2-blue>

- Pre-grade cashew kernels and sort them in different **stainless-steel Bowls** after peeling



*Source: GIZ/ComCashew – stainless steel bowls to grade cashew kernels*

**e) Outline the procedure for peeling**

Use the checklist to follow steps 1 to 5 in peeling cashew kernels. Rate your own performance critically and honestly after you have completed each activity.



Excellent



Okay



Try Again

Activities	Rating
1. Take a batch of heat-treated and humidified cashew kernels	
2. Rub the kernel gently between your fingers and the palm of your hands to remove the testa.	
3. If some parts of the testa are still attached to the kernel, use a knife to carefully remove the testa from the kernel. Caution! Do not cut yourself with the knife.	
4. Pre-grade the kernels and sort them into different bowls according to: <ul style="list-style-type: none"> <li>• White Wholes</li> <li>• Scorched Wholes</li> <li>• White Pieces</li> <li>• Scorched Pieces</li> <li>• Browns</li> <li>• Rejects</li> </ul>	
5. Store kernels of the same grade in a plastic container to avoid infestation, mould and rodent attacks	

*It is ok, if you are not excellent in everything. You can always try again.*

f) **Peel cashew kernel**



Practical Exercise: Go to the processing factory for your apprenticeship and peel cashew kernel.



Source: GIZ/ComCashew – Peeling section in cashew processing factory

## SELF ASSESSMENT



1. Explain peeling cashew kernel.

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2. State the factors to consider in peeling cashew kernel processing.

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3. State the uses of tools for peeling.

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4. Outline the procedure for peeling.

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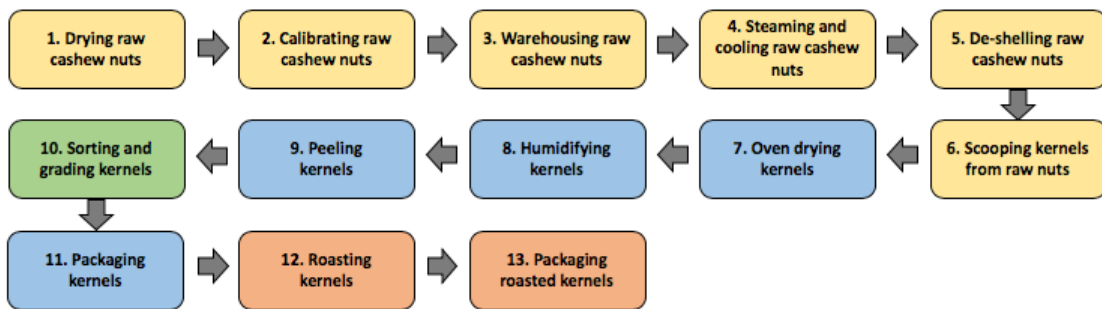
*Well done! You have completed the first set of questions. Strength doesn't come from what you can do. It comes from overcoming the things you once thought you couldn't. Let's move on to the next chapter.*

## 2. DEMONSTRATE SKILLS FOR SORTING AND GRADING CASHEW KERNEL

### a) Explain sorting and grading of cashew kernel

Sorting and grading are the processes of classifying cashew kernels based on colour, shape and size. A combination of these characteristics results in 27 conventional international quality grades for cashew kernels.

The green field indicates the step of the processing process you are currently studying.



For more information on sorting and grading cashew kernel, watch video on *Cashew Processing in Ghana* from Minute 2:54 to 3:07, watch video on *Cashew Nut Processing – Peace Corps Ghana* from Minute 3:53 to 4:29, watch video on *African cashew processing* from Minute 4:32 to 4:50.



Source: GIZ/ComCashew – Sorting and grading cashew kernels

**b) State the importance of sorting and grading**

Sorting and grading of cashew kernels is important because:

- it is the last opportunity for quality control of the cashew kernels before packaging
- cashew kernels are classified into 27 quality grades specified by the market
- prices for cashew kernels are based on the quality grades
- the higher the quality and volume of your product, the higher your selling price

**c) State the factors to consider in sorting and grading of cashew kernel**

Three (3) key factors are important in grading cashew kernels. These are colour, shape and size of the kernel.

Cashew kernels are graded according to the classification scheme of the Association of Food Industries (AFI):

- **Colour**
  - White (W)
  - Scorched (S)
  - Dessert (D)
- **Shape**
  - Whole (W) kernels
  - Broken kernels
- Broken kernels are further graded by **Size** into:
  - Splits (S)
  - Butts (B)
  - Pieces (P)
  - Baby Bits (BB)

Table 1: Grading of cashew kernels

Grading parameter	Grading designation
Colour	White (W); Scorched (S); Dessert (D)
Shape	Whole (W); Broken kernels
Size	Whole: 140 – 500  Broken kernels: e.g. Splits (S), Butts (B), Pieces (P) and Baby Bits (BB)

Source: Association of Food Industries (AFI), [www.afius.org](http://www.afius.org)



A skilled worker can grade 100 - 150 kg of kernels per 8-hour shift.



### Grading according to the colour of cashew kernels:

Whole cashew kernels and broken cashew kernels are roughly classified according to three colour categories: White (W), Scorched (S) or Dessert (D).

Table 2 shows the detailed grades and colour characteristics of whole and broken kernels.

Table 2: Cashew grades and characteristics

Grade	Colour characteristic
<b>First quality fancy</b>	Uniformly white, pale ivory or light yellow.
<b>Second quality scorched</b>	Yellow, light brown, light ivory, light ash-grey or deep ivory.
<b>Third quality special scorched</b>	Deep yellow, brown, amber, and light to deep blue. They may be slightly shrivelled, immature, and light-brown speckled, blemished or otherwise discoloured.
<b>Fourth quality</b>	They have the same colour characteristics as the first or second quality but have pitted spots.
<b>Lightly blemished wholes (LBW)</b>	Light brown, light ivory, light ash-grey or deep ivory. Kernels may show light brown speckles or blemishes on the surface, provided that not more than 40 % of the kernels are affected.
<b>Lightly blemished pieces (LP)</b>	They may be light brown, light ivory, light ash-grey or deep ivory. Pieces may show light brown speckles or blemishes on the surface, provided that not more than 20 % of the pieces are affected.
<b>Blemished wholes (BW)</b>	Deep yellow, brown, amber or light to deep blue. Kernels may be slightly shrivelled, immature or may be brown speckled or blemished on the surface, provided that not more than 60 % of the kernels are affected.
<b>Dessert (D)</b>	Cashew kernels may be scraped, deeply scorched, shrivelled, deep-brown-speckled, black-speckled, blemished or otherwise discoloured.

Source: AFI specification for cashew kernels, [www.afius.org](http://www.afius.org)

### Grading according to the shape of cashew kernels:

Depending on their shape, cashew kernels are classified into whole and broken grades, which are butts, splits or pieces as follows:



#### **Whole (W)**

A cashew kernel is classified as whole, if it has the kidney shape of a cashew kernel and not more than 1/8 of the kernel has been broken off.

This grade is labelled as grade W.



#### **Butts (B)**

Butts are kernels which have been broken crosswise. They are less than 7/8 but not less than 3/8 of a whole kernel and the cotyledons are still naturally attached.

This grade is labelled as grade B.



#### **Splits (S)**

Splits are kernels that have been split lengthwise and not more than 1/8 of its cotyledon has been broken off.

This grade is labelled as S.



#### **Pieces**

Pieces are smaller size broken kernels. They are categorized into the following grades in a decreasing size order:

- Large Pieces (LWP, SP, SPS, etc.)
- Small Pieces (SWP, SSP, DSP, etc.)
- Chips (CHIPS, SSP1, SSP2, SSP3)
- Baby Bits (BB, G1, G2, G3)
- Fine Grains (X)
- Fines (FE)
- Mixed Pieces (P1M, P2M, P3M)



Source: Association of Food Industries; [www.afius.org](http://www.afius.org);

Source: GIZ/ComCashew – Classification of cashew kernels

### Grading according to the size of cashew kernels:

Size is an estimation of the amount of kernels per kilogramme (kg) or pound (lb).

Classification by size is compulsory for first quality / fancy cashew kernels but is optional for other whole grades (see table 2).

Table 3: Size designation of cashew kernels

Size Designation	Count per Kilogram (kg)	Pound (lb)
180	266 - 395	140-180
210	395 - 465	180-210
240	485 - 530	220-240
320	660 - 706	300-320
450	880 - 990	400-450

Source: Association of Food Industries; [www.afius.org](http://www.afius.org)

### Grading cashew kernels is done in the order of colour, shape and size.

A white coloured whole kernel in the size 180 will be referred to as **WW180**, meaning

- **W**hite kernel
- **W**hole kernel
- Kernel size **180**

Another example is a grade is **SW240**, meaning

- **S**corched kernel
- **W**hole kernel
- Kernel size **240**

However, few exceptions exist in the classification of broken kernels:

- FB (Fancy Butts) is a white coloured butt
- FS (Fancy Splits) is a white coloured split kernel
- LWP (Large White Pieces)
- SWP (Small White Pieces)

A combination of these three characteristics – colour, shape and size – results in 27 conventional international quality grades for cashew kernels.

However, there can be more than 27 grades, depending on the country of origin and market demand.

Table 4 presents the conventional grades and their full descriptions based on AFI Standards that are commonly used in the cashew industry.

Table 4: Conventional grades of cashew kernels

No	Grade	Description
<b>White kernels</b>		
1	WW180	White Wholes 180
2	WW210	White Wholes 120
3	WW240	White Wholes 240
4	WW320	White Wholes 320
5	WW450	White Wholes 450
6	WW500	White Wholes 500
7	FB / WF	Fancy Butts (White Butts)
8	FS / WS	Fancy Splits (White Splits)
9	LWP	Large White Pieces
10	SWP	Small White Pieces
11	BB	Baby Bits
<b>Scorched kernels</b>		
12	SW180	Scorched Wholes 180
13	SW210	Scorched Wholes 210
14	SW240	Scorched Wholes 240
15	SW320	Scorched Wholes 320
16	SW450	Scorched Wholes 450
17	SW500	Scorched Wholes 500
18	SB	Scorched Butts
19	SS	Scorched Splits
20	SP	Scorched Pieces
21	SSP	Scorched Small Pieces
<b>Dessert kernels</b>		
22	DW	Dessert Wholes
23	SSW	Scorched Second Wholes
24	DB	Dessert Butts
25	DS	Dessert Splits
26	DP	Dessert Pieces
27	SPS	Scorched Pieces Second

Source: AFI Quality Grades [www.afius.org](http://www.afius.org)



Quality is the most vital criterion in marketing cashew kernels on the global market. Quality aspects include safety, reliability, durability and acceptability of the product to the consumer. Therefore, processors have to match the standards set by importers, consumers and standard agencies.

Quality assurance procedures are an essential element of any processing operation to ensure product consistency between different batches.

Cashew kernels should be free from any deterioration that make them unfit for human consumption.

The kernels should be:

- sufficiently developed and ripe
- clean
- free from any visible foreign matter
- free from living or dead insects
- free from visible insect damage, mites or other parasites
- free from mould or rancidity
- free from adhering cashew nut shell liquid or testa
- free of any foreign smell or taste



Source: GIZ/ComCashew – High quality cashew kernels

d) **State the uses of equipment for sorting and grading**

Grading can be done manually, using highly trained and skilled factory staff or with cashew grading machines.

Although, manual sorting and grading is the most efficient method for classifying cashew kernels, some processors use grading machines combined with manual grading.

- The **grading machine** sorts cashew kernels according to colour, size and shape.



Source: [https://www.meyer-corp.com/Belt-type-Muliti-function-Sorter\\_I209](https://www.meyer-corp.com/Belt-type-Muliti-function-Sorter_I209)

- **Manual grading** according to colour, size and shape.

Female graders are employed for sorting and grading in almost all cashew processing factories. These skilled women have the expertise to correctly select the kernels according to specific grades.

With experience, graders become accustomed to picking out kernels of one particular size.

Nevertheless, a supervisor / inspector will take batches of graded kernels to verify / inspect whether the grades are as per the specification.

Graders sit or stand at tables or conveyer belts. They are given a certain quantity (in terms of weight) of cashew kernels to be graded and separated.

It is essential that the room is well lit as colour is an important grading criterion.



Source: GIZ/ComCashew – Grading and sorting cashew kernels on conveyer belt

e) **Outline the procedure for sorting and grading**

Use the checklist to follow steps 1 to 8 in sorting and grading. Rate your own performance critically and honestly after you have completed each activity.



Excellent



Okay



Try Again

Activities	Rate
1. Take a batch of peeled cashew kernels	
2. Pour the batch of peeled cashew kernels on a sorting table and spread the kernels on the table	
3. Sort the cashew kernels according to wholes and broken kernels	
4. Grade the whole cashew kernels according to colour, shape and size	
5. Grade the broken cashew kernels according to colour, shape and size	
6. Remove and discard any cashew kernels that are of low quality	
7. Store cashew kernels in containers according to specific grades	
8. Label the containers with the cashew grade for easy identification and packaging	

*Remember, the learning journey never ends.*



f) **Sort and grade cashew kernel**



Practical Exercise: Go to the processing factory for your apprenticeship to sort and grade cashew kernels.



Source: GIZ/ComCashew – Grading and sorting cashew kernels

## SELF ASSESSMENT



1. Explain sorting and grading of cashew kernel.

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2. State the importance of sorting and grading.

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3. State the factors to consider in sorting and grading of cashew kernel.

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4. Outline the procedure for sorting and grading.

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*Congratulations! You have completed the second set of questions. When you fear your struggles, your struggles consume you. When you face your struggles, you overcome them. Let's move on.*

### 3. DEMONSTRATE SKILLS FOR PACKAGING CASHEW KERNEL

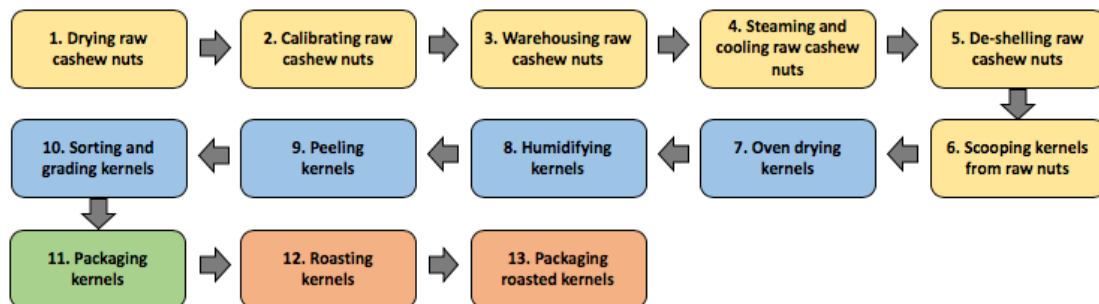
#### a) Explain packaging of cashew kernel

Packaging of cashew kernels is the process of conditioning cashew kernels, filling them into plastic bags according to grades, vacuum sealing and packaging them to facilitate sales and shipment.

Packaging of cashew kernels includes seven (7) different steps:

1. Conditioning cashew kernels for packaging (dry and humidify to maximum 4 % moisture content)
2. Quality control of cashew kernels (Dust removal and metal detection)
3. Fumigation of cashew kernels (optional, mainly for US market)
4. Filling and introducing carbon dioxide and nitrogen into the plastic bag
5. Vacuum packaging of cashew kernels in plastic bags
6. Packing of vacuum sealed plastic bags in cartons for selling or shipment
7. Stacking of carton on pallets in a temperature-controlled room

The green field indicates the step of the processing process you are currently studying.



For more information on packaging cashew kernels, watch video on *Cashew Processing in Ghana* from Minute 3:07 to 3:17, watch video on *African cashew processing* from Minute 4:58 to 4:43.



Source: GIZ/ComCashew – Packaging cashew kernels

**b) State the importance of packaging**

Packaging is important to:

- prevent entry of foreign matters into the cashew kernels
- prolong the shelf life of cashew kernels
- maintain the quality of cashew kernels according to international food safety requirements
- prevent pest infestation
- facilitate transportation and shipment



*Source: GIZ/ComCashew – Quality control of cashew kernels*

**c) State the factors to consider in packaging**

1. Heating or humidifying of cashew kernels

Cashew kernels are conditioned (dried or humidified) to a moisture content of 3.5 - 4 %, which is ideal for packaging.

- Lower moisture levels result in breakages after packaging
- Higher moisture levels induce blockage or clamping of kernels after packaging

2. Fumigation of cashew kernels

Cashew kernels are then fumigated to prevent infestation by pests and micro-organisms. This is a requirement for US markets and for some buyers.

3. Quality control of cashew kernels

Before final packaging, the graded cashew kernels are sent through a metal detector and a dust remover.

- In the dust removal process, cashew kernels pass through a closed chamber where pressurized air is used to blow out the dust and light particles.
- The metal detection process ensures that the cashew kernels are not contaminated with any metals.

Both quality control processes, metal detection and dust removal, are mechanical.

4. Filling and vacuum sealing of cashew kernels in plastic bags

Vacuum packing is the most acceptable method for packaging cashew kernels. This packaging method involves back flushing the kernels with a mixture of carbon dioxide and nitrogen to prolong the shelf life.

The packaging facility should be designed in compliance with international food safety standards and to meet buyer requirements. It is the responsibility of the factory management to ensure full compliance with international food safety requirements for cashew kernels.

5. Packing of vacuum sealed plastic bags in cartons for shipment

The vacuum sealed cashew kernels are placed into branded carton boxes, sealed and labelled with the quality grade of the cashew kernels inside. Carton boxes facilitate storage and transportation of cashew kernels.

For easy shipment and appropriate storage, the carton boxes are placed on pallets in a temperature-controlled room.

d) **State the uses of equipment for packaging**

The following machines and materials are required for packaging cashew kernels:

- **Metal Detector** to remove any foreign materials



Source: <http://www.mekongmachine.com/product/cashew-metal-detector/>

- **Vacuum packaging and sealing of plastic bags**



Source: <https://www.danielmachine.com/shops/cashew-nut-processing/cashew-nut-vacuum-packing-machine-344.html>

- **Floor scale to weigh** plastic bags during manual filling



Source: [https://www.gorillascales.com/index.php?main\\_page=product\\_info&products\\_id=382](https://www.gorillascales.com/index.php?main_page=product_info&products_id=382)

- **Plastic bags** with vacuum sealed cashew kernels are packed in branded **cartoon** for shipment:
  - Plastic bags of two sizes, specifically designed for cashew, are demanded by most buyers for packing the 25 lbs and 50 lbs bags.
  - Gulf countries prefer tin packaging. Processor exporting to a Gulf country must pay attention to the buyer specifications.



Source: GIZ/ComCashew – Vacuum sealed and packaged cashew kernels

**e) Outline the procedure for packaging**

Use the checklist to follow steps 1 to 9 in packaging cashew kernels. Rate your own performance critically and honestly after you have completed each activity.



Excellent



Okay



Try Again

Activities	Rate
1. Dry or humidify same quality cashew kernel grades to a moisture content of 3.5 – 4 % to avoid breakage or stickiness of the kernels	
2. Send the cashew kernels through the dust remover and metal detector	
3. Fumigate cashew kernels to prevent infestation (optional)	
4. Place the plastic bag on a weighing scale and fill the required amount of treated cashew kernels into the plastic bag	
5. Back flush the cashew kernels with a mixture of carbon dioxide and nitrogen	
6. Vacuum seal the cashew kernels in the same plastic bag	
7. Place the vacuum sealed cashew kernels in branded carton boxes	
8. Seal and label the branded cartons with the quality grade of the cashew kernels inside	
9. Stack the carton boxes on pallets in a temperature-controlled room. Store and/or ship the cashew kernels in the carton boxes	

*Set a goal so big that you can't achieve it until you grow into the person who can.*



f) **Package cashew kernel**



Practical Exercise: Go to the processing factory for your apprenticeship and package cashew kernels. Follow the detailed instructions in this unit.



Source: GIZ/ComCashew – Filling and vacuum packaging of cashew kernels

## SELF ASSESSMENT



1. Explain packaging of cashew kernel.

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2. State the factors to consider in packaging.

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3. State the uses of equipment for packaging.

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4. Outline the procedure for packaging.

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*You are making great progress! You have completed another set of questions. Take a break or go ahead and start with the next chapter.*

#### 4. DEMONSTRATE SKILLS FOR ROASTING CASHEW KERNEL (OVEN ROASTING)

##### a) Explain treatment of cashew kernel before roasting

It is important to ensure that kernels are clean and of uniform size for roasting.

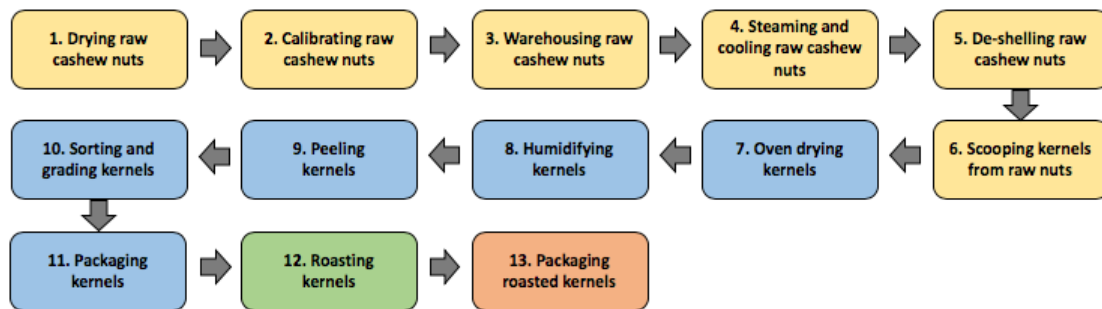
The treatment of cashew kernels involves three (3) main steps:

- Clean the cashew kernels by using pressurized air to blow out any potential foreign material such as the cashew testa, dust or micro particles
- Classify or grade the cashew kernels by separating the broken kernels from the whole kernels
- Add flavouring agents, for example salt, spices or butter



Do not treat cashew kernels with sugar before roasting, because the sugar caramelizes and does not allow uniform roasting.  
 Use sugar only after roasting!

The green field indicates the step of the processing process you are currently studying.



For more information on roasting cashew kernels, watch video on *African cashew processing* from Minute 6:15 to 6:38.



Source: <https://sincerelynuts.com/cashew-roasted-salted/>

**b) Outline the importance of treating cashew kernel before roasting**

It is important to treat the cashew kernel before roasting to:

- ensure high-quality roasted cashew kernels
- ensure uniform roasting and colour of the roasted cashew kernels
- add flavours and different tastes to the roasted cashew kernels

**c) State the factors to consider during treatment of cashew kernel before roasting**

Consider four (4) factors during treatment of cashew kernels before roasting:

1. Quality of the kernel
  - Discard all brown kernels
2. Grade of the kernel (colour, shape, size)
  - Whole kernels and broken kernels should not be mixed during roasting
3. Moisture content of the cashew kernel must be at 3.5 to 4 %
4. Buyer and market specifications:
  - The amount of salt may be determined by the buyer and differ
  - Some buyers prefer cashew kernels to be roasted with margarine or butter, others without it
  - Some buyers may want no additives, not even salt



Source: <https://fitfoodiefinds.com/maple-sesame-roasted-cashews/>

**d) State the methods of roasting cashew kernel**

There are three (3) common methods for roasting cashew kernels manually:

**1. Oven roasting**

- Pre-heat your oven, according to customer requirements or your own recipe
- Spread your raw cashew kernels on a metal tray
- Do not overload the tray to ensure uniform roasting of cashew kernels
- Place the tray in the centre of the oven for roasting
- Turn your cashew kernels every 2 minutes to ensure uniform roasting
- Roast the cashew kernels for 8 to 10 minutes, depending on customer requirements or your own recipe
- Remove the roasted cashew kernels from the oven
- Pour the roasted cashew kernels on a plate or another metal tray to cool down

**2. Dry pan roasting**

- Spread your raw cashew kernels in the pan
- Do not overload the pan to ensure uniform roasting of cashew kernels
- Turn the gas stove to medium heat
- Turn your cashew kernels every 1 to 2 minutes to ensure uniform roasting
- Roast the cashew kernels for 8 to 10 minutes, depending on customer requirements or your own recipe
- Remove the roasted cashew kernels from the pan
- Pour the roasted cashew kernels on a plate to cool down

**3. Hot oil frying**

- Pre-heat vegetable oil in a deep pan, according to customer requirements or your own recipe
- Pour the raw cashew kernels in the hot oil
- Do not overload the pan to ensure uniform frying of cashew kernels
- Fry the raw cashew kernels until they are golden brown, depending on customer requirements or your own recipe
- Take the cashew kernels out of the oil
- Sieve the cashew kernels to rinse off the excessive oil
- Pour the fried cashew kernels on a plate to cool down

There are two (2) common methods for roasting cashew kernels mechanically:

### **1. Dry roasting**

- Pour the raw cashew kernels into the drum or on a metal conveyer belt
- Set the temperature in the roasting drum, or in the oven through which the conveyer belt will pass, according to customer requirements or your own recipe
- Start the drum rotation or metal conveyer belt
- The cashew kernels are stirred inside the heated drum or pass through the oven with the conveyer belt. The kernels are in constant movement to ensure uniform drying
- The roasted cashew kernels are automatically discharged on another conveyer belt or in a container for cooling



*Source: GIZ/ComCashew – Roasted cashew kernels*

### **2. Hot oil frying**

- Heat the vegetable oil bath, according to customer requirements or your own recipe
- Pour the raw cashew kernels into a large sieve or on a metal conveyer belt
- Place the drum in the hot oil and start the rotation arms in the drum or start the conveyer belt to move the kernels through the hot oil.
- Set the temperature and timer according to customer requirements or your own recipe
- Lift the sieve or the conveyer belt from the hot oil to rinse and cool down the cashew kernels

**e) State the procedure in oven roasting of cashew kernel**

Use the checklist to follow steps 1 to 9 in oven roasting. Rate your own performance critically and honestly after you have completed each activity.



Excellent



Okay



Try Again

Activities	Rate
1. Treat cashew kernels (clean, classify, flavour)	
2. Pre-heat your oven	
3. Spread your raw cashew kernels on a metal tray. Do not overload the tray to ensure uniform roasting	
4. Place the tray in the centre of the oven for roasting	
5. Turn your cashew kernels every 2 minutes to ensure uniform roasting	
6. Set the roasting temperature, depending on your customer requirements or your own recipe	
7. Roast the cashew kernels for 8 to 10 minutes, depending on customer requirements or your own recipe	
8. Remove the roasted cashew kernels from the oven	
9. Pour the roasted cashew kernels on a plate or another metal tray to cool down	

*Education not only teaches us facts, but also teaches us how to think and learn on our own.*

f) **Oven roast cashew kernel**



Practical Exercise: Ask the manager of the processing factory, if you can get some cashew kernels and follow the instructions for oven roasting cashew kernels.

**Before roasting**



**After roasting**



Source: <https://www.realfoodsource.com/2019/02/07/roasting-nuts/>



## SELF ASSESSMENT



1. Explain treatment of cashew kernel before roasting.

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2. Outline the importance of treating cashew kernel before roasting.

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3. State the factors to consider during treatment of cashew kernel before roasting.

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4. State the methods of roasting cashew kernel.

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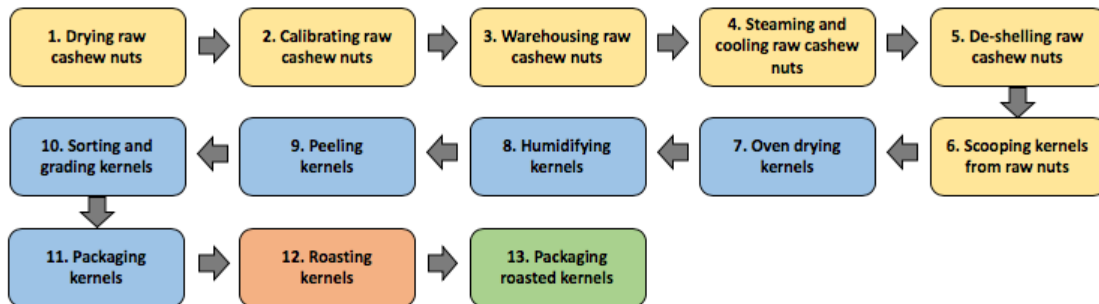
*Great success, you are almost done! The path to success is to take massive, determined action. Let's tackle the last chapter.*

## 5. DEMONSTRATE SKILLS FOR PACKAGING ROASTED CASHEW KERNEL

### a) Explain packaging of roasted cashew kernel

Packaging of roasted cashew kernels is the process of filling roasted cashew kernels into the appropriate packaging material for storage and distribution to the end consumer.

The green field indicates the step of the processing process you are currently studying.



For more information on packaging of roasted cashew kernels, watch video on *African cashew processing* from Minute 6:38 to 7:44.



Source: <https://66nuts.com/products/honey-roasted-cashews-10-oz>

**b) State different types of packaging materials**

The following materials are suitable for packaging cashew kernels:

- **Tin**



Source: <https://intl.target.com/p/planters-deluxe-salted-whole-cashews-18-25oz/-/A-12946096>

- **Glass bottle with plastic seal**



Source: <https://koeze.com/hidden-categories/colossal-cashews>

- Pouch with zipper



Source: <https://inroomplus.com/products/cashews-silver-pouch-48ct-3oz>

- Pouch without zipper



Source: [https://www.worldofsweets.de/Marke+uiltje/uiltje-Cashews-geroestet-gesalzen-150g.302522.html?adword=Google/PRODUKTERWEITERUNG/%C3%BCiltje/302522&gclid=EA1aIQobChM1xp7epYPx4wIvA7DtCh04YA\\_JEAQYBCABEGlmwvD\\_BwE](https://www.worldofsweets.de/Marke+uiltje/uiltje-Cashews-geroestet-gesalzen-150g.302522.html?adword=Google/PRODUKTERWEITERUNG/%C3%BCiltje/302522&gclid=EA1aIQobChM1xp7epYPx4wIvA7DtCh04YA_JEAQYBCABEGlmwvD_BwE)

**c) State the importance of packaging**

Packaging is important to:

- prolong the shelf life of roasted cashew kernels
- maintain the quality of roasted cashew kernels according to international food safety requirements
- maintain the taste of roasted cashew kernels
- prevent infestation of roasted cashew kernels
- facilitate safe transportation of roasted cashew kernels

**d) State the factors to consider in packaging**

The packaging materials for roasted cashew kernels must:

- have an air tight seal
- be moisture protected
- keep the roasted cashew kernels fresh to maintain product quality
- keep the roasted cashew kernels hygienic
- be tamper proof
- be leakage proof
- be easy to open and close
- be tear resistance
- be of durable material
- be easy to label the material

Apart from protecting your cashew kernels from quality losses, you can use the packaging material to brand and label your roasted cashew kernels for marketing.

**e) Outline the procedure for packaging**

Use the checklist to follow steps 1 to 4 in packaging roasted cashew kernels. Rate your own performance critically and honestly after you have completed each activity.



Excellent



Okay



Try Again

Activities	Rate
1. Choose an appropriate packaging material for roasted cashew kernels	
2. Brand and label your packaging material	
3. Place the packaging material on a weighing scale and fill the required amounts of roasted kernels (as stated on the packaging, for example 200g) into the packaging material	
4. Seal the packaging material air tight to ensure that the quality of the roasted kernels is maintained	

*Our greatest weakness is giving up. The most certain way to succeed is always to try one more time.*

**f) Package roasted cashew kernel**



Practical Exercise: Take a batch of roasted cashew kernels and package them in the appropriate material available to you. Follow the instructions in this chapter.

## SELF ASSESSMENT



1. Explain packaging of roasted cashew kernel.

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2. State different types of packaging materials.

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3. State the importance of packaging.

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4. State the factors to consider in packaging.

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*Congratulations! You have completed this unit successfully. Believe in yourself. You are braver than you think, more talented than you know, and capable of more than you imagine.*

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