Basic Agro Food Processing

Level-I

Based on October 2019 Version 2 Occupational standards

Module Title: - **Packing or Unpack Product Manually**

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LG #57	LO #1- Prepare to pack or unpack product

Instruction sheet
This learning guide is developed to provide you the necessary information regarding the following content coverage and topics: • packaging requirements • packaging consumables against product type This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to: • Identify packaging requirements • Check packaging consumables against product type

Learning Instructions:
1. Read the specific objectives of this Learning Guide. 2. Follow the instructions described below. 3. Read the information written in the information Sheets 4. Accomplish the Self-checks

Information Sheet -1 Identify packaging requirements

1.1 Packaging requirements

Packaging is an integral part of the processing and preservation of foods and can influence many of these factors. It can influence physical and chemical changes, including migration of chemicals into foods. The flavor, color, texture as well as moisture and oxygen transfer is influenced by packaging. The effects of temperature changes and light can be modified by packaging materials. Let us consider the more important methods of preservation of foods used by food industries today and how they integrate with the food packaging used in their processing.

1.1.1 Basic functions of packaging

Basic functions packaging are containment, protection, preservation, convenience and information. The list of additional functions mentioned communication, selling, presentation, promotion, environmental responsibility and other.

1. **Containment**

The role of containment is to conceal the product and its parts and prevent them from spillage and loss, starting from the packing line through transportation phases until it arrives to customer's home. Some goods can have dangerous consequences when not contained properly inside a package- especially liquids and chemicals. Also, if a product which consists of multiple parts does not contain all of them or the instruction for use when customer opens it, it degrades the product proving it unusable. Every type of package has its sensitive areas which may get damaged and cause loss of containment and therefore producers enforce protocols and testing of package to ensure that the contents are properly contained.

2. **Protection**

Since ancient times, the products that people used, such as tools, clothes or food, had to be transported to their homes without the goods being altered by the environment,

air, dust, vibration, weather conditions or animals. The protection function of package represents preventing all outside forces to intervene with the product inside. Certain products also require special temperature or humidity levels to preserve their shape or purpose; therefore package should protect the contents from changing their nature. In order to provide sufficient package that will protect the products, it is necessary to understand the product's characteristics and address potential hazards that would tamper those. It often proves efficient to use a secondary package when protecting larger quantities of products together and transporting them.

3. Preservation

This function is not universal for all the goods, it should be considered especially when dealing with food products, pharmaceutics and other perishable products. The importance of preservation is to keep products in controlled environment so it remains safe to use for longer time period. The key to correct preservation is to package the product while it is in safe condition and it is imperial to understand how this state can be sustained inside the package by defining the product-spoilage mechanisms. The package attributes therefore have to address potential causes of spoilage in order for the product to maintain in desired state. Preservation is necessary for products that need to maintain certain levels of oxygen, moisture; volatiles or they are light sensitive.

4. Convenience

Based on a fact that package is a tool which helps goods remain in desired condition when reaching consumers, it also should be convenient for them to carry, transport and open the package while maintain safe. As known from retail assortment theory, customers make decisions while shopping and the fundamental choice is which size of product they will buy according to their needs and convenience. Global performance Management Company Nielsen Holdings PLC based in United Kingdom provided retailing solution based on sophisticated data from local customer researches. They also offer consultancy services for large retailers or supermarkets where they assort the goods based on psychology theory of customer behavior. One of decisions customers

tend to make while shopping is choosing the amount and also size of package either by price or their preference.

Different packages offer variety of uses. These examples represent common situations when convenience is truly important and therefore majority of manufacturers offer their products in various sizes and shapes to satisfy needs of their customers. The convenience function extends also to secondary package, the pallets or boxes used when transporting goods are often determined by equipment and the ability to fit primary packages into secondary one without wasting space based on resource utilization and easy handling. To improve food quality, intelligent packaging provides optimization and enhancement of certain foods.

5. Information

There are several categories of information included in every package:

1. **Tracking information** is usually in form of bar or matrix code; however, they might be also triple dimensional or chips with radio frequencies. It includes the metadata of product. This information is not available for end-users of product, on the contrary it is essential in order for a product to reach customer. Special equipment such as scanners or detectors are needed to access the information which consists of manufacturer, basic description, package dimensions and other data regarding product that are not likely to change over longer period of time.
2. **Product information** consists of data describing ingredients and nutrition volumes of food products or information with technical details for electronic goods. There are several regulations on product information by government in majority of countries. One of essential information on each product is the country of origin, manufacturer and distributor. Each product requires different information based on its nature and purpose.
3. **Every manufacturer wants consumers** to continue shopping products from their assortment and that is the reason why every package in retail store has a distinctive brand logo. Logos, product names, brand slogans, these are all tools used by companies to signal to customers which product they buy. In every retail store,

people can choose from tens of different brands in every product category, which makes the competition among brands to impress customer even tougher. Sometimes, even the package itself can be brand-specific so customers can recognize it quicker. A good example provides a company manufacturing potato crisps Pringles. Pringles, unlike their competitors, chose to package crisps neatly into carton tubes instead of traditional plastic or foil bags. Another important communication distinction on the package is color. Brands tend to follow strict colour code for their product lines for easier recognition.

1.1.2 Specifications in the food packaging chain

This information leaflet is aimed at all elements of the food packaging chain, at producers and users of food packaging and intermediate materials. Its objective is to

- ✓ Support the combined effort towards safe food packaging. In detail, it shall support and enhance the communication within the supply chain for any type of food packaging
- ✓ provide ideas and standard operation procedures for the wording of product specifications for packaging materials, packaging and packaging components,
- ✓ Inform neutrally on legal requirements and industry-wide recommendations for their implementation.

❖ **Specifications**

A specification is the formal description of a product or system, possibly in combination with a service. The specification has the objective of defining and quantifying parameters that can be used by the customer to check and accept the product of a supplier upon delivery. In practice, specifications do not contain all product requirements; legal requirements do not have to be stated as they have to be complied with anyway. In the best scenario, a specification is a document which is agreed between all parties concerned and is completed at the end of an in-depth communication process.

1.1.3 Information on the compilation of a food packaging specification

a) Scope and validity of a packaging specification
b) Communication along the chain
c) Internal communication

❖ **Key aspects for packaging specifications:**

- ✓ Result of well-timed anticipatory communication
- ✓ Clear definition of the binding contract
- ✓ Clear assignment of tasks and responsibilities
- ✓ Defined scope
- ✓ As specifically as possible, as detailed as necessary
- ✓ Technically sound, appropriate information
- ✓ Comprehensible description of the entire packaging system
- ✓ Does not serve as a declaration of conformity with law
- ✓ Becomes effective with acceptance and signature

❖ Scope of specification

A specification should have a clear structure and include the following items:

a) Identification of the customer
b) Scope/identification of the specified product
c) General agreements between customer and supplier
d) Specific agreements/limitations
e) Reference to legal regulations/recommendations
f) Information on specific suitability/exclusions
g) Confirmation of compliance with the specification
h) Descriptions
i) Description of the packaging material/packaging components
j) Description of the food product to be packed/used
k) Description of technical suitability/machinability

l) Agreements regarding tests/delegation of tests/information on specific test issues

m) Releases/signature/date/revision

n) Annex/certificates/drawings

Self-Check – 1	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: matching

A	B
1. Contain	A. Instructions for use
2. Protect	B. Maintain quality
3. Inform	C. Advertise product
4. Attract	D. Portion control

Test II: Short Answer Questions

1. Write down all basic functions of food packaging? (6points)
2. What are Key aspects for packaging specifications? (5points)
3. What are the categories of information in every food package? (5points)

Note: **Satisfactory rating - ≥10 points** **Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet-2 Check packaging consumables against product type

2.1 Packaging consumables against product type

2.1.1 Types of food packaging

Packaging: - a coordinated system of preparing goods for transport, distribution, storage, retailing & use. It is also the development and production of packages (filling, closing, labeling) by trained professionals or operators employing methods & equipment designed for specific product lines and types of packages. Packaging machines e.g. fillers, counters, cappers, labelers, wrapper equipment, cartoners, case loaders & sealers....

A. Packaging types-layer/level of functions

The basic package functions have different levels of importance depending on the particular package level.

1. Primary package

- ❖ The first wrap or containment that directly holds/envelops product for sale.
  -E.g. bottle, can, tube, fiber drum

2. Secondary package

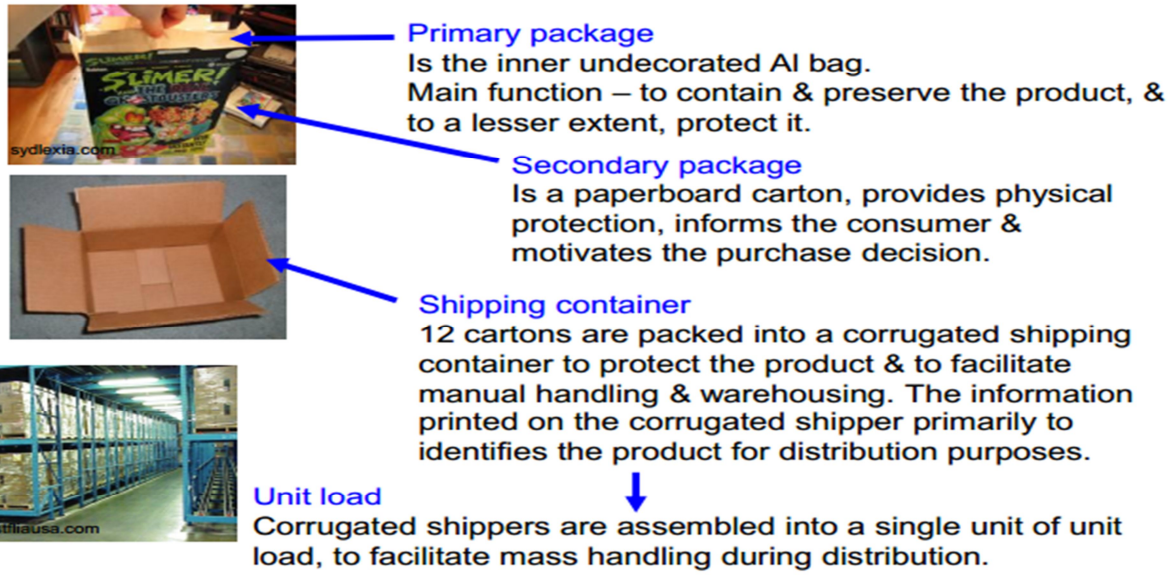
- ❖ Any outer wrappings that help to store, transport, inform, display and protect the product. -E.g. decorated carton or gift box.

3. **Tertiary package:**

- ❖ **Distribution** package (shipper). Grouping of product for bulk handling, warehouse storage, transportation & shipping. -E.g. corrugated brown carton, large pallets of shrink- wrapped boxes

4. **Unit load**

- ❖ A group of distribution packages assembled into a single unit for the purpose of mechanical handling, storage & shipping. -E.g. contena



B. Types of packaging based on end user.

1. Consumer packaging

- ✓ The package that will ultimately reach the consumer as a unit of sale from a merchandising outlet.

- ✓ Small units in large number
- ✓ Attractive decorations
- ✓ Directed towards retails and households - E.g. Consumable goods – food, beverages.

2. Industrial packaging

- ✓ A package for delivering goods from manufacturer to manufacturer. It is usually, but not always, contains goods or materials for further processing.
- ✓ Larger & heavier units,
- ✓ No attempt appealing to the eyes - E.g. Fibre drums, gunny bag.

C. Packaging types-based on physical form

- ✓ **Flexible:-** e.g. sachets, pouches, plastic sacks
- ✓ **Semi-flexible:-** e.g. paperboard boxes for cereal
- ✓ **Rigid:-** e.g. crates, glass bottles, metal cans

2.1.2 The packaging design and development framework

- ❖ Packaging of a product affects every aspect of its design and performance
  - ✓ Flavor
  - ✓ Integrity
  - ✓ Shelf life
  - ✓ Minimizing damage resulting from microbial attack
  - ✓ Safety
- ❖ Cost & Brand image Designing and manufacturing of packaging materials is a multi- step process
- ❖ Involves careful and numerous considerations to successfully engineer the final package with all the required properties.
  - ✓ product needs
  - ✓ shelf-life extension,
  - ✓ cost-efficiency,
  - ✓ environmental issues,

- ✓ consumer convenience
- ✓ Distribution needs and wants of packaging
- ✓ Packaging materials, machinery and production processes

❖ To design and development of appropriate packaging the following are essential:

- ✓ understanding of a product's characteristics,
- ✓ the intrinsic mechanism(s) by which it can deteriorate, its fragility in distribution and possible interactions with packaging materials i.e. compatibility

2.1.3 Selection of Packaging Materials

A package will be considered as a good one if it is attractive and maintains the quality, safety and extends shelf life of the product. Therefore, the properties of packaging materials should match the characteristic of the product in the package.

❖ The major selection criteria for food packaging material and techniques are:

- ✓ product needs
- ✓ shelf-life extension,
- ✓ cost-efficiency,
- ✓ environmental issues,
- ✓ consumer convenience
- ✓ Distribution needs and wants of packaging
- ✓ Packaging materials, machinery and production processes

❖ The shelf life of packaged food is dependent on numerous factors such as;

1. The intrinsic nature of the food
   - ✓ Acidity (pH)
   - ✓ Water activity (aw)
   - ✓ Nutrient content
   - ✓ Redox potential,
   - ✓ Respiration rate and
   - ✓ Biological structure
2. The extrinsic factors

- ✓ Temperature
- ✓ Relative humidity (RH) and
- ✓ The surrounding gaseous composition

By carefully considering all of these factors, it is possible to evaluate existing and developing active packaging technologies and apply them for maintaining the quality and extending the shelf life of different food products

2.1.4 Properties of the Package

1. **Strength:** Whether the food is in bulk or a small retail pack, the container must be strong enough to carry the weight of the contents, as any damage may result in contamination by foreign matter or loss of contents.
2. **Ease of Filling and Emptying:** The packaging must be easily filled and emptied.
3. **Appearance:** The trend is toward simple wrappers and bags, usually glossy paper, transparent or printed film, with attractive designs.
4. **Protection:** This can mean either preserving the condition of the contents inside the wrap, such as prevention from drying out, or acting as a barrier against exterior contaminants.
5. **Protection can involve:** Exclusion of light: as light can promote rancidity and cause fading; Prevention of access of water vapor and oxygen: as these can be most damaging and cause stale flavors and/or surface mold growth. If a container is permeable to air, oxygen can enter, resulting in staleness and rancidity, particularly if combined with humid conditions. Evaluation of contamination of odor (paint, perfume, soap and strong flavours like cheese) will ruin any food. Exclusion of the entrance of insects must be ensured.
6. **Shelf Life:** Shelf life of the product can be extended if the packaging material properties match the behavior characteristic of the product.

Self-Check – 2	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Choose the best the answer

1. One the following is not intrinsic nature of the food?

   A. Acidity (pH) B. Water activity (aw) C. Nutrient content D. Temperature

2. Which one is not extrinsic factor?

   A. Temperature B. Relative humidity (RH) C. Respiration rate D. All

3. Major selection criteria for food packaging material are:

❖ Product needs B. shelf-life extension, C. cost-efficiency, D. All

4. One is not packaging type based on end user

A. Consumer packaging B. Industrial packaging C. primary packaging D. All

5. The first wrap or containment that directly holds for sale is called

A. Primary packaging B. secondary packaging C. tertiary packaging D. All

Test II: Short Answer Questions

1. What are the properties of the package? (4points)
2. List down types packaging based on level of functions (8points)
3. Write types Packaging depend on physical form (3points)

Note: **Satisfactory rating - ≥10points** **Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

LG #58 LO #2- Manually pack or unpack product

Instruction sheet

This learning guide is developed to provide you the necessary information regarding the following **content coverage** and topics:

- Packing or unpacking product
- Identify, remove and correct or report unacceptable packaging consumables, product and packed products
- Maintaining the work area
- Conducting work

This guide will also assist you to attain the learning outcomes stated in the cover page. Specifically, upon completion of this learning guide, you will be able to:

- Pack or unpack product
- Identify, remove and correct or report unacceptable packaging consumables, product and packed products
- Maintain the work area
- Conduct work

Learning Instructions:
1. Read the specific objectives of this Learning Guide. 2. Follow the instructions described below. 3. Read the information written in the information Sheets 4. Accomplish the Self-checks 5. Perform Operation Sheets 6. Do the “LAP test”

Information Sheet- 1 Packing or unpacking product

1.1 Packing or unpacking product

Packaging activities start from the manufacturing process of food and determines present and future needs and expectations of the people and makes life easier. Food products are created ultimately for consumers, consumer attitudes and opinions play an important role in the creation of food packaging. In food packaging market the driving factors for growth are convenience, functionality and tolerance are consumer centered. Manufacturers and retailers need to understand packaging innovations that can offer benefits to consumers and important for consumers and affect consumer purchasing practices in order to remain competitive. New materials, designs and technologies enable packaging to respond to the rapidly evolving demands of modern consumer lifestyles.

1.1.1 Types of packaging materials

A wide range of packaging materials and packaging formats are used in the fresh and processed food industry to handle, store, and distribute fresh and processed food products, from farm to the consumer. Different types of materials such as glass, plastic, metal, cardboard are used for making packaging containers and the material used depends on the nature of the food product because different packaging materials possess a range of performance characteristics that exert significant impacts on shelf-life. Bottles and glass jars are often used for packaging liquid food stuff while solid food products are mostly packed on plastics and cardboards. Processed fruit and vegetables are usually packed in airtight metal containers to prevent oxygen transmission that might lead to spoilage of the product through microbial growth and oxidation of lipids

Packaging can also be of mixed material. This kind of packaging may be resource and energy efficient than using a single material. However, the drawback of such packaging is the difficulty to recycle, which is attributed to the lack of infrastructure to separate the

materials. New biodegradable, plant-based packaging materials are needed to combat environmental problems associated with such mixed packaging.

1.1.2 Packaging formats used for different food products

Choosing the right format of packaging is important to meet the functions of packaging. There are some considerations for selecting appropriate packaging, including suitable structure and form, efficiency and disposal after use. While engineering and economic aspects of packaging performance are important, the environmental issues associated with packaging also need to be addressed when choosing packaging. Common packaging formats used in the food industry include paperboard cartons, wooden boxes, metal cans, glass, and plastic bottles.

1.1.3 Packaging equipment and machinery

- Choosing packaging machinery includes an assessment of
  - ✓ technical capabilities,
  - ✓ labor requirements,
  - ✓ worker safety,
  - ✓ maintainability,
  - ✓ serviceability,
  - ✓ reliability,
  - ✓ ability to integrate into the packaging line,
  - ✓ capital cost,
  - ✓ floor space,
  - ✓ Flexibility (change-over, materials, multiple products, etc.),
  - ✓ energy requirements,
  - ✓ quality of outgoing packages,
  - ✓ qualifications,
  - ✓ throughput,
  - ✓ efficiency,
  - ✓ productivity,
  - ✓ ergonomics,

- ✓ return on investment.

❖ Packaging machinery can be:

1. purchased as standard, off-the-shelf equipment
2. purchased custom-made or custom-tailored to specific operations
3. manufactured or modified by in-house engineers and maintenance staff

❖ Packaging machines may be classified in to following general types:

- ✓ Blister packs, skin packs and Vacuum Packaging Machines
- ✓ Bottle capping equipment, Over-Capping, Lidding, Closing, Seaming and Sealing Machines
- ✓ Cartoning Machines
- ✓ Box, Case and Tray Forming, Packing, Unpacking, Closing and Sealing Machines
- ✓ Cleaning, Sterilizing, Cooling and Drying Machines
- ✓ Conveyors, Accumulating and Related Machines
- ✓ Feeding, Orienting, Placing and Related Machines
- ✓ Filling Machines: handling liquid and powdered products
- ✓ Package Filling and Closing Machines
- ✓ Form, Fill and Seal Machines
- ✓ Inspecting, Detecting and Check weighing Machines
- ✓ Palletizing, Depalletizing, Unit load assembly
- ✓ Product Identification: labeling, marking, etc.
- ✓ Wrapping Machines
- ✓ Other specialty machinery includes slitters, perforating machines etc.

❖ Packaging systems

- ✓ Horizontal Form-Fill-Seal Machines for Rigid and Semi-Rigid Packages (so-called deep-draw machines)
- ✓ Horizontal & Vertical Form-Sill-Seal Machines For Flexible “Pillow-Pack”
- ✓ Pouches (so-called flow-pack machines)
- ✓ Vacuum Chambers Machines
- ✓ Gemella Packaging System

- ✓ Fibrelam System
- ✓ Bag – In – Carton Systems
- ✓ Bag-In-Box System
- ✓ Walki-Vent System
- ✓ Flavaloc

1.1.5 Packaging some foods

A. Fruits Packaging

The box is made of hardboard with holes, and each box contains four trays. Each tray is wrapped with thin plastic and weighs around 250 g/tray. The box is very strong and is able to protect fruits from bruises and damage during the transport.

B. Vegetables Packaging

Vegetables are perishable and this makes their packaging more difficult than fruits. They are usually packed in boxes or plastic wrap. Refrigerated trucks are used to transport vegetables from original sites to preserve and save the quality and freshness of vegetable crops.

C. Tea packaging

Tea is sensitive to moisture, odor and light. It requires proper packaging which is impermeable to moisture, odor, light and oxygen. Different types of tea require different packaging materials. Tea is packed in different shape and sizes depending on their uses and storage time. The following are examples of packaging materials which are available at present:

- ✓ Stand-up zippered LDPE (low density polyethylene) pouch for short time before drinking or short shelf life
- ✓ HDPE (high density polyethylene) (for herbal tea)
- ✓ Paper/foil
- ✓ Paper/foil/PE, foil/PE
- ✓ Waxed paper/PE

- ✓ OPP/EVOH (ethylene vinyl alcohol copolymer)/OPP used as tea pouch
- ✓ Bottles made of PE, polyesters, PET (Polyethylene terephthalate) or glass
- ✓ Paperboard can with a tin plate base (paperboard canister).

Packaging machinery technology, the method form-fill-seal (FFS) is used for a wide variety of packs such as tea bags and sachets.

- ✓ First, the machines form packages to their expected shape,
- ✓ then they are filled with products, in this case dry tea and
- ✓ the last step of packaging is sealing the product in chosen material.

Tea bags are made by FFS technology from light-weight permeable tissues. To protect the tea bags, usually secondary package is made from aluminium foil because of its feature to provide a protecting barrier between product and the environment.

D. Coffee Packaging

Different types of coffee require different packaging materials to maintain quality and safety. For example, roasted coffee requires a barrier to moisture and gases. If the material is non-permeable to gas, the coffee bag may burst, unless the bag is filled after the roasted coffee beans are cold. This is because roasted coffee beans will produce carbon dioxide within 12 hours after processing. Hence packaging has been developed to include an air valve. A bag thus consists of an ultra-seal membrane, with a one-way valve that allows carbon dioxide (a by-product of the roasting process) to escape from the sealed package, without oxygen flowing into the package. This oxygen barrier property will preserve the just-roasted flavor of the coffee.

- ❖ The coffee bags which are used at present are:
  - ✓ standard zippered (HDPE or LDPE) pouch
  - ✓ standard zippered OPP bag for roasted coffee beans and ground coffee
  - ✓ polyester/foil/PE, polyester/foil/LDPE for ground coffee
  - ✓ foil/PE
  - ✓ polyester/foil/polyolefin/PE (polyolefin is use for additional stiffness)
  - ✓ metallized polyester laminated to LDPE

- ✓ waxed paper/EVOH/PE
- ✓ PP used for pouches and bottles (PVC & PETG are also used for coffee bottles)

The packaging material for roasted coffee should be multilayer materials of PP/EVOH/PE or waxed paper/EVOH/PE or OPP. However, material selection depends on the purpose of the producer, whether the coffee will be stored and for how long before reaching the consumers.

E. Milk packaging

The most common type of package for milk is paper carton laminated with foil film on the inner part. These laminated paper boxes may have different types of closures that influence the expiry date of milk after opening the package. The two main categories are resealable and unreasealable. It is considered more convenient when a milk box has plastic cap that can be closed, however several other closures do not provide the posibility of closing, for example packages that are meant to be opened by cutting or tearing the corner of the package.

F. Spices packaging Requirements

In order to maintain the quality of the spices during handling, transportation, storage and distribution, the packaging material to be used is to be selected with care, keeping in mind the functional as well as the marketing requirements. The packaging requirements for spices, in general, are listed below:

- ✓ To protect the product from spillage and spoilage.
- ✓ To provide protection against atmospheric factors such as light, heat, humidity and oxygen. The selected packaging materials should have high water vapour and oxygen barriers.
- ✓ The packaging material should have a high barrier property to prevent aroma/flavour losses and ingress of external odour.
- ✓ The volatile oil present in the spice product has a tendency to react with the inner/ contact layer of the packaging material, at times leading to a greasy and

messy package with smudging of the printed matter. The packaging material should therefore be grease and oil resistant and compatible with the product.

- ✓ Besides the above functional requirements, the packaging material should have good machinability, printability and it should be easily available and disposable.

1.1.6 Unpacking

Different types of packing material are used for different kinds of goods. Stock may arrive in cardboard boxes, wooden crates or sacks; it may be clothing transported and delivered on hangers; it may be chilled or frozen food needing special handling. Within the outer packaging goods may be packed in polystyrene (either loose beads or slabs), in straw, in paper or in other protective materials. Special tools or equipment are needed to remove certain types of packing scissors, pliers and screwdrivers, for example- and it's just as important to return these to their proper places after use as it is to get the stock to the right location.

1.1.7 Functions for Pack and Unpack

1. **Create the Numbering Pattern for Container Numbers**

A numbering pattern is necessary when you want the system to uniquely identify each container instance using a specific format or pattern. A container number is generated for each container instance if the user does not supply a container number. You define the container numbering pattern in Next Number Maintenance. By default, the system will generate a container number that is unique across all container instances regardless of the container definition (container name).

2. **Define a Container**

The Container Maintenance activity enables a user to create a container master (a container definition). Then at the start of packing, the container definition is used to create a container instance identified by a container number. The container definition can specify the data types to use, the materials that are allowed to be packed and the minimum and maximum quantities to be packed.

3. Define the Data You Want Collected During the Packing Process

Data types allow you to specify which type of data you want to collect. The packing data types that you define in Data Field Assignment Maintenance can be selected in the following fields of the Main tab of Container Maintenance:

- Container Data Type - when you want the operator to collect information about the containers being packed into a container
- Company Data Type - when you want the operator to collect information about SFCs being packed into a container.

Pack/Unpack checks the packing data type to determine the fields to display for data collection. For more information regarding creating data types, see Data Field Assignment Maintenance and Data Field Definition Maintenance in this document and in the SAP ME online help.

4. Control Which Objects can be Packed and Unpacked

Containers can include materials, containers or process lots. The objects operators can pack into or unpack from a container can be defined in Container Maintenance. For example, one container (a box) could contain a quantity of a material and a quantity of those boxes could be loaded on another container (a pallet), along with other container. You can control how the Pack/Unpack activity behaves with activity rules.

5. Identify the Documents for Packing or Unpacking

When a container is being defined, you can specify the documents you want printed during the packing or unpacking process. The documents that you define in Document Maintenance appear as options in the Documents tab of Container Maintenance when you click Insert New and browse for documents using the Document browse button.

You can use the Document Print activity (SY520) or the ADS Document Print activity (SY521) as an activity hook to print information about packed or unpacked containers.

You can print documents you have set up both in the system and a third-party printing program. Pack/Unpack checks the Documents tab of Container Maintenance to determine the documents to print during the packing or unpacking process.

6. Define the Dimensions and Weight of the Container

When a container is being defined, you can define its dimensions and weight. You define the height, width, length, maximum fill weight, and weight of a container in the Dimensions tab of Container Maintenance. These values are not used by SAP ME in any calculations. They are available for informational purposes and for use by customer developed hook activities.

Self-Check – 4	**Written test**

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Say True or False

1. Choosing the right packaging is important to meet the functions of packaging (2points)
2. Tea is sensitive to moisture, odor and light (2points)

Test II: Short Answer Questions

1. Write down the examples of packaging machines? (4points)
2. Write at least five examples of packaging materials? (5points)
3. Mention down food packaging systems (3points)

Note: **Satisfactory rating - ≥8points** **Unsatisfactory - below 8 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Operation sheet – 1 Packaging tea product

Procedures:

1. Preparation of the Vacuum Bags:
2. Place (put) the Tea Bags into Rectangular-Shaped Boxes:
3. Insert Anti-oxidation Bags Into Tea Packets:
4. Scoop Tea into Respective Tea Bags:
5. Weigh of the Tea Bags:
6. Make of Tea Bags into Rectangular Shapes:
7. Placement of the Tea Bags in Vacuum Machine:
8. Finally, pack the tea

LAP TEST	Performance Test

Name……. ID……..

Date…….

Time started: _____ Time finished: _____

Instructions: Given necessary templates, tools and materials you are required to perform the following task within **1hour**. The project is expected from each student to do it.

Task-1 Tea product packaging

Information Sheet- 2 Identify, remove and correct or report unacceptable packaging consumables, product and/or packed products

2.1 Unacceptable packaging consumables product and packed products

Unprotected or poorly wrapped and packaged food may be vulnerable to microbiological contamination and cross-contamination. Use of the inappropriate wrapping materials may lead to chemical contamination. Unhygienic storage and assembly of wrapping and packaging can contaminate the materials and therefore the food.

During transport food may be exposed to microbiological and physical hazards from the environment or through cross-contamination from other food. Poor cleaning or maintenance of transport vehicles may also give rise to chemical hazards. Procedures are needed to prevent or minimize the risk of all such hazards causing illness to consumers. Wrapping and packaging can control microbial spoilage by, for example, packaging meat in protective atmospheres using varying levels of oxygen (O2), carbon dioxide (CO2) and nitrogen (N2).

Examples demonstrating the importance of wrapping, packaging and transport hygiene:

Problem	Effect	Possible outcome
Poor quality wrapping materials	Materials can tear	Food is exposed to contamination
Inappropriate wrapping materials	Materials may contain chemicals	Food is tainted by chemicals in the wrapping material

Poor storage conditions	Wrapping and / or packaging can deteriorate	Food is contaminated by dirt and pests
Unlined cardboard cartons	Cartons can absorb microbiological contamination and be a source of dust and paper fragments	A source of microbiological and physical contamination
Inadequate cleaning of reusable containers	Cross-contamination between product batches	Increased chance of contamination of food products by food poisoning bacteria (such as Salmonella)
Inadequate separation between exposed and packaged meat during transport	Cross-contamination of food	
Transport is poorly cleaned, maintained or unsuitable vehicles or containers are used to transport food	Microbiological, physical or chemical cross contamination of food	

2.2 Correct, remove and report unacceptable packaging consumables product and packed products

2.2.1 Mechanisms of correcting and removing unacceptable packaging consumables product and packed products

a) Compliance regarding wrapping and packaging design and storage

- ✓ Store wrapping materials in which a way that do not become contaminated
- ✓ Put adequate pest control procedures in place
- ✓ Make sure that if processed foodstuffs are being wrapped, there are large enough rooms or the separate storage of raw materials from processed materials.

b) Good practice

- Consider the design and construction of premises or when buildings are rebuilt, altered or refurbished is adequate for the anticipated throughout:
  - ✓ For storage of wrapping materials so that they are off floor and from dust and other contamination
  - ✓ For storage of packaging materials so that they are off the floor
  - ✓ For assembly of wrapping/packaging before use
  - ✓ For wrapping and packaging of meat and for its products
  - ✓ For the separate storage of packaged and exposed meat and its products

c) Compliance regarding wrapping and packaging materials

- Make sure that:
  - ✓ Materials used for wrapping or packaging is not a source of contamination
  - ✓ The integrity of the construction and cleanliness of containers is assured

d) Compliance regarding reusable containers

- Make sure that:
  - ✓ cleanliness of **reusable** containers is assured
  - ✓ wrapping and packaging materials re-used for foodstuffs are easy to clean and where necessary, to disinfect

e) Compliance regarding packing operation

- ✓ Make sure that wrapping and packaging operation are carry out so as avoid contamination of the products
- ✓

2.3 Report unacceptable packaging consumables

Although no packaging is the best choice of all, it is not always practical. The need for any packaging should be evaluated in the research, design and marketing stages of a product. The goal should always be to reduce unnecessary packaging. The bulk delivery of solids and liquids to food industries and bulk retail sales from bins (including hardware products, produce, housewares, toys and other items) eliminate unnecessary

packaging. Where the need for packaging exists, packaging should follow the 3R's hierarchy.

The 3R's packaging hierarchy does not include all possible options. To measure full environmental and/or economic impacts packaging must be subject to an agreed upon reputable and independent environmental life cycle analysis model as well as national testing protocols.

REDUCE: The first R minimal packaging

- **Reduce** is the most important of the 3R's. Packaging should be reduced prior to the manufacturing stage, by designing and marketing products for the first "R". This means reducing the number of layers, materials and toxins at source.
  - ✓ In general order of hierarchy, reduction occurs by:
    a. Using less packaging and by meeting all or most of the 3R's hierarchy, including reuse and recycle
    b. Minimizing the number of materials used
    c. Minimizing the weight and volume of materials used
    d. Employing bulk delivery systems
    e. Product concentration resulting in smaller packages
    f. Using fewer toxic chemicals in the product and its packaging
    g. Utilizing modes of shipping requiring less packaging and use of repairable pallets by manufacturers
    h. Using multi-layered, multi-material packaging. However, this usually makes the product non-recyclable (i.e.: composites, laminates)

RE-USE: The second R reusable packaging

- ✓ **Reuse** is second in importance. Packaging should be designed to be reusable, refillable, returnable and durable to the greatest extent possible. In general order of hierarchy, reuse is achieved by:
  a. Reusing/refilling commercially and redistributing refilled products
  b. Refilling by the consumer through dispensing systems at retail outlets

c. Reusing containers which have been standardized to assist in reuse applications
d. Refilling via a second package (i.e.: smaller, concentrated containers or larger family-size packages)
e. Reusing in the home - INFREQUENTLY purchased, durable and distinctive containers (i.e.: teddy bear peanut butter jars that can later be used as cookie)
f. Reusing in the home - FREQUENTLY purchased containers (i.e.: margarine tubs)

RECYCLE: The third R recycle packaging

✓ **Recycle** is third in importance. Packaging should be designed to be recyclable and/or made with recycled content. A package or packaging material is considered to be "recyclable" if there is a widely available and economically viable collection, processing and marketing system for the product/material. In general order of hierarchy, packaging may be recycled in the following ways:

a. Recycling over and over back into its original packaging type (also known as primary or "closed loop" recycling
b. Recycling back into another recyclable, useful package/marketable product (also known as secondary recycling)
c. Recycling back into another non-recyclable product (also known as "open loop" or tertiary recycling). Examples include:
d. Durable and marketable goods such as synthetic carpet
e. "Cascaded" (delayed disposal), short-lived or single use marketable items such as seeding flowerpots
f. Recycling into "show piece" product that is not marketable in quantity such as park benches made from disposable diapers

Self-Check – 5	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. What is good packaging practices (3points)
2. Why we pack food product? (5points)

Note: **Satisfactory rating - ≥4points** **Unsatisfactory - below 4 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet- 3 Maintain the work area according to housekeeping standards

3.1 Maintain the work area according to housekeeping standards

Effective housekeeping can help control or eliminate workplace hazards. Poor housekeeping practices frequently contribute to incidents. If the sight of paper, debris, clutter and spills is accepted as normal, then other more serious hazards may be taken for granted

Housekeeping is not just cleanliness. It includes keeping work areas neat and orderly, maintaining halls and floors free of slip and trip hazards, and removing of waste materials (e.g., paper, cardboard) and other fire hazards from work areas. It also requires paying attention to important details such as the layout of the whole workplace, aisle marking, the adequacy of storage facilities, and maintenance. Good housekeeping is also a basic part of incident and fire prevention.

Effective housekeeping is an ongoing operation: it is not a one-time or hit-and-miss cleanup done occasionally. Periodic "panic" cleanups are costly and ineffective in reducing incidents.

3.1.1 Purpose of workplace housekeeping

- Poor housekeeping can be a cause of incidents, such as:
  - ✓ tripping over loose objects on floors, stairs and platforms
  - ✓ being hit by falling objects
  - ✓ slipping on greasy, wet or dirty surfaces
  - ✓ striking against projecting, poorly stacked items or misplaced material
  - ✓ cutting, puncturing, or tearing the skin of hands or other parts of the body on projecting nails, wire or steel strapping
- To avoid these hazards, a workplace must "maintain" order throughout a workday. Although this effort requires a great deal of management and planning, the benefits are many.

3.1.2 Benefits of good housekeeping practices

- Effective housekeeping results in:
  - ✓ reduced handling to ease the flow of materials
  - ✓ fewer tripping and slipping incidents in clutter-free and spill-free work areas
  - ✓ decreased fire hazards
  - ✓ lower worker exposures to hazardous products (e.g. dusts, vapours)
  - ✓ better control of tools and materials, including inventory and supplies
  - ✓ more efficient equipment cleanup and maintenance
  - ✓ better hygienic conditions leading to improved health
  - ✓ more effective use of space
  - ✓ reduced property damage by improving preventive maintenance
  - ✓ less janitorial work
  - ✓ improved morale

3.1.3 Good housekeeping program plan

A good housekeeping program plans and manages the orderly storage and movement of materials from point of entry to exit. It includes a material flow plan to ensure minimal handling. The plan also makes sure that work areas are not used as storage areas by

having workers move materials to and from work areas as needed. Part of the plan could include investing in extra bins and more frequent disposal.

The costs of this investment could be offset by the elimination of repeated handling of the same material and more effective use of the workers' time. Often, ineffective or insufficient storage planning results in materials being handled many times and being stored in hazardous ways. Knowing the workplace layout and the movement of materials throughout it will help when planning work procedures.

Worker training is an essential part of any good housekeeping program. Workers need to know how to work safely with the products they use. They also need to know how to protect other workers such as by posting signs (e.g., "Wet - Slippery Floor") and reporting any unusual conditions.

Housekeeping order is "maintained" not "achieved." Cleaning and organization must be done regularly, not just at the end of the shift. Integrating housekeeping into jobs can help ensure this is done. A good housekeeping program identifies and assigns responsibilities for the following:

- clean up during the shift
- day-to-day cleanup
- waste disposal
- removal of unused materials
- inspection to ensure cleanup is complete

Do not forget out-of-the-way places such as shelves, basements, sheds, and boiler rooms that would otherwise be overlooked. The final step to any housekeeping program is inspection. It is the only way to check for deficiencies in the program so that changes can be made. Examples of checklists include inspecting offices and manufacturing facilities.

3.1.4 Elements of an effective housekeeping program

- ✓ Maintenance
- ✓ Dust and Dirt Removal
- ✓ Employee Facilities
- ✓ Surfaces
- ✓ Maintain Light Fixtures
- ✓ Aisles and Stairways
- ✓ Spill Control
- ✓ Tools and Equipment
- ✓ Waste Disposal
- ✓ Storage

Self-Check – 6	**Written test**

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Say True or False

1. Housekeeping is just cleanliness.
2. The final step to any housekeeping program is inspection.
3. Effective housekeeping can help eliminate workplace hazards.
4. Effective housekeeping is not an ongoing operation.

Test II: Short Answer Questions

1. What down the cause of poor housekeeping? (7points)
2. Write Elements of an effective housekeeping program? (5points)
3. What are Benefits of good housekeeping practices? (4points)

Note: **Satisfactory rating - ≥10 points** **Unsatisfactory - below 10 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Information Sheet- 4 Conducting work in accordance with workplace environmental guidelines

4.1 Conducting work in accordance with workplace environmental guidelines

4.1.1 Legislative Requirements

A person conducting a business or undertaking at a workplace must ensure, as far as is reasonably practicable. The following are legislative Requirements:

a. the layout of the workplace allows, and the workplace is maintained so as to allow, for persons to enter and exit and to move about without risk to health and safety, both under normal working conditions and in an emergency,
b. work areas have space for work to be carried out without risk to health and safety,
c. floors and other surfaces are designed, installed and maintained to allow work to be carried out without risk to health and safety,
d. lighting enables:
    i. each worker to carry out work without risk to health and safety, and
    ii. persons to move within the workplace without risk to health and safety, &
    iii. safe evacuation in an emergency,
e. ventilation enables workers to carry out work without risk to health and safety,
f. workers carrying out work in extremes of heat or cold are able to carry out work without risk to health and safety,
g. work in relation to or near essential services does not give rise to a risk to the health and safety of persons at the workplace.

A person is conducting business or undertaking workplace must ensure, so far as is reasonably practicable, the provision of adequate facilities for workers, including toilets, drinking water, washing and eating facilities. These facilities must be in good working order, clean, safe and accessible. When considering how to provide and maintain facilities that are adequate and accessible, a person conducting a business or undertaking must consider all relevant matters including:

1. the nature of the work being carried out at the workplace
2. the nature of the hazards at the workplace
3. the size, location and nature of the workplace
4. the number and composition of the workers at the workplace.

4.1.2 Environmental Packaging Considerations

Implemented, proposed and/or impending Federal and State legislation prohibits wasteful and/or excessive packaging. The challenge then is to meet these requirements with the amount and degree of packaging required without excess.

Over packaging and wasteful **"just in case"** packaging is undesirable for both the supplier and the user.

1. Non-recyclable packaging is that which has no available or economical system in place to reprocess the material used. Wax-coated corrugated is a prime example of this type of packaging.
2. Wax or plastic coated paper is prohibited because it contaminates the recycling process.
3. Non-kraft corrugated has no recycle value and therefore is unacceptable. Recycling centers will not accept it; therefore, rail industry suppliers shall not use it.
4. The use of lead and cadmium in packaging and/or labeling material is strictly prohibited.
5. Plastic plugs, caps and protectors are extremely difficult to recycle due to oil and paint contamination, colors, uncertainty of resin type, and transportation costs. Every effort should be made to reduce the use of plastic. If it cannot be eliminated, other changes can be made to assist with the effectiveness of the packaging:
6. Mold the Society of the Plastics Industry (SPI) code into the part. When elimination is not possible these codes will allow for effective recycling.
7. Clear Linear Low Density PolyEthylene (LLDPE) plastics are preferred and can be effectively recycled.
8. Shipping plastics must not be contaminated with paints and lubricants.

9. When at all possible, replace plastic with a recyclable paper substitute.

Self-Check – 1	Written test

Name…… ID…… Date…….

Directions: Answer all the questions listed below. Examples may be necessary to aid some explanations/answers.

Test I: Short Answer Questions

1. What does mean LLDPE? (2 points)
2. What a person conducting a business or undertaking must consider the relevant matters? (4 points)

Note: **Satisfactory rating - ≥3 points** **Unsatisfactory - below 3 points**

You can ask you teacher for the copy of the correct answers.

Answer Sheet

Score = _____

Rating: _____

Name: _____ Date: _____

Reference Materials

Book:

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