|  |
| --- |
| **Model Curriculum**  **QP Name: Perishable Product Handling Specialist**  **QP Code: LSC/Q8701**  **QP Version: 2.0**  **NSQF Level: 5**  **Model Curriculum Version: 2.0** |
| **­**  Logistics Sector Skill Council|| Logistics Sector Skill Council, Ground Floor, Temple Tower, No.476, Anna Salai, Nandanam, Chennai, Tamil Nadu 600035 |

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# Training Parameters

|  |  |
| --- | --- |
| **Sector** | Logistics |
| **Sub-Sector** | Cold Chain |
| **Occupation** | Cold Chain Operations |
| **Country** | India |
| **NSQF Level** | 5 |
| **Aligned to NCO/ISCO/ISIC Code** | NCO-2015/ NIL |
| **Minimum Educational Qualiﬁcation and Experience** | Graduate in the relevant field OR Graduation in any field + 1 year of relevant experience OR 2-year Diploma (after 12th Class) in the relevant field + 1 year of relevant experience OR Class XII + 4 years of relevant experience OR Class 10 + 2 years of ITI + 2 years of relevant experience OR Certificate-NSQF (Reefer Vehicle Operator - level 4) with 2 Years of relevant experience |
| **Pre-Requisite License or Training** | NA |
| **Minimum Job Entry Age** | 21 |
| **Last Reviewed On** | NA |
| **Next Review Date** | NA |
| **NSQC Approval Date** | NA |
| **QP Version** | 2.0 |
| **Model Curriculum Creation Date** | 21-08-2022 |
| **Model Curriculum Valid Up to Date** | 21-08-2022 |
| **Model Curriculum Version** | 2.0 |
| **Minimum Duration of the Course** | 540 |
| **Maximum Duration of the Course** | 660 |

# Program Overview

This section summarizes the end objectives of the program along with its duration.

## Training Outcomes

At the end of the program, the learner will be able to:

* Administer loading and unloading operations as per safety requirements
* Inspect suitable handling of perishable goods as per quality standards
* Monitor pre cooling operations to avoid damages
* Perform effective palletization and stacking of goods
* Manage workplace for safe and healthy work environment by following and ensuring compliance to regulatory and safety norms
* Communicate effectively with colleagues and clients for proper information flow
* [Assess grading line operations](#NOS3) and take corrective actions to resolve discrepancy
* [Administer ripening chamber operations](#NOS5) to ensure uniform ripening
* Examine product packaging for ease of loading, protection, unlaoding and sales

## Compulsory Modules

The table lists the modules, their duration and mode of delivery.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NOS and Module Details | Theory  Duration | Practical  Duration | On-the-Job Training Duration (Mandatory) | On-the-Job Training Duration (Recommended) | Total Duration |
| Bridge Module | **20** | **10** |  |  | **30** |
| Module 1: Introduction to Perishable product handling specialist | 20 | 10 |  |  | 30 |
| LSC/ N8701- Supervise loading and unloading operations  V1.0  5 | **20** | **40** | **5** |  | **65** |
| Module 2: Supervision of loading /unloading operation | 20 | 40 | *5* |  | 65 |
| LSC/N8702 – Oversee inspection of goods at the time of arrival  V2.0  5 | **20** | **40** | **5** |  | **65** |
| Module 3: Monitor inspection of goods | 20 | 40 | 5 |  | 65 |
| LSC/N8704 – Supervise pre cooling unit operations  V2.0  5 | **20** | **40** | 5 |  | **65** |
| Module 4: Supervision of pre cooling operations | 20 | 40 | 5 |  | 65 |
| LSC/N8706 – Manage placement of goods in controlled conditions  V1.0  3 | **20** | **50** | 5 |  | **75** |
| Module 5: Storage and movement of goods in cold storage | 20 | 50 | 5 |  | 75 |
| LSC/N9901 – Maintain food and personal safety, health, and hygiene in cold storage plant  V1.0  5 | **20** | **30** | **5** |  | **55** |
| Module 6: Compliance to health, safety and security norms | 20 | 30 | **5** |  | 55 |
| LSC/9902 Communicate effectively with colleagues and clients  V1.0  5 | **30** | **30** | **5** |  | **65** |
| Module 7: Effective Communication | 30 | 30 | **5** |  | 65 |
| Employability | **30** | **30** |  |  | **60** |
| Total Duration | **180** | **270** | **30** |  | **480** |

## Elective Modules

The table lists the elective modules, their duration and mode of delivery.

**Electives 1: Grading line operations**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NOS and Module Details | Theory  Duration | Practical  Duration | On-the-Job Training Duration (Mandatory) | On-the-Job Training Duration (Recommended) | Total Duration |
| **LSC/N8703 – Administer grading line operations**  **V1.0**  **5** | **30** | **30** |  |  | **60** |
| Module 9: Inspection of grading line operations | 30 | 30 |  |  | 60 |
| Total Duration | **30** | **30** |  |  | **60** |

**Electives 2: Ripening Chamber Operations**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NOS and Module Details | Theory  Duration | Practical  Duration | On-the-Job Training Duration (Mandatory) | On-the-Job Training Duration (Recommended) | Total Duration |
| **LSC/N8705 – Administer ripening chamber operations**  **V1.0**  **5** | **30** | **30** |  |  | **60** |
| Module 10: Management of ripening chamber operations | 30 | 30 |  |  | 60 |
| Total Duration | **30** | **30** |  |  | **60** |

**Electives 3: Product protection and packaging**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| NOS and Module Details | Theory  Duration | Practical  Duration | On-the-Job Training Duration (Mandatory) | On-the-Job Training Duration (Recommended) | Total Duration |
| **LSC/N8707– Supervise product protection and packaging**  **V1.0**  **3** | **30** | **30** |  |  | **60** |
| Module 11: Monitor packaging | 30 | 30 |  |  | 60 |
| Total Duration | **30** | **30** |  |  | **60** |

**Module Details**

## Module 1: Introduction to Perishable Product Handling Specialist

***Mapped to Bridge Module***

**Terminal Outcomes:**

* Describe the basic structure and function of supply chain
* Detail the various functions of a perishable product handling specialist

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *10:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Classify the components of supply chain and logistics sector * Detail the various sub-sectors and the opportunities in them * Identify various activities in cold chain, warehouse etc. * Detail your job role as perishable product handling specialist and its interface with other job roles * Detail the various cold storage equipment such as evaporators, compressors, sensors etc. * Discuss the documentation requirements in cold storage maintenance operations | * Demonstrate the use of evaporators, compressor etc. * Explain the various documentation involved in cold chain maintenance operation |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
|  | |

## Module 2: Supervision of loading/unloading operation

***Mapped to LSC/N8701, v1.0***

**Terminal Outcomes:**

* Demonstrate the maintenance procedure of refrigeration equipment as per SOP.

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *40:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Perform manpower allocation based on volume and specifications of goods. * Verify vehicle details against details received from route controller * Inform truck coordinator and procurement head in case of discrepancy * Detail handling requirement for different types of goods * Inspect proper handling of goods by workers as per requirements * Examine proper stacking of goods to prevent damages and facilitate quality inspection |  |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| Statistical tools, ERP, stationery  compressor, condenser, evaporator, temperature, and humidity sensor | |

## Module 3: Monitor inspection of goods

***Mapped to LSC/N8702, V1.0***

**Terminal Outcomes:**

* Demonstrate effective monitoring of maintenance activities as per SOP

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *50:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Instruct workers to separate spoiled goods from unspoiled goods * Describe quality specifications for handling different types of perishable products * Inspect checks being undertaken by quality chemists based on quality standards * Review reports to assess non-conformance to quality parameters * Verify quantity of goods as per purchase order * Communicate discrepancies on quality and quantity to internal stakeholders * Report quantity of goods transferred to grading line after inspection * Inspect safe handling of goods at grading line operations | * Inspect adherence to quality, time and cost budgets allocated for maintenance * Perform maintenance of refrigeration equipment as per SOP * Demonstrate appropriate maintenance activities for refrigeration equipment * Inspect the logs for timely updates * Provide expert inputs to subordinates for carrying out maintenance activity * Assess timely completion of activities by workers * Assess work efficiency to suggest training needs |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Office, compressor, condenser, evaporator, temperature and humidity sensor, simulator, cold storage equipment, gas leak detectors, tools and tackles, consumables | |

## Module 4: Supervision of pre-cooling operations

***Mapped to LSC/N8704, v1.0***

**Terminal Outcomes:**

* Detail the appropriate steps for supervision of repairs and services as per SOP

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *50:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Identify suitable pre-cooling technology as per product requirements * Inspect proper segegration of goods in pre cooling chamber * Examine placement and stacking of goods for uniform cooling * Manage space efficiency by timely removal of goods from pre-cooling unit to temporarary staging space * Inspect proper handling of goods to avoid damage | * Identify suitable pre-cooling technology as per product requirements * Inspect proper segregation of goods in pre cooling chamber * Examine placement and stacking of goods for uniform cooling * Manage space efficiency by timely removal of goods from pre-cooling unit to temporary staging space * Inspect proper handling of goods to avoid damage |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Office  compressor, condenser, evaporator, temperature and humidity sensor, simulator, tools and tackles, consumables, cold storage equipment, gas leak detectors, electrical systems, start relays and defrost timers, pressure pumps, etc. | |

## Module 5: Storage and movement of goods in cold storage

***Mapped to LSC/N8706, v1.0***

**Terminal Outcomes:**

* Demonstrate effective training on safe handling of equipment’s condensers, evaporators etc.
* Detail the maintenance procedure for refrigeration equipment such as dismantling, tracing faults, repair and service, component replacement, control circuit repairs, etc.

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *50:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Explain the process of delivering training on safe handling of equipment’s, condensers, evaporators etc. * Detail harmful effects of refrigerants to the environment * Explain the maintenance process for dismantling, tracing faults, component replacement etc. * Discuss the procedure for delivering training on emergency responses during breakdown during emergency response * Explain the proper usage of tools and techniques | * Provide training to plant engineers on safe handling of refrigerants * Understand the harmful effect of refringent * Provide training on appropriate procedures for handling evaporators, condenser etc. * Demonstrate maintenance of refrigeration equipment such as dismantling, tracing faults, repair and service, component replacement, control circuit repairs, etc. * Provide training on emergency responses during breakdown * Provide training on usage of tools, techniques etc. * Provide training on numerical calculations and reporting necessary for performing the activity |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Office  compressor, condenser, evaporator, temperature and humidity sensor, simulator, tools and tackles, consumables, cold storage equipment, gas leak detectors, electrical systems, start relays and defrost timers, pressure pumps, etc. | |

## Module 6: Compliance to health, safety and security norms

***Mapped to LSC/N9901, v1.0***

**Terminal Outcomes:**

* Describe health, safety, and security procedures in cold storage plants
* Demonstrate the inspection procedure to ensure appropriate and safe conditions of activity area and equipment
* Illustrate the standard protocol to be followed during emergency situations, accidents and breach of safety

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *50:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Detail health, safety and security procedures in cold storage plants * Explain the inspection procedure to ensure appropriate and safe conditions of activity area and equipment * Detail hygiene and sanitation standards as per regulatory bodies such as FSSAI, APEDA * Evaluate protective devices, pipelines and cold storage areas as per SOP * Detail the pest control methods to be followed to ensure zero pest infestation * Describe the SOP for safe handling of goods * Explain the protocol to be followed during accident, emergency etc. | * Perform health and safety procedure in cold storage plants * Follow safety precautionary methods * Check the activity area and equipment for compliance to safety * Check the pipeline and cold storage area are as per SOP * Perform pest control as per SOP to avoid infestation * Inspect adherence to standard operating procedures (SOP) while handling goods * Implement standard protocol in case of emergency situations, accidents, and breach of safety |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Project, MS Office, Computer, Projector, TV, Stationery, Worksheets, Statistical Tools  compressor, condenser, evaporator, temperature and humidity sensor, simulator, tools and tackles, consumables | |

## Module 7: Effective Communication

***Mapped to LSC/N9902, v1.0***

**Terminal Outcomes:**

* Demonstrate effective communication skills to understand targets and performance indicators
* Establish good client relationships and maintain them effectively

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *40:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Understand the target and performance indicator from seniors * Detail the progress to superiors * Explain the behavior to be followed in workplace * Breakdown issues among colleagues * Interpret cooperation, coordination to be established with colleagues and clients * Recognize the client requirement * Manage client escalation immediately * Manage good client relationship | * Communicate effectively with seniors to understand targets, performance indicators * Practice responsible, disciplined and respectful behavior in the workplace * Resolve conflicts amongst colleagues * Practice cooperation, coordination, etiquette and collaboration with colleagues and clients * Provide expert inputs and guide colleagues * Communicate effectively with clients to understand work requirements * Solve client escalations effectively * Establish and maintain good client relationships |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Project, MS Office, Computer, Projector, TV, Stationery, Worksheets, Statistical Tools  compressor, condenser, evaporator, temperature and humidity sensor, simulator, tools and tackles, consumables | |

## Module 8: Inspection of grading line operations

***Mapped to LSC/N8703, v1.0***

**Terminal Outcomes:**

* Demonstrate effective communication skills to understand targets and performance indicators
* Establish good client relationships and maintain them effectively

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *40:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Administer sorting and grading of goods for removal of improperly sized, severely damaged, over mature and damaged goods * Decide criteria for grading and sorting of goods based on end user requirements * Examine grading knowledge of workers on various categories of goods to be sorted * Inspect washing facility and appropriate water conditions * Administer washing and drying process for various goods as per quality standards * Perform allocation of workers for grading line operations * Inspect adherence to safety precautions, standards and ergonomics in grading line operations * Implement corrective actions in case of discrepancy | * Administer sorting and grading of goods for removal of improperly sized, severely damaged, over mature and damaged goods * Decide criteria for grading and sorting of goods based on end user requirements * Examine grading knowledge of workers on various categories of goods to be sorted * Inspect washing facility and appropriate water conditions * Administer washing and drying process for various goods as per quality standards * Perform allocation of workers for grading line operations * Inspect adherence to safety precautions, standards and ergonomics in grading line operations * Implement corrective actions in case of discrepancy |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| MS Project, MS Office, Computer, Projector, TV, Stationery, Worksheets, Statistical Tools  compressor, condenser, evaporator, temperature and humidity sensor, simulator, tools and tackles, consumables | |

## Module 9: Management of ripening chamber operations

***Mapped to LSC/N8705, v1.0***

**Terminal Outcomes:**

* Demonstrate the steps to be followed in the management of ripening chamber operations

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *40:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Detail the steps to be followed for managing ripening chamber operations * Describe the inspection procedure for ripening chamber conditions such as ripening gas level, oxygen, and carbon dioxide levels etc. * Detail ripening chamber operator on the chamber condition changes required over the ripening cycle * Detail the inspection of maintenance of pre-engineered building panels, MHE and refrigeration system * Categorize suitable crates to be used for uniform ripening * Calculate number of storage days required for goods in ripening chamber * Plan alternate use of ripening chamber in case of space availability | * Examine ripening chamber conditions such as ripening gas level, oxygen and carbon dioxide levels etc. * Inspect temperature, air path control mechanism etc. * Instruct ripening chamber operator on the chamber condition changes required over the ripening cycle * Examine maintenance of pre-engineered building panels, MHE and refrigeration system * Inspect transfer of products to ripening chamber at appropriate time * Identify suitable crates to be used for uniform ripening * Compute number of storage days required for goods in ripening chamber * Plan alternate use of ripening chamber in case of space availability |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| Teaching board, computer, projector,  video player or TV, Statistical tools, stationery, MS Office, cold storage setup, Ethylene tanks, Carbon dioxide tanks, Gas dispensing and control equipment, Gas level testing equipment, Leakage sensors, compressor, condenser, evaporator, temperature and humidity sensor, simulator, tools and tackles, consumables | |

## Module 10: Monitor packaging

***Mapped to LSC/N8707, v1.0***

**Terminal Outcomes:**

* Detail the steps to be followed for effective monitoring of packaging of goods

|  |  |
| --- | --- |
| Duration: *20:00* | Duration: *40:00* |
| **Theory – Key Learning Outcomes** | **Practical – Key Learning Outcomes** |
| * Discuss the procedure of sample inspection of goods for compliance to quality standards * Detail packaging standards, packaging material as per product specification for inspection cleared goods * Explain the inspection process of packed goods for pre dispatch quality check * Explain the inspection process of labelling and online numbering of cartons etc. | * Perform sample inspection of goods for compliance to quality standards * Check packaging standards, packaging material as per product specification for inspection of cleared goods * Examine the packed goods for pre dispatch quality check * Check labelling and online numbering of cartons etc. |
| **Classroom Aids** | |
| Charts, Models, Video presentation, Flip Chart, Whiteboard/Smart Board, Marker, Board eraser | |
| **Tools, Equipment and Other Requirements** | |
| Teaching board, computer, projector,  video player or TV, Product wise country wise packaging standards, different types of packaging materials, Non production material for packaging, packaging consumables, packaging equipment | |

# Annexure

## Trainer Requirements

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Trainer Prerequisites | | | | | | |
| Minimum Educational Qualification | **Specialization** | **Relevant Industry Experience** | | **Training Experience** | | **Remarks** |
| ***Years*** | ***Specialization*** | ***Years*** | ***Specialization*** |  |
| Graduate or Diploma | Engineering | 6 | Handling of perishable products | 1 | Handling pf perishable products |  |

|  |  |
| --- | --- |
| Trainer Certification | |
| Domain Certification | **Platform Certification** |
| Certified for Job Role: “Perishable product handling specialist” mapped to QP: “LSC/Q8701, v1.0”. Minimum accepted score is 80% | Recommended that the Trainer is certified for the Job Role: “Trainer”, mapped to the Qualification Pack: “MEP/Q2601”. Minimum accepted score is 80% |

## Assessor Requirements

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| Assessor Prerequisites | | | | | | |
| Minimum Educational Qualification | **Specialization** | **Relevant Industry Experience** | | **Training/Assessment Experience** | | **Remarks** |
| ***Years*** | ***Specialization*** | ***Years*** | ***Specialization*** |  |
| 12th Pass | NA | 2 | Handling of perishable products | 1 | Handling of perishable products | Graduation is preferred |

|  |  |
| --- | --- |
| Assessor Certification | |
| Domain Certification | **Platform Certification** |
| Certified for Job Role: “Perishable Product Handling Specialist” mapped to QP: “LSC/Q8701, v1.0”. Minimum accepted score is 80% | Recommended that the Assessor is certified for the Job Role: “Assessor”, mapped to the Qualification Pack: “MEP/Q2601”. Minimum accepted score is 80% |

## Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the learner on the required competencies of the program.

|  |  |
| --- | --- |
| Sr. No. | Guidelines for Assessment |
| 1 | Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC. |
| 2 | The assessment for the theory part will be based on knowledge bank of questions created by the SSC. |
| 3 | Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below) |
| 4 | Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training canter based on this criterion |
| 5 | To pass the Qualification Pack, every trainee should score a minimum of 70% in each NOS |
| 6 | In case of unsuccessful completion, the trainee may seek re-assessment on the Qualification Pack |

# References

## Glossary

|  |  |
| --- | --- |
| Term | Description |
| Declarative Knowledge | Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem. |
| Key Learning Outcome | Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application). |
| OJT (M) | On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site |
| OJT (R) | On-the-job training (Recommended); trainees are recommended the specified hours of training on site |
| Procedural Knowledge | Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills. |
| Training Outcome | Training outcome is a statement of what a learner will know, understand and be able to do **upon** **the** **completion of the training**. |
| Terminal Outcome | Terminal outcome is a statement of what a learner will know, understand and be able to do **upon the completion of a module.** A set of terminal outcomes help to achieve the training outcome. |

## Acronyms and Abbreviations

|  |  |
| --- | --- |
| Term | Description |
| QP | Qualification Pack |
| NSQF | National Skills Qualification Framework |
| NSQC | National Skills Qualification Committee |
| NOS | National Occupational Standards |
|  |  |
|  |  |
|  |  |