

Qualification Pack



Chilling Plant Technician

QP Code: AGR/Q4205

Version: 3.0

NSQF Level: 4

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AGR/Q4205: Chilling Plant Technician

Brief Job Description

A Chilling Plant Technician performs work in the repair, maintenance, service, modification, troubleshooting, inspection and monitoring of the operation of the chilling system used for chilling milk.

Personal Attributes

A Chilling Plant Technician must have the ability to plan, organize, prioritize, calculate and handle pressure. The individual must have a mechanical aptitude and must possess reading, writing and communication skills. In addition, the individual must have stamina and personal hygiene.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [AGR/N4220: Prepare and Maintain Work Area and Chilling Equipment](#)
2. [AGR/N4221: Handle Refrigeration Unit for Chilling and Storing Milk](#)
3. [AGR/N4222: Complete Documentation and Record-keeping Related to the Chilling Plant](#)
4. [AGR/N4223: Ensure Safety, Hygiene and Sanitation for Storage of Milk in a Chilling Plant](#)
5. [DGT/VSQ/N0102: Employability Skills \(60 Hours\)](#)

Qualification Pack (QP) Parameters

Sector	Agriculture
Sub-Sector	Dairying
Occupation	Milk Collection and Handling
Country	India
NSQF Level	4
Credits	13
Aligned to NCO/ISCO/ISIC Code	NCO-2015/NIL

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Minimum Educational Qualification & Experience	12th grade Pass OR Completed 2nd year of the 3-year diploma after 10 (and pursuing regular diploma) OR 10th grade pass (plus 2-year NTC) OR 10th grade pass (plus 1-year NTC plus 1 year NAC) OR 8th grade pass with 2 year NTC plus 1 year NAC plus 1 year CITS OR 10th grade pass and pursuing continuous schooling OR 10th grade pass with 2 Years of experience relevant experience OR Previous relevant Qualification of NSQF Level (Level 3.0 with minimum education as 8th Grade pass) with 3 Years of experience relevant experience OR Previous relevant Qualification of NSQF Level (Level 3.5 with 1.5- year relevant experience)
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	31/03/2025
NSQC Approval Date	31/03/2022
Version	3.0
Reference code on NQR	QG-04-AG-00319-2023-V1.1-ASCI
NQR Version	1.1

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AGR/N4220: Prepare and Maintain Work Area and Chilling Equipment

Description

This OS unit is about preparing the work area for hygiene and safety, ensuring performance and maintenance of chilling equipment and components as per the specification and standard of the organization.

Scope

The scope covers the following :

- Prepare and maintain work area for chilling of milk
- Receive milk at chilling plant
- Prepare and maintain chilling equipment

Elements and Performance Criteria

Prepare and maintain work area for chilling of milk

To be competent, the user/individual on the job must be able to:

- PC1.** clean and maintain the cleanliness of the work area using approved cleaning chemicals and sanitizers to keep it free from dust, waste, flies and pests
- PC2.** ensure that the work area is safe and hygienic for the chilling of milk
- PC3.** dispose of waste materials as per defined SOPs and industry requirements

Receive milk at chilling plant

To be competent, the user/individual on the job must be able to:

- PC4.** receive milk at the chilling plant in milk cans
- PC5.** prepare milk reception schedule for all the routes without loss of quality
- PC6.** plan the route of the milk van in such a way that the procured milk reaches the chilling plant at the specified time for that route
- PC7.** take actions for the cooling of milk cans during transit and before the reception at the CC

Prepare and maintain chilling equipment

To be competent, the user/individual on the job must be able to:

- PC8.** check the working and performance of all equipment used in chilling plant facility such as compressor, conveyor belt, condenser, evaporator, fans, sensors, thermostatic expansion valve, humidity meter, etc.
- PC9.** clean the equipment used with approved cleaning chemicals and sanitizers following SOP
- PC10.** ensure that the oil traps on the refrigerant discharge side are frequently drained
- PC11.** check evaporators and receivers if it has solidified and is obstructing the flow of the refrigerant
- PC12.** ensure that the evaporator coils are kept free of frost by periodically defrosting
- PC13.** ensure that the refrigerant pipes are free of any clog and there is no ice inside the pipes
- PC14.** ensure that the compressor stuffing boxes are repacked at regular intervals
- PC15.** practice minor repairs/faults of all equipment, if required

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Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organization's standards, process standards and procedures followed in the organization for chilling of milk
- KU2.** types of chemicals, materials and equipment required for the cleaning and maintenance
- KU3.** the cleaning process to disinfect equipment/ tools
- KU4.** supplier/manufacturer instructions related to cleaning and maintenance
- KU5.** calibration procedure and method for equipment handled
- KU6.** food safety standards and regulations (as per FSSAI)
- KU7.** legal regulations pertaining to workplaces such as health and safety, recommended dosage for use of sanitizers, control of substances hazardous to health, handling/storage/ disposal/ cautions of use of sanitizers and disinfectants

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** note the details of the refrigeration system and components, maintenance and service reports
- GS2.** read and interpret design, drawings and construction of the refrigeration facility
- GS3.** read and interpret the storage methods and conditions for chilling all types of milk and milk products
- GS4.** discuss task lists, schedules and activities with the supervisor
- GS5.** effectively communicate with the team members
- GS6.** plan and organize the work order and jobs received from the supervisor
- GS7.** plan to utilize time and equipment effectively
- GS8.** support the supervisor in scheduling tasks for helper(s)
- GS9.** apply domain information about maintenance processes and technical knowledge about tools and equipment
- GS10.** use acquired knowledge of the process for identifying and handling issues

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Prepare and maintain work area for chilling of milk</i>	8	8	-	8
PC1. clean and maintain the cleanliness of the work area using approved cleaning chemicals and sanitizers to keep it free from dust, waste, flies and pests	-	-	-	-
PC2. ensure that the work area is safe and hygienic for the chilling of milk	-	-	-	-
PC3. dispose of waste materials as per defined SOPs and industry requirements	-	-	-	-
<i>Receive milk at chilling plant</i>	8	9	-	8
PC4. receive milk at the chilling plant in milk cans	-	-	-	-
PC5. prepare milk reception schedule for all the routes without loss of quality	-	-	-	-
PC6. plan the route of the milk van in such a way that the procured milk reaches the chilling plant at the specified time for that route	-	-	-	-
PC7. take actions for the cooling of milk cans during transit and before the reception at the CC	-	-	-	-
<i>Prepare and maintain chilling equipment</i>	18	19	-	14
PC8. check the working and performance of all equipment used in chilling plant facility such as compressor, conveyor belt, condenser, evaporator, fans, sensors, thermostatic expansion valve, humidity meter, etc.	-	-	-	-
PC9. clean the equipment used with approved cleaning chemicals and sanitizers following SOP	-	-	-	-
PC10. ensure that the oil traps on the refrigerant discharge side are frequently drained	-	-	-	-
PC11. check evaporators and receivers if it has solidified and is obstructing the flow of the refrigerant	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. ensure that the evaporator coils are kept free of frost by periodically defrosting	-	-	-	-
PC13. ensure that the refrigerant pipes are free of any clog and there is no ice inside the pipes	-	-	-	-
PC14. ensure that the compressor stuffing boxes are repacked at regular intervals	-	-	-	-
PC15. practice minor repairs/faults of all equipment, if required	-	-	-	-
NOS Total	34	36	-	30

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N4220
NOS Name	Prepare and Maintain Work Area and Chilling Equipment
Sector	Agriculture
Sub-Sector	Dairying
Occupation	Milk Collection and Handling
NSQF Level	4
Credits	2
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022

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AGR/N4221: Handle Refrigeration Unit for Chilling and Storing Milk

Description

This OS unit is about ensuring proper installation, handling chilling system and components and storing milk in chilling containers/cans while maintaining storage parameters, as per specification and standard of the organization.

Scope

The scope covers the following :

- Ensure proper installation of the chilling unit
- Initiate the chilling system
- Store milk in chilling containers
- Test milk at chilling plant
- Inspect, repair/replace chilling systems and components
- Maintain the chilling system and components

Elements and Performance Criteria

Ensure proper installation of the chilling unit

To be competent, the user/individual on the job must be able to:

- PC1.** inspect the location for setting up the chilling unit, install condensing unit, mount evaporation coil evaporator
- PC2.** install piping following industry guidelines and applicable codes to ensure proper operation of the unit, check all wiring connections
- PC3.** calculate the number of temperature sensors required for the unit, identify the location to place the sensors and place them in relevant locations
- PC4.** charge refrigerant from the supply tank to compressor determining charging level through weight and sight glass indication
- PC5.** practice pre-start-up checks by verifying sufficient refrigerant is charged, electrical connections are tight, wiring and piping are properly routed and secured
- PC6.** calibrate various measuring and controlling instruments like HP/LP cutouts, o/l relays, temperature sensors, thermostatic expansion valve

Initiate the chilling system

To be competent, the user/individual on the job must be able to:

- PC7.** start the system and check the compressor discharge and suction pressures to ensure they are in the normal operating range
- PC8.** check the voltage and amperage at the compressor terminals
- PC9.** check fans on the evaporator coil and condensing unit (for air-cooled condenser) to ensure they are operational and turning in the correct direction
- PC10.** set up the defrost control/timer clock to the required time and verify the defrost initiation settings, set the temperature control to desired temperature range
- PC11.** check the functioning and performance of sensors and temperature measuring devices

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Store milk in chilling containers

To be competent, the user/individual on the job must be able to:

- PC12.** check all the features of the unit, operation of the cooling equipment and ensure readiness
- PC13.** calibrate temperature and humidity measuring instruments of the facility
- PC14.** receive milk for chilling in cans, check the quality of milk to be refrigerated through physical parameters such as appearance and smell
- PC15.** arrange cans on the conveyor belt by type of milk and supplier
- PC16.** adjust controls to set storage parameters such as temperature and humidity required for the milk to be chilled down to the specified temperature, following the storage parameter chart
- PC17.** ensure that the milk from the cans/containers is emptied into a weighing bowl with a filter where the weight of the milk can be measured through an electronic weighing machine
- PC18.** check the temperature of milk following SOP
- PC19.** pump the milk from the holding tank through the line filter
- PC20.** ensure that the milk is passed through the PHE for cooling
- PC21.** observe temperature and humidity and adjusts controls to maintain storage parameters during the entire chilling period
- PC22.** check the temperature of stored milk periodically for conformance to set and achieved temperature
- PC23.** ensure that milk storage tanks are properly cleaned
- PC24.** store chilled milk in silos or directly pumped into milk tanker for transportation
- PC25.** test the milk for Fat/ SNF temperature, any impurities before final transportation to the processing unit

Test milk at chilling plant

To be competent, the user/individual on the job must be able to:

- PC26.** take the sample from the weighing bowl and test the milk for fat, SNF, acidity and adulterants
- PC27.** collect and send samples from all batches (VLCs) of milk received to the chilling plant laboratory
- PC28.** mark/number the samples collected
- PC29.** analyze milk samples for Fat and SNF content, acidity and adulteration
- PC30.** conduct various milk tests for adulterants and segregate cans accordingly

Inspect, repair/replace chilling systems and components

To be competent, the user/individual on the job must be able to:

- PC31.** conduct periodic inspection of system and components for correct operation
- PC32.** identify malfunction of components, dismantle, repair and replace faulty components
- PC33.** reassemble components, test for correct operation, charge system with correct refrigerant, ensure the correct operation of the equipment
- PC34.** ensure equipment is running efficiently and the required operating conditions are maintained in the chilling containers for operational requirements

Maintain the chilling system and components

To be competent, the user/individual on the job must be able to:

- PC35.** ensure periodic preventive maintenance of the system and components following SOP

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- PC36.** check the evaporators for ice accumulation/proper defrosting, wash evaporator coils to remove dust and foreign materials drawn into the fins
- PC37.** check evaporator and condenser fan blades for fractures, clean the fan blades, replace worn blades and tighten the fan set screws, lubricate fan motors, replace fan motor if required
- PC38.** check for the operation of defrost controls, ensure defrost heaters are in the correct position for maximum heat transfer to the evaporator coil, check the voltage at each heater terminal and ensure heater terminals are in good condition
- PC39.** replace worn condenser motor in compressor unit
- PC40.** check all electrical components and replace damaged wirings and tighten all electrical connections
- PC41.** check and ensure the functioning of pressure controls and safety controls
- PC42.** check the oil level, ensure the working of solenoid valves
- PC43.** clean condenser periodically
- PC44.** check the condition of refrigerant line insulation and replace if necessary, check the refrigerant level in the system, ensure no refrigerant leak

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** organization standards, process standards and procedures followed in the organization for chilling of milk
- KU2.** organization procedures for loading, storing and unloading procured milk in the milk chilling unit
- KU3.** refrigeration principles, techniques and practices
- KU4.** components of the refrigeration system and its installation
- KU5.** the types of refrigerants and the procedure to handle them
- KU6.** methods to calibrate the testing equipment and equipment in the storage facility
- KU7.** methods to control temperature and humidity in the refrigeration unit
- KU8.** methods and procedures to monitor and control the cooling process of the stored milk
- KU9.** methods to examine the operation of the chilling unit
- KU10.** the procedure for charging refrigerant in the refrigeration system
- KU11.** the procedure for identifying faults, selecting replacement parts and servicing
- KU12.** the procedure and sequence for performing preventative maintenance of refrigeration system and its components
- KU13.** the procedure for dismantling, repairing, reassembling and testing components
- KU14.** calculation of refrigerant required for the storage area
- KU15.** risks associated with working in extreme temperature conditions and control measures

Generic Skills (GS)

User/individual on the job needs to know how to:

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- GS1.** note the details of milk stored, storage parameters and provide necessary information to fill the storage chart
- GS2.** write information documents to internal departments/ internal teams
- GS3.** read and interpret design, drawings and construction of the storage facility
- GS4.** read and interpret the storage methods and conditions for storing all types of milk
- GS5.** read equipment manuals and storage documents to understand the equipment's operation and storage requirements
- GS6.** discuss task lists, schedules and activities with the supervisor
- GS7.** effectively communicate with the team members
- GS8.** communicate clearly with the supervisor and cross-department team on the issues faced during the storage process
- GS9.** plan and organize the work order and jobs received from the supervisor
- GS10.** plan to utilize time and equipment effectively
- GS11.** apply domain information about maintenance processes and technical knowledge about tools and equipment

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Ensure proper installation of the chilling unit</i>	6	4	-	5
PC1. inspect the location for setting up the chilling unit, install condensing unit, mount evaporation coil evaporator	-	-	-	-
PC2. install piping following industry guidelines and applicable codes to ensure proper operation of the unit, check all wiring connections	-	-	-	-
PC3. calculate the number of temperature sensors required for the unit, identify the location to place the sensors and place them in relevant locations	-	-	-	-
PC4. charge refrigerant from the supply tank to compressor determining charging level through weight and sight glass indication	-	-	-	-
PC5. practice pre-start-up checks by verifying sufficient refrigerant is charged, electrical connections are tight, wiring and piping are properly routed and secured	-	-	-	-
PC6. calibrate various measuring and controlling instruments like HP/LP cutouts, o/l relays, temperature sensors, thermostatic expansion valve	-	-	-	-
<i>Initiate the chilling system</i>	5	5	-	1
PC7. start the system and check the compressor discharge and suction pressures to ensure they are in the normal operating range	-	-	-	-
PC8. check the voltage and amperage at the compressor terminals	-	-	-	-
PC9. check fans on the evaporator coil and condensing unit (for air-cooled condenser) to ensure they are operational and turning in the correct direction	-	-	-	-
PC10. set up the defrost control/timer clock to the required time and verify the defrost initiation settings, set the temperature control to desired temperature range	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. check the functioning and performance of sensors and temperature measuring devices	-	-	-	-
<i>Store milk in chilling containers</i>	8	14	-	7
PC12. check all the features of the unit, operation of the cooling equipment and ensure readiness	-	-	-	-
PC13. calibrate temperature and humidity measuring instruments of the facility	-	-	-	-
PC14. receive milk for chilling in cans, check the quality of milk to be refrigerated through physical parameters such as appearance and smell	-	-	-	-
PC15. arrange cans on the conveyor belt by type of milk and supplier	-	-	-	-
PC16. adjust controls to set storage parameters such as temperature and humidity required for the milk to be chilled down to the specified temperature, following the storage parameter chart	-	-	-	-
PC17. ensure that the milk from the cans/containers is emptied into a weighing bowl with a filter where the weight of the milk can be measured through an electronic weighing machine	-	-	-	-
PC18. check the temperature of milk following SOP	-	-	-	-
PC19. pump the milk from the holding tank through the line filter	-	-	-	-
PC20. ensure that the milk is passed through the PHE for cooling	-	-	-	-
PC21. observe temperature and humidity and adjusts controls to maintain storage parameters during the entire chilling period	-	-	-	-
PC22. check the temperature of stored milk periodically for conformance to set and achieved temperature	-	-	-	-
PC23. ensure that milk storage tanks are properly cleaned	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. store chilled milk in silos or directly pumped into milk tanker for transportation	-	-	-	-
PC25. test the milk for Fat/ SNF temperature, any impurities before final transportation to the processing unit	-	-	-	-
<i>Test milk at chilling plant</i>	4	6	-	3
PC26. take the sample from the weighing bowl and test the milk for fat, SNF, acidity and adulterants	-	-	-	-
PC27. collect and send samples from all batches (VLCs) of milk received to the chilling plant laboratory	-	-	-	-
PC28. mark/number the samples collected	-	-	-	-
PC29. analyze milk samples for Fat and SNF content, acidity and adulteration	-	-	-	-
PC30. conduct various milk tests for adulterants and segregate cans accordingly	-	-	-	-
<i>Inspect, repair/replace chilling systems and components</i>	3	4	-	3
PC31. conduct periodic inspection of system and components for correct operation	-	-	-	-
PC32. identify malfunction of components, dismantle, repair and replace faulty components	-	-	-	-
PC33. reassemble components, test for correct operation, charge system with correct refrigerant, ensure the correct operation of the equipment	-	-	-	-
PC34. ensure equipment is running efficiently and the required operating conditions are maintained in the chilling containers for operational requirements	-	-	-	-
<i>Maintain the chilling system and components</i>	8	10	-	4
PC35. ensure periodic preventive maintenance of the system and components following SOP	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC36. check the evaporators for ice accumulation/proper defrosting, wash evaporator coils to remove dust and foreign materials drawn into the fins	-	-	-	-
PC37. check evaporator and condenser fan blades for fractures, clean the fan blades, replace worn blades and tighten the fan set screws, lubricate fan motors, replace fan motor if required	-	-	-	-
PC38. check for the operation of defrost controls, ensure defrost heaters are in the correct position for maximum heat transfer to the evaporator coil, check the voltage at each heater terminal and ensure heater terminals are in good condition	-	-	-	-
PC39. replace worn condenser motor in compressor unit	-	-	-	-
PC40. check all electrical components and replace damaged wirings and tighten all electrical connections	-	-	-	-
PC41. check and ensure the functioning of pressure controls and safety controls	-	-	-	-
PC42. check the oil level, ensure the working of solenoid valves	-	-	-	-
PC43. clean condenser periodically	-	-	-	-
PC44. check the condition of refrigerant line insulation and replace if necessary, check the refrigerant level in the system, ensure no refrigerant leak	-	-	-	-
NOS Total	34	43	-	23

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N4221
NOS Name	Handle Refrigeration Unit for Chilling and Storing Milk
Sector	Agriculture
Sub-Sector	Dairying
Occupation	Milk Collection and Handling
NSQF Level	4
Credits	3
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022

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AGR/N4222: Complete Documentation and Record-keeping Related to the Chilling Plant

Description

This OS unit is about documenting and maintaining records of milk stored in the chilling plant and other storage parameters.

Scope

The scope covers the following :

- Document and maintain records of stored milk in the chilling unit
- Document and maintain records of storage parameters
- Document and maintain records of chilling system present in the chilling unit

Elements and Performance Criteria

Document and maintain records of stored milk in the chilling unit

To be competent, the user/individual on the job must be able to:

- PC1.** document and maintain records of quality and quantity, of incoming milk, and quantity & temperature stored milk
- PC2.** maintain records of all outgoing milk losses from incoming to the outgoing period
- PC3.** load the details in the ERP system for future reference
- PC4.** verify the documents and track details in cases of concerns

Document and maintain records of storage parameters

To be competent, the user/individual on the job must be able to:

- PC5.** document and maintain records of parameters such as the temperature of the milk, relative humidity of chilling container, before loading, during the storage period and during unloading from the storage facility for each batch of milk stored following SOP
- PC6.** maintain a record of observations or deviations (if any) related to storage parameters
- PC7.** load the details in the ERP system for future reference
- PC8.** verify the documents and track details in cases of concerns

Document and maintain records of chilling system present in the chilling unit

To be competent, the user/individual on the job must be able to:

- PC9.** document and maintain records of the technical drawings of chilling container/chamber, chilling system and components, electrical lines, etc.
- PC10.** document and maintain records of the chilling system such as type of chilling unit, type of refrigerant, the quantity of refrigerant used, the cooling system followed
- PC11.** document and maintain records of operating conditions of chilling container/chamber by recording temperature of milk and air in the chilling room/chamber, compressor pressure, ice formation, etc.
- PC12.** document and maintain records of preventive maintenance, routine checks, inspections, faults identified, repairs, replacements, refrigerant leak, recharge, of the chilling system and components following SOP

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PC13. maintain a record of observations or deviations (if any)

PC14. verify the documents and track details in cases of concerns

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. documentation system followed in the organization like loading and unloading chart, storage chart, storage parameter chart, chilling system and components report, etc.

KU2. organization methods to document and maintain records on observations (if any) related storage process

KU3. the details to be recorded and maintained on milk stored in a chilling unit

KU4. the details to be recorded and maintained on preventive maintenance, routine checks, service, repairs, replacements, etc.

KU5. entering the details in the ERP system followed by the organization

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. note the details of the refrigeration system and components, maintenance and service reports

GS2. read and interpret the storage methods and conditions for chilling all types of milk and milk products

GS3. discuss task lists, schedules and activities with the supervisor

GS4. effectively communicate with the team members

GS5. plan and organize the work order and jobs received from the supervisor

GS6. plan to utilize time and equipment effectively

GS7. use reasoning skills to identify and resolve basic problems

GS8. use acquired knowledge of the process for identifying and handling issues

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Document and maintain records of stored milk in the chilling unit</i>	12	12	-	8
PC1. document and maintain records of quality and quantity, of incoming milk, and quantity & temperature stored milk	-	-	-	-
PC2. maintain records of all outgoing milk losses from incoming to the outgoing period	-	-	-	-
PC3. load the details in the ERP system for future reference	-	-	-	-
PC4. verify the documents and track details in cases of concerns	-	-	-	-
<i>Document and maintain records of storage parameters</i>	12	10	-	8
PC5. document and maintain records of parameters such as the temperature of the milk, relative humidity of chilling container, before loading, during the storage period and during unloading from the storage facility for each batch of milk stored following SOP	-	-	-	-
PC6. maintain a record of observations or deviations (if any) related to storage parameters	-	-	-	-
PC7. load the details in the ERP system for future reference	-	-	-	-
PC8. verify the documents and track details in cases of concerns	-	-	-	-
<i>Document and maintain records of chilling system present in the chilling unit</i>	14	13	-	11
PC9. document and maintain records of the technical drawings of chilling container/chamber, chilling system and components, electrical lines, etc.	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. document and maintain records of the chilling system such as type of chilling unit, type of refrigerant, the quantity of refrigerant used, the cooling system followed	-	-	-	-
PC11. document and maintain records of operating conditions of chilling container/chamber by recording temperature of milk and air in the chilling room/chamber, compressor pressure, ice formation, etc.	-	-	-	-
PC12. document and maintain records of preventive maintenance, routine checks, inspections, faults identified, repairs, replacements, refrigerant leak, recharge, of the chilling system and components following SOP	-	-	-	-
PC13. maintain a record of observations or deviations (if any)	-	-	-	-
PC14. verify the documents and track details in cases of concerns	-	-	-	-
NOS Total	38	35	-	27

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N4222
NOS Name	Complete Documentation and Record-keeping Related to the Chilling Plant
Sector	Agriculture
Sub-Sector	Dairying
Occupation	Milk Collection and Handling
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022

Qualification Pack

AGR/N4223: Ensure Safety, Hygiene and Sanitation for Storage of Milk in a Chilling Plant

Description

This OS unit is about maintaining safety, hygiene and sanitation in the milk collection area and processing unit for refrigeration and storage

Scope

The scope covers the following :

- Hygiene and sanitation related functions for storage of milk in a chilling plant
- Apply safety practices for storage of milk in a chilling plant

Elements and Performance Criteria

Hygiene and sanitation related functions for storage of milk in a chilling plant

To be competent, the user/individual on the job must be able to:

- PC1.** comply with sanitation and hygiene procedures followed in the organization
- PC2.** ensure personal hygiene by using gloves, hairnets, masks, earplugs, goggles, shoes, etc.
- PC3.** ensure hygienic storage of milk by inspecting raw materials, ingredients, finished products, etc. for compliance to physical, chemical and microbiological parameters
- PC4.** clean, maintain and monitor milk processing equipment periodically, using it only for the specified purpose
- PC5.** follow housekeeping practices by having a designated area for materials/tools
- PC6.** provide training on hazard management to understand types of hazards such as physical, chemical and biological hazards
- PC7.** conduct workplace checklist audits before and after work to ensure safety and hygiene
- PC8.** document and maintain procured milk, storage container or packaging material, process and finished milk and milk products for the credibility and effectiveness of the food safety control system

Apply safety practices for storage of milk in a chilling plant

To be competent, the user/individual on the job must be able to:

- PC9.** comply with safety procedures followed in the organization
- PC10.** judge the quality of produce using criteria such as smell, appearance, taste and take immediate measures to prevent spoilage
- PC11.** store different varieties of produce, chemicals, gases separately to prevent cross-contamination
- PC12.** label produce, chemicals, gases and store them in designated storage areas

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

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- KU1.** organization methods of maintaining safety checklists
- KU2.** food safety and hygiene standards to be followed
- KU3.** organization methods for cleaning and sanitation of equipment and work area
- KU4.** possible physical, chemical and biological hazards and methods of prevention of various hazards
- KU5.** personal hygiene requirement
- KU6.** different types of sanitizers used for storage area and equipment and the procedure to use
- KU7.** quality parameters and quality assessment based on physical parameters, basic milk microbiology
- KU8.** labelling/marketing requirements for produce, chemicals, gases and storing in the designated area
- KU9.** stock rotation based on First-In-First-Out (FIFO) / First-Expiry-First-Out (FEFO)

Generic Skills (GS)

User/individual on the job needs to know how to:

- GS1.** note the details of milk stored, storage parameters and provide necessary information to fill the storage charge
- GS2.** read equipment manuals and storage documents to understand the equipment's operation and storage requirements
- GS3.** effectively communicate with the team members
- GS4.** communicate clearly with the supervisor and cross-department team on the issues faced during the storage process
- GS5.** analyze critical points in the day-to-day tasks through experience and observation and identify control measures to solve the issue
- GS6.** plan to utilize time and equipment effectively
- GS7.** use acquired knowledge of the process for identifying and handling issues

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Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Hygiene and sanitation related functions for storage of milk in a chilling plant</i>	25	18	-	22
PC1. comply with sanitation and hygiene procedures followed in the organization	-	-	-	-
PC2. ensure personal hygiene by using gloves, hairnets, masks, earplugs, goggles, shoes, etc.	-	-	-	-
PC3. ensure hygienic storage of milk by inspecting raw materials, ingredients, finished products, etc. for compliance to physical, chemical and microbiological parameters	-	-	-	-
PC4. clean, maintain and monitor milk processing equipment periodically, using it only for the specified purpose	-	-	-	-
PC5. follow housekeeping practices by having a designated area for materials/tools	-	-	-	-
PC6. provide training on hazard management to understand types of hazards such as physical, chemical and biological hazards	-	-	-	-
PC7. conduct workplace checklist audits before and after work to ensure safety and hygiene	-	-	-	-
PC8. document and maintain procured milk, storage container or packaging material, process and finished milk and milk products for the credibility and effectiveness of the food safety control system	-	-	-	-
<i>Apply safety practices for storage of milk in a chilling plant</i>	14	12	-	9
PC9. comply with safety procedures followed in the organization	-	-	-	-
PC10. judge the quality of produce using criteria such as smell, appearance, taste and take immediate measures to prevent spoilage	-	-	-	-

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Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. store different varieties of produce, chemicals, gases separately to prevent cross-contamination	-	-	-	-
PC12. label produce, chemicals, gases and store them in designated storage areas	-	-	-	-
NOS Total	39	30	-	31

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National Occupational Standards (NOS) Parameters

NOS Code	AGR/N4223
NOS Name	Ensure Safety, Hygiene and Sanitation for Storage of Milk in a Chilling Plant
Sector	Agriculture
Sub-Sector	Dairying
Occupation	Milk Collection and Handling
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	31/03/2022
Next Review Date	31/03/2025
NSQC Clearance Date	31/03/2022

Qualification Pack

DGT/VSQ/N0102: Employability Skills (60 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Career Development & Goal Setting
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

To be competent, the user/individual on the job must be able to:

- PC1.** identify employability skills required for jobs in various industries
- PC2.** identify and explore learning and employability portals

Constitutional values - Citizenship

To be competent, the user/individual on the job must be able to:

- PC3.** recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.
- PC4.** follow environmentally sustainable practices

Becoming a Professional in the 21st Century

To be competent, the user/individual on the job must be able to:

- PC5.** recognize the significance of 21st Century Skills for employment
- PC6.** practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life

Basic English Skills

To be competent, the user/individual on the job must be able to:

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- PC7.** use basic English for everyday conversation in different contexts, in person and over the telephone
- PC8.** read and understand routine information, notes, instructions, mails, letters etc. written in English
- PC9.** write short messages, notes, letters, e-mails etc. in English

Career Development & Goal Setting

To be competent, the user/individual on the job must be able to:

- PC10.** understand the difference between job and career
- PC11.** prepare a career development plan with short- and long-term goals, based on aptitude

Communication Skills

To be competent, the user/individual on the job must be able to:

- PC12.** follow verbal and non-verbal communication etiquette and active listening techniques in various settings
- PC13.** work collaboratively with others in a team

Diversity & Inclusion

To be competent, the user/individual on the job must be able to:

- PC14.** communicate and behave appropriately with all genders and PwD
- PC15.** escalate any issues related to sexual harassment at workplace according to POSH Act

Financial and Legal Literacy

To be competent, the user/individual on the job must be able to:

- PC16.** select financial institutions, products and services as per requirement
- PC17.** carry out offline and online financial transactions, safely and securely
- PC18.** identify common components of salary and compute income, expenses, taxes, investments etc
- PC19.** identify relevant rights and laws and use legal aids to fight against legal exploitation

Essential Digital Skills

To be competent, the user/individual on the job must be able to:

- PC20.** operate digital devices and carry out basic internet operations securely and safely
- PC21.** use e- mail and social media platforms and virtual collaboration tools to work effectively
- PC22.** use basic features of word processor, spreadsheets, and presentations

Entrepreneurship

To be competent, the user/individual on the job must be able to:

- PC23.** identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research
- PC24.** develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion
- PC25.** identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity

Customer Service

To be competent, the user/individual on the job must be able to:

- PC26.** identify different types of customers
- PC27.** identify and respond to customer requests and needs in a professional manner.

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PC28. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

To be competent, the user/individual on the job must be able to:

PC29. create a professional Curriculum vitae (Résumé)

PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively

PC31. apply to identified job openings using offline /online methods as per requirement

PC32. answer questions politely, with clarity and confidence, during recruitment and selection

PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills and different learning and employability related portals

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use English language for effective verbal (face to face and telephonic) and written communication in formal and informal set up

KU6. importance of career development and setting long- and short-term goals

KU7. about effective communication

KU8. POSH Act

KU9. Gender sensitivity and inclusivity

KU10. different types of financial institutes, products, and services

KU11. how to compute income and expenditure

KU12. importance of maintaining safety and security in offline and online financial transactions

KU13. different legal rights and laws

KU14. different types of digital devices and the procedure to operate them safely and securely

KU15. how to create and operate an e- mail account and use applications such as word processors, spreadsheets etc.

KU16. how to identify business opportunities

KU17. types and needs of customers

KU18. how to apply for a job and prepare for an interview

KU19. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read and write different types of documents/instructions/correspondence

GS2. communicate effectively using appropriate language in formal and informal settings

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- GS3.** behave politely and appropriately with all
- GS4.** how to work in a virtual mode
- GS5.** perform calculations efficiently
- GS6.** solve problems effectively
- GS7.** pay attention to details
- GS8.** manage time efficiently
- GS9.** maintain hygiene and sanitization to avoid infection

Qualification Pack

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Introduction to Employability Skills</i>	1	1	-	-
PC1. identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
<i>Constitutional values - Citizenship</i>	1	1	-	-
PC3. recognize the significance of constitutional values, including civic rights and duties, citizenship, responsibility towards society etc. and personal values and ethics such as honesty, integrity, caring and respecting others, etc.	-	-	-	-
PC4. follow environmentally sustainable practices	-	-	-	-
<i>Becoming a Professional in the 21st Century</i>	2	4	-	-
PC5. recognize the significance of 21st Century Skills for employment	-	-	-	-
PC6. practice the 21st Century Skills such as Self-Awareness, Behaviour Skills, time management, critical and adaptive thinking, problem-solving, creative thinking, social and cultural awareness, emotional awareness, learning to learn for continuous learning etc. in personal and professional life	-	-	-	-
<i>Basic English Skills</i>	2	3	-	-
PC7. use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
PC8. read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
PC9. write short messages, notes, letters, e-mails etc. in English	-	-	-	-
<i>Career Development & Goal Setting</i>	1	2	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. understand the difference between job and career	-	-	-	-
PC11. prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
<i>Communication Skills</i>	2	2	-	-
PC12. follow verbal and non-verbal communication etiquette and active listening techniques in various settings	-	-	-	-
PC13. work collaboratively with others in a team	-	-	-	-
<i>Diversity & Inclusion</i>	1	2	-	-
PC14. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC15. escalate any issues related to sexual harassment at workplace according to POSH Act	-	-	-	-
<i>Financial and Legal Literacy</i>	2	3	-	-
PC16. select financial institutions, products and services as per requirement	-	-	-	-
PC17. carry out offline and online financial transactions, safely and securely	-	-	-	-
PC18. identify common components of salary and compute income, expenses, taxes, investments etc	-	-	-	-
PC19. identify relevant rights and laws and use legal aids to fight against legal exploitation	-	-	-	-
<i>Essential Digital Skills</i>	3	4	-	-
PC20. operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
PC21. use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
PC22. use basic features of word processor, spreadsheets, and presentations	-	-	-	-

Qualification Pack

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Entrepreneurship</i>	2	3	-	-
PC23. identify different types of Entrepreneurship and Enterprises and assess opportunities for potential business through research	-	-	-	-
PC24. develop a business plan and a work model, considering the 4Ps of Marketing Product, Price, Place and Promotion	-	-	-	-
PC25. identify sources of funding, anticipate, and mitigate any financial/ legal hurdles for the potential business opportunity	-	-	-	-
<i>Customer Service</i>	1	2	-	-
PC26. identify different types of customers	-	-	-	-
PC27. identify and respond to customer requests and needs in a professional manner.	-	-	-	-
PC28. follow appropriate hygiene and grooming standards	-	-	-	-
<i>Getting ready for apprenticeship & Jobs</i>	2	3	-	-
PC29. create a professional Curriculum vitae (Résumé)	-	-	-	-
PC30. search for suitable jobs using reliable offline and online sources such as Employment exchange, recruitment agencies, newspapers etc. and job portals, respectively	-	-	-	-
PC31. apply to identified job openings using offline /online methods as per requirement	-	-	-	-
PC32. answer questions politely, with clarity and confidence, during recruitment and selection	-	-	-	-
PC33. identify apprenticeship opportunities and register for it as per guidelines and requirements	-	-	-	-
NOS Total	20	30	-	-

Qualification Pack

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0102
NOS Name	Employability Skills (60 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	4
Credits	2
Version	1.0
Last Reviewed Date	NA
Next Review Date	27/05/2024
NSQC Clearance Date	27/05/2021

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

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 the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training centre (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criterion.
6. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.

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7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack

Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
AGR/N4220.Prepare and Maintain Work Area and Chilling Equipment	34	36	-	30	100	20
AGR/N4221.Handle Refrigeration Unit for Chilling and Storing Milk	34	43	-	23	100	30
AGR/N4222.Complete Documentation and Record-keeping Related to the Chilling Plant	38	35	-	27	100	15
AGR/N4223.Ensure Safety, Hygiene and Sanitation for Storage of Milk in a Chilling Plant	39	30	-	31	100	25
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	10
Total	165	174	-	111	450	100

Qualification Pack

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Qualification Pack

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.

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Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.