









# Bulk Milk Cooler (BMC) Operator

QP Code: AGR/Q4204

Version: 3.0

NSQF Level: 4

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### AGR/Q4204: Bulk Milk Cooler (BMC) Operator

### **Brief Job Description**

A Bulk Milk Cooler (BMC) Operator is responsible for operating a large storage tank used for cooling and holding milk at a certain temperature until it can be picked up by a milk hauler.

#### **Personal Attributes**

A Bulk Milk Cooler (BMC) Operator must have the ability to plan, organize, prioritize, calculate, concentrate and handle pressure. The individual must possess reading, writing, and communication skills. In addition, the individual must have mechanical aptitude and troubleshooting skills.

### **Applicable National Occupational Standards (NOS)**

### **Compulsory NOS:**

- 1. <u>AGR/N4215: Prepare and maintain work area and process machineries for operating Bulk Milk Cooler (BMC)</u>
- 2. AGR/N4216: Prepare for Operating Bulk Milk Cooler (BMC)
- 3. AGR/N4217: Operate Bulk Milk Cooler (BMC) and Ensure Cleaning and Maintenance Post-cooling
- 4. <u>AGR/N4218: Complete Documentation and Record-keeping Related to Operating of Bulk Milk</u> Cooler (BMC)
- 5. AGR/N4219: Ensure Safety, Hygiene and Sanitation for Cooling Milk in BMC
- 6. 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
Minimum Educational Qualification & Experience	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	24/02/2025
NSQC Approval Date	24/02/2022
Version	3.0
Reference code on NQR	QG-04-AG-00318-2023-V1.1-ASCI
NQR Version	1.1









# AGR/N4215: Prepare and maintain work area and process machineries for operating Bulk Milk Cooler (BMC)

### **Description**

This OS unit is about preparing work area for hygiene and safety, and ensuring performance, efficiency and maintenance of process machineries and tools, for operating Bulk Milk Cooler (BMC)

### Scope

The scope covers the following:

- Prepare and maintain work area (for operating Bulk Milk Cooler)
- Prepare and maintain process machineries and tools (for operating Bulk Milk Cooler)

#### **Elements and Performance Criteria**

### Prepare and maintain work area (for operating Bulk Milk Cooler)

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

- **PC1.** clean and maintain the work area using sanitizers and keep it free from dust, waste, flies and pests
- PC2. dispose waste materials as per organisation standards and industry requirements

Prepare and maintain process machineries and tools (for operating Bulk Milk Cooler)

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

- **PC3.** check the working and performance of all machinery and equipment used for the process such as agitator, inlet, manhole, air vent, outlet, milk pump, line filter, DG set, etc.
- **PC4.** clean the machinery, pipelines, and tools used with recommended sanitizers following specifications and organization standards
- **PC5.** ensure that there is no leakage of refrigerant from any part of the BMC.
- **PC6.** organize the necessary tools and equipment required for the process
- **PC7.** perform minor repairs/faults of all machines, if required
- **PC8.** select and set the machines and tools required, i.e weigh scale calibration, milk tester calibration, Load cells, servo stabilizer etc.
- **PC9.** ensure the availability of hot water for cleaning and also hot water generating system is in good working order

### **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 bulk milk cooling operations
- **KU2.** the use of bulk milk coolers and its maintenance to arrest bacterial growth, retain freshness and enhance the quality of milk, avoid economic losses due to spillage of milk









- **KU3.** types of bulk milk coolers (BMC), which depend on factors such as frequency of milk collection, required milk quality, energy, and water availability
- KU4. types of cooling systems direct expansion cooling system, ice bank cooling system
- **KU5.** types of chemicals, materials, and equipment required for the cleaning and maintenance
- **KU6.** cleaning process to disinfect equipment/tools
- **KU7.** supplier/manufacturer's instructions related to cleaning and maintenance

### **Generic Skills (GS)**

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

- **GS1.** record data of procured milk, local sale if any, and that handed over to tanker operator (Dispatched)
- **GS2.** record the readings of the process parameters and provide necessary information to fill the process chart
- **GS3.** note down observations (if any) related to the process
- **GS4.** read and interpret the information required for the operation and maintenance of machinery
- GS5. discuss task lists, schedules, and activities with the supervisor
- **GS6.** effectively communicate with the team members
- GS7. plan and organize the work order and jobs received from the supervisor
- **GS8.** use reasoning skills to identify and resolve basic problems
- **GS9.** use acquired knowledge of the process for identifying and handling issues









# **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare and maintain work area ( for operating Bulk Milk Cooler)	8	8	-	8
<b>PC1.</b> clean and maintain the work area using sanitizers and keep it free from dust, waste, flies and pests	-	-	-	-
<b>PC2.</b> dispose waste materials as per organisation standards and industry requirements	-	-	-	-
Prepare and maintain process machineries and tools ( for operating Bulk Milk Cooler)	26	28	-	22
<b>PC3.</b> check the working and performance of all machinery and equipment used for the process such as agitator, inlet, manhole, air vent, outlet, milk pump, line filter, DG set, etc.	-	-	-	-
<b>PC4.</b> clean the machinery, pipelines, and tools used with recommended sanitizers following specifications and organization standards	-	-	-	-
<b>PC5.</b> ensure that there is no leakage of refrigerant from any part of the BMC.	-	-	-	-
<b>PC6.</b> organize the necessary tools and equipment required for the process	-	-	-	-
<b>PC7.</b> perform minor repairs/faults of all machines, if required	-	-	-	-
<b>PC8.</b> select and set the machines and tools required, i.e weigh scale calibration, milk tester calibration, Load cells, servo stabilizer etc.	-	-	-	-
<b>PC9.</b> ensure the availability of hot water for cleaning and also hot water generating system is in good working order	-	-	-	-
NOS Total	34	36	-	30









# **National Occupational Standards (NOS) Parameters**

NOS Code	AGR/N4215
NOS Name	Prepare and maintain work area and process machineries for operating Bulk Milk Cooler (BMC)
Sector	Agriculture
Sub-Sector	Dairying
Occupation	Milk Collection and Handling
NSQF Level	4
Credits	2
Version	2.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









### AGR/N4216: Prepare for Operating Bulk Milk Cooler (BMC)

### **Description**

This OS unit is about preparation for reception and cooling of milk through planning equipment utilization and organizing procured milk and equipment.

### Scope

The scope covers the following:

- Plan Equipment Utilization (for operating Bulk Milk Cooler)
- Organize Procured Milk and Equipment (for operating Bulk Milk Cooler)

#### **Elements and Performance Criteria**

### Plan Equipment Utilization (for operating Bulk Milk Cooler)

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

- **PC1.** ensure working and performance of all machinery required for the process
- **PC2.** report malfunctions of the machine, if any, to the supervisor
- PC3. ensure that these precautions are taken before starting the BMC every day wear protective equipment, prevent direct contact of refrigerant with the skin, make sure that the service cylinder is not overfilled and not exposed to sunlight and heat from other sources, avoid discharge near-naked flames or flame producing appliances, avoid direct contact with refrigerant/oil solutions from the hermetic system
- **PC4.** calculate the process time for effective utilization of machinery and manpower
- **PC5.** assign responsibilities/work to the assistants and helpers

# Organize procured milk and equipment (for operating Bulk Milk Cooler)

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

- **PC6.** illustrate process chart/product flow chart/handling milk
- **PC7.** check the quality of procured milk by verifying the quality analysis report from the milk tester and assessing its physical parameters
- **PC8.** pre-cool the milk by passing it through the plate cooler/plate heat exchanger by connecting the inlet of the pre-cooler with the outlet of the hauling tank
- **PC9.** follow the checklist for proper pre-cooling of the milk connect the water and milk flow pipes in opposite directions, fit filter on milk line before plate cooler, fit filter on water line if needed.
- **PC10.** check whether the inlet and outlet valves are tightly closed and there is no leakage
- PC11. connect pipes from the pre-cooler/ dump tank to the inlet of the BMC
- **PC12.** start the machine and check the working condition and performance of the machine
- **PC13.** practice minor adjustments and repairs (if required)
- PC14. keep the tools accessible to attend repairs/faults in case of breakdown
- **PC15.** keep records of calibrations and observations









### **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

- **KU1.** types of milk cooling systems used by the organization i.e Direct Expansion, Instant Cooling
- KU2. organization maintenance procedures for process equipment
- **KU3.** various machinery used in the organization
- **KU4.** types of procured milk (cow milk, goat milk, buffalo milk, etc.) and various types of dairy products
- **KU5.** the types of machinery used for each process
- KU6. sanitary standards for farm milk cooling and holding tanks
- **KU7.** how to handle all processing machinery
- KU8. knowledge of sanitizers and disinfectants and their handling and storing methods

### **Generic Skills (GS)**

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

- **GS1.** read and interpret the process required for refrigerating milk and milk products
- **GS2.** read equipment manuals and process documents to understand the equipment operation and process requirements
- **GS3.** discuss task lists, schedules and activities with the supervisor
- **GS4.** effectively communicate with the team members
- **GS5.** question the supervisor in order to understand the nature of the problem and to clarify queries
- **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









# **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Plan Equipment Utilization (for operating Bulk Milk Cooler)	12	13	-	11
<b>PC1.</b> ensure working and performance of all machinery required for the process	-	-	-	-
<b>PC2.</b> report malfunctions of the machine, if any, to the supervisor	-	-	-	-
PC3. ensure that these precautions are taken before starting the BMC every day - wear protective equipment, prevent direct contact of refrigerant with the skin, make sure that the service cylinder is not overfilled and not exposed to sunlight and heat from other sources, avoid discharge near-naked flames or flame producing appliances, avoid direct contact with refrigerant/oil solutions from the hermetic system	-	-	-	-
<b>PC4.</b> calculate the process time for effective utilization of machinery and manpower	-	-	-	-
<b>PC5.</b> assign responsibilities/work to the assistants and helpers	-	-	-	-
Organize procured milk and equipment (for operating Bulk Milk Cooler)	19	25	-	20
<b>PC6.</b> illustrate process chart/product flow chart/handling milk	-	-	-	-
<b>PC7.</b> check the quality of procured milk by verifying the quality analysis report from the milk tester and assessing its physical parameters	-	-	-	-
<b>PC8.</b> pre-cool the milk by passing it through the plate cooler/plate heat exchanger by connecting the inlet of the pre-cooler with the outlet of the hauling tank	-	-	-	-
<b>PC9.</b> follow the checklist for proper pre-cooling of the milk - connect the water and milk flow pipes in opposite directions, fit filter on milk line before plate cooler, fit filter on water line if needed.	-	-	-	-









Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> check whether the inlet and outlet valves are tightly closed and there is no leakage	-	-	-	-
<b>PC11.</b> connect pipes from the pre-cooler/ dump tank to the inlet of the BMC	-	-	-	-
<b>PC12.</b> start the machine and check the working condition and performance of the machine	-	-	-	-
<b>PC13.</b> practice minor adjustments and repairs (if required)	-	-	-	-
PC14. keep the tools accessible to attend repairs/faults in case of breakdown	-	-	-	-
PC15. keep records of calibrations and observations	-	-	-	-
NOS Total	31	38	-	31









# **National Occupational Standards (NOS) Parameters**

NOS Code	AGR/N4216
NOS Name	Prepare for Operating Bulk Milk Cooler (BMC)
Sector	Agriculture
Sub-Sector	Dairying
Occupation	Milk Collection and Handling
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









# AGR/N4217: Operate Bulk Milk Cooler (BMC) and Ensure Cleaning and Maintenance Post-cooling

### **Description**

This OS unit is about operating Bulk Milk Cooler (BMC) to cool the procured milk and post-cooling cleaning and maintenance as per the specification and standards of the organization

### Scope

The scope covers the following:

- Operate Bulk Milk Cooler (BMC)
- Post operation maintenance of BMC equipment

### **Elements and Performance Criteria**

### Operate Bulk Milk Cooler (BMC)

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

- **PC1.** inspect the condition of the insulating material between the internal and external cover of the cooling tank
- **PC2.** follow SOP to obtain a sample of the milk from the incoming batch of milk
- **PC3.** ensure that the temperature of chilling i.e., 4 degrees C has been attained before milk is loaded in a road milk tanker
- **PC4.** ensure that there is no over-agitation of milk
- **PC5.** monitor the volumetric meter provided on the side of the BMC
- **PC6.** use the thermostat at the specific temperature in case of a direct expansion cooler is used
- **PC7.** set process parameters of the cooling tank like temperature, time, etc.
- **PC8.** monitor the digital thermometer provided on the cooler to check the internal temperature of the milk in the cooler
- **PC9.** adjust the thermostat in case the temperature inside the cooling tank is not at the specified temperature
- **PC10.** open outlet valves to allow chilled milk to enter the storage for further processing
- **PC11.** disconnect the hose from the outlet valve and cap the hose, when the milk has been removed from the bulk tank
- **PC12.** check the volume of the chilled milk after its temperature has been lowered to the recommended temperature
- **PC13.** conduct periodic manual scrubbing following a standard procedure to remove scaling and ensure cleaning of dents and corners

### Post operation maintenance of BMC equipment

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

- **PC14.** practice CIP of the tank, pipelines, Pump, filter, etc. as per standard procedure using cleaning agents with the required strength
- **PC15.** clean the exterior of the milk cooler using recommended cleaning agents and sanitizers









- **PC16.** check the condition of condensing unit regularly
- **PC17.** clean the condensing unit regularly and straighten the fins if found dented or pressed against each other
- **PC18.** check occasionally that condenser fans are running
- PC19. check agitator and intermittent agitation
- **PC20.** check the tank for excessive buttering and/or foaming
- **PC21.** use bright light to check the condition inside the cooling tank
- **PC22.** attend minor repairs/faults of all machines (if any)
- **PC23.** ensure periodic preventive maintenance (daily/weekly/monthly/quarterly/half-yearly/annual) of all machines and equipment following the SOP or supplier's instructions/manuals

### **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

- **KU1.** organization procedures for maintenance of process equipment
- **KU2.** types of procured milk (cow milk, goat milk, buffalo milk, etc.) and various types of dairy products
- **KU3.** the types of machinery used for processing each type of milk product
- **KU4.** process and process parameters for the production of various products
- **KU5.** knowledge of sanitizers and disinfectants and their handling and storing methods

### **Generic Skills (GS)**

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

- **GS1.** read and interpret the process required for producing various types of milk and flow diagram of milk chilling equipment
- **GS2.** read equipment manuals and process documents to understand the equipment's operation and process requirements
- GS3. discuss task lists, schedules and activities with the supervisor
- **GS4.** effectively communicate with the team members
- **GS5.** analyze critical points in day-to-day tasks through experience and observation and identify control measures to solve the issue
- **GS6.** plan to utilize time and equipment effectively









# **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Operate Bulk Milk Cooler (BMC)	20	19	-	15
<b>PC1.</b> inspect the condition of the insulating material between the internal and external cover of the cooling tank	-	-	-	-
<b>PC2.</b> follow SOP to obtain a sample of the milk from the incoming batch of milk	-	-	-	-
<b>PC3.</b> ensure that the temperature of chilling i.e., 4 degrees C has been attained before milk is loaded in a road milk tanker	-	-	-	-
PC4. ensure that there is no over-agitation of milk	-	-	-	-
<b>PC5.</b> monitor the volumetric meter provided on the side of the BMC	-	-	-	-
<b>PC6.</b> use the thermostat at the specific temperature in case of a direct expansion cooler is used	-	-	-	-
<b>PC7.</b> set process parameters of the cooling tank like temperature, time, etc.	-	-	-	-
<b>PC8.</b> monitor the digital thermometer provided on the cooler to check the internal temperature of the milk in the cooler	-	-	-	-
<b>PC9.</b> adjust the thermostat in case the temperature inside the cooling tank is not at the specified temperature	-	-	-	-
<b>PC10.</b> open outlet valves to allow chilled milk to enter the storage for further processing	-	-	-	-
<b>PC11.</b> disconnect the hose from the outlet valve and cap the hose, when the milk has been removed from the bulk tank	-	-	-	-
<b>PC12.</b> check the volume of the chilled milk after its temperature has been lowered to the recommended temperature	-	-	-	-









Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC13.</b> conduct periodic manual scrubbing following a standard procedure to remove scaling and ensure cleaning of dents and corners	-	-	-	-
Post operation maintenance of BMC equipment	14	18	-	14
<b>PC14.</b> practice CIP of the tank, pipelines, Pump, filter, etc. as per standard procedure using cleaning agents with the required strength	-	-	-	-
<b>PC15.</b> clean the exterior of the milk cooler using recommended cleaning agents and sanitizers	-	-	-	-
PC16. check the condition of condensing unit regularly	-	-	-	_
<b>PC17.</b> clean the condensing unit regularly and straighten the fins if found dented or pressed against each other	-	-	-	-
<b>PC18.</b> check occasionally that condenser fans are running	-	-	-	-
PC19. check agitator and intermittent agitation	-	-	-	-
<b>PC20.</b> check the tank for excessive buttering and/or foaming	-	-	-	-
<b>PC21.</b> use bright light to check the condition inside the cooling tank	-	-	-	-
PC22. attend minor repairs/faults of all machines (if any)	-	-	-	-
PC23. ensure periodic preventive maintenance (daily/weekly/monthly/quarterly/half-yearly/annual) of all machines and equipment following the SOP or supplier's instructions/manuals	-	-	-	-
NOS Total	34	37	-	29









# **National Occupational Standards (NOS) Parameters**

NOS Code	AGR/N4217
NOS Name	Operate Bulk Milk Cooler (BMC) and Ensure Cleaning and Maintenance Post-cooling
Sector	Agriculture
Sub-Sector	Dairying
Occupation	Milk Collection and Handling
NSQF Level	4
Credits	2
Version	2.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









# AGR/N4218: Complete Documentation and Record-keeping Related to Operating of Bulk Milk Cooler (BMC)

### **Description**

This OS unit is about documenting and maintaining records of procured milk, cooling process and final chilled milk, related to the operation of Bulk Milk Cooler (BMC).

### Scope

The scope covers the following:

- Document and maintain records of procured milk
- Document and maintain records of cooling process and process parameters
- Document and maintain records of chilled milk

### **Elements and Performance Criteria**

#### Document and maintain records of procured milk

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

- **PC1.** document and maintain records of procured milk, from the catchment area
- **PC2.** maintain a record of observations (if any) related to procured milk
- PC3. load the procured milk details in ERP for future reference
- **PC4.** verify the documents and track from finished product to procured milk, in case of quality concerns and during quality management system audits

### Document and maintain records of cooling process and process parameters

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

- **PC5.** process document with details like the type of process handled, process sequence, equipment and machinery details, efficiency and capacity utilization of equipment, etc.
- **PC6.** document batch size, yield and wastage of procured milk, energy utilization
- **PC7.** maintain a record of observations (if any) or deviations related to process and production
- **PC8.** load the production and process details in ERP for future reference
- **PC9.** verify documents and track from finished product to ingredients, in case of quality concerns and for quality management system audits

### Document and maintain records of chilled milk

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

- **PC10.** document the finished/cooled milk details such as catchment area, batch number, time of cooling, date of procurement and processing, storage conditions, etc., as per organization standards
- **PC11.** maintain record on observations or deviations (if any) related to finished products
- PC12. load the finished product details in ERP for future reference
- **PC13.** verify the documents and track from finished product to ingredients, in case of quality concerns and for quality management system audits
- **PC14.** calculate the balance of fat and SNF between procured and dispatched milk









### **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

- **KU1.** the documentation system followed in the organization like production chart, process chart and finished product chart
- **KU2.** the organization methods to document and maintain records on observations (if any) related to procured milk, process and finished products
- KU3. the details to be recorded and maintained on procured milk and finished products
- **KU4.** methods to track back the record from finished product to procured milk

### **Generic Skills (GS)**

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

- **GS1.** read and interpret the process required for refrigerating milk and milk products
- GS2. discuss task lists, schedules and activities with the supervisor
- GS3. effectively communicate with the team members
- **GS4.** analyze critical points in the day-to-day tasks through experience and observation
- **GS5.** plan to utilize time and equipment effectively
- **GS6.** apply domain information about maintenance processes and technical knowledge about tools and equipment
- **GS7.** use acquired knowledge of the process for identifying and handling issues









# **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Document and maintain records of procured milk	12	12	-	8
<b>PC1.</b> document and maintain records of procured milk, from the catchment area	-	-	-	-
<b>PC2.</b> maintain a record of observations (if any) related to procured milk	-	-	-	-
<b>PC3.</b> load the procured milk details in ERP for future reference	-	-	-	-
<b>PC4.</b> verify the documents and track from finished product to procured milk, in case of quality concerns and during quality management system audits	-	-	-	-
Document and maintain records of cooling process and process parameters	12	11	-	7
<b>PC5.</b> process document with details like the type of process handled, process sequence, equipment and machinery details, efficiency and capacity utilization of equipment, etc.	-	-	-	-
<b>PC6.</b> document batch size, yield and wastage of procured milk, energy utilization	-	-	-	-
<b>PC7.</b> maintain a record of observations (if any) or deviations related to process and production	-	-	-	-
<b>PC8.</b> load the production and process details in ERP for future reference	-	-	-	-
<b>PC9.</b> verify documents and track from finished product to ingredients, in case of quality concerns and for quality management system audits	-	-	-	-
Document and maintain records of chilled milk	15	13	-	10
<b>PC10.</b> document the finished/cooled milk details such as catchment area, batch number, time of cooling, date of procurement and processing, storage conditions, etc., as per organization standards	-	-	-	-









Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC11.</b> maintain record on observations or deviations (if any) related to finished products	-	-	-	-
<b>PC12.</b> load the finished product details in ERP for future reference	-	-	-	-
<b>PC13.</b> verify the documents and track from finished product to ingredients, in case of quality concerns and for quality management system audits	-	-	-	-
PC14. calculate the balance of fat and SNF between procured and dispatched milk	-	-	-	-
NOS Total	39	36	-	25









# **National Occupational Standards (NOS) Parameters**

NOS Code	AGR/N4218
NOS Name	Complete Documentation and Record-keeping Related to Operating of Bulk Milk Cooler (BMC)
Sector	Agriculture
Sub-Sector	Dairying
Occupation	Milk Collection and Handling
NSQF Level	4
Credits	2
Version	2.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









# AGR/N4219: Ensure Safety, Hygiene and Sanitation for Cooling Milk in BMC

### **Description**

This OS unit is about maintaining safety, hygiene and sanitation in the work area and cooling unit for processing procured milk.

### Scope

The scope covers the following:

- Ensure hygiene and sanitation related functions (for cooling milk in BMC)
- Ensure safety practices (for cooling milk in BMC)

#### **Elements and Performance Criteria**

### Ensure hygiene and sanitation related functions (for cooling milk in BMC)

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 use of gloves, hairnets, masks, earplugs, goggles, safety shoes, uniform, etc.
- **PC3.** ensure hygienic production by inspecting procured raw milk for compliance to physical, chemical and microbiological parameters
- **PC4.** follow housekeeping practices by having a designated area for materials/tools
- **PC5.** understand types of hazards such as physical, chemical and biological hazards
- **PC6.** identify, document and report problems such as rodents and pests to management
- PC7. conduct workplace checklist audits before and after work to ensure sanitation and hygiene

#### Ensure safety practices (for cooling milk in BMC)

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

- **PC8.** comply with safety procedures followed in the organization
- **PC9.** practice safe storage of procured and chilled milk separately to prevent cross-contamination
- **PC10.** label procured milk and store them in designated storage areas/silos according to safe food practices for maintaining First-In-First-Out (FIFO)/first-expired first-out (FEFO) system

### **Knowledge and Understanding (KU)**

The individual on the job needs to know and understand:

- **KU1.** organization methods of maintaining safety checklists
- **KU2.** food safety and hygiene standards 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.** the personal hygiene requirement
- **KU6.** different types of sanitizers used for process area, equipment and the procedure to use them
- **KU7.** the food safety standards and regulations (as per FSSAI)
- **KU8.** labelling/marking requirements for procured milk, finished goods, stored material, packaging material and their designated storage area
- **KU9.** the storage norms for procured milk, packaging material and finished products

### **Generic Skills (GS)**

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

- **GS1.** write information documents to internal departments/ internal teams
- **GS2.** read and interpret the process required for producing various types of products
- **GS3.** read and interpret and process flowchart for all products produced
- **GS4.** read equipment manuals and process documents to understand the equipment's operation and process requirements
- **GS5.** read internal information documents sent by internal teams
- **GS6.** effectively communicate with the team members
- **GS7.** analyze critical points in day-to-day tasks through experience and observation and identify control measures to solve the issue
- **GS8.** plan to utilize time and equipment effectively
- **GS9.** organize all process/ equipment manuals so as to access information easily
- **GS10.** use acquired knowledge of the process for identifying and handling issues









# **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure hygiene and sanitation related functions (for cooling milk in BMC)	30	23	-	18
<b>PC1.</b> comply with sanitation and hygiene procedures followed in the organization	-	-	-	-
<b>PC2.</b> ensure personal hygiene by use of gloves, hairnets, masks, earplugs, goggles, safety shoes, uniform, etc.	-	-	-	-
<b>PC3.</b> ensure hygienic production by inspecting procured raw milk for compliance to physical, chemical and microbiological parameters	-	-	-	-
<b>PC4.</b> follow housekeeping practices by having a designated area for materials/tools	-	-	-	-
<b>PC5.</b> understand types of hazards such as physical, chemical and biological hazards	-	-	-	-
<b>PC6.</b> identify, document and report problems such as rodents and pests to management	-	-	-	-
<b>PC7.</b> conduct workplace checklist audits before and after work to ensure sanitation and hygiene	-	-	-	-
Ensure safety practices (for cooling milk in BMC)	12	10	-	7
<b>PC8.</b> comply with safety procedures followed in the organization	-	-	-	-
<b>PC9.</b> practice safe storage of procured and chilled milk separately to prevent cross-contamination	-	-	-	-
<b>PC10.</b> label procured milk and store them in designated storage areas/silos according to safe food practices for maintaining First-In-First-Out (FIFO)/first-expired first-out (FEFO) system	-	-	-	-
NOS Total	42	33	-	25









# **National Occupational Standards (NOS) Parameters**

NOS Code	AGR/N4219
NOS Name	Ensure Safety, Hygiene and Sanitation for Cooling Milk in BMC
Sector	Agriculture
Sub-Sector	Dairying
Occupation	Milk Collection and Handling
NSQF Level	4
Credits	1
Version	2.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022









### **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:









- **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.









### 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









- **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









# **Assessment Criteria**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	1	1	-	-
<b>PC1.</b> identify employability skills required for jobs in various industries	-	-	-	-
PC2. identify and explore learning and employability portals	-	-	-	-
Constitutional values - Citizenship	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	-	-	-	-
Becoming a Professional in the 21st Century	2	4	-	-
<b>PC5.</b> recognize the significance of 21st Century Skills for employment	-	-	-	-
<b>PC6.</b> 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	2	3	-	-
<b>PC7.</b> use basic English for everyday conversation in different contexts, in person and over the telephone	-	-	-	-
<b>PC8.</b> read and understand routine information, notes, instructions, mails, letters etc. written in English	-	-	-	-
<b>PC9.</b> write short messages, notes, letters, e-mails etc. in English	-	-	-	-
Career Development & Goal Setting	1	2	-	-









Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<b>PC10.</b> understand the difference between job and career	-	-	-	-
<b>PC11.</b> prepare a career development plan with short- and long-term goals, based on aptitude	-	-	-	-
Communication Skills	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	-	-	-	-
Diversity & Inclusion	1	2	-	-
<b>PC14.</b> 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	2	3	-	-
<b>PC16.</b> select financial institutions, products and services as per requirement	-	-	-	-
<b>PC17.</b> carry out offline and online financial transactions, safely and securely	-	-	-	-
<b>PC18.</b> 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	3	4	-	-
<b>PC20.</b> operate digital devices and carry out basic internet operations securely and safely	-	-	-	-
<b>PC21.</b> use e- mail and social media platforms and virtual collaboration tools to work effectively	-	-	-	-
<b>PC22.</b> use basic features of word processor, spreadsheets, and presentations	-	-	-	-









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









### **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.









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/N4215.Prepare and maintain work area and process machineries for operating Bulk Milk Cooler (BMC)	34	36	0	30	100	20
AGR/N4216.Prepare for Operating Bulk Milk Cooler (BMC)	31	38	0	31	100	20
AGR/N4217.Operate Bulk Milk Cooler (BMC) and Ensure Cleaning and Maintenance Post- cooling	34	37	0	29	100	25
AGR/N4218.Complete Documentation and Record- keeping Related to Operating of Bulk Milk Cooler (BMC)	39	36	0	25	100	15
AGR/N4219.Ensure Safety, Hygiene and Sanitation for Cooling Milk in BMC	42	33	0	25	100	15
DGT/VSQ/N0102.Employability Skills (60 Hours)	20	30	-	-	50	5
Total	200	210	-	140	550	100









# **Acronyms**

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









# 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.









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.