

**REPUBLIC OF KENYA**

**OCCUPATIONAL STANDARD**

**FOR**

**DAIRY PROCESSING ATTENDANT**

**LEVEL 4**

**OCCUPATIONAL STANDARD ISCED CODE: 0721 354A**

First published 2024

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**FOREWORD**

The provision of quality education and training is fundamental to the Government’s overall strategy for social-economic development. Quality education and training will contribute to the achievement of Kenya’s development blueprint, Vision 2030 and sustainable development goals.

Reforms in the education sector are necessary for the achievement of Kenya Vision 2030 and meeting the provisions of the Constitution of Kenya 2010. These reforms resulted to the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No.14 of 2012). A key feature of this policy is the radical change in the design and delivery of the TVET training. This policy document requires that training in TVET be competency based, certification be based on demonstration of competence and mode of delivery allows for multiple entry and exit in TVET programmes.

The reforms also demand that Industry informs curriculum development to ensure the curriculum addresses its competence needs. It is against this background that this Occupational Standard was developed for developing a Competency-Based Education and Training (CBET) curriculum for Dairy Processing attendant Level 4. This Occupational Standard will also be the basis for the assessment of an individual for competency certification.

It is my conviction that this Occupational Standard will play a great role in the development of a competent human resource for sustainable development.

**PREFACE**

Kenya Vision 2030 aims to transform the country into a newly industrializing, middle-income country providing a high-quality life to all its citizens by the year 2030. Kenya intends to create a globally competitive and adaptive human resource base to meet the requirements of a rapidly industrializing economy through life-long education and training. TVET has a responsibility of facilitating the process of inculcating knowledge, skills, and attitudes necessary for catapulting the nation to a globally competitive country, hence the paradigm shift to embrace Competency-Based Education and Training (CBET).

The TVET Act 210A and Sessional Paper No. 14 of 2012 on Reforming Education and Training in Kenya, emphasized the need to reform curriculum development, assessment and certification. This called for a shift to CBET to address the mismatch between skills acquired through training and skills needed by the industry as well as increase the global competitiveness of the Kenyan labour force.

The occupational standard will be the basis for the development of a competency-based education and training curriculum for Animal Dairy Processing Attendant Level 4.

I am grateful to the Governing Council Members, TVETA, sector regulators, the industry experts, and subject experts who participated in the development of these standards.

**ACKNOWLEDGMENT**

This Occupational Standard were developed through the combined effort of various stakeholders from private and public organizations. I am thankful to the management of these organizations for allowing their staff to participate in this course. I wish to acknowledge the invaluable contribution of industry players who provided input towards the development of this Occupational Standard.

I also thank all the individuals and organizations who participated in the validation of this Occupational Standard.

# ACRONYMS

|  |  |
| --- | --- |
| EAS | East Africa Standard |
| ISO | Organization of International Standards |
| KS | Kenya Standard |
| UHT | Ultra-High Temperature |

EAS East Africa Standard

NEMA National Environment Management Authority

**KEY TO ISCED UNIT CODE**



# OCCUPATIONAL STANDARD OVERVIEW

Dairy processing level 4 Occupational standard consists of competencies that an individual must achieve to carry out activities in processing milk and milk products. It entails handling of raw milk; processing fluid milk, processing fermented milk and processing fat-based milk products.

This occupational standard consists of the following basic, common and core competencies:

**SUMMARY OF UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **CORE UNITS OF COMPETENCY** | |
| **UNIT CODE** | **UNIT TITLE** |
| **0721 351 05A** | HANDLE RAW MILK |
| **0721 351 06A** | PROCESS FLUID MILK PRODUCTS |
| **0721 351 07A** | PROCESS FERMENTED MILK PRODUCTS. |
| **0721 351 08A** | PROCESS FAT BASED MILK PRODUCTS |

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# CORE UNITS OF COMPETENCY

# **HANDLE RAW MILK**

**UNIT CODE: 0721 351 01A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by a Dairy Processing Attendant level 4 to handle raw milk. It involves procuring raw milk, grading, bulking and preserving, and dispatching raw milk.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace functions | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| 1. Procure raw milk | * 1. Raw milk ***sources*** are identified as per work requirement.   2. Cost of raw milk is determined based on prevailing market price.   3. ***Raw milk*** ***supply agreement*** is prepared based on procurement laws   4. Raw milk is delivered in accordance to KS 1552 Code of hygienic practice for milk and milk products |
| 1. Grade raw milk | * 1. ***Grading tools, equipment and materials*** for testing raw milk are assembled according to job requirement.   2. Raw milk sample is collected as per KS ISO 707:2008 sampling of milk and milk products   3. ***Raw milk analysis*** is carried out in accordance KS ISO/TC 34/SC 5 milk and milk products   4. Raw milk is received based on Kenya Bureau of standards and dairy industry standards.   5. Raw milk quality records are updated based on work procedure.   6. Raw milk testing equipment are cleaned in accordance with KS1552-2016 Code of hygienic practice for milk and milk products |
| 1. Preserve raw milk | * 1. Raw milk is weighed in accordance with work procedures   2. Raw milk is ***bulked*** as per KS1552- 2016 Code of Hygienic practice for milk and milk products   3. Raw milk ***cooling parameters*** are set as per the KS1552- 2016 Code of hygienic practice for milk and milk products.   4. Raw milk cooling process is carried out as per equipment operational manual.   5. Raw milk cooling process is monitored as per work instruction manual.   6. Raw milk bulking ***records*** are documented based on work instruction manual   7. Raw milk handling equipment are cleaned in accordance with KS1552- 2016 Code of hygienic practice for milk and milk products |
| 1. Dispatch raw milk | * 1. Raw milk quality is determined in accordance with work procedures   2. Raw milk volume is determined in accordance with work procedures   3. Raw milk is loaded as per KS1552- 2016 Code of Hygienic practice for milk and milk products   4. Raw milk is dispatched in accordance to work procedures.   Raw milk stock is reconciled as per work instruction manual |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
| --- | --- |
| **Variable** | **Range** |
| 1. Raw milk grading tools, equipment and materials may include but are not limited to: | **Tools and equipment**   * Alcohol gun * Plunger * Lactometer * Thermometer * Measuring cylinder * Test tubes * Centrifuge * Lovi bond Comparator   **Materials**   * Ethanol * Resazurin tablets * Antibiotic test kit * Aflatoxin test kit * Indicator * Sodium hydroxide |
| 1. Raw milk quality may include but are not limited to: | * Organoleptic test * Compositional test * Resazurin test * Alcohol test * Lactometer test * Antibiotic test * pH test |
| 1. Raw milk bulking equipment may include but are not limited to: | * Vats * Cans * Silo tanks |
| 1. Bulked may include but are not limited to: | Consolidated in:   * Cans * Vats * Silos |
| 1. Raw milk cooling parameters may include but are not limited to: | * Cooling time * Agitation * Temperatures |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Dairy microbiology
* Dairy chemistry
* Milk sampling techniques
* Milk quality testing techniques
* Milk preservation techniques
* Good manufacturing practices
* Code of hygiene
* Record keeping

**Required skills**

The individual needs to demonstrate the following skills:

* Communication skills
* Problem solving
* Weighing skills
* Milk handling skills
* Food safety risk assessment
* Milk equipment handling

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate   1. Tested ***Raw milk quality*** as per KS ISO/TC 34/SC 5 milk and milk products. 2. ***Bulked*** raw milk as per (KS)1552- 2016 code of Hygienic practice for milk and milk products. 3. Carried out Raw milk cooling process as per equipment operational manual. |
| 1. Resource implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place   2. Access to relevant work environment   3. Resources relevant to the proposed activities or tasks |
| 1. Methods of assessment | Competency in this unit may be assessed through:   * 1. Practical assessment.   2. Portfolio of evidence.   3. Third party report.   4. Written tests .   5. Oral questioning. |
| 1. Context of assessment | Competency may be assessed:   * 1. Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

# **PROCESS FLUID MILK PRODUCTS**

**UNIT CODE: 0721 351 02A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by a dairy processing attendant level 4 to process fluid milk products. it involves processing pasteurized milk, ultra heat-treated milk and extended shelf-life milk, lactose free milk and milk substitutes

**ELEMENTS AND PERFORMANCE CRITERIA**

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| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace functions | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| 1. Process pasteurized milk | * 1. Raw milk sample is collected as per KS ISO 707:2008 Sampling of milk and milk products   2. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   3. ***Processing materials and equipment*** are assembled based on work requirement.   4. Milk is standardized as per Kenya Standards East Africa Standards (KS EAS) 69-2019   5. Standardized milk is homogenized as per KS EAS 69-2019 standard.   6. Standardized milk is ***pasteurized*** as per KS EAS 69-2019 standard.   7. Pasteurized milk is packaged as per KS EAS 69-2019 standard   8. Pasteurized milk is stored in accordance KS EAS 69-2019   9. Processing equipment is cleaned as per code of hygienic practice for milk and milk products   10. Dairy waste is disposed as per (KS)1552- 2016 code of Hygienic practice for milk and milk products   11. Pasteurized milk processing records are updated as per Dairy Industry Act 336. |
| 1. Process UHT milk | * 1. Raw milk sample is collected as per ISO 707:2008 Guidance on sampling of milk and milk products   2. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   3. ***UHT milk processing materials and equipment*** are assembled based on work requirement.   4. Milk is standardized in line with Kenya Standards East Africa Standards (KS EAS) 69-2019   5. Standardized milk is homogenized in line with KS EAS 69-2019 standard.   6. Standardized milk is ***pasteurized*** in accordance with KS EAS 69-2019 standard.   7. Pasteurized milk is stored in accordance with KS EAS 63-2019 standard.   8. Pasteurized milk is **sterilized** as per KS EAS 63-2019 standard   9. Sterilized milk is packaged as per KS EAS 63-2019 standard.   10. Sterilized milk milk is stored in accordance with KS EAS 63-2019 standard.   11. Processing equipment is cleaned as per code of hygienic practice for milk and milk products   12. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   13. Sterilized milk processing records are updated as per Dairy Industry Act 336. |
| 1. Process extended shelf-life milk. | * 1. Raw milk sample is collected as per KS ISO 707:2008 Sampling of milk and milk products   2. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   3. ***Processing materials and equipment*** are assembled based on work requirement.   4. Standardized milk is ***pasteurized*** in accordance with KS EAS 69-2019   5. Pasteurized milk is stored in accordance with KS EAS 63-2019.   6. Pasteurized milk is **sterilized** in accordance with KS EAS 63-2019.   7. Extended shelf-life milk is packaged as per KS EAS 63-2019.   8. Sterilized milk milk is stored in accordance KS EAS 63-2019   9. Processing equipment is cleaned as per code of hygienic practice for milk and milk products   10. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   11. Sterilized milk processing records are updated as per Dairy Industry Act 336. |
| 1. Process lactose free milk | * 1. Raw milk sample is collected as per KS ISO 707:2008 Sampling of milk and milk products   2. ***Raw milk sample analysis*** is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products   3. ***Lactose free processing materials and equipment*** are assembled based on work requirement.   4. Milk is standardized in accordance with KS EAS 39   5. Standardized milk is homogenized in line with KS EAS 39   6. Milk is pasteurized in accordance with KS EAS 39.   7. Pasteurized milk undergoes lactase enzyme treatment in accordance to KS EAS 39.   8. Lactose free milk is pasteurized accordance to KS EAS 39.   9. Lactose free milk is packaged as per KS EAS 39.   10. Lactose free milk is stored in accordance KS EAS 39.   11. Processing equipment is cleaned as per code of hygienic practice for milk and milk products.   12. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   Lactose free milk processing records are updated as per work instruction manual |
| 1. Process milk substitutes | 1. ***Milk substitute products*** are identified based on the type of substitute 2. ***Base ingredients*** are selected based on the type of substitute 3. Milk substitutes is processed based on the type of substitute. 4. Milk substitutes is packaged based on the type of substitute 5. Milk substitutes is stored based on the type of substitute 6. Processing equipment is cleaned as per code of hygienic practice for milk and milk products. 7. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   Milk substitute processing records are updated as per work instruction manual |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

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| --- | --- |
| Variable | Range |
| 1. Pasteurized milk processing materials and equipment may include but are not limited to: | **Materials**   * Raw milk * Milk powder * Anhydrous fat * Packaging material   **Equipment**   * Blender * Cream separator * Homogenizer * Pasteurizer * Milk silo tank * Packaging machine |
| 1. UHT processing materials and equipment may include but are not limited to: | * Homogenizer * Steriliser * Sterile tank * Aseptic packaging machines   **Materials:**   * Pasteurized milk. |
| 1. Pasteurized may include but are not limited to: | * Batch pasteurisation * Continuous pasteurisation |
| 1. Sterilized may include but are not limited to: | * High Heat treatment for a short time. |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Milk sampling techniques
* Milk quality testing techniques
* Milk preservation techniques
* Good manufacturing practices
* Code of hygiene practices
* Record keeping
* Dairy waste and management
* Equipment operation.
* Food safety principles.

**Required skills**

The individual needs to demonstrate the following skills:

* Communication
* Milk testing
* Milk handling
* Milk equipment handling

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

|  |  |
| --- | --- |
| 1.Critical aspects of competency | Assessment requires evidence that the candidate:   * 1. Pasteurized standardized milk as per KS EAS 69-2019 standard.   2. Sterilized pasteurized milk as per KS EAS 63-2019 standard   3. Packaged sterilized milk as per KS EAS 63-2019 standard.   4. Packaged extended shelf life milk as per KS EAS 63-2019 |
| 2.Resource implications | The following resources should be provided:   1. Appropriately simulated environment where assessment can take place 2. Access to relevant work environment 3. Resources relevant to the proposed activities or tasks |
| 1. Methods of assessment | Competency in this unit may be assessed through:   * 1. Practical assessment.   2. Oral questioning   3. Portfolio of evidence   4. Third party report   5. Written tests |
| 1. Context of assessment | Competency may be assessed:   * 1. Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

# **PROCESS FERMENTED MILK PRODUCTS**

**UNIT CODE: 0721 351 03A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by a dairy processing attendant level 4 to process cheese products. it involves production of yoghurt, cultured milk; and cheddar, gouda, paneer, mozzarella and cream cheese.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace functions | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| 1. Produce yoghurt product | * 1. Raw milk sample is collected as per KS ISO 707:2008 Sampling of milk and milk products   2. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   3. ***Yoghurt processing materials and equipment*** are assembled based on work requirement.   4. Yoghurt product making is carried out in accordance with Kenya Standard East Africa Standard (KS EAS) 33-2006, Yoghurt — Specification   5. ***Yoghurt product quality is tested*** in accordance with KS ISO/TC 34/SC 5 milk and milk products.   6. Yoghurt product is packaged in accordance with Kenya East Africa Standard (K EAS) 33-2006, Yoghurt — Specification.   7. Yoghurt product is stored in accordance with Kenya East Africa Standard (K EAS) 33-2006, Yoghurt — Specification   8. Processing equipment is cleaned as per code of hygienic practice for milk and milk products   9. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   10. Yoghurt product production records are updated as per work instruction manual |
| 1. Produce Cultured milk product | * 1. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   2. ***Cultured milk product processing materials and equipment*** are assembled based on work requirement.   3. Cultured milk product making is carried out in accordance with Kenya East Africa Standard (K EAS) 1008:2021 Fermented (cultured) milk — Specification.   4. ***Cultured milk product quality is tested*** in accordance with KS ISO/TC 34/SC 5 milk and milk products   5. Cultured milk product is packaged in accordance with Kenya East Africa Standard (K EAS) 1008:2021 Fermented (cultured) milk — Specification   6. Cultured milk product is stored in accordance with Kenya Standard East Africa Standard (KS EAS) 1008:2021 Fermented (cultured) milk — Specification   7. Processing equipment is cleaned as per code of hygienic practice for milk and milk products   8. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   9. Cultured milk product production records are updated as per work place manual. |
| 1. Produce cheddar cheese | * 1. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   2. ***Cheddar cheese processing materials and equipment*** are assembled as per work requirement.   3. Cheddar cheese making is carried out in accordance with Kenya Standard (KS) 28-1, General standard for cheese.   4. Cheddar cheese is ripened in accordance with KS 28-1, General standard for cheese.   5. Cheddar cheese quality is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   6. Cheddar cheese is packaged in accordance with KS 28-1, General standard for cheese.   7. Cheddar cheese is stored in accordance with KS 28-1, General standard for cheese.   8. Cheddar cheese processing equipment is cleaned as per code of hygienic practices for milk and milk products   9. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   10. Cheddar cheese production records are updated as per work instruction manual |
| 1. Produce paneer cheese | * 1. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   2. ***Paneer cheese processing materials and equipment*** are assembled based on work requirement.   3. Paneer cheese making is carried out in accordance with Kenya Standard (KS) 28-1, General standard for cheese.   4. Paneer cheese quality is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products.   5. Paneer cheese is packaged in accordance with (KS) 28-1, General standard for cheese.   6. Paneer cheese is stored in accordance with (KS) 28-1, General standard for cheese.   7. Processing equipment is cleaned as per code of hygienic practice for milk and milk products   8. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products.   9. Paneer cheese production records are updated as work instruction manual. |
| 1. Produce mozzarella cheese | * 1. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   2. ***Mozzarella cheese processing materials and equipment*** are assembled based on work requirement.   3. Mozzarella cheese making is carried out in accordance with Kenya Standard (KS) 28-1, General standard for cheese.   4. Mozzarella cheese quality is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products.   5. Mozzarella cheese is packaged in accordance with (KS) 28-1, General standard for cheese.   6. Mozzarella cheese is stored in accordance with (KS) 28-1, General standard for cheese.   7. Processing equipment is cleaned as per code of hygienic practice for milk and milk products   8. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   9. Mozzarella cheese production records are updated as per work instruction manual. |
| 1. Produce Cream cheese | * 1. Cream cheese ***Processing materials and equipment*** are assembled based on work requirement.   2. Cream cheese making is carried out in accordance with Kenya Standard (KS) 28-1, General standard for cheese.   3. Cream cheese sample is drawn as per KS ISO 707:2008 Sampling of milk and milk products   4. Cream cheese quality is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   5. Cream cheese is packaged in accordance with (KS) 28-1, General standard for cheese.   6. Cream cheese is stored in accordance with (KS) 28-1, General standard for cheese.   7. Processing equipment is cleaned as per code of hygienic practice for milk and milk products   8. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   9. Cream cheese production records are updated as per work instruction manual. |
| 1. Produce gouda cheese | * 1. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   2. ***Gouda cheese processing materials and equipment*** are assembled based on work requirement.   3. Gouda cheese making is carried out in accordance with Kenya Standard (KS) 28-1, General standard for cheese.   4. Gouda cheese is ripened in accordance with KS 28-1, General standard for cheese.   5. Gouda cheese quality is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   6. Gouda cheese is packaged in accordance with KS 28-1, General standard for cheese.   7. Gouda cheese is stored in accordance with KS 28-1, General standard for cheese.   8. Processing equipment is cleaned as per code of hygienic practice for milk and milk products   9. Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   10. Gouda cheese production records are updated as per work instruction manual. |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

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| --- | --- |
| **Variable** | **Range** |
| 1. Yoghurt processing materials and equipment may include but are not limited to: | **Material**  • Starter culture  • Milk  • Thickeners  • Sweetener  • Emulsifier  • Stabilizers  • Food colour  • Flavours  **Equipment**  • Milk pasteurizer  • Homogenizer  • Fermentation tanks  • Thermometers  • Cooler |
| 1. Yoghurt product quality is tested may include but are not limited to: | * Organoleptic * pH * Viscosity. |
| 1. Cultured milk product processing materials and equipment may include but are not limited to: | **Material**  • Starter culture  • Milk  • Thickeners  • Sweetener  • Emulsifier  • Stabilizers  • Food colour  • Flavours  **Equipment**  • Milk pasteurizer  • Homogenizer  • Fermentation tanks  • Thermometers  • Cooler |
| 1. Cultured milk product quality is tested may include but are not limited to: | * Organoleptic * pH * Viscosity |
| 1. 1) Cheddar cheese processing materials and equipment may include but are not limited to: | **Material**   * Starter culture * Rennet * Food Colour * Salt   **Equipment**   * Cheese vat * Cheese press * Cheese mould * Knives * Cheese cloth * Miller * pH meter * Thermometer |
| 1. Gouda cheese processing materials and equipment may include but are not limited to: | **Material**   * Starter culture * Rennet * Food Colour * Salt   **Equipment**   * Cheese vat * Cheese press * Cheese mould * Knives * Cheese cloth * Thermometer * pH meter |
| 1. Paneer cheese processing materials and equipment may include but are not limited to: | **Material**   * Citric acid * Food Colour * Salt   **Equipment**   * Cheese vat * Cheese mould * Knives * Cheese cloth * Thermometer * pH meter |
| 1. Mozzarella cheese processing materials and equipment may include but are not limited to: | Material   * Starter culture * Rennet * Food Colour * Salt   **Equipment**   * Cheese vat * Knives * Stretcher |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

The individual needs to demonstrate knowledge of:

* Dairy microbiology
* Dairy chemistry
* Milk Fermentation.
* Milk sampling techniques
* Milk quality testing techniques
* Good manufacturing practices
* Code of hygiene practices
* Record keeping
* Dairy waste and management
* Cheese technology

**Required skills**

The individual needs to demonstrate the following skills:

* Communication
* Milk handling
* Cheese equipment handling
* Inoculation.
* Cheese making
* Milk testing.

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

|  |  |
| --- | --- |
| 1.Critical aspects of competency | Assessment requires evidence that the candidate:   * 1. Carried out Yoghurt product making in accordance with Kenya Standard East Africa Standard (KS EAS) 33-2006, Yoghurt — Specification   2. Carried out Cultured milk product making in accordance with Kenya East Africa Standard (K EAS) 1008:2021 Fermented (cultured) milk — Specification.   3. Carried out Cheddar cheese making in accordance with Kenya Standard (KS) 28-1, General standard for cheese.   4. Carried out Gouda cheese making in accordance with Kenya Standard (KS) 28-1, General standard for cheese   5. Ripened Cheddar cheese in accordance with KS 28-1, General standard for cheese.   6. Ripened Gouda cheese in accordance with KS 28-1, General standard for cheese.   7. Carried out Paneer cheese making in accordance with Kenya Standard (KS) 28-1, General standard for cheese.   8. Carried out Mozzarella cheese making in accordance with Kenya Standard (KS) 28-1, General standard for cheese.   9. Carried out Cream cheese making in accordance with Kenya Standard (KS) 28-1, General standard for cheese. |
| 2.Resource implications | The following resources should be provided:   1. Appropriately simulated environment where assessment can take place 2. Access to relevant work environment 3. Resources relevant to the proposed activities or tasks |
| 1. Methods of assessment | Competency in this unit may be assessed through:   * + Practical assessment.   + Oral questioning   + Portfolio of evidence   + Third party report   + Written tests |
| 1. Context of assessment | Competency may be assessed:   * 1. Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |

# **PROCESS FAT BASED MILK PRODUCTS**

**UNIT CODE: 0721 351 04A**

**UNIT DESCRIPTION**

This unit specifies the competencies required by a Dairy Processing Attendant level 4 to process Fat Based Milk products. It involves production of dairy cream, dairy Butter, dairy Ghee and dairy Ice Cream.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the key outcomes which make up workplace functions | **PERFORMANCE CRITERIA**  These are assessable statements which specify the required level of performance for each of the elements  ***(Bold and italicized terms are elaborated in the range)*** |
| 1. Produce dairy cream | * 1. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   2. ***Cream processing materials and equipment*** are assembled based on work requirement.   3. Dairy cream product is produced in accordance with KS 35:2018 Dairy cream and prepared creams - Specification   4. Dairy cream product quality is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   5. Dairy cream product is packaged in accordance with KS 35:2018 Dairy cream and prepared creams – Specification   6. Dairy cream product is stored in accordance with KS 35:2018 Dairy cream and prepared creams - Specification.   7. Processing equipment is cleaned as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   8. Dairy waste is disposed as per KS 1552- 2016 code of Hygienic practice for milk and milk products   9. Dairy cream product production records are updated as per work instruction manual |
| 1. Produce Dairy Butter | * 1. Raw milk sample is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   2. ***Butter processing materials and equipment*** are assembled based on work requirement.   3. Dairy butter making is carried out in accordance with KS EAS 22:2019 Butter - Specification   4. Dairy butter product quality is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   5. Dairy butter is packaged in accordance with KS EAS 22:2019 Butter - Specification   6. Dairy butter product is stored in accordance with KS EAS 22:2019 Butter - Specification   7. Processing equipment is cleaned as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products   8. Dairy waste is disposed as per KS1552- 2016 code of Hygienic practice for milk and milk products   9. Dairy butter product production records are updated as per work instruction manual. |
| 1. Produce Dairy Ghee | * 1. ***Ghee Processing materials and equipment*** are assembled based on work requirement.   2. Dairy ghee making is carried out in accordance with KS 326 Specification for edible fats and oils   3. Dairy ghee product quality is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   4. Dairy ghee is packaged in accordance with KS 326 Specification for edible fats and oils   5. Dairy ghee product is stored in accordance with KS 326 Specification for edible fats and oils   6. Processing equipment is cleaned as per Kenya Standards (KS)1552- 2016 Code of Hygienic practice for milk and milk products   7. Dairy waste is disposed as per KS 1552- 2016 Code of Hygienic practice for milk and milk products   8. Dairy ghee product production records are updated as per work instruction manual. |
| 1. Produce Dairy Ice Cream | * 1. ***Dairy Ice cream processing materials and equipment*** are assembled based on work requirement.   2. Dairy Ice cream making is carried out in accordance with Kenya Standard East Africa Standard (KS EAS 70) Dairy ice cream — Specification   3. Dairy Ice cream product quality is tested in accordance with KS ISO/TC 34/SC 5 milk and milk products   4. Dairy Ice cream product is packaged in accordance with (K EAS 70) Dairy ice cream — Specification   5. Dairy Ice cream product is stored in accordance with (K EAS 70) Dairy ice cream — Specification   6. Processing equipment is cleaned as Kenya Standards (KS)1552- 2016 Code of Hygienic practice for milk and milk products   7. Dairy waste is disposed as per KS1552- 2016 Code of Hygienic practice for milk and milk products.   8. Dairy Ice cream product production records are updated as per work instruction manual. |

**RANGE**

This section provides work environment and conditions to which the performance criteria apply. It allows for different work environment and situations that will affect performance.

|  |  |
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| **Variable** | **Range** |
| 1. Cream processing materials and equipment may include but are not limited to: | **Materials**   * Raw milk * Cream   **Equipment**   * Cream separator |
| 1. Butter processing materials and equipment may include but are not limited to: | **Materials**   * Raw milk * Cream * Salt * Food colours   **Equipment**   * Cream separator * Butter churn |
| 1. Ghee Processing materials and equipment may include but are not limited to: | **Materials**   * Butter * Cream   Equipment   * Heat exchangers |
| 1. Dairy Ice cream processing materials and equipment may include but are not limited to: | **Materials**   * Milk powder * Sweeteners * Flavours * Food colour * Stabilizers * Emulsifiers   **Equipment**   * Ice cream freezer |

**REQUIRED KNOWLEDGE AND SKILLS**

This section describes the knowledge and skills required for this unit of competency.

**Required knowledge**

The individual needs to demonstrate knowledge of:

* Milk sampling techniques
* Milk tests
* Cream production
* Butter making technology
* Ghee making technology
* Ice cream technology
* Principles of sensory evaluation
* Codes of hygienic practice (s)
* Dairy products standards
* Good manufacturing practices
* Cleaning of processing equipment
* Dairy waste and management
* Records keeping

**Required skills**

The individual needs to demonstrate the following skills:

* Measuring
* Milk sampling
* Milk testing
* Communication
* Food handling
* Computation
* Active listening

**EVIDENCE GUIDE**

This provides advice on assessment and must be read in conjunction with the performance criteria, required knowledge and skills range.

|  |  |
| --- | --- |
| 1. Critical aspects of competency | Assessment requires evidence that the candidate:   * 1. Produced dairy cream product in accordance with KS 35:2018 Dairy cream and prepared creams - Specification   2. Carried out Dairy butter making is in accordance with KS EAS 22:2019 Butter - Specification   3. Carried out Dairy ghee making in accordance with KS 326 Specification for edible fats and oils   4. Carried out Dairy Ice cream making in accordance with Kenya Standard East Africa Standard (KS EAS 70) Dairy ice cream — Specification |
| 1. Resource implications | The following resources should be provided:   * Assessment location / work place * Personal Protective Equipment |
| 1. Methods of assessment | Competency in this unit may be assessed through:   * Practical report * Oral questioning * Portfolio of evidence * Interviews * Third party report * Written tests |
| 1. Context of assessment | Competency may be assessed:   * Workplace or simulated workplace |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector and workplace job role is recommended. |