PROCESS FLUID MILK PRODUCTS

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UNIT DESCRIPTION

This unit specifies the competencies required by a Dairy Plant Technician level 5 to process fluid milk products. It involves processing Pasteurized milk, Ultra Heat Treated milk and Extended Shelf Life 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. Process pasteurized milk	1.1 Raw milk sample is collected as per KS ISO 707:2008 Sampling of milk and milk products 1.2 ***Raw milk quality analysis*** is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products 1.3 ***Pasteurized milk processing materials and equipment*** are assembled based on work requirement. 1.4 Milk is standardized in line with Kenya Standards East Africa Standards (KS EAS) 69-2019 1.5 Standardized milk is homogenized in line with KS EAS 69-2019 1.6 Standardized milk is ***pasteurized*** in accordance with KS EAS 69-2019 1.7 **Pasteurization efficiency** is **assessed** as per pasteurized milk standards 1.8 AI is applied in pasteurized milk processing as per work instruction manual. 1.9 Pasteurized milk is packaged as per KS EAS 69-2019 1.10 Pasteurized milk is packaged sustainably as per work place procedures 1.11 Pasteurized milk is stored in accordance KS EAS 69-2019 1.12 Pasteurized milk processing equipment is cleaned as per code of hygienic practice for milk and milk products 1.13 Dairy waste is disposed as per (KS)1552- 2016 code of Hygienic practice for milk and milk products 1.14 Dairy waste is sustainably disposed as per work place procedure. 1.15 Pasteurized milk processing records are updated as per work instruction manual.
2. **2.** Process ultra-high temperature milk	4.1 Raw milk sample is collected as per ISO 707:2008 Guidance on sampling of milk and milk products

	4.2 ***Raw milk quality analysis*** is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products 4.3 ***UHT milk processing materials and equipment*** are assembled based on work requirement. 4.4 Milk is standardized in line with Kenya Standards East Africa Standards (KS EAS) 69-2019 4.5 Standardized milk is homogenized in line with KS EAS 69-2019 4.6 Standardized milk is pasteurized in accordance with KS EAS 27:2023 UHT milk- specification. 4.7 Pasteurized milk is stored in accordance with KS EAS 27:2023 UHT milk- specification. 4.8 Milk is sterilized in accordance with KS EAS 27:2023 UHT milk- specification. 4.9 UHT milk Sterility is assessed as per KS EAS 27:2023 UHT milk- specification. 4.10 AI is applied in UHT milk processing as per work instruction manual. 4.11 Sterilized milk is packaged as per KS EAS 27:2023 UHT milk- specification. 4.12 Sterilized milk is packaged sustainably as per work place procedures 4.13 Sterilized milk milk is stored in accordance KS EAS 63-2019 4.14 UHT milk processing equipment is cleaned as per code of hygienic practice for milk and milk products 4.15 Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products 4.16 Dairy waste is sustainably disposed as per work place procedure 4.17 Sterilized milk processing records are updated as per work instruction manual.
3. Process lactose free milk	6.1 Raw milk sample is collected as per KS ISO 707:2008 Sampling of milk and milk products 6.2 ***Raw milk quality analysis*** is carried out in accordance with KS ISO/TC 34/SC 5 milk and milk products 6.3 ***Lactose free processing materials*** and equipment are assembled based on work requirement. 6.4 Milk is standardized in accordance with KS EAS 39 6.5 Standardized milk is homogenized in line with KS EAS 39 6.6 Milk is pasteurized in accordance with KS EAS 39. 6.7 Pasteurized milk undergoes lactase enzyme treatment in accordance to KS EAS 39. 6.8 Lactose free milk is pasteurized accordance to KS EAS 39. 6.9 AI is applied in Lactose free milk is processing as per work instruction 6.10 Lactose free milk is packaged as per KS EAS 39.

	6.11 Lactose free milk is sustainably packaged as per work place procedures 6.12 Lactose free milk is stored in accordance KS EAS 39. 6.13 Processing equipment is cleaned as per code of hygienic practice for milk and milk products. 6.14 Dairy waste is disposed as per Kenya Standards (KS)1552- 2016 code of Hygienic practice for milk and milk products 6.15 Dairy waste is sustainably disposed as per work place procedure 6.16 Lactose free milk processing records are updated as per work instruction manual
4. Process milk substitutes products	4.1 ***Milk substitute products*** are identified based on the type of substitute 4.2 ***Base ingredients*** are selected based on the type of substitute 4.3 Based ingredient is heat treated based on the type of substitute. 4.4 AI is applied in UHT milk processing as per work instruction manual 4.5 Milk substitutes product is packaged based on the type of substitute 4.6 Milk substitutes product is packaged sustainably as per work place procedures 4.7 Milk substitutes product is stored based on the type of substitute 4.8 Processing equipment is cleaned as per code of hygienic practice for milk and milk products. 4.9 Dairy waste is disposed as per Kenya Standards (KS)1552-2016 code of Hygienic practice for milk and milk products 4.10 Dairy waste is sustainably disposed as per work place procedure 4.11 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.

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
2. Pasteurization efficiency is assessed may include but are not limited to:	• Alkaline phosphatase test
3. UHT processing materials and equipment may include but are not limited to:	• Homogenizer • Steriliser • Sterile tank • Aseptic packaging machines
4. ***Lactose free processing materials*** may include but are not limited to:	• Lactase enzyme
5. Pasteurized may include but are not limited to:	• Batch pasteurisation at <68^{O}C for 30 minutes • Continuous pasteurisation <72^{O}C for 15 seconds
6. Sterilized may include but are not limited to:	• Heat treatment at ≤133^{O}C for 5 seconds
7. Sterility may include but are not limited to:	• Packet integrity • Sterilisation temperatures • Sterile packaging material

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 practices
- Legal requirements
- Record keeping
- Dairy waste and management

Required skills

The individual needs to demonstrate the following skills:

- Communication
- Problem solving

- Milk testing
- Analytical
- Milk handling
- 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: 1.1 Sterilized milk in accordance with KS EAS 27:2023 UHT milk- specification. 1.2 Assessed pasteurization efficiency as per pasteurized milk standards 1.3 Assessed UHT milk sterility as per KS EAS 27:2023 UHT milk- specification. 1.4 Cleaned UHT milk processing equipment as per code of hygienic practice for milk and milk products 1.5 Pasteurized milk in accordance with KS EAS 69-2019 1.6 Cleaned pasteurized milk processing equipment as per code of hygienic practice for milk and milk products
2.Resource implications	The following resources should be provided: 2.1 Appropriately simulated environment where assessment can take place 2.2 Access to relevant work environment 2.3 Resources relevant to the proposed activities or tasks
3. Methods of assessment	Competency in this unit may be assessed through: 3.1 Observation 3.2 Oral questioning 3.3 Portfolio of evidence 3.4 Third party report 3.5 Written tests
4. Context of assessment	Competency may be assessed: 4.1 Workplace 4.2 Simulated work environment
5. Guidance information for assessment	Holistic assessment with other units relevant to the industry sector and workplace job role is recommended.