

**THE REPUBLIC OF KENYA**

**NATIONAL OCCUPATIONAL STANDARD**

**FOR**

**BEE PRODUCTS PROCESSOR**

**KNQF LEVEL 4**

**ISCED CODE: 0811 354 A**

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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 achievement of Kenya’s development blue print 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. The education sector had to be aligned to the Constitution and this resulted in the formulation of the Policy Framework for Reforming Education and Training (Sessional Paper No. 4 of 2016). A key feature of this policy is the radical change in the design and delivery of the TVET training. The policy document requires that training in TVET shall be competency based, curriculum development shall be industry led, certification shall be based on demonstration of competence and mode of delivery shall allow for multiple entry and exit in TVET programmes.

These reforms demand that Industry takes a leading role in curriculum development to ensure the curriculum addresses its competence needs. It is against this background that these Occupational Standards were developed for the purpose of developing a competency-based curriculum for Bee Products Processing and Value Addition level 4. These Occupational Standards will also be the basis for assessment of an individual for competence certification.

It is my conviction that these Occupational Standards will play a great role towards development of competent human resource for the apiculture sector’s growth and 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 Technical and Vocational Education and Training Act No. 29 of 2013 and Sessional Paper No. 4 of 2016) on Reforming Education and Training in Kenya, emphasized the need toreform curriculum development, assessment and certification. This called for shift to CBET to address the mismatch between skills acquired through training and skills needed by industry as well as increase the global competitiveness of Kenyan labour force.

The TVET Curriculum Development, Assessment and Certification Council (TVET CDACC), in conjunction with apiculture Sector Skills Advisory Committee (SSAC) have developed these Occupational Standards for Fashion Designers. These occupational standards will be the basis for development of competency-based curriculum for Bee Products Processing and Value Addition Level 4. These Standards will also be the basis for assessment of an individual for competence certification.

The occupational standards are designed and organized with clear performance criteria for each element of a unit of competency. These standards also outline the required knowledge and skills as well as evidence guide.

I am grateful to Council Secretariat, Council Technical Committee, apiculture SSAC and expert workers and all those who participated in the development of these occupational standards.

# ACKNOWLEDGMENT

These Occupational Standards were developed through combined effort of various stakeholders from private and public organizations. I am sincerely 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 inputs towards the development of these Standards.

I thank TVET Curriculum Development, Assessment and Certification Council (TVET CDACC) for providing guidance on the development of these Standards. My gratitude goes to the apiculture Sector Skills Advisory Committee (SSAC) members for their contribution to the development of these Standards. I thank all the individuals and organizations who participated in the validation of these Standards.

I acknowledge all institutions which in one way or another contributed to the success of development of these Standards.

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# **ACRONYMS AND ABBREVIATIONS**

AGR : Agriculture

APIPR : Apiculture – Processing

CC : Core Competency

CDACC : Curriculum Development Assessment and Certification Council

CO : Common Units

CR : Core competency

OS : Occupational Standards

OSHA : Occupation Safety and Health Act

PPE : Personal Protective Equipment

SSAC : Sector Skills Advisory Committee

TVET : Technical and Vocational Education and Training

TVETA : Technical and Vocational Education and Training Authority

# KEY TO UNIT CODE

Sector / Industry

Sub Sector

Curriculum Area

Version Control

Unit of Competence Number

ISCED level, Programme Orientation and Level of Completion

xx

x

xxx

x

x

x

# 

# OVERVIEW

Bee products processing Level 4 qualification consists of competencies that an individual must have to harvest bee products, process honey, bees wax, propolis, pollen, and bee venom. It also entails performing bee product value addition and managing quality of bee products.

The units of competency comprising Bee products Processor Level 4 qualification include the following:

**CORE UNITS OF COMPETENCY**

|  |  |
| --- | --- |
| **Unit Code** | **Unit Title** |
| 0811 341 01 A | Harvest bee products |
| 0811 341 02 A | Process honey |
| 0811 341 03 A | Process bee wax |
| 0811 341 04 A | Process propolis |
| 0811 341 05 A | Process pollen |
| 0811 341 06 A | Process bee venom |
| 0811 341 07 A | Perform bee product value addition |
| 0811 341 08 A | Manage quality of bee products |

# 

# MODULE I

**HARVEST BEE PRODUCTS**

**UNIT CODE:** 0811 341 01 A

**UNIT DESCRIPTION**

This unit specifies the competencies required to harvest bee products. It involves preparing to harvest bee products, conducting bee product harvesting, extracting bee products and performing post-harvest practices.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **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. Prepare to harvest bee products | 1. ***Bee products*** to be harvested are identified as per the apiary records 2. Colonies to be harvested are identified as per workplace procedures. 3. ***Materials and equipment*** are identified as per workplace procedures. 4. Materials and equipment’s are assembled as per workplace procedures 5. Personal protective equipment is worn as per the occupational health and safety procedures |
| 1. Conduct bee product harvesting | 1. Hive is opened as per the workplace procedures 2. Ripe honey is harvested as per the workplace procedures 3. Propolis is harvested as per workplace procedures 4. Pollen is trapped and collected as per workplace procedures 5. Bee broods are harvested as per workplace procedures 6. Royal jelly harvested as per workplace procedures |
| 1. Extract bee products | 1. Bee venom is extracted as per workplace procedures 2. Honey is extracted as per workplace procedures 3. Bee’s wax is extracted as per workplace procedures |
| 1. Perform post-harvest practices | 1. Bee products are sorted as per workplace procedures 2. Bee products are graded as per the workplace procedures 3. Bee products are weighed based on workplace procedures 4. ***Bee products production records*** are prepared as per the workplace procedures 5. Bee products are transported as per the workplace procedures 6. ***Bee products*** are stored as per health and storage specifications |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| 1. Bee products may include but not limited to: | * Bee’s wax * Pollen * Royal jelly * Bee venom * Bee broods * Honey |
| 1. Materials and equipment may include but not limited to: | * Harvesting and storage containers * Smokers * PPE kit * Bee brush * Bee escape * Bee venom collection frame * Electro-stimulator * Glass sheet |
| 1. Bee production records may include but not limited to: | * Quality * Classification * Quantity per hive records |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Numeracy
* Computer
* Organizing
* Analytical
* Negotiation
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking
* Harvesting techniques
* Extraction techniques
* Appropriate use of tools and equipment
* Bee products handling

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Types of bee products
* Equipment and techniques in bee product harvesting
* Types of PPEs
* Safe use of tools and equipment
* Bee behavior
* Equipment for extraction
* Bee products harvesting, grading and storage.
* Bee products uses

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   1. Identified colonies to be harvested as per workplace procedures. 2. Identified and assembled materials and equipment for bee products harvesting 3. Used personal protective equipment as per the occupational health and safety procedures 4. Opened hive as per the workplace procedures 5. Harvested ripe honey, propolis, pollen, bee broods and royal jelly as per the workplace procedures 6. Extracted bee venom, honey, bees wax and pollen as per workplace procedures 7. Weighed and graded bee products based on the workplace procedures 8. Prepared bee products production records as per the workplace procedures 9. Stored bee products as per health and storage specifications |
| 1. Resource Implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place   2. Access to relevant workplace assessment environment   3. Resources relevant to the proposed assessment activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## PROCESS HONEY

**UNIT CODE:** 0811 341 02 A

**UNIT DESCRIPTION**

This unit specifies the competencies required to process honey. It involves preparing materials for processing honey, preparing processing equipment, processing honey and performing post processing procedures.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **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. Prepare materials for processing honey | 1. Materials for processing honey are assembled as per the workplace procedures 2. Materials for processing honey are sorted as per the workplace procedures |
| 1. Prepare processing equipment | 1. Identification of processing equipment 2. Assemble processing equipment 3. Set up the processing equipment 4. Hygienic and safety measures considered |
| 1. Process honey | 1. ***State/form of honey*** is identified based on quality manual 2. Right processing steps are initiated as per guidelines 3. Processed honey is stored in appropriate containers/materials |
| 1. Perform post processing procedures | 1. Honey is packaged and labeled as per the workplace procedures 2. Waste material disposed as per workplace guidelines |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| State/form of honey may include but not limited to: | * Raw honey * Semi processed * Decanted * Comb honey * Granulated |
| State may include but not limited to: | * Liquid * Solid |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Analytical
* Negotiation
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Bee products
* Processing equipment
* Food grade materials
* Work place safety precautions
* Public heath
* Different forms of honey
* Honey processing methods
* Food grade materials
* Differentiation of Honey bee combs
* Wax processing
* Wax storage materials

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified processing equipment   2. Assembled processing equipment   3. Considered Hygienic and safety measures   4. Identified state of honey based on   5. Initiated right processing steps as per guidelines   6. Stored processed honey in appropriate containers/materials   7. Identified and assembled Empty combs   8. Settled and stored wax appropriately |
| 1. Resource Implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place   2. Access to relevant workplace assessment environment   3. Resources relevant to the proposed assessment activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the –job 3. During industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## PROCESS BEES WAX

**UNIT CODE:** 0811 341 03 A

**UNIT DESCRIPTION**

This unit specifies the competencies required to process bees’ wax. It involves preparing materials for processing bees wax, preparing processing equipment, processing bees wax and performing post processing procedures.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **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. Prepare materials for processing bees wax | 1. Materials for processing bees wax are identified as per the workplace procedures 2. Materials for processing bees wax are assembled and sorted as per the workplace procedures |
| 1. Prepare processing equipment | 1. Processing equipment are identified as per the workplace procedures 2. ***Processing equipment*** assembled as per the workplace procedures 3. Processing equipment set up as per the workplace procedures 4. Hygienic and safety measures considered as per the workplace procedures |
| 1. Process bees wax | 1. Combs selected and assembled as per the workplace procedures 2. Right processing steps initiated as per workplace guidelines 3. Wax allowed to settle and stored appropriately |
| 1. Perform post processing procedures | * 1. Bees wax is packaged, labeled and stored as per the workplace procedures   2. Waste material disposed as per workplace guidelines |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| Processing equipment may include but not limited to: | * Steam wax extractor * Solar wax extractor * Wax straining bag * Wax squeezing rods * Sauce pans |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizational
* Analytical
* Negotiation
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Bee products
* Processing equipment
* Food grade materials
* Work place safety precautions
* Public heath
* Different forms of honey
* Food grade materials
* Differentiation of Honey bee combs
* Wax processing
* Wax storage materials

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified bee products   2. Identified processing equipment   3. Assembled processing equipment   4. Considered Hygienic and safety measures   5. Initiated correct processing steps as per guidelines   6. Stored processed honey in appropriate containers/materials   7. Settled and stored wax appropriately |
| 1. Resource Implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place   2. Access to relevant workplace assessment environment   3. Resources relevant to the proposed assessment activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## PROCESS PROPOLIS

**UNIT CODE:** 0811 341 04 A

**UNIT DESCRIPTION**

This unit specifies the competencies required to process propolis. It involves preparing materials for processing propolis, preparing processing equipment, processing propolis and performing post processing procedures.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **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. Prepare materials for processing propolis | 1. Materials for processing propolis are identified as per the workplace procedures 2. Materials for processing propolis are assembled and sorted as per the workplace procedures |
| 1. Prepare processing equipment | 1. Processing equipment are identified as per the workplace procedures 2. Processing equipment are assembled as per the workplace procedures 3. Processing equipment are set up as per the workplace procedures 4. Hygienic and safety measures are considered as per the workplace procedures |
| 1. Process propolis | 1. Raw propolis is assembled as per the workplace procedures 2. ***Foreign materials*** are removed as per the workplace procedures 3. Right processing steps are initiated as per guidelines 4. Propolis is stored as per the workplace procedures |
| 1. Perform post processing procedures | * 1. Propolis is packaged and labeled as per the workplace procedures   2. Waste material are disposed as per workplace guidelines |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range  Includes but not limited to: |
| Foreign materials may include but not limited to: | * Dead bees * Dust * Wood debris * Soil particles * Wax |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizing
* Analytical
* Negotiation
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Bee products
* Processing equipment
* Food grade materials
* Work place safety precautions
* Public heath
* Food grade materials
* Differentiation of Honey bee combs

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified bee products   2. Identified processing equipment   3. Assembled processing equipment   4. Considered Hygienic and safety measures   5. Initiated right processing steps as per guidelines   6. Collected raw propolis   7. Removed foreign materials from propolis   8. Stored propolis as per the workplace procedures |
| 1. Resource Implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place   2. Access to relevant workplace assessment environment   3. Resources relevant to the proposed assessment activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## PROCESS POLLEN

**UNIT CODE**0811 341 05 A

**UNIT DESCRIPTION**

This unit specifies the competencies required to process pollen. It involves preparing materials for processing pollen, preparing processing equipment, processing pollen and performing post processing procedures.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **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. Prepare materials for processing pollen | 1. Materials for processing pollens are identified as per the workplace procedures 2. Materials for processing pollen are assembled and sorted as per the workplace procedures |
| 1. Prepare processing equipment | 1. ***Processing equipment*** are identified as per the workplace procedures 2. Processing equipment are assembled as per the workplace procedures 3. Processing equipment are set up as per the workplace procedures 4. Hygienic and safety measures are considered as per the workplace procedures |
| 1. Process pollen | 1. Pollen are removed from pollen traps or combs as per the workplace procedures 2. Pollen are sorted as per the workplace procedures 3. Pollen are dried as per the workplace procedures 4. Pollen are stored as per the workplace procedures |
| 1. Perform post processing procedures | * 1. Pollen is packaged and labeled as per the workplace procedures   2. Waste materials are disposed as per workplace guidelines |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range |
| Processing equipment may include but not limited to: | * Sieve * Spatula |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizational
* Analytical
* Negotiation
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Bee products
* Processing equipment
* Food grade materials
* Work place safety precautions
* Public heath
* Food grade materials

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified bee products   2. Identified processing equipment   3. Assembled processing equipment   4. Considered hygienic and safety measures   5. Removed Pollen from pollen traps or combs   6. Sorted Pollen   7. Dried Pollen   8. Stored Pollen   9. Initiated right processing steps as per guidelines |
| 1. Resource Implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place   2. Access to relevant workplace assessment environment   3. Resources relevant to the proposed assessment activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## PROCESS BEE VENOM

**UNIT CODE:** 0811 341 06 A

**UNIT DESCRIPTION**

This unit specifies the competencies required to process bee venom. It involves preparing materials for processing bee venom, preparing processing equipment, processing bee venom and performing post processing procedures.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **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. Prepare materials for processing bee venom | 1. Materials for processing bee venom are identified as per the workplace procedures 2. Materials for processing bee venom are assembled and sorted as per the workplace procedures |
| 1. Prepare processing equipment | 1. Processing equipment are identified as per the workplace procedures 2. Processing equipment are assembled as per the workplace procedures 3. Processing equipment are set up as per the workplace procedures 4. Hygienic and safety measures are considered as per the workplace procedures |
| 1. Process bee venom | 3.1 Right processing steps initiated as per guidelines |
| 1. Perform post processing procedures | * 1. Bee venom is packaged and labeled as per the workplace procedures   2. Waste materials are disposed as per workplace guidelines |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range  Includes but not limited to: |
|  |  |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizational
* Analytical
* Negotiation
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Bee products
* Processing equipment
* Food grade materials
* Work place safety precautions
* Public heath
* Food grade materials
* Differentiation of Honey bee combs

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Identified bee products   2. Identified processing equipment   3. Assembled processing equipment   4. Considered hygienic and safety measures   5. Identified state of honey based on   6. Initiated right processing steps as per guidelines |
| 1. Resource Implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place   2. Access to relevant workplace assessment environment   3. Resources relevant to the proposed assessment activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## PERFORM BEE PRODUCT VALUE ADDITION

**UNIT CODE:** 0811 341 07 A

**UNIT DESCRIPTION**

This unit specifies the competencies required to perform bee product value addition. It involves preparing the equipment, materials and supplies for value addition, processing wax-based value-added products, processing honey-based value-added products and processing propolis-based value-added products. It also includes processing royal jelly-based value-added products, processing bee venom-based value-added products; packaging and storing value added bee products.

**ELEMENTS AND PERFORMANCE CRITERIA**

|  |  |
| --- | --- |
| **ELEMENT**  These describe the **key outcomes** which make up **workplace function**. | **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. Prepare the equipment, materials and supplies for value addition | 1. ***Equipment and materials for value addition*** are prepared as per the workplace procedures. 2. PPE are worn according to Occupational Health and Safety procedures. 3. ***Value added products*** are identified based on workplace procedures and market demand. |
| 1. Process wax-based value-added products | 1. ***Wax based value added products*** are processed as per workplace procedures |
| 1. Process honey-based value-added products | 1. ***Honey based value added products*** are processed as per as per workplace procedures |
| 1. Process propolis based value added products | 1. ***Propolis based value added products*** are processed as per workplace procedures |
| 1. Process royal jelly-based value-added products | 1. ***Royal jelly-based value-added products*** are processed as per workplace procedures |
| 1. Process bee venom-based value-added products | * 1. ***Bee venom-based value-added products*** are processed as per workplace procedures |
| 1. Package, brand and market value added bee products | * 1. Bee products packaged as per industry standards   2. Bee products labeled and branded as per industry standards   3. Bee products marketed as per industry regulations |

**RANGE**

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

|  |  |
| --- | --- |
| Variables | Range  Includes but not limited to: |
| 1. Equipment and materials for value addition may include but are not limited to: | * Honey extractor * Uncapping knife * Processing, straining and settling tanks * Packaging materials * Bottles and jars * Labels * Weighing scales * Perfumes * Buckets * Ginger * Hibiscus * Medicinal plants * Propolis capsules * Vegetable oils |
| 1. Value added products may include but are not limited to: | * Wax based * Honey based * Propolis * Royal jelly * Bee venom |
| 1. Wax based value added products may include but are not limited to: | * Candles * Body cream * Soaps * Sandal cream * Cosmetics * Pharmaceutical capsule covers |
| 1. Honey based value added products may include but are not limited to: | * Honey juice * Concussion * Honey cakes and bread * Peanuts * Cough syrups |
| 1. Propolis based value added products may include but are not limited to: | * Propolis tincture * Propolis ointments * Propolis cream * Propolis capsules |
| 1. Royal jelly-based value-added products may include but are not limited to: | * Royal jelly syrup * Cream capsules * Ointment * Jelly * Lotion |
| 1. Bee venom-based value-added products may include but are not limited to: | * Bee venom capsules * Anti-wrinkle cream * Mask/ anti-ageing * Cleansing balm |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Organizational
* Analytical
* Negotiation
* Interpersonal
* Communication
* Evaluation
* Problem solving
* Critical thinking

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Food quality materials.
* Design of processing premises
* Recipes for value added bee products.
* Processing of bee products
* Consumer behavior
* Marketing of consumer products

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Prepared equipment and materials for value addition as per the workplace policy.   2. Used PPE according to Occupational Health and Safety procedures.   3. Processed wax based, honey based, propolis based, royal jelly-based, bee venom-based value-added products as per workplace guidelines   4. Packaged, labelled, branded and marketed bee products as per industry standards |
| 1. Resource Implications | The following resources should be provided:   * 1. Appropriately simulated environment where assessment can take place   2. Access to relevant workplace assessment environment   3. Resources relevant to the proposed assessment activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Written tests   2. Third party reports   3. Oral questioning   4. Interview   5. Observation |
| 1. Context of Assessment | Assessment could be conducted:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |

## CONTROL QUALITY OF BEE PRODUCTS

**UNIT CODE:** 0811 341 08 A

**UNIT DESCRIPTION**

This unit specifies the competencies required to control quality of bee products. It involves establishing bee products safety and quality systems, managing quality operations, preparing for raw material and product analyses and carrying out raw material, packaging materials and finished products analyses.

**ELEMENTS AND PERFORMANCE CRITERIA**

| **ELEMENT**  These describe the key outcomes which make up workplace function. | **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. Establish food safety and quality systems | * 1. ***Food safety and quality systems*** are designed and established as per legal, regulatory requirements and workplace quality manual   2. Food safetyand quality systemsare implemented and maintained as per legal, regulatory requirements and workplace quality manual   3. Food safety and quality records are developed and maintained according to legal and regulatory requirements |
| 1. Manage quality operations | * 1. Quality operations are planned and executed as per overall workplace plan   2. Quality operations resources are allocated and controlled as per workplace procedures.   3. Quality operations are organized as per workplace procedures.   4. Quality operations are coordinated as per workplace procedures.   5. Audit of quality operations is carried out based on workplace procedures. |
| 1. Prepare for bee product analyses | * 1. ***Laboratory standards*** are established as per Codex/ AOAC/KEBS and workplace quality manual.   2. Laboratory standards are implemented based on Codex/ AOAC (International laboratory standards) and workplace quality manual.   3. Laboratory status is confirmed according to laboratory code of practice.   4. ***Regulatory and statutory requirements*** for food laboratory practices are adhered to |
| 1. Carry out bee products analyses | * 1. ***Sampling procedures*** are adhered to as per workplace quality manual   2. Samples are prepared and analyzed based on specific ***test*** procedure   3. Testing reagents are prepared, and equipment calibrated according to specifications   4. Analyses results are interpreted, reported and appropriate decisions made based on test outcomes and workplace standards. |

**Range**

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

| Variable | Range  *May include but is not limited to:* |
| --- | --- |
| 1. Food safety and quality systems may include but are not limited to: | * International standards e.g. FSSC, ISO GFSI PRC, HACCP * National standards e.g. KEBS * Workplace standards |
| 1. Laboratory standards may include but are not limited to: | * AOAC/CODEX * National laboratory standards * Workplace laboratory standards * KEBS |
| 1. Regulatory and statutory requirements may include but are not limited to: | * Cap 242 (public health act) * Cap 254 (food, drugs and chemical substances act) * NEMA regulations * OSH Act 2007 |
| 1. Sampling procedures may include but are not limited to: | * General-Random, Stratified * Workplace * KEBS standards |
| 1. Tests may include but are not limited to: | * Miro-biological * Physical * Chemical * Organic * Organoleptic |

**REQUIRED SKILLS AND KNOWLEDGE**

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

**Required Skills**

The individual needs to demonstrate the following skills:

* Communication
* Interpersonal
* Leadership
* Planning
* Problem solving
* Route cause analysis
* Negotiation
* Interpretation
* Trouble shooting
* Apparatus handling
* Analytical
* Sampling
* Training/facilitation
* Computer

**Required Knowledge**

The individual needs to demonstrate knowledge of:

* Food chemistry
* Food Analysis
* Food microbiology
* Quality/Safety management Systems
* Quality management
* Pest and rodent control
* Emerging Issues
* Principles of food engineering
* Environmental safety
* Laboratory techniques

**EVIDENCE GUIDE**

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

|  |  |
| --- | --- |
| 1. Critical Aspects of Competency | Assessment requires evidence that the candidate:   * 1. Demonstrated knowledge of laboratory standards   2. Demonstrated knowledge of relevant legal, statutory and regulatory requirements.   3. Adhered to lab code of practice.   4. Demonstrated knowledge of various sampling techniques.   5. Demonstrated ability to carry out food lab test/analyses.   6. Reported and interpreted test results correctly and objectively.   7. Demonstrated knowledge of various quality and food safety systems. |
| 1. Resource Implications | The following resources should be provided:   1. Appropriately simulated environment where assessment can take place 2. Access to relevant workplace assessment environment 3. Resources relevant to the proposed assessment activity or tasks |
| 1. Methods of Assessment | Competency may be assessed through:   * 1. Observation   2. Oral questioning   3. Projects   4. Written tests   5. Third party   6. Portfolio |
| 1. Context of Assessment | Competency may be assessed:   1. On-the-job 2. Off-the –job 3. During Industrial attachment |
| 1. Guidance information for assessment | Holistic assessment with other units relevant to the industry sector, workplace and job role is recommended. |