

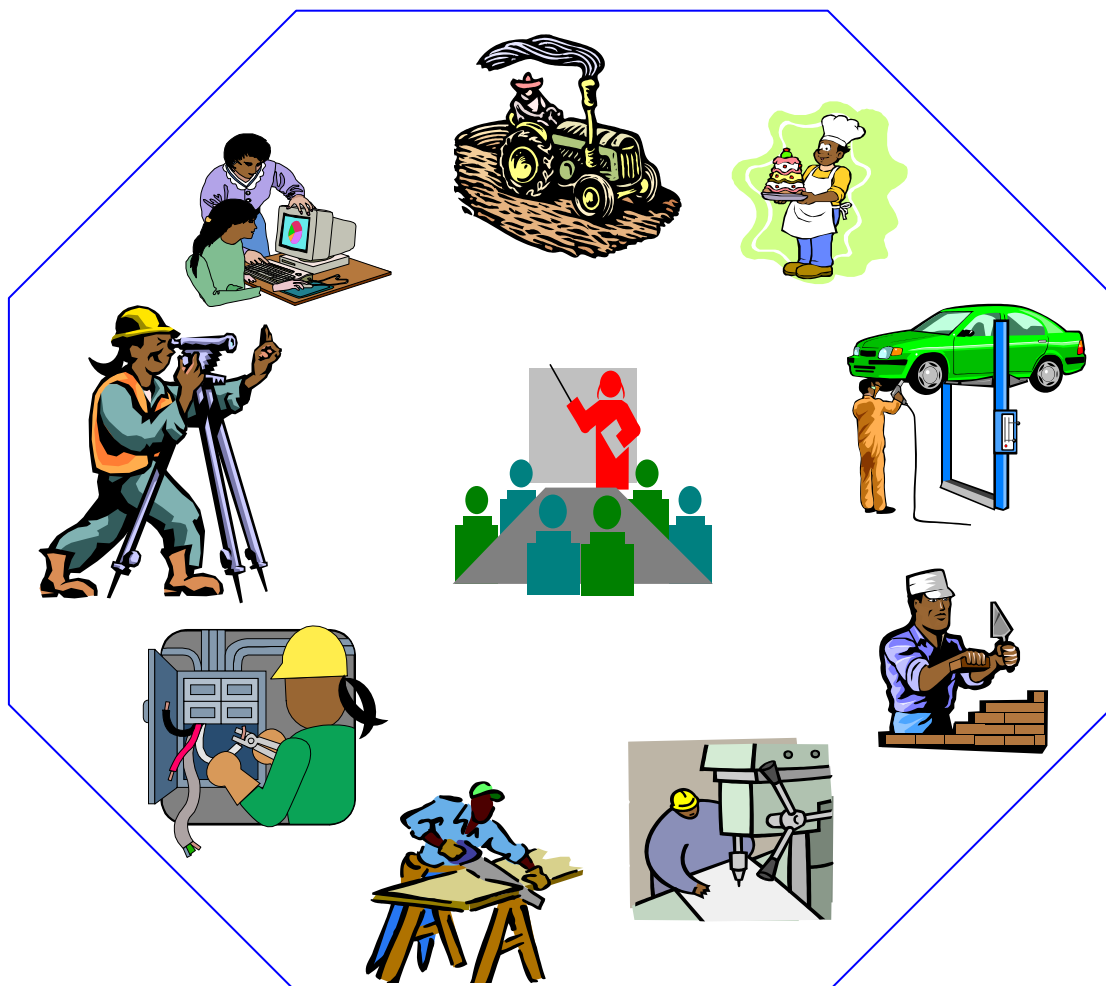
Federal Democratic Republic of Ethiopia

OCCUPATIONAL STANDARD

**BAMBOO INDUSTRIAL
PROCESSING**



NTQF Level III and II



*Ministry of Education
April 2011*

Introduction

Ethiopia has embarked on a process of reforming its TVET-System. Within the policies and strategies of the Ethiopian Government, technology transformation – by using international standards and international best practices as the basis, and, adopting, adapting and verifying them in the Ethiopian context – is a pivotal element. TVET is given an important role with regard to technology transfer. The new paradigm in the outcome-based TVET system is the orientation at the current and anticipated future demand of the economy and the labor market.

The Ethiopia Occupational Standard (EOS) is the core element of the Ethiopian National TVET-Strategy and an important factor within the context of the National TVET-Qualification Framework (NTQF). They are national Ethiopian standards, which define the occupational requirements and expected outcome related to a specific occupation without taking TVET delivery into account.

This document details the mandatory format, sequencing, wording and layout for the Ethiopia Occupational Standard which comprised of Units of Competence.

A Unit of Competence describes a distinct work activity. It is documented in a standard format that comprises:

- Occupational title, NTQF level
- Unit code
- Unit title
- Unit descriptor
- Elements and performance criteria
- Variables and Range statement
- Evidence guide

Together all the parts of a Unit of Competence guide the assessor in determining whether the candidate is competent.

The ensuing sections of this EOS document comprise a description of the respective occupation with all the key components of a Unit of Competence:

- a chart with an overview of all Units of Competence for the level including the Unit Codes and the Unit of Competence Titles
- contents of each Unit of Competence (competence standard)
- occupational map providing the technical and vocational education and training (TVET) providers with information and important requirements to consider when designing training programs for this standards and for the individual, a career path

UNIT OF COMPETENCE CHART

Occupational Standard: Bamboo Industrial Processing

Occupational Code: IND BIP

NTQF Level III

[IND BIP3 01 0411](#)

Prepare Chemical Solutions

[IND BIP3 02 0411](#)

Laminate Bamboo Materials

[IND BIP3 03 0411](#)

Produce Profiled Bamboo Laminated Products

[IND BIP3 04 0411](#)

Apply Finishing to Bamboo Laminated Products

[IND BIP3 05 0411](#)

Design Products

[IND BIP3 06 0411](#)

Prepare Technical Drawing

[IND BIP3 07 0411](#)

Set-up and Maintain Advanced Bamboo Processing Machines

[IND BIP3 08 0411](#)

Apply Quality Control

[IND BIP3 09 0411](#)

Monitor Implementation of Work Plan/Activities

[IND BIP3 10 0411](#)

Lead Small teams

[IND BIP3 12 0411](#)

Improve Business Practice

[IND BIP3 13 1012](#)

Maintain Quality System and Continuous Improvement Processes (Kaizen)

[IND BIP3 11 0411](#)

Lead Workplace Communication

NTQF Level II

[IND BIP2 01 0411](#)

Read and Interpret Sketches and Drawing

[IND BIP2 02 0411](#)

Carry-out Chemical Treatment

[IND BIP2 03 0411](#)

Kiln Dry Bamboo Materials

[IND BIP2 04 0411](#)

Carbonize Bamboo Materials

[IND BIP2 05 0411](#)

Perform Finish Milling

[IND BIP2 06 0411](#)

Weave Bamboo Curtains

[IND BIP2 07 0411](#)

Perform Basic Bamboo Processing

[IND BIP2 08 0411](#)

Perform Operational Maintenance of Tools and Equipment

[IND BIP2 09 0411](#)

Work in Team environment

[IND BIP2 10 0411](#)

Participate in Workplace Organization

[IND BIP2 11 0411](#)

Develop Business Practice

[IND BIP2 12 1012](#)

Apply Continuous Improvement Processes (Kaizen)

NTQF Level III

Occupational Standard: Bamboo Industrial Processing Level III	
Unit Title	Prepare Chemical Solutions
Unit Code	IND BIP3 01 0411
Unit Descriptor	This unit covers the knowledge, skills, and attitude required to prepare the chemical solutions for bamboo treatment, finishing, gluing.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 5S is performed and workplace made ready and safe for work activities</p> <p>1.2 Materials needed are identified and prepared according to work specifications</p> <p>1.3 Tools and equipment are checked and made ready for work activities</p> <p>1.4 Safety signs are ensured to be in-placed within the work area</p> <p>1.5 PPE is utilized throughout the process</p>
2. Weigh/measure amount of chemicals	<p>2.1 Amount of chemicals is taken in accordance with the correct procedures</p> <p>2.2 Amount of chemicals is in accordance with the specification</p> <p>2.3 Correct materials for weighing and measuring amount of chemicals are used</p> <p>2.4 Safety measures are observed in handling chemicals</p> <p>2.5 Environmental protection is observed throughout the operation</p>
3. Sort chemicals	<p>3.1 Chemicals are separated and sorted according to use</p> <p>3.2 Sorted chemicals are properly labelled</p> <p>3.3 Chemicals are placed on safety carts or stored in the appropriate place as prescribed by the enterprise quality/standard procedures</p>
4. Mix chemicals	<p>4.1 Chemicals are mixed according to procedures and specifications</p> <p>4.2 Mixtures are checked for correctness and quantity</p> <p>4.3 Safety in handling chemicals are observed through the process</p> <p>4.4 Environmental protection is observed and maintained in accordance with enterprise quality system or standard procedures</p>

	<p>4.5 Prepared chemical solutions/mixtures are stored and labelled in safe and well protected container following safety procedures</p> <p>4.6 Workplace is cleaned and made ready for the next activity</p>
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Variable	Range
5S	<ul style="list-style-type: none"> • Sort • Sweep • Standardize • Systematize • Self Discipline
Materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Litmus paper/ph paper • Plastic containers • Funnel • Plastic scoop • Stirrer
Chemical handling	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Policies and procedures in chemical handling, storing • Standards for chemical mixing • Policies in chemical safety
PPE (Personal Protective Equipment)	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Gloves • Goggles • Working clothes • Safety shoes
Chemicals	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Water • Brine solution • Sodium chloride • Citric acid • Borax • Insecticides • Caustic soda • Lime • Sealers • Thinners • Paints • Glue • Stains • Resins
Tools and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Weighing scale • Hi-temp thermometer

	<ul style="list-style-type: none"> • Cart • Mixer • Brine tester • Mixing bowls • Measuring cups
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Evidence Guide	
Critical aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • weighing chemicals • sorting chemicals • mixing chemicals • labeling mixture • storing chemicals
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • techniques, policies and procedures in chemical handling and storing • procedures, techniques and standards for chemical mixing and mixtures • materials: specifications, uses and characteristics • physical properties of elements, chemicals and solutions in bamboo treatment, finishing, and glue mixing • use and maintenance of tools and equipment • policies in chemical disposal and waste • personal protective equipment (PPE)
Underpinning Skills	Demonstrates skills to: <ul style="list-style-type: none"> • prepare materials • mix chemicals • measure chemicals • handle chemicals and solutions • perform housekeeping
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Assessment Methods	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test / Oral Questioning • Observation / Demonstration
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

Occupational Standard: Bamboo Industrial Processing Level III	
Unit Title	Laminate Bamboo Materials
Unit Code	IND BIP1 02 0411
Unit Descriptor	This unit covers the knowledge, skills, and attitude in laminating bamboo materials such as bamboo splits slats and strips for boards, planks, panels and stings for curtains. This includes glue application, composing of laminates and pressing.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Production process to be undertaken are properly identified and confirmed</p> <p>1.2 Materials are selected according to work specifications</p> <p>1.3 Tools and equipment are identified and checked for functionality and safe operations</p> <p>1.4 Use of PPE, 5S and safety procedures are observed throughout the process</p> <p>1.5 Workstation is made ready and safe for work activity</p>
2. Prepare bamboo laminates.	<p>2.1 Bamboo laminates are ensured to be cleaned</p> <p>2.2 Bamboo laminates are ensured to be sanded</p> <p>2.3 Bamboo laminates and slats are ensured to be trimmed</p> <p>2.4 Bamboo laminates are ensured to be dried</p>
3. Prepare adhesives	<p>3.1 Type of glue to be used is checked with job specifications.</p> <p>3.2 Glue consistency is checked with job specifications.</p>
4. Laminate materials	<p>4.1 Glue is applied evenly on the bamboo laminates following standard procedures and glue specifications</p> <p>4.2 Bamboo laminates applied with glue are placed in the pressing equipment following standard procedures</p> <p>4.3 Bamboo products are laminated in accordance with standard production process</p> <p>4.4 Lamination defects are identified and rectified</p> <p>4.5 Safety is observed throughout the process.</p>
5. Finish and store bamboo products	<p>5.1 Bamboo products are polished and all ends ensured to be glued</p> <p>5.2 Bamboo product are packaged in accordance with job specifications</p>

	<p>5.3 Products are stored according to standards procedures and safety policy</p> <p>5.4 Necessary documentation is completed in accordance with standard format and procedures</p>
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Variable	Range
Production process	<ul style="list-style-type: none"> • Pressing procedure • Sanding procedure • Gluing procedure • Polishing procedure
PPE	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • gloves • goggles • coverall • safety shoes
Bamboo laminates	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Slats • Slivers • Mats • Crush bamboo
Materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • sand paper • glue/adhesives • plastic cover • plastic/resin • xylol/clear top coats • packaging materials
Pressing equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Laminating press (Hot, cold, high frequency...) • Clamps (Bar clamps, C Clamps, F Clamps...) • Jigs
Tools and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • laminating machine • polishing machine • gluing machine • pressing machine • basic repair tools

Evidence Guide	Description
Critical Aspects of Competency	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • preparing procedures and techniques • gluing bamboo laminates • pressing bamboo laminates • laminating bamboo products • finishing and storing bamboo products
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • machine operations • production steps and procedures • safety procedures • glue types and properties
Underpinning Skills	Demonstrates skills to: <ul style="list-style-type: none"> • operating machines • basic machine maintenance • laminating procedures • Glue spreading
Resource Implications	The following resources should be provided: <ul style="list-style-type: none"> • access to relevant workplace or appropriately simulated environment where assessment can take place • materials relevant to the proposed activity or task
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

Occupational Standard: Bamboo Industrial Processing Level III	
Unit Title	Produce Profiled Bamboo Laminated Products
Unit Code	IND BIP3 03 0411
Unit Descriptor	This unit covers the knowledge, skills, and attitude in producing profiled bamboo laminated products.

Elements	Performance Criteria
1. Prepare for profiling	<p>1.1 Work order is reviewed and checked with appropriate personnel</p> <p>1.2 Type and quantity of bamboo laminated products to be profiled is selected from the storage location</p> <p>1.3 Equipment is selected appropriate to work requirements and checked for operational effectiveness in accordance with manufacturer's recommendations</p> <p>1.4 Profile to be cut is identified and cutting blades selected</p> <p>1.5 Communication with others is established and maintained in accordance with OHS requirements</p>
2. Set-up profiling equipment	<p>2.1 Pre start-up checks are carried out on equipment in accordance with site requirements</p> <p>2.2 Machine guides are selected and attached to the machinery</p> <p>2.3 Cutting blades are installed in the selected machinery</p> <p>2.4 Depth of cut/profile is set in accordance with the required profile and minimisation of waste</p> <p>2.5 Bamboo laminated product stack is positioned in close proximity to maximise ease of machine feeding</p> <p>2.6 Equipment set-up is checked and adjusted by running a bamboo laminated product through the machine to set depth and profile</p>
3. Cut material to profile	<p>3.1 Bamboo laminated products are fed into the machine at the feed rate prescribed by organisational requirements</p> <p>3.2 Cutting sequence is followed, maintained and adjusted to produce the required quantity and maximise the feed rate</p> <p>3.3 Profiling process is regularly checked and adjusted to maintain the desired depth and profile</p> <p>3.4 Bamboo laminated products with defects are rejected and disposed of in accordance with site procedures</p> <p>3.5 Processing and equipment faults are reported to the appropriate personnel</p>

	<p>3.6 Profiled bamboo laminated products are safely stacked in a designated location in accordance with work order requirements</p> <p>3.7 Records and reports are accurately completed, processed and maintained in accordance with workplace procedures</p>
4. Clean up	<p>4.1 Faulty and/or defective equipment is tagged and reported in accordance with workplace procedures</p> <p>4.2 Waste and scrap are removed following OHS procedures</p> <p>4.3 Tools and equipment used are cleaned, checked for serviceable condition and stored appropriately following OHS procedures</p> <p>4.4 Work area are cleaned in accordance with workplace and OHS procedures</p>

Variable	Range
Work order	<ul style="list-style-type: none"> is to include instructions for the cutting and despatch of bamboo laminated products from the work site and may include type, size, length, profile, thickness, quantity and grade
Appropriate personnel	<p>May include but not limited to:</p> <ul style="list-style-type: none"> Supervisors Clients Colleagues Managers
Tools and Equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> Hand tools (Wrenches, screw drivers, chisel, pliers,...) Finishing equipment (Air compressor, spray gun, sander.....) Safety equipment
Bamboo laminated products	<p>May include but not limited to:</p> <ul style="list-style-type: none"> Bamboo Floor boards Bamboo Oriented Strand Boards (OSB) Matboard
Storage location	<p>May include but not limited to:</p> <ul style="list-style-type: none"> Racks Trays Bins Pallet boxes Stacking bays
Equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> Measuring equipment Multi-head planing equipment Multi-spindle moulders High speed routers

	<ul style="list-style-type: none"> • Profiled cutting blades in different shapes and sizes • Shaping machines
Communication	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Verbal and non-verbal language • constructive feedback • active listening • questioning to clarify and confirm understanding • use of positive, confident and cooperative language • use of language and concepts appropriate to individual social and cultural differences • control of tone of voice and body language
Pre-start up checks	are conducted to ensure the machine has been set-up correctly, the cutters are installed accurately and machinery operating to optimum performance
Machine guides	may include machine manufacturer produced guides located strategically on the machine to maintain timber in straight feed and ensure consistency of profile cut and enterprise produced guides/jigs to maintain consistency of timber against cutting blades
Cut/profile	<ul style="list-style-type: none"> • may include various shapes and patterns to which cutting blades can be shaped, that will in turn shape the bamboo laminated product to achieve the desired profile outcome • profiled products may include building components, furniture components, tops, quad, beading, mouldings, shaped beams, architraves, skirting boards and scotia
Feed rate	is to include the rate of speed the panel is passed through the machine affecting the sharpness of the cutting blades, the finish of the material and the production output
Defects	may include warp, wane, cupping, holes, breakages, lifting veneer or bonding problems
Records and reports	<ul style="list-style-type: none"> • may include product type, size, profile, inspection, grading and labelling outcomes, storage locations, quality outcomes, hazards, incidents or equipment malfunctions • may be manual, using a computer-based system or another appropriate organisational communication system

Evidence Guide

Critical Aspects of Competence	<p>Competency assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> • interpreted working drawings with details • selected and prepared profiles, jigs, materials, power and hand tools, equipment and PPE consistent with job requirements • used safe and effective power and hand tools • laid out according to specified dimension • profiled products are checked for compliance with the job
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	<p>requirements and specified tolerances</p> <ul style="list-style-type: none"> • applied organizational quality procedures and processes • completed work without damage to materials or injury to personnel
Underpinning Knowledge and Attitudes	<ul style="list-style-type: none"> • Types and uses of PPE • Mensuration • Interpretation of working drawing and details • Profiles, materials, power and hand tools and equipment uses and specifications • Knowledge of machine operation • Economic use of material • Safe and effective use of machines and equipment • Company rules and regulations
Underpinning Skills	<ul style="list-style-type: none"> • Using PPE • Applying Mensuration • Interpreting related drawings and details • Following machining procedures • Following safe and effective use of machines and equipment • Using materials economically • Communicating effectively • Following company rules and regulations
Resources Implication	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> • Workplace or fully equipped assessment location with necessary tools, equipment and consumable materials
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Bamboo Industrial Processing Level III	
Unit Title	Apply Finishing to Bamboo Laminated Products
Unit Code	IND BIP3 04 0411
Unit Descriptor	This unit covers the knowledge, skills, and attitude applying finishing materials to bamboo laminated products. This includes surface preparation and coating the final top coat.

Elements	Performance Criteria
1. Prepare product for finishing	1.1 Bamboo laminated product surface is cleaned and freed from foreign matters 1.2 Surface defects are corrected, sanded and smoothen 1.3 Characteristics of the surface and the required surface coating materials are identified 1.4 OHS requirements are observed throughout the work 1.5 Tools and equipment required are identified and set up 1.6 Sources of contamination in work area are identified and isolated
2. Prepare surfaces	2.1 Bamboo laminated products surfaces are prepared according to workplace procedures and specification 2.2 Surface preparation is checked for conformity with job specifications throughout the process 2.3 Products are inspected and approved for further processing 2.4 Defects and minor imperfections are rectified and/or reported in accordance with workplace procedures
3. Apply finishing materials	3.1 Use and apply finishing materials according to specification 3.2 Product item is dried according to specifications 3.3 Final checking is done
4. Clean up	4.1 Faulty and/or defective equipment is tagged and reported in accordance with workplace procedures 4.2 Waste and scrap are removed following OHS procedures 4.3 Tools and equipment used are cleaned, checked for serviceable condition and stored appropriately following OHS procedures 4.4 Work area are cleaned in accordance with workplace and OHS procedures

Variable	Range
Bamboo laminated products	May include but not limited to: <ul style="list-style-type: none"> • Bamboo floorboards • Bamboo Oriented Strand Boards (OSB) • Bamboo Matboard
Foreign Matters	May include but not limited to: <ul style="list-style-type: none"> • Substances/Chemicals <ul style="list-style-type: none"> • Grease • Oil • Alkaline • Dust • Rust • Exposed nails/wires • Welding spatters
Tools and Equipment	May include but not limited to: <ul style="list-style-type: none"> • Hand tools (Wrenches, screw drivers, chisel, pliers, ...) • Finishing equipment (Air compressor, spray gun, sander.....) • Safety equipment
Minor imperfection	May include but not limited to: <ul style="list-style-type: none"> • Minor cracks • Surface imperfection • Dents • Holes
Finishing materials	May include but not limited to: <ul style="list-style-type: none"> • Sanding sealer • Thinners • Stains • Paints • Waxes • Varnish

Evidence Guide			
Critical aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • Surface preparation • Prepare finishing materials • Apply finishing materials 		
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • machine operation • drying methods and operation • Finishing materials • Surface preparations • Types of surface defects and corrective remedy 		
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Underpinning Skills	Demonstrates skills to: <ul style="list-style-type: none"> • Surface preparation • Prepare finishing materials • Apply finishing materials
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Assessment Methods	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test / Oral Questioning • Observation / Demonstration
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Bamboo Industrial Processing Level III	
Unit Title	Design Products
Unit Code	<u>IND BIP3 05 0411</u>
Unit Descriptor	This unit covers the knowledge, skills, and attitude in designing bamboo laminated products, bamboo curtain, and profiles.

Elements	Performance Criteria
1. Plan and prepare for work	<p>1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied</p> <p>1.2 Plant, tools and equipment selected to carry out tasks are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement</p> <p>1.3 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use</p> <p>1.4 Material quantity requirements are calculated in accordance with plans and/or specifications</p> <p>1.5 Environmental protection requirements are identified for the project in accordance with environmental plans and regulatory obligations and applied</p>
2. Identify project design work	<p>2.1 Need of client/customer is identified in line with work/job order</p> <p>2.2 Type of project is confirmed with appropriate personnel and/or client</p> <p>2.3 Production materials and methods are identified and confirmed</p>
3. Establish designing criteria and limitations	<p>3.1 Samples for selecting type of design are obtained from appropriate source.</p> <p>3.2 Free hand sketch is drawn based on selected type of design.</p> <p>3.3 Free hand sketch is approved following work requirement.</p> <p>3.4 Drawing requirements are established and documented identifying dimensions, angles, shapes and finished sizes</p> <p>3.5 Designing conventions and specifications to be noted on the design are identified</p>

4. Complete design work	<p>4.1 Necessary materials are selected for design work based on selected type.</p> <p>4.2 Dimensions are plotted from criteria and documented specifications.</p> <p>4.3 Dimensional points are connected to match appropriate drawing views</p> <p>4.4 Final design is worked with CAD or manually following approved sketch.</p> <p>4.5 Design is checked and approved according to work place procedures.</p>
5. Clean up	<p>5.1 Work area is cleared and materials disposed of, reused or recycled in accordance with legislation/regulations/codes of practice and job specification</p> <p>5.2 Tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices</p> <p>5.3 Appropriate reports are accomplished in accordance with work procedures and standards</p>

Variables	Range
Safety requirements	<ul style="list-style-type: none"> • OHS requirements are to be in accordance with legislation and regulations, organizational safety policies and procedures, and project safety plan. • This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of firefighting equipment, organizational first aid, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • Safe operating procedures are to include but not be limited to the conduct of operational risk assessment and treatments associated with power cables (including overhead service trays, cables and conduits), lighting, working with dangerous materials, working in confined spaces, surrounding structures, working in proximity to others, visitors and the public • Emergency procedures related to this unit are to include but may not be limited to emergency shutdown and stopping, extinguishing fires, organizational first aid requirements and evacuation
Tools and	Tools and equipment may include but not be limited to:

Equipment	<ul style="list-style-type: none"> • Steel rules, fixers, templates, drawing table, set square and computer
Materials	<p>Materials are to include but not be limited to:</p> <ul style="list-style-type: none"> • measuring instruments • stationary materials • drawing table/board • drawing tools and instruments • CAD software

Evidence Guide	
Critical Aspects of Competence	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> • identified the factors and criteria relevant to the design • applied safety requirements throughout the work sequence, including the use of personal protective clothing and equipment • Produced designs of bamboo laminated product, bamboo curtains and profiles. • applied either manual or computer-aided techniques and processes • cleaned up workplace
Underpinning Knowledge and Attitudes	<ul style="list-style-type: none"> • Workplace and equipment safety requirements • Processes for interpreting and applying data and information in preparing design • Materials and tools/instruments handling methods • Quality requirements • Construction terminology and symbols • Safe work method and practices • Design and production planning • Techniques and processes of manual production drawing • Types of computer-aided drawing equipment, software, techniques and processes • Theory and practice of calculations and measurement techniques • Bamboo curtain weaving procedures and techniques.
Underpinning Skills	<ul style="list-style-type: none"> • Reading and interpreting data and information • Preparing / producing design • Applying safety procedures and measures
Resource Implications	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> • workplace or fully equipped assessment location with necessary tools and equipment as well as consumable materials
Methods of Assessment	<p>Competence may be assessed through:</p> <p>Interview / Written Test</p> <p>Observation/Demonstration with Oral Questioning</p>
Context of Assessment	<p>Competency may be assessed in the work place or in a simulated work place setting</p>

Occupational Title: Bamboo Industrial Processing Level III	
Unit Title	Prepare Technical Drawings
Unit Code	<u>IND BIP3 06 0411</u>
Unit Descriptor	This unit specifies the competency required to produce sketches and sectional view drawings relevant to bamboo industrial processing.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 OHS requirements associated with preparing basic drawings, documentation tasks and the workplace environment are adhered to</p> <p>1.2 Quality requirements of the company operations are determined / recognized and adhered throughout the process</p> <p>1.3 Tools and equipment selected are consistent with preparing drawings and documentation and checked for serviceability and any faults reported to supervisor</p> <p>1.4 Drawing type is selected and made sure to suit job requirements</p> <p>1.5 Key features, dimensions and orientation, services and features are identified for inclusion in the drawings</p>
2. Create simple sketches, drawings and sectional views	<p>2.1 Drawing medium is selected to suit job requirements</p> <p>2.2 Drawing instruments, equipment and materials are used to produce scaled line work, simple geometric shapes, lettering, numbering and the correct setting out of drawings</p> <p>2.3 Line work is applied in a range of different types and media in accordance with standard industry drawing practice</p> <p>2.4 Hand letter text is formed in a variety of formats</p> <p>2.5 Simple two dimensional drawings and sketches are prepared using standard drawing conventions and specifications</p> <p>2.6 Simple three dimensional drawings and sketches are prepared using standard drawing conventions</p> <p>2.7 Sectional details of simple design elements and angles are prepared using standard drawing conventions</p> <p>2.8 Notations and dimensions are added to complete drawing</p>

3. Develop specifications	<p>3.1 Purpose of specifications are identified as they relate to frame complex drawings</p> <p>3.2 Elements are identified as suitable for use in specifications</p> <p>3.3 Specification for a project is drafted using correct format and conventions.</p> <p>3.4 Different drawing scales and symbols are identified and used</p> <p>3.5 Title panels are prepared to enable verification that drawing used is the latest version</p> <p>3.6 Common symbols and abbreviations are included using correct format and conventions</p> <p>3.7 Any production notes or special requirements are noted</p>
4. Complete drawing	<p>4.1 Angles, shapes and dimensions are checked against specifications and sample.</p> <p>4.2 Adjustments are made to the drawing within scope of authority.</p> <p>4.3 Drawing is checked for compliance with workplace documentation requirements.</p>

Variables	Range
Occupational Health and Safety (OHS)	<p>OHS requirements are to be in accordance with federal legislation and regulations, organizational safety policies and procedures, and project safety plan. This may include :</p> <ul style="list-style-type: none"> • protective clothing and equipment • use of tools and equipment • workplace environment and safety • handling of materials • organizational first aid • hazard control and hazardous materials and substances
Tools and equipment	<p>Tools and equipment include but not be limited to:</p> <ul style="list-style-type: none"> • steel rules, fixers, templates, drawing table, set square and computer
Drawings	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • sketches, orthographic drawings and sectional view drawings • structure/configuration plans, project plans, drawings, specifications, illustrations, dimensions and notes • cross sectional plans, longitudinal plans • perspective views, isometric views, , structural detail and specification providing illustrations and dimensions
Key features of	<p>May include but not be limited to:</p>

drawings	<ul style="list-style-type: none"> • shape and size/ dimensions, angles and finished sizes • services requirements • types and shape of structure • type of construction and layout
Drawing mediums	May include pencil, pen and ink, computer aided drafting, graph paper, cartridge paper or tracing paper
Specifications	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • detail relating to materials and quality of work, quality assurance, nominated sub-contractors, provision of site access/facilities, details relating to performance including: <ul style="list-style-type: none"> • standards of work • tolerances • material types • characteristics • treatments and finishes • orientation of site is to include relationship to the north compass point, location of roads and relationship to neighboring properties • services may include but not be limited to drainage, sewerage, gas, telephone and cable, water and electricity
Projects	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Bamboo curtain • Floorboards • Bamboo Tiles • Profiles

Evidence Guide			
Critical Aspects of Competence	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> • interpreted and applied relevant information, standards and specifications • complied with production plan, OHS regulations and legislation applicable to workplace operations • complied with organizational policies and procedures including quality requirements • produced drawings and one sectional view drawings in compliance with standard drawing conventions • explained processes for the interpretation of reports, working drawings and specifications • communicate effectively to produce accurate drawing • Prepared production drawings of furniture/furnishings: <ul style="list-style-type: none"> • covering a scope of at least three products • applying both manual and computer-aided techniques and processes 		
Underpinning Knowledge and Attitudes	<p>A knowledge of:</p> <ul style="list-style-type: none"> • features of plans, scale, key, contours, symbols and abbreviations 		
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	<ul style="list-style-type: none"> • commonly used general drawing symbols and abbreviations • the processes for application of scales in plan preparation/ interpretation • techniques for orienting/confirming the orientation of a plan • key features of formal job specifications • project quality requirements • furniture construction terminology • basic calculations of heights, areas, volumes and grades • drawing techniques and conventions • structural, design and construction principles • terminology, definitions and fault identification • furniture design and planning criteria • structural geometry • types of computer-aided drawing equipment, software, techniques and processes • theory and application of calculation with measurement techniques and equipment / tools • types, techniques and processes of manual production drawing • processes for the administration and preparation of documentation and reports
Underpinning Skills	<p>Demonstrate skills on:</p> <ul style="list-style-type: none"> • Gathering and interpreting information • Selecting appropriate drawing type, materials and medium • Using drawing tools and equipment • Creating simple sketches, drawings and sectional views • Developing specifications • Using computer-aided techniques (CAD)
Resource Implications	<p>The following resources should be made available:</p> <ul style="list-style-type: none"> • workplace location or simulated workplace • materials relevant to producing construction drawings • equipment appropriate to producing construction drawings • realistic activities covering the mandatory task requirements • specifications and work instructions
Method of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview /Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Bamboo Industrial Processing Level III	
Unit Title	Set-up and Maintain Advanced Bamboo Processing Machines
Unit Code	<u>IND BIP3 07 0411</u>
Unit Descriptor	This unit covers the knowledge, skills, and attitude setting-up and maintenance of advance bamboo processing machines.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Tools and supplies required to carry out routine maintenance for Advance bamboo processing machines are identified, selected and provided on site according to maintenance procedures.</p> <p>1.2 Routine pre-operational checks of machinery and equipment are carried out and adjustments made according to manufacturer's specifications and/or enterprise procedures.</p> <p>1.3 Faulty or unsafe machinery and equipment are identified and segregated for repair or replacement according to enterprise requirements.</p> <p>1.4 OHS hazards in the workplace are identified and reported to the supervisor.</p>
2. Carry out basic routine maintenance	<p>2.1 Suitable personal protective equipment is stored, selected, used and maintained according to OHS requirements.</p> <p>2.2 Greasing, lubrication and other basic servicing of machinery and equipment is carried out according to operator's manual/manufacturers</p> <p>2.3 Routine adjustments and repairs are made to machinery and equipment according to operators' manual/manufacturers' specifications and supervisors instructions.</p> <p>2.4 Work is conducted according to OHS requirements and completed to supervisor's satisfaction.</p>
3. Complete work	<p>3.1 Tools are cleaned, returned to operating order and stored according to manufacturers' specifications and enterprise requirements.</p> <p>3.2 Environmental procedures are followed and waste from maintenance activities is collected, treated and disposed or recycled according to enterprise requirements.</p> <p>3.3 Work area is cleaned and maintained according to OHS and enterprise requirements.</p> <p>3.4 Malfunctions, faults, wear or damage to tools are reported to the supervisor according to enterprise requirements.</p>

Variables	Range
Tools and Equipment	<p>It may include but not limited to:</p> <ul style="list-style-type: none"> • Hand tools, personal protective equipment, hand held power tools, grease guns, cleaning and maintenance supplies including grease, fuel, oil, chemicals, water steam, power and air.
Routine maintenance	<p>It may include but not limited to:</p> <ul style="list-style-type: none"> • Dismantling and assembling, testing, tightening, minor adjustments and repairs, and routine servicing procedures including lubricating, and checks of cooling system, fuel, grease and oil, and battery levels.
Routine pre-operational checks	<p>It may include but not limited to:</p> <ul style="list-style-type: none"> • Routine safety and pre-start checks and preparatory procedures including cleaning, lubricating, hand sharpening, priming pumps, clearing filters, tightening, basic repairs and adjustments.
Advance Bamboo Processing Machines	<p>It may include but not limited to:</p> <ul style="list-style-type: none"> • Laminating Press Equipment • Kiln drying Equipment • Carbonizing equipment • Multi-head Spindle moulder • Glue Spreader • Finishing Line Equipment
Enterprise requirements	<p>It may include but not limited to:</p> <ul style="list-style-type: none"> • Standard Operating Procedures (SOPs), industry standards, production schedules, Material Safety Data Sheets (MSDSs), work notes and plans, product labels, manufacturers specifications, operators' manuals, enterprise policies and procedures (including waste disposal, recycling and re-use guidelines), and supervisors oral or written instructions.
OHS requirements	<ul style="list-style-type: none"> • OHS requirements are to be in accordance with legislation/regulations/codes of practice, organizational safety policies and procedures and project safety plan. This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of firefighting equipment, organizational first aid, hazard control and hazardous materials and substances • Safe operating procedures are to include but not be limited to the conduct of operational risk assessment and treatments associated with power cables, trip hazards, working with dangerous materials, working in confined spaces, working in proximity to others, worksite visitors and the public

	<ul style="list-style-type: none"> • Emergency procedures related to this unit are to include but may not be limited to extinguishing fires, organizational first aid requirements and evacuation
Personal protective equipment	<p>It may include but not limited to:</p> <ul style="list-style-type: none"> • Overalls, gloves, protective eyewear, hearing protection, safety harness, etc.
Environmental	<p>It may include but not limited to:</p> <ul style="list-style-type: none"> • Measures to reduce excessive noise and exhaust emissions, the safe use and disposal of maintenance debris including oil containers, fuel and chemical residues.
Materials	<p>May include but not limited to:</p> <p>stationeries , grease, fuel, oil, chemicals, water steam, power and air, overalls, gloves, protective eyewear, hearing protection, safety harness, etc.</p>
Tools and Equipment	<p>May include but not limited to:</p> <p>hand tools, personal protective equipment, hand held power tools, grease guns and different machinery maintenance equipment</p>

Evidence Guide	
Critical Aspects of Competence	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> • prepared for routine maintenance • carried out routine maintenance for advance bamboo processing machines • completed routine maintenance activities
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge and attitudes on:</p> <ul style="list-style-type: none"> • Workplace and equipment safety requirements • Quality requirements and safe work methods • Types, characteristics, uses and limitations of equipment involved bamboo processing • Types, characteristics and functions of tools used in maintenance of machinery and equipment • The method of operation and maintenance requirements of advance bamboo processing machine and equipment • Codes of Practice with regard to the use and control of hazardous substances and/or working in confined spaces. • Environmental Codes of Practice with regard to maintenance activities.
Underpinning Skills	<p>Demonstrate skills on:</p> <ul style="list-style-type: none"> • Preparing for routine maintenance • Carrying routine maintenance

	<ul style="list-style-type: none"> • Completing routine maintenance activities
Resources Implication	The following resources must be provided: variety of information, communication tools, simulated workplace
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

Occupational Standard: Bamboo Industrial Processing Level III	
Unit Title	Apply Quality Control
Unit Code	IND BIP3 08 0411
Unit Descriptor	This unit covers the knowledge, skills and attitudes required in applying quality control industrial bamboo production.

Elements	Performance Criteria
1. Determine quality standards	1.1 Quality standard documents are acquired and reviewed 1.2 Quality standards and procedures are introduced to staff / personnel. 1.3 Quality standard procedures are ensured to be implemented in accordance with the organization/workplace policy. 1.4 Standard procedures are revised / updated when necessary
2. Assess quality of work and product delivered	2.1 Products/work outputs and work performance are checked against organization quality standards and specifications 2.2 Work outputs and performance delivered are evaluated using the appropriate evaluation parameters and in accordance with organization standards 2.3 Causes of any identified faults are identified and corrective actions are taken in accordance with organization policies and procedures
3. Record information	3.1 Basic information on the quality performance is recorded in accordance with organization procedures 3.2 Records of work quality are maintained according to the requirements of the organization
4. Study causes of quality deviations	4.1 Causes of deviations from final outputs or services are investigated and reported in accordance with organization procedures 4.2 Suitable preventive action is recommended based on organization quality standards and identified causes of deviation from specified quality standards of final service or output
5. Complete documentation	5.1 Information on quality and other indicators of service performance is recorded. 5.2 All service processes and outcomes are recorded.

Variable	Range
Quality check	<ul style="list-style-type: none"> • visual inspection • physical measurements • check against design/specifications
Quality standards	<ul style="list-style-type: none"> • materials • component parts • final product • production process • conformity to specifications
Quality parameters	<ul style="list-style-type: none"> • finish • size • durability • product variations • materials • alignment • color • damage and imperfections

Evidence Guide	
Critical Aspects of Competence	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> • checked completed work continuously against organization standard • identified and isolated faulty or poor product/output • checked service delivered against organization standards • identified and applied corrective actions on the causes of identified faults or error • recorded basic information regarding quality performance • investigated causes of deviations of services against standard • recommended suitable preventive actions
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • relevant quality standards, policies and procedures • characteristics of products/outputs • safety environment aspects of production processes • relevant evaluation techniques and quality checking procedures • workplace procedures and reporting procedures
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • interpret work instructions, specifications and standards appropriate to the required work or product • carry out relevant performance evaluation • maintain accurate work records in accordance with procedures • meet work specifications and requirements

	<ul style="list-style-type: none"> • communicate effectively within defined workplace procedures
Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> • access to relevant workplace or appropriately simulated environment and materials relevant to the activity/ task
Methods of Assessment	<p>Competence may be accessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context for Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Bamboo Furniture Making Level III	
Unit Title	Monitor Implementation of Work Plan/Activities
Unit Code	IND BIP3 09 0411
Unit Descriptor	This unit deals with the skills and knowledge required to oversee and monitor the quality of work operations within an enterprise. This unit may be carried out by team leaders, supervisors or managers.

Elements	Performance Criteria
1. Plan and organise workflow	<p>1.1 Current workload of colleagues is accurately assessed.</p> <p>1.2 Work is scheduled in a manner which enhances efficiency and customer service quality.</p> <p>1.3 Work is delegated to appropriate people in accordance with principles of delegation.</p> <p>1.4 Workflow is assessed against agreed objectives and timelines.</p> <p>1.5 Colleagues are assisted in prioritization of workload.</p> <p>1.6 Input is provided to appropriate management regarding staffing needs.</p>
2. Monitor and improve workplace operations	<p>2.1 Efficiency and service levels are monitored on an ongoing basis.</p> <p>2.2 Operations in the workplace support overall enterprise goals and quality assurance initiatives.</p> <p>2.3 Quality problems and issues are promptly identified and adjustments are made accordingly.</p> <p>2.4 Procedures and systems are changed in consultation with colleagues to improve efficiency and effectiveness.</p> <p>2.5 Colleagues are consulted about ways to improve efficiency and service levels.</p>
3. Maintain workplace records	<p>3.1 Appropriate documents and information are collected in accordance with workplace procedures.</p> <p>3.2 Workplace records are accurately completed and submitted within required timeframe.</p> <p>3.3 Where appropriate completion of records is delegated and monitored prior to submission.</p> <p>3.4 Workplace records are kept in a secured location</p>
4. Solve problems and make	<p>4.1 Workplace problems are promptly identified and considered from an operational and customer service</p>

decisions	<p>perspective.</p> <p>4.2 Short term action is initiated to resolve the immediate problem where appropriate.</p> <p>4.3 Problems are analysed for any long term impact and potential solutions are assessed and actioned in consultation with relevant colleagues.</p> <p>4.4 Where problem is raised by a team member, they are encouraged to participate in solving the problem.</p> <p>4.5 Follow up action is taken to monitor the effectiveness of solutions in the workplace.</p>
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Variable	Range
Workplace records	May include but not limited to: <ul style="list-style-type: none"> • staff records • regular performance reports

Evidence Guide	Description
Critical Aspects of Competence	Critical evidence in knowledge and skills include: <ul style="list-style-type: none"> • ability to effectively monitor and respond to a range of common operational and service issues in the workplace • understanding of the role of staff involved in workplace monitoring • knowledge of quality assurance, principles of workflow planning, delegation and problem solving
Underpinning Knowledge and Attitudes	Demonstrate knowledge and attitude on: <ul style="list-style-type: none"> • the roles and responsibilities of those involved in monitoring work operations • overview of leadership and management responsibilities • principles of work planning • typical work organisation methods appropriate to the industry • quality assurance principles and time management • principles of delegation • problem solving and decision making processes • industrial and/or legislative issues which affect short term work organization as appropriate to industry sector
Underpinning Skills	Demonstrate skills of: <ul style="list-style-type: none"> • Planning and organizing workflow • Monitoring and improving workplace operations • Maintaining workplace records • Evaluating efficiency • Reporting and documentation

Resource Implications	May include but not limited to workplace or fully equipped assessment location with necessary tools and equipment as well as consumable materials
Methods of Assessment	Competence may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation/Demonstration with Oral questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Spinning and Ginning Operations Level III	
Unit Title	Lead Small Team
Unit Code	IND BIP3 10 0411
Unit Descriptor	This unit covers the knowledge, skills and attitudes to lead small teams including setting and maintaining team and individual performance standards.

Elements	Performance Criteria
1. Provide team leadership	<p>1.1 Work requirements are identified and presented to team members</p> <p>1.2 Reasons for instructions and requirements are communicated to team members</p> <p>1.3 Team members' queries and concerns are recognized, discussed and dealt with</p>
2. Assign responsibilities	<p>2.1 Duties and responsibilities are allocated having regard to the skills, knowledge and aptitude required to properly undertake the assigned task and according to company policy</p> <p>2.2 Duties are allocated having regard to individual preference, domestic and personal considerations, whenever possible</p>
3. Set performance expectations for team members	<p>3.1 Performance expectations are established based on client needs and according to assignment requirements</p> <p>3.2 Performance expectations are based on individual team members duties and area of responsibility</p> <p>3.3 Performance expectations are discussed and disseminated to individual team members</p>
4. Supervised team performance	<p>4.1. Monitoring of performance takes place against defined performance criteria and/or assignment instructions and corrective action taken if required</p> <p>4.2. Team members are provided with feedback, positive support and advice on strategies to overcome any deficiencies</p> <p>4.3. Performance issues which cannot be rectified or addressed within the team are referenced to appropriate personnel according to employer policy</p> <p>4.4. Team members are kept informed of any changes in the priority allocated to assignments or tasks which might impact on client/customer needs and satisfaction</p> <p>4.5. Team operations are monitored to ensure that employer/client needs and requirements are met</p>

	<p>4.6. Follow-up communication is provided on all issues affecting the team</p> <p>4.7. All relevant documentation is completed in accordance with company procedures</p>
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Variable	Range
Work requirements	<ul style="list-style-type: none"> • Client Profile • Assignment instructions
Team member's concerns	<ul style="list-style-type: none"> • Roster/shift details
Monitor performance	<ul style="list-style-type: none"> • Formal process • Informal process
Feedback	<ul style="list-style-type: none"> • Formal process • Informal process
Performance issues	<ul style="list-style-type: none"> • Work output • Work quality • Team participation • Compliance with workplace protocols • Safety • Customer service

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • Maintained or improved individuals and/or team performance given a variety of possible scenario • Assessed and monitored team and individual performance against set criteria • Represented concerns of a team and individual to next level of management or appropriate specialist and to negotiate on their behalf • Allocated duties and responsibilities, having regard to individual's knowledge, skills and aptitude and the needs of the tasks to be performed • Set and communicated performance expectations for a range of tasks and duties within the team and provided feedback to team members

Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • Company policies and procedures • Relevant legal requirements • How performance expectations are set • Methods of Monitoring Performance • Client expectations • Team member's duties and responsibilities
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • Communication skills required for leading teams • Informal performance counseling skills • Team building skills • Negotiating skills
Resource Implications	<ul style="list-style-type: none"> • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or task
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Bamboo Industrial Processing Level III	
Unit Title	Lead Workplace Communication
Unit Code	IND BIP3 11 0411
Unit Descriptor	This unit covers the knowledge, skills, and attitudes to lead in the dissemination and discussion of information and issues in the workplace.

Elements	Performance Criteria
1. Communicate information about workplace processes	1.1 Appropriate communication method is selected 1.2 Multiple operations involving several topics areas are communicated accordingly 1.3 Questions are used to gain extra information 1.4 Correct sources of information are identified 1.5 Information is selected and organized correctly 1.6 Verbal and written reporting is undertaken when required 1.7 Communication skills are maintained in all situations
2. Lead workplace discussion	2.1 Response to workplace issues are sought 2.2 Response to workplace issues are provided immediately 2.3 Constructive contributions are made to workplace discussions on such issues as production, quality and safety 2.4 Goals/objectives and action plan undertaken in the workplace are communicated.
3. Identify and communicate issues arising in the workplace	3.1 Issues and problems are identified as they arise 3.2 Information regarding problems and issues are organized coherently to ensure clear and effective communication 3.3 Dialogue is initiated with appropriate staff/personnel 3.4 Communication problems and issues are raised as they arise

Variable	Range
Methods of communication	<ul style="list-style-type: none"> • Non-verbal gestures • Verbal • Face to face • Two-way radio • Speaking to groups • Using telephone • Written • Using Internet

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge to:</p> <ul style="list-style-type: none"> • Dealt with a range of communication/information at one time • Made constructive contributions in workplace issues • Sought workplace issues effectively • Responded to workplace issues promptly • Presented information clearly and effectively written form • Used appropriate sources of information • Asked appropriate questions • Provided accurate information
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • Organization requirements for written and electronic communication methods • Effective verbal communication methods • Apparel/Garments Terminology
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • Organize information • Understand and convey intended meaning • Participate in variety of workplace discussions • Comply with organization requirements for the use of written and electronic communication methods
Resource Implications	The following resources must be provided: variety of information, communication tools, simulated workplace
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	Competence may be assessed in the work place or in a simulated work place setting

Occupational Standard: Bamboo Industrial Processing Level III	
Unit Title	Improve Business Practice
Unit Code	IND BIP3 12 0411
Unit Descriptor	This unit covers the knowledge, skills and attitudes required in promoting, improving and growing business operations.

Elements	Performance Criteria
1. Diagnose the business	1.1 Data required for diagnosis is determined and acquired 1.2 Competitive advantage of the business is determined from the data 1.3 SWOT analysis of the data is undertaken
2. Benchmark the business	2.1 Sources of relevant benchmarking data are identified 2.2 Key indicators for benchmarking are selected in consultation with key stakeholders 2.3 Like indicators of own practice are compared with benchmark indicators 2.4 Areas for improvement are identified
3. Develop plans to improve business performance	3.1 A consolidated list of required improvements is developed 3.2 Cost-benefit ratios for required improvements are determined 3.3 Work flow changes resulting from proposed improvements are determined 3.4 Proposed improvements are ranked according to agreed criteria 3.5 An action plan to implement the top ranked improvements is developed and agreed 3.6 Organizational structures are checked to ensure they are suitable
4. Develop marketing and promotional plans	4.1 The practice vision statement is reviewed 4.2 Practice objectives are developed/reviewed 4.3 Target markets are identified/refined 4.4 Market research data is obtained 4.5 Competitor analysis is obtained 4.6 Market position is developed/reviewed 4.7 Practice brand is developed 4.8 Benefits of practice/practice products/services are identified

	4.9 Promotion tools are selected/developed
5. Develop business growth plans	<p>5.1 Plans to increase yield per existing client are developed</p> <p>5.2 Plans to add new clients are developed</p> <p>5.3 Proposed plans are ranked according to agreed criteria</p> <p>5.4 An action plan to implement the top ranked plans is developed and agreed</p> <p>5.5 Practice work practices are reviewed to ensure they support growth plans</p>
6. Implement and monitor plans	<p>6.1 Implementation plan is developed in consultation with all relevant stakeholders</p> <p>6.2 Indicators of success of the plan are agreed</p> <p>6.3 Implementation is monitored against agreed indicators</p> <p>6.4 Implementation is adjusted as required</p>

Variable	Range
Data required includes:	<ul style="list-style-type: none"> • organization capability • appropriate business structure • level of client service which can be provided • internal policies, procedures and practices • staff levels, capabilities and structure • market, market definition • market changes/market segmentation • market consolidation/fragmentation • revenue • level of commercial activity • expected revenue levels, short and long term • revenue growth rate • break even data • pricing policy • revenue assumptions • business environment • economic conditions • social factors • demographic factors • technological impacts • political/legislative/regulative impacts • competitors, competitor pricing and response to pricing • competitor marketing/branding • competitor products

Competitive advantage includes:	<ul style="list-style-type: none"> • services/products • fees • location • timeframe
Objectives should be 'SMART' , that	<ul style="list-style-type: none"> • Specific • Measurable • Achievable • Realistic • Time defined
Market research data includes:	<ul style="list-style-type: none"> • data about existing clients • data about possible new clients • data from internal sources • data from external sources such as: <ul style="list-style-type: none"> • trade associations/journals • Yellow Pages small business surveys • libraries • Internet • Chamber of Commerce • client surveys and industry reports • secondary market research • primary market research such as: <ul style="list-style-type: none"> • telephone surveys • personal interviews • mail surveys
Competitor analysis	<ul style="list-style-type: none"> • competitor offerings • competitor promotion strategies and activities • competitor profile in the market place
SWOT analysis includes:	<ul style="list-style-type: none"> • internal strengths such as staff capability, recognized quality • internal weaknesses such as poor morale, under-capitalization, poor technology • external opportunities such as changing market and economic conditions • external threats such as industry fee structures, strategic alliances, competitor marketing
Key indicators may include:	<ul style="list-style-type: none"> • salary cost and staffing • personnel productivity (particularly of principals) • profitability • fee structure • client base • size staff/principal • overhead/overhead control
Organizational structures include:	<ul style="list-style-type: none"> • legal structure (partnership, limited liability company, etc.) • organizational structure/hierarchy • reward schemes

<p>Market position should include data on:</p>	<ul style="list-style-type: none"> • product • the good or service provided • product mix • the core product - what is bought • the tangible product - what is perceived • the augmented product - total package of consumer • features/benefits • product differentiation from competitive products • new/changed products • price and pricing strategies (cost plus, supply/demand, ability to pay, etc.) • pricing objectives (profit, market penetration, etc.) • cost components • market position • distribution strategies • marketing channels • promotion • promotional strategies • target audience • communication • promotion budget
<p>Practice brand may include:</p>	<ul style="list-style-type: none"> • practice image • practice logo/letter head/signage • phone answering protocol • facility decor • slogans • templates for communication/invoicing • style guide • writing style • AIDA (attention, interest, desire, action)
<p>Benefits may include:</p>	<ul style="list-style-type: none"> • features as perceived by the client • benefits as perceived by the client
<p>Promotion tools include:</p>	<ul style="list-style-type: none"> • networking and referrals • seminars • advertising • press releases • publicity and sponsorship • brochures • newsletters (print and/or electronic) • websites • direct mail • telemarketing/cold calling
<p>Yield per existing client may be increased by:</p>	<ul style="list-style-type: none"> • raising charge out rates/fees • packaging fees • reduce discounts • sell more services to existing clients

Evidence Guide	
Critical Aspects of Competence	<p>The candidate must be able to demonstrate:</p> <ul style="list-style-type: none"> • ability to identify the key indicators of business performance • ability to identify the key market data for the business • knowledge of a wide range of available information sources • ability to acquire information not readily available within a business • ability to analyze data and determine areas of improvement • ability to negotiate required improvements to ensure implementation • ability to evaluate systems against practice requirements • and form recommendations and/or make recommendations • ability to assess the accuracy and relevance of information
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • data analysis • communication skills • computer skills to manipulate data and present information • negotiation skills and problem solving • planning skills • marketing principles • ability to acquire and interpret relevant data • current product and marketing mix • use of market intelligence • development and implementation strategies of promotion and growth plans
Underpinning Skills	<ul style="list-style-type: none"> • data analysis and manipulation • ability to acquire and interpret required data • current practice systems and structures • sources of relevant benchmarking data • methods of selecting relevant key benchmarking indicators • communication skills • working and consulting with others when developing plans for the business • negotiation skills and problem solving • using computers to manipulate, present and distribute information • planning skills
Resource Implications	<p>Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.</p>
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Bamboo Industrial Processing Level III	
Unit Title	Maintain Quality System and Continuous Improvement Processes (Kaizen)
Unit Code	IND BIP3 13 1012
Unit Descriptor	This unit of competence covers the skills and knowledge required to prevent process improvements in their own work from slipping back to former practices or digressing to less efficient practices. It covers responsibility for the day- to-day operation of the work/functional area and ensuring that quality system requirements are met and that continuous improvements are initiated and institutionalized.

Elements	Performance Criteria
1. Develop and maintain quality framework within work area	1.1 Distribute and explain information about the enterprise's quality system to personnel 1.2 Encourage personnel to participate in improvement processes and to assume responsibility and authority 1.3 Allocate responsibilities for quality within work area in accordance with quality system 1.4 Provide coaching and mentoring to ensure that personnel are able to meet their responsibilities and quality requirements
2. Maintain quality documentation	2.1 Identify required quality documentation, including records of improvement plans and initiatives 2.2 Prepare and maintain quality documentation and keep accurate data records 2.3 Maintain document control system for work area 2.4 Contribute to the development and revision of quality manuals and work instructions for the work area 2.5 Develop and implement inspection and test plans for quality controlled products
3. Facilitate the application of standardized procedures	3.1 Ensure all required procedures are accessible by relevant personnel 3.2 Assist personnel to access relevant procedures, as required 3.3 Facilitate the resolution of conflicts arising from job 3.4 Facilitate the completion of required work in accordance with standard procedures and practices

<p>4. Provide training in quality systems and improvement processes</p>	<p>4.1 Analyze roles, duties and current competency of relevant personnel</p> <p>4.2 Identify training needs in relation to quality system and continuous improvement processes (kaizen)</p> <p>4.3 Identify opportunities for skills development and/or training programs to meet needs</p> <p>4.4 Initiate and monitor training and skills development programs</p> <p>4.5 Maintain accurate training record</p>
<p>5. Monitor and review performance</p>	<p>5.1 Review performance outcomes to identify ways in which planning and operations could be improved</p> <p>5.2 Use the organization's systems and technology to monitor and review progress and to identify ways in which planning and operations could be improved</p> <p>5.3 Enhance customer service through the use of quality improvement techniques and processes</p> <p>5.4 Adjust plans and communicate these to personnel involved in their development and implementation</p>
<p>6. Build continuous improvement process</p>	<p>6.1 Organize and facilitate improvement team</p> <p>6.2 Encourage work group members to routinely monitor key process indicators</p> <p>6.3 Build capacity in the work group to critically review the relevant parts of the value chain</p> <p>6.4 Assist work group members to formalize improvement suggestions</p> <p>6.5 Facilitate relevant resources and assist work group members to develop implementation plans</p> <p>6.6 Monitor implementation of improvement plans taking appropriate actions to assist implementation where required.</p>
<p>7. Facilitate the identification of improvement opportunities</p>	<p>7.1 Analyze the job completion process</p> <p>7.2 Ask relevant questions of job incumbent</p> <p>7.3 Encourage job incumbents to conceive and suggest improvements</p> <p>7.4 Facilitate the trying out of improvements, as appropriate</p>
<p>8. Evaluate relevant components of quality system</p>	<p>8.1 Undertake regular audits of components of the quality system that relate to the work area</p> <p>8.2 Implement improvements in the quality system in accordance with own level of responsibility and workplace procedures</p>

	<p>8.3 Facilitate the updating of standard procedures and practices</p> <p>8.4 Ensure the capability of the work team aligns with the requirements of the procedure</p>
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Variable	Range
Coaching and mentoring	<p>May refer to:</p> <ul style="list-style-type: none"> • providing assistance with problem-solving • providing feedback, support and encouragement • teaching another member of the team, usually focusing on a specific work task or skill
Continuous improvement processes may include:	<p>May include:</p> <ul style="list-style-type: none"> • cyclical audits and reviews of workplace, team and individual performance • evaluations and monitoring of effectiveness • implementation of quality systems, such as International Standardization for Organization (ISO) • modifications and improvements to systems, processes, services and products • policies and procedures which allow the organization to systematically review and improve the quality of its products, services and procedures • seeking and considering feedback from a range of stakeholders • Kaizen • Enterprise-specific improvement systems
Technology	<p>May include:</p> <ul style="list-style-type: none"> • computerized systems and software such as databases, project management and word processing • telecommunications devices • any other technology used to carry out work roles and responsibilities
Customer service	<p>May be:</p> <ul style="list-style-type: none"> • internal or external • to existing, new or potential clients
Key process indicators	<p>Key process indicators may include:</p> <ul style="list-style-type: none"> • statistical process control data/charts • orders • lost time, injury and other OHS records • equipment reliability charts, etc.
Continuous improvement tools	<p>May include:</p> <ul style="list-style-type: none"> • statistics • cause and effect diagrams • fishbone diagram • Pareto diagrams

	<ul style="list-style-type: none"> • run charts • X bar R charts • PDCA • Sigma techniques • balanced scorecards • benchmarking • performance measurement • upstream and downstream customers • internal and external customers immediate and/or final
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Evidence Guide	
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Critical Aspects of Competence	<p>Evidence of the following is essential:</p> <ul style="list-style-type: none"> • taking active steps to implement, monitor and adjust plans, processes and procedures to improve performance • supporting others to implement the continuous improvement system/processes, and to identify and report opportunities for further improvement • knowledge of principles and techniques associated with continuous improvement systems and processes • assist others to follow standard procedures and practices • assist others make improvement suggestions • standardize and sustain improvements <p>Assessors should ensure that candidates can:</p> <ul style="list-style-type: none"> • implement and monitor defined quality system • requirements and initiate continuous improvements within the work area • apply effective problem identification and problem solving techniques • strengthen customer service through a focus on continuous improvement • implement, monitor and evaluate quality systems in the work area • initiate quality processes to enhance the quality of performance of individuals and teams in the work area • gain commitment of individuals/teams to quality principles and practices • implement effective communication strategies • encourage ideas and feedback from team members when developing and refining techniques and processes • analyze training needs and implement training programs • prepare and maintain quality and audit documentation
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • principles and techniques associated with: <ul style="list-style-type: none"> – benchmarking – best practice – change management

	<ul style="list-style-type: none"> – continuous improvement systems and processes – quality systems • range of procedures available and their application to different jobs • applicability of takt time and muda to jobs • identification and possible causes of variability in jobs • continuous improvement process for organization • questioning techniques • methods of conceiving improvements • suggestion and try out procedures • relevant OHS • quality measurement tools for use in continuous improvement processes • established communication channels and protocols • communication/reporting protocols • continuous improvement principles and process • enterprise business goals and key performance indicators • enterprise information systems management • enterprise organizational structure, delegations and responsibilities • policy and procedure development processes • relevant health, safety and environment requirements • relevant national and international quality standards and protocols • standard operating procedures (SOPs) for the technical work performed in work area • enterprise quality system
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • coach and mentor team members • gain the commitment of individuals and teams to continuously improve • innovate or design better ways of performing work • communicate with relevant people • prioritize and plan tasks related to encouraging and improving use of standardized procedures • negotiate with others to resolve conflicts and gain commitment to standardized procedures • facilitate other employees in improvement activities • implement and monitor defined quality system requirements • initiate continuous improvements within the work area • apply effective problem identification and problem solving techniques • strengthen customer service through a focus on continuous improvement • implement, monitor and evaluate quality systems • implement effective communication strategies • encourage ideas and feedback from team members when

	<p>developing and refining techniques and processes</p> <ul style="list-style-type: none"> • analyze training needs and implementing training programs • prepare and maintain quality and audit documentation
Resources Implication	<p>Access may be required to:</p> <ul style="list-style-type: none"> • workplace procedures and plans relevant to work area • specifications and documentation relating to planned, currently being implemented, or implemented changes to work processes and procedures relevant to the candidate • documentation and information in relation to production, waste, overheads and hazard control/management • enterprise quality manual and procedures • quality control data/records
Methods of Assessment	<p>Competence in this unit may be assessed by using a combination of the following to generate evidence:</p> <ul style="list-style-type: none"> • demonstration in the workplace • suitable simulation • oral or written questioning to assess knowledge of procedures and contingency management; principles and techniques associated with change management • review of the audit process and outcomes generated by the candidates <p>Those aspects of competence dealing with improvement processes could be assessed by the use of suitable simulations and/or a pilot plant and/or a range of case studies and scenarios.</p> <p>In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competence which are difficult to assess directly.</p>
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated workplace setting / environment.</p>

NTQF Level II

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Read and Interpret Sketches and Drawing
Unit Code	IND BIP2 01 0411
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to read and interpret drawings.

Elements	Performance Criteria
1. Interpret technical drawing	1.1 Components, assemblies or objects are recognized as required. 1.2 Dimensions are identified as appropriate. 1.3 Instructions are identified and followed as required. 1.4 Material requirements are identified as required. 1.5 Tolerance , limits and fits are identified in drawing.
2. Read and interpret job specifications	2.1 Job specifications are identified from drawings, notes and descriptions. 2.2 Standards of work, finishes and tolerances are identified from project specifications. 2.3 Material attributes are identified from specifications
3. Interpret details from freehand sketch	3.1 Components, assemblies or objects are recognized as required. 3.2 Dimensions are identified as appropriate. 3.3 Instructions are identified and followed as required. 3.4 Material requirements are identified in accordance to job specifications and work orders.

Variable	Range
Occupational Health and Safety (OHS)	OHS requirements are to be in accordance with federal/regional legislation and regulations, organizational safety policies and procedures, and project safety plan. <ul style="list-style-type: none"> • This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of firefighting equipment, organizational first aid, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • Emergency procedures are to include but may not be limited extinguishing fires, organizational first aid

	requirements and evacuation
Tools and Equipment	Equipment is to include but not be limited to drawings, sketches, blue prints and pencils.

Evidence Guide	
Critical Aspects of Competence	Assessment requires evidence that the candidate: <ul style="list-style-type: none"> • read and interpreted accurately technical drawings/sketches
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • understanding specifications and relating to job requirements • key features of formal job specifications • drawing symbols • dimensioning techniques • tolerance, limits and fits • drawing tools and supplies
Underpinning Skills	Demonstrates skills of: <ul style="list-style-type: none"> • reading working drawings • interpreting signs and symbols • calculate tolerance, limits and fits • basic mathematical processes of addition, subtraction, division and multiplication
Resource Implications	The following resources must be provided: <ul style="list-style-type: none"> • Workplace or fully equipped assessment location with necessary tools and equipment as well as consumable material
Methods of Assessment	Competence may be accessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed individually in the actual workplace or through accredited institution

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Carry-out Chemical Treatment
Unit Code	<u>IND BIP2 02 0411</u>
Unit Descriptor	This unit covers the knowledge, skills, and attitude in treating and curing bamboo materials with chemicals for use and durability.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Materials are selected according to work specifications</p> <p>1.2 Tools and equipment are identified and prepared for work</p> <p>1.3 Use of PPE, 5S and safety procedures are observed throughout the process</p> <p>1.4 Treatment Method is identified and confirmed with supervisor</p> <p>1.5 Chemical formulations are acquired and confirmed with supervisor.</p>
2. Check chemical mixtures / solutions	<p>2.1 Chemicals mixtures / solution needed are identified according to job specification</p> <p>2.2 Mixture is thoroughly stirred prior to use and following safety procedures</p> <p>2.3 Ensure there is no sediments or solid particles present in the mixtures / solutions</p> <p>2.4 Mixtures are ensured to be stored in a secured container</p>
3. Treat bamboo materials	<p>3.1 Bamboos materials for treatment are checked and prepared in accordance to job specifications</p> <p>3.2 Treatment is done according to company standards and standard procedures</p> <p>3.3 Safety procedures are observed throughout the process</p> <p>3.4 Problems with required work and/or operation of treatment facilities are identified and reported to appropriate persons.</p> <p>3.5 Used treatment chemicals are disposed in accordance to manufacturer's disposal procedures and company disposal procedures.</p>
4. Clean up work area	<p>4.1 Problems are handled following enterprise policy and procedures</p> <p>4.2 Process, encountered problems and action taken are recorded and reported in accordance with enterprise standard procedures</p>

	<p>4.3 Material that can be reused is collected and stored.</p> <p>4.4 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p>
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Variable	Range
Chemicals	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • borax • citric acid • sodium chloride • caustic soda • lime • insecticides
PPE	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • gloves • goggles • coverall • safety shoes
Materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • mixing & boiling tanks/containers • bamboo strips, slats and splits • fire woods • hanging cords
Tools and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • stove • tongs • mixing ladles • Treatment vats • Treatment Chambers
Treatment Method	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Non-pressure method • Pressurize method • Traditional method

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • Determine appropriate treatment method • Prepare chemical solutions • Treat bamboo materials
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • Safety principles and procedures • Chemical storage and disposal • Treatment Method • Five thermal laws • States of matter principles

Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • Use and maintain relevant tools, machinery, equipment • Identify problems and equipment faults and demonstrate appropriate response procedures • Use appropriate communication and interpersonal techniques with colleagues and others • Accurately record and report workplace information, and maintain documentation • Efficiently and safely treat bamboo materials
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Kiln Drying Bamboo Materials
Unit Code	<u>IND BIP2 03 0411</u>
Unit Descriptor	This unit covers the knowledge, skills, and attitude kiln drying bamboo materials.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Applicable Occupational Health and Safety (OHS), legislative and organizational requirements relevant to drying hardwood are identified and complied with</p> <p>1.2 Work order is reviewed and checked with appropriate personnel</p> <p>1.3 Equipment is selected appropriate to work requirements and checked for operational effectiveness in accordance with manufacturer's recommendations</p> <p>1.4 Oven sections and sample boards are selected and cut in accordance with standard operating procedures</p> <p>1.5 Drying process is planned in accordance with site procedures</p> <p>1.6 Communication with others is established and maintained in accordance with OHS requirements</p>
2. Load and control drying conditions	<p>2.1 Bamboo materials to be dried are visually assessed for consistent drying characteristics and adjusted to meet site requirements</p> <p>2.2 Moisture content is measured and routinely compared with anticipated levels in accordance with standard operating procedures</p> <p>2.3 Pre start-up checks are carried out on equipment in accordance with site requirements</p> <p>2.4 Kiln is loaded with racks selected for processing and loading completed and reported</p> <p>2.5 Baffles and blankets are positioned in accordance with standard operating procedures</p> <p>2.6 Kiln control settings are regularly adjusted and routinely checked to site drying schedules</p>
3. Unload kiln	<p>3.1 Drying end point is identified and kiln made safe for entry</p> <p>3.2 Kiln is opened and moisture content of bamboo materials checked in accordance with anticipated equilibrium moisture content</p>

	<p>3.3 Moisture probes and baffles are removed from samples in accordance with standard operating procedures</p> <p>3.4 Kiln change is monitored and reconditioning or high humidity treatment conducted as required</p> <p>3.5 Bamboo materials are directed and moved to storage or processing operations in accordance with site requirements</p> <p>3.6 Sub-standard material is rejected and disposed of in accordance with site requirements</p>
4. Clean up work area	<p>4.1 Problems are handled following enterprise policy and procedures</p> <p>4.2 Process, encountered problems and action taken are recorded and reported in accordance with enterprise standard procedures</p> <p>4.3 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace procedures.</p>

Variable	Range
Occupational Health and Safety (OHS)	<p>OHS requirements are to be in accordance with federal/regional legislation and regulations, organizational safety policies and procedures, and project safety plan.</p> <ul style="list-style-type: none"> • This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of firefighting equipment, organizational first aid, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • Emergency procedures are to include but may not be limited extinguishing fires, organizational first aid requirements and evacuation
Work order	<ul style="list-style-type: none"> • is to include instructions for the drying of bamboo poles, slats, slivers, skewers and may diameter, width, length, thickness and quantity
Appropriate personnel	<ul style="list-style-type: none"> • may include supervisors, suppliers, clients, colleagues and managers
Equipment	<ul style="list-style-type: none"> • may include low temperature kilns up to 60 to 70 degrees Celsius with a heat source which may be solar, electricity or gas, kilns powered by burning wood waste up to temperatures of 90 degrees Celsius, vacuum dryers, and kilns powered by steam producing boilers

	<ul style="list-style-type: none"> • is to include procedures for equipment lock-out, i.e. protecting operators and co-workers from accidental injury by isolating the machine from the power source • Moisture meter
Communication	<ul style="list-style-type: none"> • may include verbal and non-verbal language, constructive feedback, active listening, questioning to clarify and confirm understanding, use of positive, confident and cooperative language, use of language and concepts appropriate to individual social and cultural differences, control of tone of voice and body language
Visually assessed	<ul style="list-style-type: none"> • is to include the assessment of materials to determine finish quality and faults and may include stability, spacing of strips and support to minimize warping
Moisture content (MC)	<ul style="list-style-type: none"> • is the amount of moisture maintained in timber or timber products after drying to avoid cracking and deforming • may include testing for capacitance, resistance and oven-dry conditions
Pre-start up checks	<ul style="list-style-type: none"> • are conducted to ensure the equipment has been set-up correctly, the systems are performing accurately and equipment is operating to optimum performance
Drying schedules	<ul style="list-style-type: none"> • is to include drying times based on moisture content
Drying End Points	<ul style="list-style-type: none"> • is the predicted time when the drying process will be completed and the desired moisture content achieved
Equilibrium Moisture Content (EMC)	<ul style="list-style-type: none"> • is the moisture level to be achieved by drying which will be sustainable in the environment after processing thereby retaining its shape and strength without excessive movement

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • Effectively conduct kiln operations • Efficiently bamboo materials to target moisture content in readiness for storage and/or processing • Correctly determine and record moisture content during drying operations
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • Drying techniques • Kiln operations • Basic knowledge on how bamboo dries • Methods of visual inspection • Characteristics of bamboo • Procedures for the recording, reporting and maintenance of workplace records and information

Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • Operate kiln dryer • Determine moisture content and drying condition • Identify problems and equipment faults and demonstrate appropriate procedures • Accurately record and report workplace information, and maintain documentation • use appropriate communication and interpersonal techniques with colleagues and others
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Carbonize Bamboo Materials
Unit Code	IND BIP2 04 0411
Unit Descriptor	This unit covers the knowledge, skills, and attitude in carbonizing bamboo materials.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Applicable Occupational Health and Safety (OHS), legislative and organizational requirements relevant to drying hardwood are identified and complied with</p> <p>1.2 Work order is reviewed and checked with appropriate personnel</p> <p>1.3 Equipment is selected appropriate to work requirements and checked for operational effectiveness in accordance with manufacturer's recommendations</p> <p>1.4 Oven sections and sample boards are selected and cut in accordance with standard operating procedures</p> <p>1.5 Carbonizing process is planned in accordance with site procedures</p> <p>1.6 Communication with others is established and maintained in accordance with OHS requirements</p>
2. Load and control carbonizing conditions	<p>2.1 Bamboo materials to be carbonized are visually assessed for consistent drying characteristics and adjusted to meet site requirements</p> <p>2.2 Pre start-up checks are carried out on equipment in accordance with site requirements</p> <p>2.3 Carbonizer is loaded with bamboo materials selected for processing and loading completed and reported</p> <p>2.4 Carbonizer control settings are regularly adjusted and routinely checked to site schedules</p>
3. Unload carbonizer	<p>3.1 Carbonizer is opened carbonized of bamboo materials are checked in accordance with work order specifications</p> <p>3.2 Bamboo materials are directed and moved to storage or processing operations in accordance with site requirements</p> <p>3.3 Sub-standard material is rejected and disposed of in accordance with site requirements</p>
4. Clean-up work area	<p>4.1 Equipment and work area are cleaned and inspected for serviceable condition in accordance with workplace</p>

	<p>procedures</p> <p>4.2 Process, encountered problems and action taken are recorded and reported in accordance with enterprise standard procedures</p> <p>4.3 Problems are handled following enterprise policy and procedures</p>
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Variable	Range
Occupational Health and Safety (OHS)	<p>OHS requirements are to be in accordance with federal/regional legislation and regulations, organizational safety policies and procedures, and project safety plan.</p> <ul style="list-style-type: none"> • This may include protective clothing and equipment, use of tools and equipment, workplace environment and safety, handling of materials, use of firefighting equipment, organizational first aid, hazard control and hazardous materials and substances • Personal protective equipment is to include that prescribed under legislation, regulation and workplace policies and practices • Emergency procedures are to include but may not be limited extinguishing fires, organizational first aid requirements and evacuation
Work order	<ul style="list-style-type: none"> • is to include instructions for the carbonizing of bamboo poles, slats, slivers, skewers and may include diameter, width, length, thickness and quantity
Appropriate personnel	<ul style="list-style-type: none"> • may include supervisors, suppliers, clients, colleagues and managers
Equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Carbonizing machine • Carriage • Moisture meter
Communication	<ul style="list-style-type: none"> • may include verbal and non-verbal language, constructive feedback, active listening, questioning to clarify and confirm understanding, use of positive, confident and cooperative language, use of language and concepts appropriate to individual social and cultural differences, control of tone of voice and body language
Visually assessed	<ul style="list-style-type: none"> • is to include the assessment of materials to determine finish quality and faults and may include stability, spacing of strips and supports
Pre-start up checks	<ul style="list-style-type: none"> • are conducted to ensure the equipment has been set-up correctly, the systems are performing accurately and equipment is operating to optimum performance

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • Effectively conduct carbonizing operations • Efficiently carbonize bamboo materials in readiness for storage and/or processing
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • Carbonizing techniques • Carbonizing operations • Methods of visual inspection • Characteristics of bamboo • Procedures for the recording, reporting and maintenance of workplace records and information
Underpinning Skills	Demonstrates skills to: <ul style="list-style-type: none"> • Operate Carbonizer • Identify problems and equipment faults and demonstrate appropriate procedures • Accurately record and report workplace information, and maintain documentation • use appropriate communication and interpersonal techniques with colleagues and others
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Perform Finish Milling
Unit Code	IND BIP2 05 0411
Unit Descriptor	This unit covers the skills, knowledge in squaring and/or smoothing the surface of bamboo materials in preparation to lamination

Elements	Performance Criteria
1. Prepare for finish milling	<p>1.1 Work order is reviewed and checked with appropriate personnel</p> <p>1.2 Type and quantity of bamboo materials to be milled are selected from the storage location</p> <p>1.3 Equipment is selected appropriate to work requirements and checked for operational effectiveness in accordance with manufacturer's recommendations</p> <p>1.4 Communication with others is established and maintained in accordance with OHS requirements</p>
2. Set-up required final milling machine	<p>2.1 Pre start-up checks are carried out on finish milling machines in accordance with site requirements</p> <p>2.2 Machine guides are selected and attached to the machinery</p> <p>2.3 Cutting blades are installed in the selected machinery</p> <p>2.4 Depth of cut is set in accordance with the required final measurement of the materials</p> <p>2.5 Milled bamboo materials stack is positioned in close proximity to maximise ease of machine feeding</p> <p>2.6 Equipment set-up is checked and adjusted by running a bamboo material through the machine to set final measurements</p>
3. Cut material to profile	<p>3.1 Bamboo laminated products are fed into the machine at the feed rate prescribed by organisational requirements</p> <p>3.2 Cutting sequence is followed, maintained and adjusted to produce the required quantity and maximise the feed rate</p> <p>3.3 Profiling process is regularly checked and adjusted to maintain the desired depth and profile</p> <p>3.4 Bamboo laminated products with defects are rejected and disposed of in accordance with site procedures</p> <p>3.5 Processing and equipment faults are reported to the appropriate personnel</p> <p>3.6 Profiled bamboo laminated products are safely stacked in a designated location in accordance with work order</p>

	<p>requirements</p> <p>3.7 Records and reports are accurately completed, processed and maintained in accordance with workplace procedures</p>
4. Clean up	<p>4.1 Faulty and/or defective equipment is tagged and reported in accordance with workplace procedures</p> <p>4.2 Waste and scrap are removed following OHS procedures</p> <p>4.3 Tools and equipment used are cleaned, checked for serviceable condition and stored appropriately following OHS procedures</p> <p>4.4 Work area are cleaned in accordance with workplace and OHS procedures</p>

Variable	Range
Work order	is to include instructions for the cutting and despatch of bamboo laminated products from the work site and may include type, size, length, profile, thickness, quantity and grade
Appropriate personnel	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Supervisors • Clients • Colleagues • Managers
Bamboo Materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Slats • Crush Bamboo • Dried bamboo poles
Finish Milling Machines	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Multi-head spindle moulder • Shaper • Edging Machines • Thickness Planer • Surface Planer and Jointer
Storage location	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Racks • Trays • Bins • Pallet boxes • Stacking bays
Equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Measuring equipment • trays

Communication	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Verbal and non-verbal language • constructive feedback • active listening • questioning to clarify and confirm understanding • use of positive, confident and cooperative language • use of language and concepts appropriate to individual social and cultural differences • control of tone of voice and body language
Pre-start up checks	are conducted to ensure the machine has been set-up correctly, the cutters are installed accurately and machinery operating to optimum performance
Machine guides	may include machine manufacturer produced guides located strategically on the machine to maintain timber in straight feed and ensure consistency of profile cut and enterprise produced guides/jigs to maintain consistency of timber against cutting blades
Feed rate	is to include the rate of speed the panel is passed through the machine affecting the sharpness of the cutting blades, the finish of the material and the production output
Defects	may include warp, wane, cupping, holes, breakages, lifting Ripple marks
Records and reports	<ul style="list-style-type: none"> • may include product type, size, profile, inspection, grading and labelling outcomes, storage locations, quality outcomes, hazards, incidents or equipment malfunctions • may be manual, using a computer-based system or another appropriate organisational communication system

Evidence Guide				
Critical Aspects of Competence	<p>Competency assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> • interpreted working drawings with details • selected and prepared profiles, jigs, materials, power and hand tools, equipment and PPE consistent with job requirements • laid out according to specified dimension • profiled products are checked for compliance with the job requirements and specified tolerances • applied organizational quality procedures and processes • completed work without damage to materials or injury to personnel 			
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge and attitudes on:</p> <ul style="list-style-type: none"> • Types and uses of PPE • Mensuration • Interpretation of working drawing and details 			
Page 65 of 92	<table border="1" style="width: 100%;"> <tr> <td style="width: 33%;">Ministry of Education Copyright</td> <td style="width: 33%;">Bamboo Industrial Processing Ethiopia Occupational Standard</td> <td style="width: 33%;">Version 1 April 2011</td> </tr> </table>	Ministry of Education Copyright	Bamboo Industrial Processing Ethiopia Occupational Standard	Version 1 April 2011
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	<ul style="list-style-type: none"> • Profiles, materials, power and hand tools and equipment uses and specifications • Knowledge of machine operation • Economic use of material • Safe and effective use of machines and equipment • Company rules and regulations
Underpinning Skills	<p>Demonstrate skills on:</p> <ul style="list-style-type: none"> • Using PPE • Applying Mensuration • Interpreting related drawings and details • Following machining procedures • Following safe and effective use of machines and equipment • Using materials economically • Communicating effectively • Following company rules and regulations
Resources Implication	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> • Workplace or fully equipped assessment location with necessary tools, equipment and consumable materials
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated work place setting</p>

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Weave Bamboo Curtains
Unit Code	IND BIP2 06 0411
Unit Descriptor	This unit covers the skills, knowledge in weaving bamboo curtains. This includes dyeing of warp and weft, and dressing of weaving equipment.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Production process to be undertaken are properly identified and confirmed</p> <p>1.2 Materials are identified and selected according to work specifications</p> <p>1.3 Tools and equipment are identified and checked for functionality and safe operations</p> <p>1.4 Use of PPE, 5S and safety procedures are observed throughout the process</p> <p>1.5 Workstation is made ready and safe for work activity</p>
2. Dye bamboo	<p>2.1 Dye bamboo according to specification</p> <p>2.2 Dyed items are dried according to specifications</p> <p>2.3 Final checking is done bamboo materials conformed to job specifications.</p>
3. Dress weaving machine	<p>3.1 Warp and weft are selected according to job specifications</p> <p>3.2 Weaving equipment is dressed following dressing procedures.</p>
4. Weave curtain	<p>4.1 Weave curtain according to design and specification.</p> <p>4.2 Warps are checked periodically for any irregularity in the design.</p> <p>4.3 Ensures that bamboo curtains conforms with specified requirements in terms of size and design</p>
5. Clean up	<p>5.1 Tools are checked for serviceable condition, returned and stored in accordance with workplace procedures.</p> <p>5.2 Unused materials are returned and/or stored in accordance with work procedures.</p> <p>5.3 Work site is cleaned and freed of waste/scrap materials following environment safety guidelines and policies</p> <p>5.4 Necessary documentation is accomplished in accordance with company standard procedures</p>

Variable	Range
Production process	May include but not limited to: <ul style="list-style-type: none"> • Dyeing • Weaving
Materials	May include but not limited to: <ul style="list-style-type: none"> • Slivers • Wickers • Cotton Thread • Rayon • Silk
Tools and equipment	May include but not limited to: <ul style="list-style-type: none"> • Weaving equipment • Warping Board • Caryl • Bobbin Winder • Scissors • Knife
PPE	May include but not limited to: <ul style="list-style-type: none"> • gloves • goggles • coverall • safety shoes
Dressing Procedures	May include: <ul style="list-style-type: none"> • Warping • Beaming • Draw-in • Denting

Evidence Guide	
Critical Aspects of Competence	Demonstrates skills and knowledge in: <ul style="list-style-type: none"> • preparation wickers, cotton thread • dye of materials • Dress weaving equipment • weave bamboo curtains
Underpinning Knowledge and Attitudes	Demonstrates knowledge of: <ul style="list-style-type: none"> • Weaving techniques • Dyeing techniques • Basic mathematical calculations

Underpinning Skills	Demonstrates skills to: <ul style="list-style-type: none"> • Weaving • Dye materials • Dress weaving equipment • weaving curtains
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Perform Basic Bamboo Processing
Unit Code	IND BIP2 07 0411
Unit Descriptor	This unit covers the skills, knowledge and in performing basic bamboo processing. This includes splitting, slicing, slitting, crushing and production of semi-processed bamboo materials.

Elements	Performance Criteria
1. Prepare for work	<p>1.1 Production process to be undertaken are properly identified and confirmed</p> <p>1.2 Bamboo are selected according to work specifications</p> <p>1.3 Tools and equipment are identified and checked for functionality and safe operations</p> <p>1.4 Use of PPE, 5S and safety procedures are observed throughout the process</p> <p>1.5 Workstation is made ready and safe for work activity</p>
2. Produce semi-processed bamboo materials	<p>2.1 Bamboo is cut according to specified length</p> <p>2.2 Appropriate tools and equipment is selected for every required production process to maximize output and minimize wastage.</p> <p>2.3 Size of semi-processed bamboo materials conformed to job specifications.</p>
3. Produce sticks	<p>3.1 Materials is selected and cut according to specifications</p> <p>3.2 Size and shape of sticks conforms to job specifications</p>
4. Clean up	<p>4.1 Material that can be reused is collected and stored</p> <p>4.2 Waste and scrap are removed following workplace procedures</p> <p>4.3 Equipment and work area are cleaned and made ready for the next work in accordance with OHS procedures</p> <p>4.4 Unserviceable equipment is tagged and faults identified in accordance with OHS procedures</p> <p>4.5 Necessary documentation is accomplished in accordance with enterprise standards</p>

Variable	Range
Production process	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Cutting

	<ul style="list-style-type: none"> • Splitting • Ripping • Slitting • Crushing • Waning
Tools and equipment	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Twin Rip saw • Manual Splitter • Splitting Machine • Wicking Machine • Doweling gadget • Pole cutter • Hand saw • Knife • Machete/Bolo
PPE	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • gloves • goggles • coverall • safety shoes
Semi-processed bamboo materials	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Slats • Slivers • Wickers • Skewers • Crush bamboo
Sticks	<p>May include but not limited to:</p> <ul style="list-style-type: none"> • Incense stick • Tooth pick • Chop Stick

Evidence Guide	
Critical Aspects of Competence	<p>Demonstrates skills and knowledge in:</p> <ul style="list-style-type: none"> • preparation of culms • Produce semi processed bamboo materials according to specifications
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • machine operation • operate hand tools and portable power tools • fabrication methods and operation • sanding • carpentry techniques and procedures

Underpinning Skills	Demonstrates skills to: <ul style="list-style-type: none"> • machine operation • operate hand tools and portable power tools • application of chemical treatment • straightening and shaping
Resources Implication	Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.
Methods of Assessment	Competency may be assessed through: <ul style="list-style-type: none"> • Interview / Written Test • Observation / Demonstration with Oral Questioning
Context of Assessment	Competency may be assessed in the work place or in a simulated work place setting

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Perform Operational Maintenance of Tools and Equipment
Unit Code	IND BIP2 08 0411
Unit Descriptor	This unit covers the knowledge, skills, and attitude required on checking condition, performing preventive maintenance and storing of tools and equipment based on the required performance standard.

Elements	Performance Criteria
1. Check condition of tools and equipment	<p>1.1 Materials, tools and equipment are identified according to classification and job requirements</p> <p>1.2 Non-functional tools and equipment are segregated and labeled according to classification</p> <p>1.3 Safety of tools and equipment are observed in accordance with manufacturer's instructions</p> <p>1.4 Condition of PPE are checked in accordance with manufacturer's instructions</p>
2. Perform basic preventive maintenance	<p>2.1 Appropriate lubricants are identified according to types of equipment</p> <p>2.2 Tools and equipment are lubricated according to preventive maintenance schedule or manufacturer's specifications</p> <p>2.3 Measuring instruments are checked and calibrated in accordance with manufacturer's instructions</p> <p>2.4 Tools are cleaned and lubricated according to standard procedures</p> <p>2.5 Defective instruments, equipment and accessories are inspected and replaced according to manufacturer's specifications</p> <p>2.6 Tools are inspected, repaired and replaced after use</p> <p>2.7 Work place is cleaned and kept in safe state in line with OHS regulations</p>
3. Store tools and equipment	<p>3.1 Forms are utilized in accordance with enterprise standard procedures</p> <p>3.2 Inventory of tools, instruments and equipment are conducted and recorded as per company practices</p> <p>3.3 Tools and equipment are stored safely in appropriate locations in accordance with manufacturer's specifications or company procedures</p> <p>3.4 Necessary documentation are completed in accordance with enterprise procedures and format</p>

Variables	Range
Materials	Including but not limited to: <ul style="list-style-type: none"> • Lubricants • Cleaning materials • Rust remover • Rugs • Spare parts
Tools and Equipment	Including but not limited to: <ul style="list-style-type: none"> • Tools Cutting tools - hacksaw, crosscut saw, rip saw Boring tools - auger, brace, grinlet, hand drill Holding tools - vise grip, C-clamp, bench vise Threading tools - die and stock, taps • Measuring instruments/equipment
PPE	Including but not limited to: <ul style="list-style-type: none"> • Goggles • Gloves • Safety shoes • Aprons/Coveralls
Forms	<ul style="list-style-type: none"> • Maintenance schedule forms • Requisition slip • Inventory Form • Inspection Form • Procedures

Evidence Guide	
Critical Aspects of Competency	Assessment requires that the candidate: <ul style="list-style-type: none"> • Selected and used appropriate processes, tools and equipment to carry out task • Identified functional and non-functional tools and equipment • Checked, lubricated and calibrated tools, equipment and instruments according to manufacturer's specifications • Replaced defective tools, equipment and their accessories • Observed and applied safe handling of tools and equipment and safety work practices • Prepared and submitted inventory report, where applicable • Maintained workplace in accordance with OHSA regulations • Stored tools and equipment safely in appropriate locations and in accordance with company practices

Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge and attitudes on:</p> <p>Safety Practices</p> <ul style="list-style-type: none"> • use of PPE • handling of tools and equipment • good housekeeping • materials, tools and equipment • types and uses of lubricants • types and uses of cleaning materials • types and uses of measuring instruments and equipment • preventive maintenance • methods, procedures and techniques
Underpinning Skills	<p>Demonstrate skills on:</p> <ul style="list-style-type: none"> • Preparing maintenance materials, tools and equipment • Proper handling of tools and equipment • Performing preventive maintenance • Following instructions
Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> • Workplace • Maintenance schedule • Maintenance materials, tools and equipment relevant to the proposed activity/task
Methods of Assessment	<p>Competency should be assessed through:</p> <ul style="list-style-type: none"> • Interview/Written Tests • Demonstration/Observation with Oral Questioning
Context of Assessment	<p>Competency assessment may occur in workplace or any appropriate simulated environment</p>

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Work In Team Environment
Unit Code	IND BIP2 09 0411
Unit Descriptor	This unit covers the skills, knowledge and attitudes to identify role and responsibility as a member of a team.

Elements	Performance Criteria
1. Describe team role and scope	<p>1.1 The role and objective of the team is identified from available sources of information</p> <p>1.2 Team parameters, reporting relationships and responsibilities are identified from team discussions and appropriate external sources</p>
2. Identify own role and responsibility within team	<p>2.1 Individual role and responsibilities within the team environment are identified</p> <p>2.2 Roles and responsibility of other team members are identified and recognized</p> <p>2.3 Reporting relationships within team and external to team are identified</p>
3. Work as a team member	<p>3.1 Effective and appropriate forms of communications used and interactions undertaken with team members who contribute to known team activities and objectives</p> <p>3.2 Effective and appropriate contributions made to complement team activities and objectives, based on individual skills and competencies and workplace context</p> <p>3.3 Observed protocols in reporting using standard operating procedures</p> <p>3.4 Contribute to the development of team work plans based on an understanding of team's role and objectives and individual competencies of the members.</p>

Variable	Range
Role and objective of team	<ul style="list-style-type: none"> • Work activities in a team environment with enterprise or specific sector • Limited discretion, initiative and judgment maybe demonstrated on the job, either individually or in a team environment
Sources of information	<ul style="list-style-type: none"> • Standard operating and/or other workplace procedures • Job procedures

	<ul style="list-style-type: none"> • Machine/equipment manufacturer's specifications and instructions • Organizational or external personnel • Client/supplier instructions • Quality standards • OHS and environmental standards
Workplace context	<ul style="list-style-type: none"> • Work procedures and practices • Conditions of work environments • Legislation and industrial agreements • Standard work practice including the storage, safe handling and disposal of chemicals • Safety, environmental, housekeeping and quality guidelines

Evidence Guide	
Critical Aspects of Competence	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> • Operated in a team to complete workplace activity • Worked effectively with others • Conveyed information in written or oral form • Selected and used appropriate workplace language • Followed designated work plan for the job • Reported outcomes
Underpinning Knowledge and Attitude	<p>Demonstrate knowledge and attitudes on:</p> <ul style="list-style-type: none"> • Communication process • Team structure • Team roles • Group planning and decision making
Underpinning Skills	<ul style="list-style-type: none"> • Communicate appropriately, consistent with the culture of the workplace
Resource Implications	<p>The following resources must be provided:</p> <ul style="list-style-type: none"> • Access to relevant workplace or appropriately simulated environment where assessment can take place • Materials relevant to the proposed activity or tasks
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Observation of the individual member in relation to the work activities of the group • Observation of simulation and or role play involving the participation of individual member to the attainment of organizational goal • Case studies and scenarios as a basis for discussion of issues and strategies in teamwork
Context for Assessment	<ul style="list-style-type: none"> • Competency may be assessed in workplace or in a simulated workplace setting • Assessment shall be observed while task are being undertaken whether individually or in group

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Participate in Workplace Communication
Unit Code	IND BIP2 10 0411
Unit Descriptor	This unit covers the knowledge, skills and attitudes required to gather, interpret and convey information in response to workplace requirements.

Elements	Performance Criteria
1. Obtain and convey workplace information	1.1 Specific and relevant information is accessed from appropriate sources 1.2 Effective questioning , active listening and speaking skills are used to gather and convey information 1.3 Appropriate medium is used to transfer information and ideas 1.4 Appropriate non- verbal communication is used 1.5 Appropriate lines of communication with supervisors and colleagues are identified and followed 1.6 Defined workplace procedures for the location and storage of information are used 1.7 Personal interaction is carried out clearly and concisely
2. Participate in workplace meetings and discussions	2.1 Team meetings are attended on time 2.2 Own opinions are clearly expressed and those of others are listened to without interruption 2.3 Meeting inputs are consistent with the meeting purpose and established protocols 2.4 Workplace interactions are conducted in a courteous manner 2.5 Questions about simple routine workplace procedures and matters concerning working conditions of employment are asked and responded to 2.6 Meetings outcomes are interpreted and implemented

<p>3. Complete relevant work related documents</p>	<p>3.1 Range of forms relating to conditions of employment are completed accurately and legibly</p> <p>3.2 Workplace data is recorded on standard workplace forms and documents</p> <p>3.3 Basic mathematical processes are used for routine calculations</p> <p>3.4 Errors in recording information on forms/ documents are identified and properly acted upon</p> <p>3.5 Reporting requirements to supervisor are completed according to organizational guidelines</p>
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Variable	Range
Appropriate sources	<ul style="list-style-type: none"> • Team members • Suppliers • Trade personnel • Local government • Industry bodies
Medium	<ul style="list-style-type: none"> • Memorandum • Circular • Notice • Information discussion • Follow-up or verbal instructions • Face to face communication
Storage	<ul style="list-style-type: none"> • Manual filing system • Computer-based filing system
Forms	<ul style="list-style-type: none"> • Personnel forms, telephone message forms, safety reports
Workplace interactions	<ul style="list-style-type: none"> • Face to face • Telephone • Electronic and two way radio • Written including electronic, memos, instruction and forms, non-verbal including gestures, signals, signs and diagrams
Protocols	<ul style="list-style-type: none"> • Observing meeting • Compliance with meeting decisions • Obeying meeting instructions

Evidence Guide	
Critical Aspects of Competence	<p>Assessment requires evidence that the candidate:</p> <ul style="list-style-type: none"> • Prepared written communication following standard format of the organization • Accessed information using communication equipment • Made use of relevant terms as an aid to transfer information effectively • Conveyed information effectively adopting the formal or informal communication
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge and attitudes on:</p> <ul style="list-style-type: none"> • Effective communication • Different modes of communication • Written communication • Organizational policies • Communication procedures and systems • Technology relevant to the enterprise and the individual's work responsibilities
Underpinning Skills	<p>Demonstrate skills on:</p> <ul style="list-style-type: none"> • Follow simple spoken language • Perform routine workplace duties following simple written notices • Participate in workplace meetings and discussions • Complete work related documents • Estimate, calculate and record routine workplace measures • Basic mathematical processes of addition, subtraction, division and multiplication • Ability to relate to people of social range in the workplace • Gather and provide information in response to workplace Requirements
Resource Implications	<p>This include:</p> <ul style="list-style-type: none"> • Fax machine • Telephone • Writing materials • Internet
Methods of Assessment	<p>Competency may be assessed through:</p> <ul style="list-style-type: none"> • Interview/Written Test • Observation/Demonstration with Oral Questioning
Context of Assessment	<ul style="list-style-type: none"> • Competency may be assessed individually in the actual workplace or through accredited institution

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Develop Business Practice
Unit Code	IND BIP2 11 0411
Unit Descriptor	This unit specifies the outcomes required to establish a business operation from a planned concept. It includes researching the feasibility of establishing a business operation, planning the setting up of the business, implementing the plan and reviewing operations once commenced.

Elements	Performance Criteria
1. Identify business opportunity	<p>1.1 Business opportunities are investigated and identified</p> <p>1.2 Feasibility study is undertaken to determine likely business viability</p> <p>1.3 Market research on product or service is undertaken</p> <p>1.4 Assistance with feasibility study of specialist and relevant parties is sought as required</p> <p>1.5 Impact of emerging or changing technology including e-commerce, on business operations are evaluated</p> <p>1.6 Practicability of business opportunity assessed in line with perceived risks, returns sought and resources available</p> <p>1.7 Business plan for operation is completed</p>
2. Identify personal business skills	<p>2.1 Financial and business skills available are identified and taken into account when business opportunities are researched</p> <p>2.2 Personal skills/attributes are assessed and matched against those perceived as necessary for a particular business opportunity</p> <p>2.3 Business risks are identified and assessed according to resources available and personal preferences</p>
3. Plan for establishment of business operation	<p>3.1 Business structure and operations are determined and documented</p> <p>3.2 Procedures to guide operations are developed and documented</p> <p>3.3 Financial backing for business operation is secured</p> <p>3.4 Business legal and regulatory requirements are identified and complied</p> <p>3.5 Human and physical resources required to commence business operation are determined</p>

	3.6 Recruitment strategies are developed and implemented
4. Implement establishment plan	<p>4.1 Marketing of business operation is undertaken</p> <p>4.2 Physical and human resources to implement business operation are obtained</p> <p>4.3 Operational unit to support and coordinate business operation is established</p> <p>4.4 Monitoring process for managing operation is developed and implemented</p> <p>4.5 Legal documents are carefully maintained and relevant records are kept and updated to ensure validity and accessibility</p> <p>4.6 Contractual procurement rights for goods and services including contracts with relevant people, negotiated and secured as required in accordance with the business plan</p> <p>4.7 Options for leasing/ownership of business premises identified and contractual arrangements completed in accordance with the business plan</p>
5. Review implementation process	<p>5.1 Review process for implementation of business operation is developed and implemented</p> <p>5.2 Improvements in business operation and associated management process are identified</p> <p>5.3 Identified improvements are implemented and monitored for effectiveness</p>

Variable	Range
Business opportunities maybe influenced by:	<ul style="list-style-type: none"> • expected financial viability • skills of operator • amount and types of finance available • returns expected or required by owners • likely return on investment • finance required • lifestyle issues
Business viability may include:	<ul style="list-style-type: none"> • opportunities available • market competition • timing/ cyclical considerations • skills available • resources available • location and/ or premises available • risk related to a particular business opportunity, especially • in regard to Occupational Health and Safety and • environmental considerations

Specialist and relevant parties	<ul style="list-style-type: none"> • Chamber of commerce • Financial planners and financial institution representatives, business planning specialists and marketing specialists • accountants • lawyers and providers of legal advice • government agencies • industry/trade associations • online gateways • business brokers/business consultants
Human and physical resources may include:	<ul style="list-style-type: none"> • software and hardware • office premises • communications equipment • specialist services through outsourcing, contracting and consultancy • staff • vehicles
Personal skills/attributes may include:	<ul style="list-style-type: none"> • technical and/ or specialist skills • business knowledge and skills • entrepreneurship • willingness to take risks
Business risks may be affected by and may include but are not restricted to:	<ul style="list-style-type: none"> • occupational health and safety and environmental considerations • relevant legislative requirements • security of investment • market competition • security of premises/ location • supply and demand • resources available
Resources may include:	<ul style="list-style-type: none"> • staff • money • time • equipment • space
Operational unit refers to:	<ul style="list-style-type: none"> • office location staffed with required personnel and equipped to service and support business • home-based site or other location such as leased or owned property
Legal documents may include:	<ul style="list-style-type: none"> • partnership agreements, • constitution documents, • statutory books for companies (Register of Members, Register of Directors and Minute Books), • Certificate of Incorporation, • Franchise Agreements and financial documentation, • appropriate software for financial records

	<ul style="list-style-type: none"> • recordkeeping including personnel, financial, taxation, OHS and environmental
Contracts with relevant people may include:	<ul style="list-style-type: none"> • owners, suppliers, • employees, landlords, • agents, distributors, • customers or any person with whom the business has, or seeks to have, a performance-based relationship

Evidence Guide	
Critical Aspects of Competence	<p>A person must be able to provide evidence:</p> <ul style="list-style-type: none"> • that a business operation has been planned and implemented from initial research into feasibility of the business and completion of the plan, through to implementing the plan and commencing operations • the ability to evaluate the results of research and assess the likely viability and practicability of a business opportunity, taking into account the current business/market climate and resources available
Underpinning Knowledge and Attitudes	<p>Demonstrate knowledge and attitudes on:</p> <ul style="list-style-type: none"> • Federal and regional government legislative requirements affecting business operations, especially in regard to occupational health and safety (OHS), equal employment opportunity (EEO), industrial relations and anti-discrimination • Technical or specialist skills relevant to the business operation • Financing options • Business systems and operations • Relevant marketing, management, sales and financial concepts • Methods for researching business opportunities • Principles of risk management relevant to the business • Methods of identifying relevant specialist services to complement the business • Forms and administrative systems • Services available and charges • Planning and control systems (sales, • Advertising and promotion, distribution and logistics • Financial recording systems • Legal rights and responsibilities • Record keeping duties

	<ul style="list-style-type: none"> Operational factors relating to the business (provision of professional services, products)
Underpinning Skills	<p>Demonstrate skills on:</p> <ul style="list-style-type: none"> Literacy skills to interpret legal requirements, company policies and procedures and immediate, day-to-day demands Marketing skills Business planning skills Entrepreneurial skills Problem-solving skills OHS skills Time management skills Belief in services and products offered by the business Communication skills including questioning, clarifying, reporting, and giving and receiving constructive feedback Technical and analytical skills to interpret business documents, reports and financial statements and projections Ability to relate to people from a range of social, cultural and ethnic backgrounds and physical and mental abilities Problem solving skills to develop contingency plans Using computers and software packages to record and manage data and to produce reports Literacy skills to enable interpretation of business information, numeracy skills for data analysis to aid research Research skills to identify a business opportunity and to conduct a feasibility study Analytical skills to assess personal attributes and to identify business risks Observation skills for identifying appropriate people, resources and to monitor work
Resource Implications	<p>The following resources should be provided:</p> <ul style="list-style-type: none"> Access to relevant workplace documentation, financial records, and equipment
Methods of Assessment	<p>Competence may be assessed through:</p> <ul style="list-style-type: none"> Interview / Written Test Observation/Demonstration with Oral questioning
Context for Assessment	<p>Competence may be assessed in the workplace or in a simulated work environment</p>

Occupational Standard: Bamboo Industrial Processing Level II	
Unit Title	Apply Continuous Improvement Processes (Kaizen)
Unit Code	IND BIP2 12 1012
Unit Descriptor	This unit of competence covers the exercise of good workplace practice and effective participation in quality improvement teams. Personnel are required to ensure the quality and integrity of their own work, detect non-conformances and work with others to suggest improvements in productivity and quality.

Elements	Performance Criteria
1. Satisfy quality system requirements in daily work	1.1 Access information on quality system requirements for own job function 1.2 Record and report quality control data in accordance with quality system 1.3 Follow quality control procedures to ensure products, or data, are of a defined quality as an aid to acceptance or rejection 1.4 Recognize and report non-conformances or problems 1.5 Conduct work in accordance with sustainable energy work practices 1.6 Promote sustainable energy principles and work practices to other workers
2. Analyze opportunities for corrective and/or optimization action	2.1 Compare current work practices, procedures and process or equipment performance with requirements and/or historical data or records 2.2 Recognize variances that indicate abnormal or sub-optimal performance 2.3 Collect and/or evaluate batch and/or historical records to determine possible causes for sub-optimal performance 2.4 Use appropriate quality improvement techniques to rank the probabilities of possible causes
3. Recommend corrective and/or optimization actions	3.1 Analyze causes to predict likely impacts of changes and decide on the appropriate actions 3.2 Identify required changes to standards and procedures and training 3.3 Report recommendations to designated personnel
4. Participate in the implementation of recommended actions	4.1 Implement approved actions and monitor performance following changes to evaluate results 4.2 Implement changes to systems and procedures to eliminate possible causes

	4.3 Document outcomes of actions and communicate them to <i>relevant personnel</i>
5. Participate in the development of continuous improvement strategies	<p>5.1 Review all relevant features of work practice to identify possible contributing factors leading to sub-optimal performance</p> <p>5.2 Identify options for removing or controlling the risk of sub-optimal performance</p> <p>5.3 Assess the adequacy of current controls, quality methods and systems</p> <p>5.4 Identify opportunities to continuously improve performance</p> <p>5.5 Develop recommendations for continual improvements of work practices, methods, procedures and equipment effectiveness</p> <p>5.6 Consult with appropriate personnel to refine recommendations before implementation of approved improvement strategies</p> <p>5.7 Document outcomes of strategies and communicate them to relevant personnel</p>

Variable	Range
Quality control procedures	<p>Quality control procedures may include:</p> <ul style="list-style-type: none"> • standards imposed by regulatory and licensing bodies • enterprise quality procedures • working to a customer brief or batch card and associated quality procedures • checklists to monitor job progress against agreed time, costs and quality standards • preparation of sampling plans • the use of hold points to evaluate conformance • the use of inspection and test plans to check compliance
Methods for statistical analysis	<p>Methods for statistical analysis may include:</p> <ul style="list-style-type: none"> • means • median • mode • ranges • standard deviations • statistical sampling procedures
Problem solving techniques	<p>Problem solving techniques may include:</p> <ul style="list-style-type: none"> • identifying inputs and outputs • sequencing a process • identifying and rectifying a problem step • root cause analysis • implementing preventative strategies

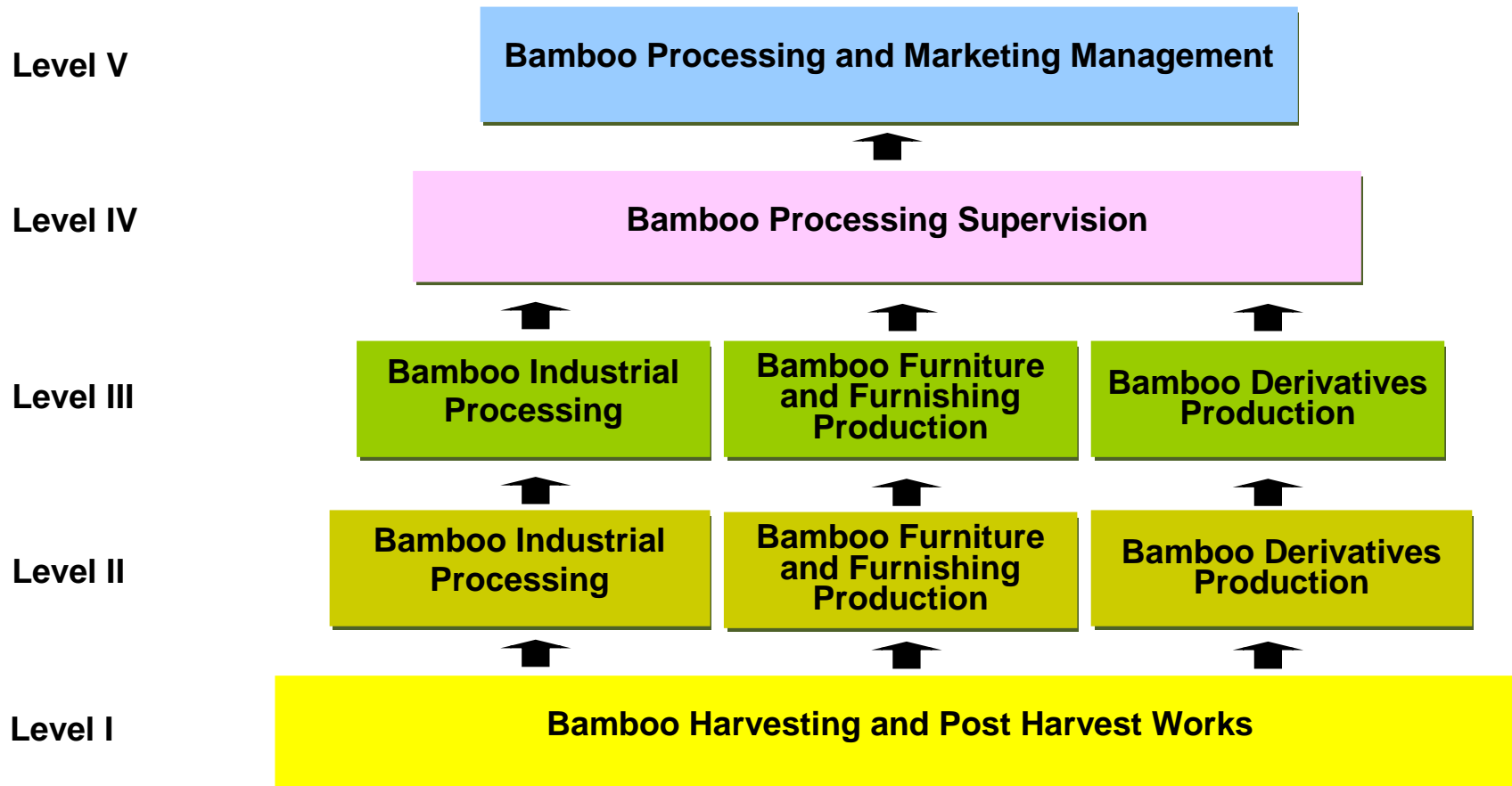
Quality improvement tools and techniques	<p>Quality improvement tools and techniques may include:</p> <ul style="list-style-type: none"> • run charts, control charts, histograms and scattergrams to present routine quality control data • plan, do, check, act (PDCA) • Ishikawa fishbone diagrams and cause and effect diagrams • logic tree • similarity/difference analysis • Pareto charts and analysis • force field/strength weakness opportunities threats (SWOT) analysis
Sustainable energy principles and work practices	<p>Sustainable energy principles and work practices may include:</p> <ul style="list-style-type: none"> • examining work practices that use excessive electricity • switching off equipment when not in use • regularly cleaning filters • insulating rooms and buildings to reduce energy use • recycling and reusing materials wherever practicable • minimizing process waste
Relevant personnel	<p>Communication to relevant personnel may involve:</p> <ul style="list-style-type: none"> • supervisors, managers and quality managers • administrative, laboratory and production personnel • internal/external contractors, customers and suppliers
Reporting	<p>Reporting may include:</p> <ul style="list-style-type: none"> • verbal responses • data entry into laboratory or enterprise database • brief written reports using enterprise proformas
Quality improvement opportunities	<p>Quality improvement opportunities could include improved:</p> <ul style="list-style-type: none"> • production processes • hygiene and sanitation procedures • reductions in waste and re-work • laboratory layout and work flow • safety procedures • communication with customers • methods for sampling, testing and recording data
Occupational health and safety (OHS) and environmental management requirements	<p>OHS and environmental management requirements:</p> <ul style="list-style-type: none"> • all operations must comply with enterprise OHS and environmental management requirements, which may be imposed through regional or federal legislation - these requirements must not be compromised at any time • all operations assume the potentially hazardous nature of samples and require standard precautions to be applied • where relevant, users should access and apply current industry understanding of infection control issued by the Ministry of Health

Evidence Guide	
Critical Aspects of Competence	<p>Assessors should ensure that candidates can:</p> <ul style="list-style-type: none"> • use the enterprise's quality systems and business goals as a basis for decision making and action • apply all relevant procedures and regulatory requirements to ensure the quality and integrity of the products/services or data provided • apply and promote sustainable energy principles and work practices • detect non-conforming products or services in the work area • follow enterprise procedures for documenting and reporting information about quality • contribute effectively within a team to recognize and recommend improvements in productivity and quality • apply effective problem solving strategies • implement and monitor improved practices and procedures
Underpinning Knowledge and Attitudes	<p>Demonstrates knowledge of:</p> <ul style="list-style-type: none"> • specifications for laboratory products and services in the candidate's work area • quality requirements associated with the individual's job function and/or work area • scientific and technical knowledge underpinning the processes, procedures, equipment and instrumentation associated with the candidate's work tasks and duties • workplace procedures associated with the candidate's regular technical duties • sustainable energy principles • relevant health, safety and environment requirements • layout of the enterprise, divisions and laboratory • organizational structure of the enterprise • lines of communication • role of laboratory services to the enterprise and customers • methods of making/recommending improvements • Standards, procedures and/or enterprise requirements
Underpinning Skills	<p>Demonstrates skills to:</p> <ul style="list-style-type: none"> • applying problem solving techniques and strategies • applying statistical analysis and statistical sampling procedures • detecting non-conforming products or services in the work area • documenting and reporting information about quality • contributing effectively within a team to recognize and recommend improvements in productivity and quality • implementing and monitoring improved practices and

	<p>procedures</p> <ul style="list-style-type: none"> • organizing, prioritizing activities and items • reading and interpreting documents describing procedures • recording activities and results against templates and other prescribed formats • working with others
Resources Implication	<p>Access may be required to:</p> <ul style="list-style-type: none"> • workplace procedures and plans relevant to work area • specifications and documentation relating to planned, currently being implemented, or implemented changes to work processes and procedures relevant to the candidate • documentation and information in relation to production, waste, overheads and hazard control/management • reports from supervisors/managers • case studies and scenarios to assess responses to contingencies • enterprise quality manual and procedures • quality control data/records • customer complaints and rectifications
Methods of Assessment	<p>Competence in this unit may be assessed by using a combination of the following to generate evidence:</p> <ul style="list-style-type: none"> • demonstration in the workplace • suitable simulation • case studies/scenarios (particularly for assessment of contingencies, improvement scenarios, and so on) • verified reports of improvements suggested and implemented by the candidate individually <p>Those aspects of competence dealing with improvement processes could be assessed by the use of suitable simulations and/or a pilot plant and/or a range of case studies and scenarios.</p> <p>In all cases, practical assessment should be supported by questions to assess essential knowledge and those aspects of competence which are difficult to assess directly.</p>
Context of Assessment	<p>Competence may be assessed in the work place or in a simulated workplace setting / environment.</p>

Sector: Industry Development

Sub-Sector: Bamboo and Craft Production



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This occupational standard was developed on April 2011 in Center of Excellence for Engineering (CEE) Addis Ababa Ethiopia.

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