



Australian Government

Department of Education, Employment and Workplace Relations

FPICOT3248A Dry timber in solar assisted kilns

Release: 1

FPICOT3248A Dry timber in solar assisted kilns

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit describes the outcomes required to dry timber in solar assisted kilns to appropriate moisture contents and stress levels whilst keeping degrade to a minimum, including evaluation of energy savings and sustainable use principles

General workplace legislative and regulatory requirements apply to this unit; however there are no specific licensing or certification requirements at the time of publication

Application of the Unit

Application of the unit

The unit involves drying hardwood and softwood timber in a range of solar assisted kilns in timber and wood products production enterprises of all sizes

The skills and knowledge required for competent workplace performance are to be used within the scope of the person's job and authority

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Not Applicable

Employability Skills Information

Employability skills This unit contains employability skills

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare for drying	<p>1.1. Applicable Occupational Health and Safety (OHS), environmental, legislative and organisational requirements relevant to drying timber are identified and followed</p> <p>1.2. Work order is reviewed and checked with appropriate personnel</p> <p>1.3. Type and quantity of timber to be dried is determined and acquired from the conversion process</p> <p>1.4. Racks to be dried are visually assessed for consistent drying characteristics and adjusted to meet site requirements</p> <p>1.5. Equipment is selected appropriate to work requirements and checked for operational effectiveness in line with manufacturer's recommendations</p> <p>1.6. Oven sections and sample boards are selected and cut in line with standard operating procedures and initial moisture content is established</p> <p>1.7. Drying process is planned in line with site procedures</p> <p>1.8. Communication with others is established and maintained in line with OHS requirements</p>
2. Load kiln and control kiln conditions	<p>2.1. Pre start-up checks are carried out on equipment in line with site requirements</p> <p>2.2. Emergency shutdown procedures are followed in the case of alarm being triggered</p> <p>2.3. Kiln is loaded with racks selected for processing and loading is completed and reported</p> <p>2.4. Baffles and/or blankets are positioned in line with standard operating procedures</p>
3. Monitor kiln conditions	<p>3.1. Moisture content is measured, monitored and routinely compared with anticipated levels in line with the drying plan, whilst observing standard operating procedures</p> <p>3.2. Kiln control settings are regularly adjusted and routinely checked to site drying schedules</p> <p>3.3. Kiln charge is monitored for drying degrade and reconditioning or high humidity treatment conducted as required</p>
4. Check timber quality	<p>4.1. Drying end point is identified and kiln made safe</p>

ELEMENT	PERFORMANCE CRITERIA
on completion of drying	<p>for entry</p> <p>4.2. Kiln is opened and moisture content of processed timber checked in line with anticipated target moisture content</p> <p>4.3. Drying stresses samples are prepared and measured as suitable for target use</p> <p>4.4. Unsuitable drying stresses are rectified</p> <p>4.5. Drying quality is visually assessed and sub-standard material is rejected and disposed of in line with site and environmental requirements</p>
5. Unload kiln and move or store timber	<p>5.1. Moisture probes and baffles and/or blankets are removed from timber in line with standard operating procedures</p> <p>5.2. Timber is directed and moved to storage or processing operations and packs are labelled in line with site requirements</p> <p>5.3. Work area is cleaned in line with site requirements</p> <p>5.4. Records and reports are completed for appropriate personnel</p>

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This describes the essential skills and knowledge and their level required for this unit

Required skills

- Technical skills sufficient to dry timber, use and maintain relevant tools, machinery and equipment, including using moisture measuring techniques
- Communication skills sufficient to use appropriate communication and interpersonal techniques with colleagues and others
- Literacy skills sufficient to accurately record and report workplace information, and maintain documentation
- Numeracy skills sufficient to calculate moisture content; estimate timber volumes and weights and analyse statistical data
- Problem solving skills sufficient to identify problems and equipment faults and demonstrate appropriate response procedures

Required knowledge

- Applicable Commonwealth, State or Territory legislative, regulatory or

REQUIRED SKILLS AND KNOWLEDGE

certification requirements and codes of practice relevant to the full range of processes for drying timber

- Environmental protection requirements, including the safe disposal of waste material
- Organisational and site standards, requirements, policies and procedures for drying timber
- Energy efficiency and savings obtained from various types of solar kilns
- Established communication channels and protocols
- Problem identification and resolution
- Types of tools and equipment and procedures for their safe use, operation and maintenance
- Species identification for a range of timbers likely to be encountered
- Drying techniques including development and relief of drying stresses
- Operation of solar assisted kilns
- Types of timber degrades and how it develops
- Basic knowledge of wood-water relationships in the drying process
- Methods of visual inspection
- Characteristics of timber
- Quality and distribution processes
- Storage systems and labelling
- Appropriate mathematical procedures for estimation and measurement
- Procedures for the recording, reporting and maintenance of workplace information

Evidence Guide

EVIDENCE GUIDE

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment

A person who demonstrates competency in this unit must be able to provide evidence that they can safely and efficiently dry timber in solar assisted kilns to appropriate moisture contents and stress levels whilst keeping degrade to a minimum

Critical aspects for assessment and evidence required to demonstrate competency in this unit

The evidence required to demonstrate competency in this unit must be relevant to and satisfy all of the requirements of the elements of this unit and include demonstration of:

EVIDENCE GUIDE

- following applicable Commonwealth, State or Territory legislative and regulatory requirements and codes of practice relevant to drying timber in solar assisted kilns
 - following organisational policies and procedures relevant to drying timber in solar assisted kilns
 - consistently achieving target end moisture contents with acceptable levels of drying degrade
 - selecting appropriate timber drying schedules for a range of species and products
- Context of and specific resources for assessment**
- Competency is to be assessed in the workplace or realistically simulated workplace
 - Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints
 - Assessment of required knowledge, other than confirmatory questions, will usually be conducted in an off-site context
 - Assessment is to comply with relevant regulatory or Australian Standards requirements
 - The following resources should be made available:
 - workplace location or simulated workplace
 - materials and equipment relevant to undertaking work applicable to this unit
 - specifications and work instructions
- Method of assessment**
- Assessment must satisfy the endorsed Assessment Guidelines of the FPI11 Training Package
 - Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of required knowledge
 - Assessment may be by direct observation of tasks, with questioning on required knowledge and it must also reinforce the integration of employability skills
 - Assessment methods must confirm the ability to access and correctly interpret and apply the required knowledge
 - Assessment may be applied under project-related conditions (real or simulated) and require evidence of process
 - Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred

EVIDENCE GUIDE

to other circumstances

- Assessment may be in conjunction with assessment of other units of competency
- The assessment environment should not disadvantage the candidate
- Assessment practices should take into account any relevant language or cultural issues related to Aboriginality, gender or language backgrounds other than English
- Where the participant has a disability, reasonable adjustment may be applied during assessment
- Language and literacy demands of the assessment task should not be higher than those of the work role

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

OHS requirements:

are to be in line with applicable Commonwealth, State or Territory legislation and regulations, and organisational safety policies and procedures, and may include:

- personal protective equipment and clothing
- safety equipment
- first aid equipment
- fire fighting equipment
- hazard identification and risk control
- fatigue management
- elimination of hazardous materials and substances
- knowledge of biohazards applicable to drying timber in solar kilns
- manual handling including shifting, lifting and carrying

RANGE STATEMENT

- kiln entry requirements
- Environmental requirements may include:**
- legislation
 - organisational policies and procedures
 - workplace practices
- Legislative requirements:** are to be in line with applicable Commonwealth, State or Territory legislation, regulations, certification requirements and codes of practice and may include:
- award and enterprise agreements
 - industrial relations
 - Australian Standards
 - confidentiality and privacy
 - OHS
 - the environment
 - equal opportunity
 - anti-discrimination
 - relevant industry codes of practice
 - duty of care
- Organisational requirements may include:**
- legal
 - organisational and site guidelines
 - policies and procedures relating to own role and responsibility
 - sustainability certification schemes
 - procedural manuals
 - quality and continuous improvement processes and standards
 - OHS, emergency and evacuation procedures
 - ethical standards
 - recording and reporting requirements
 - equipment use and maintenance and storage requirements
 - environmental management requirements (waste minimisation and disposal, recycling and re-use guidelines)
- Timber may include:**
- native timber species
 - imported timber species
 - preservative treated timber
- Work order is to include:**
- instructions for the drying of timber
- and may include:
- species

RANGE STATEMENT

- colour
 - type
 - width
 - length
 - thickness
 - quantity
 - target moisture content
 - instructions for the environmental monitoring of work and procedures
 - environmental care requirements relevant to the work
- Appropriate personnel** may include:
- supervisors
 - suppliers
 - clients
 - colleagues
 - managers
- Drying** is the process of removing water from timber whilst minimising degrade until it reaches a target moisture content suitable for intended use
- Conversion process** may include:
- sawing process
 - yard storage
 - shed or other kiln storage
 - delivery of material to the kiln site
- Racks** are packets of timber with racking sticks between each row of boards to facilitate evaporation of water from the timber
- Visual assessment** is to include:
- the assessment of materials to determine stacking quality and faults
- and may include:
- stability
 - squareness of ends
 - spacing of strips
 - support to minimise warping
- Equipment** must include:
- solar assisted kilns
 - procedures for equipment lock-out and safe entry, i.e. protecting operators and co-workers from accidental injury by isolating the machinery from the power source

RANGE STATEMENT

and may include:

- supplementary heat plant
- forklift or loader
- traverser and trolley

Sample Boards

are boards selected to be used to monitor moisture loss during the drying process

Moisture content

is the amount of moisture in timber at any given time

and must include:

- assessment via capacitance, resistance and oven-dry methods

Drying plan

is the anticipated process the timber will undergo to remove moisture to target moisture content and may include:

- air drying
- sheltered air drying
- pre-drying
- reconditioning
- high humidity treatments
- final kiln drying
- equalising
- conditioning

Communication may include:

- verbal and non-verbal language
- constructive feedback
- active listening
- questioning to clarify and confirm understanding
- use of positive, confident and cooperative language
- electronic alarm, alert and notification systems associated with the kiln control software

Pre start-up checks

are conducted to ensure equipment has been set-up correctly, the systems are performing accurately and equipment is operating to optimum performance

Emergency shutdown

is the immediate shutting off of the equipment to prevent an accident or prevent damage to the

RANGE STATEMENT

machine or product

Kiln

See *equipment*

Baffles and/or blankets

are to assist in the drying process by directing air flow

Drying schedule

is the drying set points based on moisture content, moisture loss or time

Drying degrade may include:

- surface checks
- internal checks
- end splits
- collapse
- excessive distortion
- bow
- spring
- twist
- cup
- case Hardening

Drying end point

is the point in time when the drying process will be completed and the target moisture content achieved

Target moisture content

is the moisture content the kiln operator is trying to obtain from any given batch of timber

Drying stresses

are stress levels that develop through the drying process likely to affect timber performance in service

Rectified

refers to the amelioration of excessive drying stresses and may include:

- high humidity treatments
- conditioning
- re-drying
- letting timber equalise
- See *drying degrade*

Sub-standard material**Disposal may include:**

- processing to a lower grade of product
- recovery of heat value
- recovery as ungraded product

Moisture probes

are probes pierced into representative boards

RANGE STATEMENT

which

provide moisture readings to assist in monitoring the

drying schedule

and may include

- resistance or electromagnetic property probes

Movement of material may include:

the use of:

- conveyor belt systems
- track systems or lifting equipment

lifting equipment may include:

- fork lifts
- slings
- trolley jacks
- gantry cranes and loaders
- cross transfer trucks

assistance with lifting may include the involvement of two or more personnel to lift materials manually or to guide the movement of mechanical equipment

Storage may include:

the use of:

- storage racks
- storage bays
- stacks
- modularised storage components
- temporary stacking bays (stand, frame or ground)

and may be divided into:

- standard product classification
- product designation
- size, dimension
- stack number
- weight
- grade
- shelf life
- stock rotation position
- sweeping
- removing debris

Cleaning

RANGE STATEMENT**Records and reports** may include:

- removing rust build up
- moisture content achieved
- drying schedule used
- product type
- size
- inspection
- grading and labelling outcomes
- storage locations
- quality outcomes
- hazards
- incidents or equipment malfunctions

and may be:

- manual
- using a computer-based system or another appropriate organisational communication system

Unit Sector(s)

Not Applicable

Competency field**Competency field** Common Technical