Title	**Demonstrate knowledge of wood drying, wood moisture content measurement, and establish equipment correction factor**		
Level	**3**	**Credits**	**10**

Purpose	People credited with this unit standard are able to: demonstrate knowledge of dry and wet bulb reading and the factors affecting the drying of wood; identify drying factors that can cause wood defects; explain benefits of kiln processes and compare kiln characteristics; describe the operation of continuous drying kiln (CDK) systems; and measure moisture content of wood and establish correction factor for a moisture meter.

Classification	Solid Wood Manufacturing > Timber Drying and Treatment

Available grade	Achieved

Guidance Information

1 Legislation
Health and Safety at Work Act 2015.
Resource Management Act 1991.

2 Definitions
Accepted industry practice – approved codes of practice and standardised procedures accepted by the wider wood manufacturing industry as examples of best practice.
MC refers to moisture content.
Workplace procedures refer to documented policies and procedures set by the organisation carrying out the work, and to documented or other directions provided to staff, and applicable to the tasks being carried out. They may include but are not limited to – standard operating procedures, site specific procedures, site safety procedures, equipment operating procedures, quality assurance procedures, product quality specifications, references, approved codes of practice, housekeeping standards, environmental considerations, on-site briefings, supervisor's instructions, and procedures to comply with legislative and local body requirements relevant to the industry sector.

3 Assessment information
All activities and evidence must meet workplace procedures and accepted industry practice.

4 Recommended unit standard for entry: Unit 162, *Demonstrate knowledge of the principles of wood drying*.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of dry and wet bulb reading and the factors affecting the drying of wood.

Performance criteria

1.1 Wet and dry bulb temperature readings are explained in terms of what each one does and what they measure.

1.2 Dry and wet bulb temperatures, drying time, and start time are read and interpreted from kiln charts.

1.3 Factors that are intrinsic to the wood and their effects on drying time are identified.

Range species, size, treatment, heart or sapwood, wood density, delay between cutting and drying, initial moisture content.

1.4 Effects of sawn timber characteristics on drying quality are explained.

Range species, grade; width; thickness; flat, quarter or mixed sawn.

1.5 Effects of temperature, humidity, and airflow on speed of drying are explained.

1.6 Effects of altering processing variables on speed of drying are explained.

Range packet build and fillets; stack width; batching of timber sizes; baffling.

Outcome 2

Identify drying factors that can cause wood defects.

Performance criteria

2.1 Wood defects that can be caused by the drying process are identified.

Range collapse, cup, spring (crook), bow, twist, case hardening, surface checking, end splitting, honeycombing.

2.2 Methods of reducing defects during the drying process are identified.

Range use of correct schedules; fillets; packet builds and fillet placement; restraining weights.

Outcome 3

Explain benefits of kiln processes and compare kiln characteristics.

Performance criteria

3.1 Benefits of pre-steaming, equalisation, and reconditioning are explained.

3.2 Kiln characteristics are compared.

Range characteristics may include but is not limited to – operating temperatures, air velocity, ability or need to recondition, products dried, drying time;
kilns – low temp, conventional temp, accelerated conventional temperature (ACT), high temp.

Outcome 4

Describe the operation of continuous drying kiln (CDK) systems.

Range single pass, double pass.

Performance criteria

4.1 The components of CDK systems are identified and their operation described.

4.2 The efficiency of the CDK technology is compared with batch kilns.

4.3 The timber or lumber drying process using a CDK system is described.

Outcome 5

Measure moisture content of wood and establish correction factor for a moisture meter.

Range different species, different densities, sapwood, heartwood, temperature.

Performance criteria

5.1 Samples are selected

Range species, basic density, sapwood, heartwood, temperature, treatment, moisture contents between six and twenty eight percent.

5.2 MC readings are taken and recorded.

5.3 Wood samples are prepared, and the true MC of each sample is determined by the oven drying method.

5.4 Correction factor is determined by graphing MC reading against true (actual) MC, drawing the line of best fit, and interpreting the graph.

Range MC for a minimum of thirty individual samples are required.

5.5 Capability of the meter is identified in terms of minimum and maximum MC that can be determined accurately, and temperatures at which the meter operates accurately.

Planned review date	31 December 2024

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	18 December 2006	31 December 2014
Review	2	18 April 2013	N/A
Review	3	28 May 2020	N/A

Consent and Moderation Requirements (CMR) reference	0013

This CMR can be accessed at http://www.nzqa.govt.nz/framework/search/index.do.

Comments on this unit standard

Please contact Competenz qualifications@competenz.org.nz if you wish to suggest changes to the content of this unit standard.