**NZQA**

**Approved**

Achievement standard: 91083 Version 3

Standard title: Demonstrate understanding of basic concepts used in processing

Level: 1

Credits: 4

Resource title: Processing plywood

Resource reference: Processing Technologies VP-1.61 v2

Vocational pathway: Primary Industries

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| Quality assurance status | These materials have been quality assured by NZQA. NZQA Approved number A-A-02-2015-91083-02-7380 |
| Authenticity of evidence | Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material.Using this assessment resource without modification may mean that learners’ work is not authentic. Assessors/ educators may need to change figures, measurements or data sources or set a different context or topic to be investigated or a different text to read or perform. |

Vocational Pathway Assessment Resource

Achievement standard: 91083

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Level: 1

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Vocational pathway: Primary Industries

Learner instructions

# Introduction

This assessment activity requires you to demonstrate your understanding of basic concepts used in making plywood.

You are going to be assessed on how comprehensively you demonstrate understanding of basic concepts used in processing.

The following instructions provide you with a way to structure your work so you can demonstrate what you have learnt and achieve success in this standard.

Assessor/educator note: It is expected that the assessor/educator will read the learner instructions and modify them if necessary to suit their learners.

# Task

Create an individual presentation that demonstrates your understanding of the basic concepts used in processing materials to make plywood. You need to show that you are able to interpret information on the processes and operations used to make plywood, the role of testing in processing operations, and the safe practices used to process materials to make plywood.

## Investigate

Carry out some initial investigations. Working in pairs or small groups, find out about how materials are processed to make plywood. Gather information about:

* the processing operations and their differences
* the order in which the operations are carried out, and the reason for this order
* the tests that are applied during the processing, when they are applied, and how they informed the processing to ensure the end product had the required qualities, for example how the tests provided information that helped with the next step or provided guidance on changes that needed to be made
* the safety procedures followed
* why a processing sequence failed to produce the desired result.

## Present your findings

Use the results of your investigations to compile your presentation and include the following:

* Explain processing operations, and how these achieve the resulting outcomes in plywood. Ensure that you include at least one processing operation from each of the following categories:
	+ measuring, shaping, or finishing (e.g. weighing, counting, grinding, slicing, moulding, laminating)
	+ containment, contamination prevention, or disposal (e.g. hygienic handling of materials, sanitising, working aseptically, safe disposal of biologically active materials)
	+ mixing, extracting, separating, or growing (e.g. liquid mixing, blending)
	+ heating, cooling, or reacting (e.g. liquid heating, heating a solid, reaction with hardener).
* Describe the role, and explain the importance of tests in processing operations when making plywood:
	+ testing refers to testing for such things as temperature, colour, size and shape, whether the product is set or matured, dust contamination, surface finish, absence of air holes, hardness.
* Describe safe practices in processing materials to make plywood.
* Describe how and explain why processing operations and tests are combined in a processing sequence when making plywood.
* Compare and contrast processing operations and tests and their suitability for different materials and/or ingredients and/or purposes within plywood making.
* Discuss the relationship/s between processing operations, tests, and outcomes required in plywood making.

Include annotated flow diagrams, written discussion, annotated photos or short video clips of the experimenting you did and/or diagrams where appropriate.

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Assessor/Educator guidelines

# Introduction

The following guidelines are supplied to enable assessors/educators to carry out valid and consistent assessment using this internal assessment resource.

As with all assessment resources, education providers will need to follow their own quality control processes. Assessors/educators must manage authenticity for any assessment from a public source, because learners may have access to the assessment schedule or exemplar material. Using this assessment resource without modification may mean that learners' work is not authentic. The assessor/educator may need to change figures, measurements or data sources or set a different context or topic. Assessors/educators need to consider the local context in which learning is taking place and its relevance for learners.

Assessors/educators need to be very familiar with the outcome being assessed by the achievement standard. The achievement criteria and the explanatory notes contain information, definitions, and requirements that are crucial when interpreting the standard and assessing learners against it.

# Context/setting

This activity requires learners to demonstrate their comprehensive understanding of basic concepts used in making plywood.

# Conditions

Learners could work independently or in groups to develop their understanding, but they need to create their presentation independently, and will be assessed individually.

# Resource requirements

The assessor/educator will provide learners with opportunities to explore a range of processing operations, testing techniques and appropriate safety procedures in processing.

Learners may require access to materials needed to experiment with plywood.

# Additional information

None.

# Assessment schedule: Processing Technologies 91083 – Processing plywood

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| Evidence/Judgements for Achievement | Evidence/Judgements for Achievement with Merit | Evidence/Judgements for Achievement with Excellence |
| The learner demonstrates understanding of basic concepts used in processing materials to make plywood by:* describing safe practices in processing

For example the learner describes:* + the safety gear that must be worn, and ventilation requirements when working with glue
	+ the safe use of machinery and equipment.
* describing processing operations and identifying the resulting outcomes

For example:The learner describes at least one processing operation from each of the following categories: * + measuring, shaping or finishing e.g. cutting the logs to length, measuring the quantities of powder/chemicals/water needed for the glue mix, measuring the veneer, cross graining and sawing the sheets to size
	+ containment, contamination prevention, or disposal e.g. minimising dust, minimising excess mixed glue, minimising emissions from dryers and hot presses
	+ mixing, extracting, separating, growing e.g. mixing glue, debarking, peeling off the veneer
	+ heating, cooling or reacting e.g. adding the hardener, steam preconditioning logs, drying the veneer, hot pressing plywood sheets together.

The learner describes how processing operations change for different grades, thicknesses and uses.* describing the role of tests in processing operations and how processing operations and tests can be combined in a processing sequence

For example the learner describes:* + how samples are subjected to boiling, pressure, resonance and sonic tests
	+ how a shear test is conducted to check the strength of the glue
	+ how visual tests are carried out to grade for appearance
	+ how the moisture content is tested during the drying process.

*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates in-depth understanding of basic concepts used in processing materials to make plywood by:* describing safe practices in processing

For example the learner describes:* + the safety gear that must be worn, and ventilation requirements when working with glue
	+ the safe use of machinery and equipment.
* explaining processing operations and how these achieve required outcomes

For example:The learner describes at least one processing operation from each of the following categories: * + measuring, shaping or finishing e.g. cutting the logs to lengths, measuring the quantities of powder/chemicals/water needed for glue mix, measuring the veneer, cross graining, sawing sheets to size
	+ containment, contamination prevention, or disposal e.g. minimising dust, minimising excess mixed glue, minimising emissions from dryers and hot presses
	+ mixing, extracting, separating, growing e.g. mixing glue, debarking, peeling off the veneer
	+ heating, cooling or reacting e.g. adding the hardener, steam preconditioning logs, drying the veneer, hot pressing plywood sheets together.

The learner explains: how steam preconditioning ensures the right moisture content to facilitate peeling; the process of cross graining and the benefits (e.g. reduced splitting, improved stability, consistent strength).* explaining the importance of tests in processing operations and why operations and tests are combined in a processing sequence

For example the learner explains:* + how the veneer sheets are clipped to size but if on checking for appearance, may be clipped to a smaller size.

*The above expected learner responses are indicative only and relate to just part of what is required.* | The learner demonstrates comprehensive understanding of basic concepts used in processing materials to make plywood by:* describing safe practices in processing

For example the learner describes:* + the safety gear that must be worn, and ventilation requirements when working with glue
	+ the safe use of machinery and equipment.
* comparing and contrasting processing operations and tests, and their suitability for different materials and/or purposes

For example:The learner compares and contrasts at least one processing operation from each of the following categories:* + measuring, shaping or finishing e.g. cutting the logs to lengths, measuring the quantities of powder/chemicals/water needed for glue mix, measuring the veneer, cross graining, sawing sheets to size
	+ containment, contamination prevention, or disposal e.g. minimising dust, minimising excess mixed glue, minimising emissions from dryers and hot presses
	+ mixing, extracting, separating, growing e.g. mixing glue, debarking, peeling off the veneer
	+ heating, cooling or reacting e.g. adding the hardener, steam preconditioning logs, drying the veneer, hot pressing plywood sheets together.

The learner compares and contrasts: different conditioning treatments for logs; different bonds of glues and how they are used for different applications; loading a block on the lathe manually or by using a laser scanner; clipping the veneer before or after drying; how the optimum moisture content (and associated testing) for gluing depends on the species, density of veneer and gluing procedures.* discussing the relationship/s between processing operations, tests, and outcomes required

For example the learner discusses:* + how the gluing process and testing changes for different uses. For example, aviation plywood must be processed to particular specifications, which calls for shear testing after immersion in boiling water.

*The above expected learner responses are indicative only and relate to just part of what is required.* |

Final grades will be decided using professional judgement based on an examination of the evidence provided against the criteria in the Achievement Standard. Judgements should be holistic, rather than based on a checklist approach.