Title	**Explain production processes used in composite wood panel manufacture**		
Level	**4**	**Credits**	**10**

Purpose	People credited with this unit standard are able to explain in the context of composite wood panel manufacture: furnish storage systems; the process of formation; the principles of hydraulics used in pressing; pressing operations; and finishing operations; in accordance with worksite policies and procedures.

Classification	Wood Fibre Manufacturing > Composite Wood Panel Manufacturing

Available grade	Achieved

Explanatory notes

1 Range
Composite wood panels may include but are not limited to – medium density fibreboard (MDF), insulating board, particleboard, strandboard, fibre-faced strand board, triboard;
evidence is required for one.

2 All evidence must be demonstrated and assessed in accordance with the reference text: *Technical and Problem Solving Aspects of Wood Panels Production – Composites* published by Competenz and available from Competenz at http://www.competenz.org.nz.

3 The following apply to the performance of all outcomes of this unit standard:
- a All work practices must meet recognised codes of practice and documented worksite health and safety and environmental procedures (where these exceed code) for personal, product and worksite health and safety, and must meet the obligations required under current legislation, including the Health and Safety in Employment Act 1992, the Resource Management Act 1991, and their subsequent amendments.
- b All work practices must meet documented worksite quality management procedures. This includes the recording (by electronic or non-electronic means) of activities, events, and decisions.
- c All evidence of communications gathered in relation to this unit standard must be in accordance with worksite procedures for content, recipient, timing, and method.

4 Definition
Worksite policies and procedures refer to documented policies and to documented or other directions provided to staff. These include, but are not limited to, ways of

managing health and safety, environmental considerations, quality, and production, and must conform to legislation. Examples include standard operating procedures, company health and safety plans, on-site briefings, and supervisor's instructions.

Outcomes and evidence requirements

Outcome 1

Explain furnish storage systems used in composite wood panel manufacture in accordance with worksite policies and procedures.

Evidence requirements

1.1 Types of storage systems for raw materials and their purpose are explained.

Range evidence of a minimum of three is required.

1.2 The function of storage systems for raw materials is explained.

Range evidence of a minimum of three is required.

1.3 The purpose of an air sifter in the transport system between the storage and forming section of a composite wood panel machine is explained.

Outcome 2

Explain the process of formation in composite wood panel manufacture in accordance with worksite policies and procedures.

Evidence requirements

2.1 Panel formation processes for MDF, particle board and triboard are compared.

Range may include but is not limited to – fibre preparation, effluent discharge, energy use, end product use.

2.2 The removal of unwanted material during processing is explained.

Range a minimum of two processing stages is required.

2.3 The process for applying additives is explained.

2.4 The forming process used in composite wood panel manufacture is explained.

Range forming process may include – spreaders, pendistors, forming heads, forming bins, mat formers.

2.5 Mat formation techniques used to influence mat formation are explained.

2.6 Bulk density of raw material is explained in terms of the influence on the process for applying additives.

2.7 Problems associated with the use of on-line moisture meters are explained.

Range evidence of three problems is required.

2.8 Panel defects related to operating processes that occur at the formation stage are explained.

Outcome 3

Explain the principles of hydraulics used in pressing for composite wood panel manufacture in accordance with worksite policies and procedures.

Evidence requirements

3.1 The purpose of hydraulic circuits is explained.

3.2 Contaminants to be avoided in compressed air are identified and their method of control is explained.

Range evidence of three contaminants is required.

3.3 The purpose of components in a hydraulic system are explained.

Range reservoir, piping and hoses, filters, gauges, valves, pumps, accumulators, actuators, cylinder ram, motor, component control systems, valves, controllers, servos, solenoids;
evidence of a minimum of four is required.

3.4 Operator checks for signs of deterioration of a hydraulic system are explained in accordance with worksite policies and procedures.

Range evidence of five operator checks is required.

3.5 Hydraulic system safety and environmental requirements are explained.

Range evidence of three safety and three environmental requirements is required.

Outcome 4

Explain pressing operations for composite wood panel manufacture in accordance with worksite policies and procedures.

Evidence requirements

4.1 The purpose of composite wood panel pressing stages is explained.

Range stages include – pre-pressing, hot pressing, finishing.

4.2 The influence of mat moisture content on pressing, panel structure and quality is explained.

4.3 Factors influencing final panel thickness are explained.

Range evidence of five factors is required.

4.4 Panel characteristics that are influenced by resin performance are explained.

Range evidence of three panel characteristics is required.

4.5 Terms relating to pressing and final composite wood panel characteristics are defined.

Range terms may include but are not limited to – core density, core to sander ratio, finish density, face density, face width, peak density, secondary peaks, raw density;
evidence of a minimum of three is required.

4.6 Acceptable panel density shapes and process adjustments that can be made to obtain the desired panel density are explained.

Range evidence for three shapes is required.

4.7 The impacts of surface temperature on composite wood panel characteristics is explained.

Outcome 5

Explain finishing operations used in composite wood panel manufacture in accordance with worksite policies and procedures.

Evidence requirements

5.1 Characteristics of composite wood panels leaving the press are explained.

Range characteristics may include but are not limited to – temperature, board moisture, curing time.

5.2 The term equilibrium moisture content and its effects on post-press operations are explained.

5.3 Problems associated with high moisture content are explained.

Range evidence of three problems is required.

5.4 Causes of panel defects that relate to trimming in finishing operations are explained.

Range defects may include but are not limited to – wavy edges, corners chipping out, long or short panels.

5.5 Causes of panel defects that relate to sanding operations are explained.

Range defects may include but are not limited to – chatter marks, scuffing, belt groove, burning.

5.6 The process of sanding composite wood panels is explained.

Planned review date	31 December 2018

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	29 March 2005	31 December 2011
Rollover and Revision	2	23 February 2007	31 December 2012
Review	3	20 October 2011	31 December 2015
Review	4	20 March 2014	N/A

Consent and Moderation Requirements (CMR) reference	0173

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

Please note
Providers must be granted consent to assess against standards (accredited) by NZQA, before they can report credits from assessment against unit standards or deliver courses of study leading to that assessment.

Industry Training Organisations must be granted consent to assess against standards by NZQA before they can register credits from assessment against unit standards.

Providers and Industry Training Organisations, which have been granted consent and which are assessing against unit standards must engage with the moderation system that applies to those standards.

Requirements for consent to assess and an outline of the moderation system that applies to this standard are outlined in the Consent and Moderation Requirements (CMR). The CMR also includes useful information about special requirements for organisations wishing to develop education and training programmes, such as minimum qualifications for tutors and assessors, and special resource requirements.

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.