

<b>Title</b>	<b>Clarify liquor for wood pulp manufacturing</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>5</b>

<b>Purpose</b>	People credited with this unit standard are able to: explain fundamentals of liquor clarification; operate and maintain a liquor clarification system efficiently; and monitor and control the efficient performance of a liquor clarification system.
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<b>Classification</b>	Wood Fibre Manufacturing > Pulp and Paper - Chemical Plants
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<b>Available grade</b>	Achieved
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<b>Entry information</b>	
<b>Critical health and safety prerequisites</b>	Unit 3637, <i>Describe principles of causticising and lime kiln operation in wood pulp manufacturing</i> ; or demonstrate equivalent knowledge and skills.

**Explanatory notes**

- 1 Definitions
 

*Liquor clarification* refers to clarifying, mixing, and settling green and white liquor and dregs filtration used in the kraft pulping process.

*Worksite documentation* refers to instructions to staff on policy and procedures (including the application of legislation to worksite situations) which are formally documented, and are available for reference at the worksite. Examples are standard operating procedures, specifications, manuals, and manufacturer’s information.
- 2 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, the Hazardous Substances and New Organisms Act 1996, and their subsequent amendments.
  - b All work practices must meet documented worksite operating procedures. This includes the recording (by electronic or non-electronic means) of activities, events, and decisions.
  - c All communications made in relation to this unit standard must be made in accordance with worksite procedures for content, recipient, timing, and method.

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## Outcomes and evidence requirements

### Outcome 1

Explain fundamentals of liquor clarification.

#### Evidence requirements

- 1.1 Purpose and principles of liquor clarification in the causticising process are explained in terms of flocculation, sedimentation, and liquor rise rate.
- 1.2 Operating components and process controls of liquor clarification systems are identified, and their purpose is explained, in accordance with worksite documentation.
- Range operating components may include but are not limited to – rakes, dregs filter, underflows, pumps, inflows, drive units, dilution, agitators, blend tank, distributed control system.
- 1.3 Hazards associated with liquor clarification systems are identified and actions to be taken to isolate, minimise, or eliminate the hazard are described in accordance with worksite documentation.
- Range hazards may include but are not limited to – heat, steam, leakage, spillage, dust, material handling.
- 1.4 Hazards associated with substances used in liquor clarification are identified, and the management of risks to materials, plant and people is explained, in accordance with worksite documentation.
- Range substances may include but are not limited to – white liquor, green liquor, weak wash, lime mud, flocculant.
- 1.5 Environmental impact on the effluent system caused by chemical loss to drains is described in accordance with worksite documentation.
- 1.6 Operating parameters and capability of liquor clarification systems are explained in accordance with worksite documentation.
- Range may include but is not limited to – underflow rates, pump capacities, inflow rates, rake torques, cake renewal, dregs filtration.
- 1.7 Consequences of non-conformance with worksite operating procedures for liquor clarification are described in accordance with worksite documentation.
- 1.8 Roles and responsibilities of the liquor clarification system operator are described in accordance with worksite documentation.

### Outcome 2

Operate and maintain a liquor clarification system efficiently.

**Evidence requirements**

- 2.1 Safe work practices associated with operating a liquor clarification system are identified and used in accordance with worksite documentation and legislative requirements.
- Range practices may include but are not limited to – isolation procedures, lock-outs, emergency stops, machine guarding, wearing appropriate safety equipment.
- 2.2 Clarification system is set up, started up, operated, and shut down efficiently in accordance with worksite documentation.
- 2.3 Preventative maintenance and cleaning requirements are carried out in accordance with worksite documentation.
- Range may include but is not limited to – dregs pit drain systems, basic equipment care.

**Outcome 3**

Monitor and control the efficient performance of a liquor clarification system.

**Evidence requirements**

- 3.1 Monitoring and interpretation of feedback information and the timely adjustment of control parameters enable product quality, efficient plant performance, and process and legislative requirements to be maintained in accordance with worksite documentation.
- Range process requirements – customer demand, storage levels.
- 3.2 Operating and equipment faults and malfunctions are identified, and corrective action is taken, in accordance with worksite documentation.
- Range operating faults and malfunctions – density of underflows, clarity of liquors, strength, torque, doctor blade condition, vacuum, vat level, shower flows.  
equipment faults and malfunctions may include but are not limited to – electrical, mechanical, instrumentation.
- 3.3 Output weak wash meets the requirements of worksite documentation for clarity.
- 3.4 Output white and green liquor meet the requirements of worksite documentation for clarity and strength.
- 3.5 Underflows from clarifiers meet the requirements of worksite documentation for density.
- Range white and green liquor clarifiers, mud washers, dregs filters.

3.6 Production, maintenance, and quality records are explained and completed in accordance with worksite documentation.

3.7 Production rate is regulated in accordance with worksite documentation and process requirements.

Range process requirements may include but are not limited to – liquor flow rates, underflow rates, environmental constraints.

<b>Planned review date</b>	31 December 2019
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#### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	22 February 1995	N/A
Revision	2	27 January 1997	N/A
Review	3	25 February 1999	N/A
Review	4	18 December 2006	N/A
Review	5	24 October 2014	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0173
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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](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.