

Title	Condition liquor using black liquor evaporator for wood pulp manufacturing		
Level	4	Credits	15

Purpose	People credited with this unit standard are able to: explain fundamentals of liquor conditioning using black liquor evaporators; operate and maintain a black liquor evaporator efficiently; and monitor and control the efficient performance of a black liquor evaporator.
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Classification	Wood Fibre Manufacturing > Pulp and Paper - Chemical Plants
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Available grade	Achieved
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Explanatory notes

- 1 Definitions

Liquor refers to weak black liquor 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, 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.

Outcomes and evidence requirements

Outcome 1

Explain fundamentals of liquor conditioning using black liquor evaporators.

Evidence requirements

- 1.1 Purpose of liquor conditioning is explained in accordance with worksite documentation.
- 1.2 Operating parameters and capability of the black liquor evaporators are explained in accordance with worksite documentation.
- Range includes but is not limited to – temperatures, flows, densities, pressures, vacuums, evaporator capacities.
- 1.3 Operating components and process controls of black liquor evaporators are identified, and their purpose is explained, in accordance with worksite documentation.
- Range evaporator bodies, flash tanks, pumps, condenser, clean condensate system, contaminated condensate system, steam and vapour waste gas removal systems, pressure and vacuum devices, instrumentation, hotwell, seal tank, soap removal system, distributed control system.
- 1.4 Hazards associated with black liquor evaporator operations 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, vacuum, pressure, leakage, spills, vessel entry, gas testing, non-condensable (waste) gas, foul condensate.
- 1.5 Environmental considerations applying to black liquor evaporators are described in accordance with worksite documentation and legislative requirements.
- Range may include but is not limited to – non-condensable (waste) gases to atmosphere, sewer monitoring for black liquor and contaminated condensate, soap spill.
- 1.6 The consequences of non-conformance with worksite operating procedures are described in accordance with worksite documentation.
- Range high soap content, low or high solids, impact on effluent treatment.
- 1.7 Roles and responsibilities of the black liquor evaporator operator are described in accordance with worksite documentation.

Outcome 2

Operate and maintain a black liquor evaporator efficiently.

Evidence requirements

- 2.1 Safe work practices associated with the black liquor evaporator operation are demonstrated 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 Black liquor evaporator is set up, started up, operated, and shut down efficiently in accordance with worksite documentation.
- 2.3 Setting and timely adjustment of operating parameters enables production requirements to be achieved in accordance with worksite documentation.
- Range operating parameters – temperature, solids, flows, pressures, vacuum, soap foam tank level;
production requirements – soap separation, chemical strength, production rate.
- 2.4 Preventative maintenance and cleaning requirements are carried out in accordance with worksite documentation.

Outcome 3

Monitor and control the efficient performance of a black liquor evaporator.

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 control parameters may include but are not limited to – temperature, vacuum, pressures, solids, liquor flow, production rate, continuous digester rates, tank levels;
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 may include but are not limited to – loss of vacuum, loss of steam supply, loss of water to the condenser, pump failure, soap blockages, air fluctuations, air supply failure, non-condensable gases, condensate, fouling evaporator, electrical faults.
- 3.3 Output liquor meets the requirements of worksite documentation for density.
- 3.4 Production rate is regulated in accordance with process requirements.

- 3.5 Production, maintenance, and quality records are completed in accordance with worksite documentation.

Planned review date	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

Consent and Moderation Requirements (CMR) reference	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 if you wish to suggest changes to the content of this unit standard.