

Title	Prepare primary brine in pulp or paper chemical plants		
Level	4	Credits	10

Purpose	People credited with this unit standard are able to: demonstrate knowledge of brine systems; operate a primary brine system; and monitor and control the performance of a primary brine system.
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Classification	Wood Fibre Manufacturing > Pulp and Paper - Chemical Plants
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Available grade	Achieved
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Guidance Information

1 Legislation and references

Legislation, regulations and/or industry standards relevant to this unit standard include but are not limited to the:

- Hazardous Substances and New Organisms Act 1996;
- Health and Safety at Work Act 2015;
- Resource Management Act 1991;
- Health and Safety at Work (Major Hazard Facilities) Regulations 2016.

2 Definitions

Operating parameters refer to the boundary conditions in which the operations are carried out in brine preparation.

Operating procedures refer to the process(es) that are worked through, e.g. standard operating procedure (SOP) in brine preparation.

Worksite documentation refers to organisation policies and procedures that are documented in memo, electronic, or manual format and available in the workplace, and are consistent with manufacturer's requirements. 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, sustainability, on-site briefings, supervisor's instructions, and procedures to comply with legislative and local body requirements relevant to the pulp and paper industry.

3 Assessment information

Evidence presented for assessment against this unit standard must be consistent with safe working practices and be in accordance with applicable service information, worksite documentation and legislative requirements. This includes the knowledge and use of suitable tools and equipment.

Outcomes and performance criteria

Outcome 1

Demonstrate knowledge of brine systems.

Range primary brine system, secondary brine system, return brine.

Performance criteria

1.1 Purpose of brine systems in pulp or paper chemical plants is explained.

1.2 Operating principles of brine systems are explained.

Range saturation, clarification, chemical dosing, filtration.

1.3 Operating parameters and capability of brine systems are explained.

Range brine concentration, depleted brine flows, pH, saturator level, dosage chemical flows, brine temperature, calcium levels, brine clarity, free chlorine levels.

1.4 Operating components and process controls of brine systems are described and their purpose is explained.

Range salt hopper, conveyor, saturator, mix tank, reactor, tanks, heat exchangers, filters, settling tanks.

1.5 Hazards associated with brine systems are identified and actions to be taken to minimise, or eliminate the hazard are described.

Range hazards may include but are not limited to – corrosion, burns, chemicals, steam.

1.6 Consequences of non-conformance with worksite operating procedures are described.

1.7 Roles and responsibilities of the brine systems operator are described.

Outcome 2

Operate a primary brine system.

Performance criteria

2.1 Safe work practices associated with operating a primary brine system are identified and used.

Range practices may include but are not limited to – isolation procedures, lock-outs, emergency stops, machine guarding, wearing appropriate safety equipment.

- 2.2 Primary brine system components are set up, started up, operated, and shut down.
 Range salt handling, saturator, chemical make up, settling depleted brine, saturated brine, tanks, heat exchanger, dechlorinators.
- 2.3 Operating parameters are set and adjusted to enable production requirements to be met.
 Range operating parameters – brine concentration, depleted brine flows, pH, saturator level, dosage chemical flows, brine temperature; production requirements – production rate, calcium levels, brine clarity, free chlorine levels.
- 2.4 Essential care and housekeeping requirements of the primary brine system are carried out.

Outcome 3

Monitor and control the performance of a primary brine system.

Performance criteria

- 3.1 Primary brine systems are monitored and parameters are controlled in accordance with operating parameters.
- 3.2 Operating and equipment faults and malfunctions are identified, and relevant corrective actions are taken.
 Range operating faults and malfunctions – dosing systems faults, blockages, pump stoppages; equipment faults and malfunctions – electrical, mechanical, hydraulic, pneumatic, instrumentation, distributed control system.
- 3.3 Test data and field recordings are completed.
- 3.4 Production, maintenance, and quality records are explained and completed.

Planned review date	31 December 2028
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Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	25 February 1999	31 December 2024
Review	2	18 December 2006	31 December 2024
Review	3	24 October 2014	31 December 2025
Review	4	30 November 2023	N/A

Consent and Moderation Requirements (CMR) reference

0173

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

Comments on this unit standard

Please contact Hanga-Aro-Rau Manufacturing, Engineering and Logistics Workforce Development Council qualifications@hangaarorau.nz if you wish to suggest changes to the content of this unit standard.