

Title	Prepare purified brine for electrolysis in pulp and paper chemical plants		
Level	4	Credits	10

Purpose	People credited with this unit standard are able to: explain fundamentals of brine purification; operate and maintain equipment for brine purification efficiently; and monitor and control the efficient performance of process and equipment for brine purification.
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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 Definition
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.

Outcomes and evidence requirements

Outcome 1

Explain fundamentals of brine purification.

Evidence requirements

1.1 Operating principles of brine purification are explained in accordance with worksite documentation.

Range saturation, filtration, flocculation, chemical reaction, ionic purification, aeration, sedimentation.

1.2 Operating parameters and capability of brine purification are explained in accordance with worksite documentation.

Range temperature, pH, density, purity, clarity, concentrations, output volume.

1.3 Operating components and process controls of brine purification plant are identified, and their purpose is explained, in accordance with worksite documentation.

Range may include but is not limited to – salt handling system, saturator, chemical makeup tanks, reactor, clarifier, settling system, saturated brine tank, filters, ion exchange columns, heat exchangers, dechlorinators, depleted brine system, distributed control system.

1.4 Hazards associated with brine purification 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 – corrosion, burns, compressed air, chemicals, steam.

1.5 The consequences of non-conformance with worksite operating procedures are described in accordance with worksite documentation.

1.6 Roles and responsibilities of the brine purification plant operator are described in accordance with worksite documentation.

Outcome 2

Operate and maintain equipment for brine purification efficiently.

Evidence requirements

- 2.1 Safe work practices associated with operating equipment for brine purification 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 Equipment is set up, started up, operated, and shut down efficiently in accordance with worksite documentation.
- Range may include but is not limited to – salt handling system, saturator, chemical makeup tanks, reactor, clarifier, settling system, saturated brine tank, filters, ion exchange columns, heat exchangers, dechlorinators, depleted brine system.
- 2.3 Chemicals are assembled in accordance with worksite documentation.
- Range soda ash, caustic soda, sodium carbonate, hydrochloric acid, flocculent, sodium sulphite, resins, alpha-cellulose.
- 2.4 Setting and timely adjustment of operating parameters enables production requirements to be achieved in accordance with worksite documentation.
- Range operating parameters – temperatures, concentrations, pressures, flows, pH, purity.
- 2.5 Preventative maintenance and cleaning requirements are carried out in accordance with worksite documentation.

Outcome 3

Monitor and control the efficient performance of process and equipment for brine purification.

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 – temperatures, concentrations, pressures, flows, purity.

- 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 – blockages, contamination, leakages; equipment faults and malfunctions – electrical, mechanical, hydraulic, pneumatic, instrumentation, distributed control system.
- 3.3 Output product meets the requirements of worksite documentation for purity and density.
- 3.4 Production rate is regulated in accordance with worksite documentation and process requirements.
- 3.5 Production, maintenance, and quality records are explained and 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	25 February 1999	N/A
Review	2	18 December 2006	N/A
Review	3	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.