

Title	Demonstrate knowledge of the principles of causticising in wood pulp manufacturing		
Level	3	Credits	10

Purpose	People credited with this unit standard are able to: describe the purpose and features of causticising operations; demonstrate knowledge of plant used, and chemistry involved in causticising operations; and describe safety and environmental factors involved in causticising operations.
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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 causticising in pulp manufacturing.

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

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

Describe the purpose and features of causticising operations.

Performance criteria

- 1.1 The purpose of causticising operations in the pulp making process is described.
- 1.2 Production stages and their relationship to each other are described.

Range green liquor clarifying, green liquor conditioning, dregs washing, slaking and causticising, white liquor clarifying, lime mud conditioning, lime kiln operation, non-condensable gas collection, incineration.
- 1.3 Effects of non-conformance with worksite operating procedures on causticising operations and the next pulp making process are described.

Outcome 2

Demonstrate knowledge of plant used in causticising operations.

Range green liquor clarifiers, slaker, causticisers, dregs and mud washers, white liquor clarifier or filters, lime screws, mud storage, lime mud filter, lime kiln, non-condensable gas collection, incineration, scrubbers and/or precipitators.

Performance criteria

- 2.1 Plant associated with each stage of causticising operations is identified and its purpose is described.
- 2.2 The operation of each type of plant is explained.

Outcome 3

Demonstrate knowledge of chemistry involved in causticising operations.

Performance criteria

- 3.1 Chemicals involved in the main production stages and their chemical symbols are identified.
- 3.2 Causticity, reactivity, sulphidity, and alkalinity are described in relation to causticizing operations.
- 3.3 Industry terminology for alkalinity is described.

Range effective alkali, active alkali, total titratable alkali, causticising efficiency.

3.4 Chemical reactions that occur during each of the main production stages are described.

Range reactions must include – sodium sulphide, sodium carbonate, sodium hydroxide, calcium oxide, calcium carbonate, calcium hydroxide.

Outcome 4

Describe safety and environmental factors involved in causticising operations.

Performance criteria

4.1 Specific hazards associated with chemicals and processes are described.

4.2 Safe handling procedures for chemicals are described.

4.3 Specific environmental impacts of chemicals are described.

4.4 Procedures for the disposal of waste are described.

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	24 October 1995	31 December 2024
Revision	2	27 January 1997	31 December 2024
Review	3	25 February 1999	31 December 2024
Review	4	18 December 2006	31 December 2024
Review	5	24 October 2014	31 December 2025
Review	6	30 November 2023	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>.

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.