

Title	Condition liquor using BLOX plant for wood pulp manufacturing		
Level	3	Credits	5

Purpose	People credited with this unit standard are able to: demonstrate knowledge of liquor oxidation; operate BLOX plant; and monitor and control the performance of BLOX plant.
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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

BLOX plant refers to a black liquor oxidation plant which is designed to allow intimate contact between air and liquor to oxidise the sulphur in the liquor to a stable thiosulphate and includes a scrubbing system.

Operating parameters refer to the boundary conditions in which the operations are carried out in liquor oxidation.

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

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 liquor oxidation.

Performance criteria

- 1.1 Purpose of liquor oxidation is explained.
- 1.2 Operating parameters and capability of the BLOX plant are explained.
- Range operating parameters include but are not limited to – sulphidity levels, total reduced sulphidity levels, temperatures, flows, densities, plant capacities.
- 1.3 Operating components and process controls of BLOX plants are described and their purpose is explained.
- Range operating components may include but are not limited to – agitators, pumps, tanks, air blower, instrumentation, sparge pipe and pipework, scrubbers.
- 1.4 Hazards associated with BLOX plants are identified and actions to be taken to minimise, or eliminate the hazard are described.
- Range hazards may include but are not limited to – heat, steam, waste gas, noise.
- 1.5 Chemical reactions occurring within the BLOX plant are described.
- Range oxidation, sulphidity.
- 1.6 The consequences of non-conformance with worksite operating procedures are described in terms of the effects of solids in liquor to the boiler, and under and over conditioning on the recovery boiler.
- 1.7 Roles and responsibilities of the BLOX plant operator are described.

Outcome 2

Operate BLOX plant.

Performance criteria

- 2.1 Safe work practices associated with BLOX plant operation are demonstrated.
- Range practices may include but are not limited to – plant entry procedures, isolation procedures, lock-outs or tag-outs, emergency stops, machine guarding, wearing appropriate safety equipment.

- 2.2 BLOX plant is set up, started up, operated, and shut down.
- 2.3 Operating parameters are set and adjusted to enable production requirements to be achieved.
 - Range operating parameters may include but are not limited to – tank levels, temperature, air flow, liquor flow, scrubbing parameters; production requirements may include but are not limited to – emptying of tanks, levels of sulphidity, liquor density through the plant, total reduced sulphur emissions.
- 2.4 BLOX plant is managed to allow by-passing, batching, and emptying of tanks, while maintaining product quality and environmental requirements.
- 2.5 Essential care and housekeeping requirements are carried out.

Outcome 3

Monitor and control the performance of BLOX plant.

Performance criteria

- 3.1 BLOX plant is monitored and parameters are controlled in accordance with operating parameters.
 - Range control parameters may include but are not limited to – tank levels, temperature, air flow, liquor flow; process requirements may include but are not limited to – sulphide analysis, solids, environmental requirements.
- 3.2 Operating and equipment faults and malfunctions are identified, and relevant corrective actions are taken.
 - Range operating faults and malfunctions may include but are not limited to – environmental limits, sulphidity levels; equipment faults and malfunctions may include but are not limited to – electrical, mechanical, instrumentation.
- 3.3 Sulphide content of output liquor is monitored to meet requirements.
- 3.4 Production rate is regulated in accordance with process requirements.
- 3.5 Production, maintenance, and quality records are 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	22 February 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

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.