

Title	Bleach kraft pulp in wood pulp manufacturing		
Level	4	Credits	30

Purpose	People credited with this unit standard are able to: demonstrate knowledge of the kraft pulp bleaching process; operate the kraft pulp bleaching plant; and monitor and control the performance of the kraft pulp bleaching plant.
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Classification	Wood Fibre Manufacturing > Pulp Making
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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 kraft pulp bleaching process.

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

RCA refers to root cause analysis.

TCC refers to trouble cause correct.

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 making 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 the kraft pulp bleaching process.

Performance criteria

- 1.1 Purpose of the kraft pulp bleaching process is explained.
- 1.2 Bleaching action of kraft bleaching agents is explained.
- 1.3 Operating parameters and capability of the kraft pulp bleaching process are explained.
- Range operating parameters include but are not limited to – chemical strength, retention time, physical state of chemical and method of addition, pH, pulp temperature, consistency.
- 1.4 Normal and emergency procedures for handling hazardous chemicals used in pulp bleaching are described.
- Range chlorine dioxide, hypochlorite, sodium hydroxide, oxygen, hydrogen peroxide, sulphuric acid.
- 1.5 Hazards associated with the kraft pulp bleaching process are identified and actions to be taken to minimise, or eliminate the hazards are explained.
- Range hazards may include but are not limited to – chemical interaction, chemicals.
- 1.6 Environmental considerations applying to kraft pulp bleaching, spill recovery systems are described.
- Range environmental considerations may include but are not limited to – bleaching chemical leaks, fibre loss, contaminated filtrate.
- 1.7 Consequences of non-conformance with worksite operating procedures are described.
- 1.8 Roles and responsibilities of the kraft pulp bleaching process operator are explained.

Outcome 2

Operate the kraft pulp bleaching plant.

Performance criteria

- 2.1 Safe work practices associated with the operation of the kraft pulp bleaching process are demonstrated.
- Range practices may include but are not limited to – isolation and plant access procedures, lock-outs or tag-outs, emergency stops, machine guarding, wearing appropriate safety equipment.
- 2.2 Bleach 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 – flow rate, temperature, pressure, chemical to pulp ratios, consistency, chemical strengths, pH.
- 2.4 Grade changes are completed in bleach plant.
- 2.5 Essential care and housekeeping requirements are carried out.

Outcome 3

Monitor and control the performance of the kraft pulp bleaching plant.

Performance criteria

- 3.1 Performance of the kraft pulp bleaching plant is monitored and parameters are controlled in accordance with operating parameters.
- Range control parameters – temperature, pH, flows, strength, chemical to pulp ratio, consistency, stack emissions;
performance parameters – brightness, shives, dirt, residual chemical.
- 3.2 Operating and equipment faults and malfunctions are identified, and relevant corrective actions are taken.
- Range equipment faults and malfunctions – mechanical, electrical, hydraulic, pneumatic, instrumentation, chemical, distributed control system.
- 3.3 Relevant problem-solving techniques are used to assist with trouble shooting.
- Range problem solving techniques may include but not limited to – RCA, TCCs, 5 whys technique.
- 3.4 Brightness, pH, temperature, and consistency of output pulp are monitored to meet specified requirements.
- 3.5 Production rate is regulated in accordance with requirements.

- 3.6 Production, maintenance notifications, 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	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
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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.