Title	**Blend chemical additives for paper production**		
Level	**4**	**Credits**	**5**

Purpose	People credited with this unit standard are able to: demonstrate knowledge of chemical addition for paper manufacturing; operate an additive blending system; and monitor and control the performance of an additive blending system.

Classification	Wood Fibre Manufacturing > Paper Making

Available grade	Achieved

Prerequisites	Unit standard 31293, *Demonstrate safe handling, storage, and disposal of hazardous substances in the workplace*; or demonstrate equivalent knowledge and skills.

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
Furnish refers to the fibrous and non-fibrous constituents comprising paper (including waste papers, pulps, dyes, and additives) blended into stock preparation to meet the requirements of various paper grades.
Operating parameters refers to the boundary conditions in which the operations are carried out in the chemical addition for paper manufacturing.
Operating procedures refers to the process(es) that are worked through, e.g. standard operating procedure (SOP) in the chemical addition for paper 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 paper 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 chemical addition for paper manufacturing.

Performance criteria

1.1 Purpose of adding and blending chemicals and additives into furnish is explained.

Range chemicals may include but are not limited to – dyes, sizing, alum, caustic, acids, wax, clays, retention aid, fillers, slimicide, fungicides.

1.2 Operating components and process controls for the mixing and blending of chemicals and additives are described and their purpose is explained.

1.3 Methods of chemical addition are explained.

Range chemicals may include but are not limited to – dyes, sizing, alum, caustic, acids, wax, clays, retention aid, fillers, slimicide, fungicides.

1.4 Hazards associated with the handling of chemical additives are identified and actions to be taken to minimise, or eliminate the hazards are described.

Range hazards may include but are not limited to – chemicals (including spills), moving equipment, electricity.

1.5 Consequences of non-compliance with worksite operating procedures are described.

1.6 Roles and responsibilities of the additive blending system operator are described.

Outcome 2

Operate an additive blending system.

Performance criteria

2.1 Safe work practices associated with operating and maintaining an additive blending system are demonstrated.

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

2.2 System 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 – strengths, quantity, quality;
production requirements – product quality, production rate.

2.4 Essential care and housekeeping requirements for the additive blending system are carried out.

Outcome 3

Monitor and control the performance of an additive blending system.

Performance criteria

3.1 Additive blending 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 may include but are not limited to – blockages, leaks, spills, distributed control system alarms, environmental, safety interlocks;
equipment faults and malfunctions may include but are not limited to – electrical, mechanical, hydraulic, pneumatic, instrumentation, distributed control system.

3.3 Quality and runnability of the product blend are monitored to meet specified requirements.

3.4 Production, maintenance, and quality records are completed.

Planned review date	31 December 2028

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.