

<b>Title</b>	<b>Describe principles of causticising and lime kiln operation in wood pulp manufacturing</b>		
<b>Level</b>	<b>3</b>	<b>Credits</b>	<b>10</b>

<b>Purpose</b>	People credited with this unit standard are able to describe the purpose and features, fundamentals of plant, chemistry, and safety and environmental factors involved in causticising operations.
----------------	--

<b>Classification</b>	Wood Fibre Manufacturing > Pulp and Paper - Chemical Plants
-----------------------	---

<b>Available grade</b>	Achieved
------------------------	----------

---

### 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 reference text for this unit standard is Green R.P. & Hough, G (eds.), *Chemical Recovery in the Alkaline Pulping Processes* (TAPPI Press, Revised edition, 1992). It is available through <http://www.tappi.org/>.

---

### Outcomes and evidence requirements

#### Outcome 1

Describe the purpose and features of causticising operations.

#### Evidence requirements

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

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 in accordance with worksite documentation.

## Outcome 2

Describe fundamentals 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.

### Evidence requirements

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

## Outcome 3

Describe chemistry involved in causticising operations.

### Evidence requirements

- 3.1 Chemicals involved in the main production stages are named and their chemical symbols identified in accordance with the reference text.

Range sodium sulphide, sodium carbonate, sodium hydroxide, calcium oxide (burnt lime), calcium carbonate (lime mud or lime rock).

- 3.2 Properties of each chemical are described in terms of causticity, reactivity, sulphidity, and alkalinity.

- 3.3 Industry terminology for alkalinity is used in accordance with the reference text.

Range effective alkali, active alkali, total titratable alkali.

- 3.4 Chemical reactions that occur during each of the main production stages are described in accordance with the reference text.

Range reactions must include – sodium sulphide, sodium carbonate, sodium hydroxide, calcium oxide (burnt lime), calcium carbonate.

## Outcome 4

Describe safety and environmental factors involved in causticising operations.

## Evidence requirements

- 4.1 Specific hazards associated with chemicals and processes are described in accordance with worksite documentation.
- 4.2 Safe handling procedures for chemicals are described in accordance with worksite documentation.
- 4.3 Specific environmental impacts of chemicals are described in accordance with worksite documentation.
- 4.4 Procedures for the disposal of waste are described in accordance with worksite documentation.

<b>Planned review date</b>	31 December 2019
----------------------------	------------------

### Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	24 October 1995	N/A
Revision	2	27 January 1997	N/A
Review	3	25 February 1999	N/A
Review	4	18 December 2006	N/A
Review	5	24 October 2014	N/A

<b>Consent and Moderation Requirements (CMR) reference</b>	0173
--	------

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](mailto:qualifications@competenz.org.nz) if you wish to suggest changes to the content of this unit standard.