

<b>Title</b>	<b>Explain fundamentals of kraft pulp bleaching</b>		
<b>Level</b>	<b>4</b>	<b>Credits</b>	<b>10</b>

<b>Purpose</b>	People credited with this unit standard are able to explain: the principles of kraft pulp bleaching; multi-stage kraft pulp bleaching; and environmental and safety issues associated with kraft pulp bleaching.
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<b>Classification</b>	Wood Fibre Manufacturing > Pulp and Paper Technology
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<b>Available grade</b>	Achieved
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### Explanatory notes

All evidence requirements must be demonstrated and assessed in accordance with the reference text: *Explain fundamentals of kraft pulp bleaching*, published by Competenz and available from Competenz at <http://www.competenz.org.nz/>, or Competenz, PO Box 9005, Newmarket, Auckland 1149.

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## Outcomes and evidence requirements

### Outcome 1

Explain the principles of kraft pulp bleaching.

### Evidence requirements

- 1.1 Reasons for bleaching are identified and explained.
- 1.2 Steps in kraft pulp bleaching are identified and explained.  
Range delignification, decolourisation.
- 1.3 Stages used in multi-stage bleaching sequences are identified and their effects are explained.  
Range stages – C, E, H, O, D, Z, P, EO, CD, EOP.
- 1.4 Process variables affecting bleaching reactions are identified and explained.  
Range temperature, time, pH, concentration, dosage, consistency.
- 1.5 Paper making properties affected by lignin removal are identified in terms of bonding, flexibility, strength, hydration, bulk, and freeness.

- 1.6 Visual property changes resulting from bleaching are identified in terms of brightness, opacity, and light scattering co-efficient.

**Outcome 2**

Explain multi-stage kraft pulp bleaching.

**Evidence requirements**

- 2.1 Bleach plant components are identified and their functions are explained.

Range consistency regulation, mixers, washers, pumps, towers, seal tank, sensors.

- 2.2 Bleaching sequences are explained and the function of each stage is described.

Range functions – delignification, extraction, decolourisation; sequences – CEDED, DEOPDD, CD EO DD.

**Outcome 3**

Explain environmental and safety issues associated with kraft pulp bleaching.

**Evidence requirements**

- 3.1 Bleach plant effluent contaminants are identified and their effects on health and the environment are explained.

Range contaminants – chlorine, chlorinated organics, colour.

- 3.2 Chemicals used in bleaching are identified and hazards associated with their use are explained.

Range chemicals – caustic soda, chlorine, chlorine dioxide, liquid oxygen.

<b>Planned review date</b>	31 December 2019
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**Status information and last date for assessment for superseded versions**

Process	Version	Date	Last Date for Assessment
Registration	1	30 November 2000	N/A
Review	2	18 December 2006	N/A
Review	3	24 October 2014	N/A

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

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**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.