

Title	Demonstrate knowledge of concrete production		
Level	4	Credits	10

Purpose	People credited with this unit standard are able to describe: concrete production; ready-mix concrete production; concrete supply; Portland cements; and non Portland cements.
----------------	--

Classification	Concrete > Concrete Technology
-----------------------	--------------------------------

Available grade	Achieved
------------------------	----------

Guidance Information

Legislation and publications relevant to this unit standard include:

Health and Safety in Employment Act 1992;

NZS 3104:2003 *Specification for concrete production*, available from Standards New Zealand (<http://www.standards.co.nz>);

AS 1478.1-2000 *Chemical admixtures for concrete, mortar and grout – Admixtures for concrete*, available from Standards Australia (<http://www.standards.org.au/Default.aspx>).

Outcomes and performance criteria

Outcome 1

Describe concrete production.

Performance criteria

- 1.1 The workability of fresh concrete is explained in terms of compactability, mobility and cohesion.
- 1.2 The factors that influence workability and surface finish are identified in terms of their effects.
- 1.3 The features of materials, mix proportions and the environment that affect the hardening of concrete are identified in terms of increasing or decreasing the rate of stiffening.
- 1.4 The types of lightweight and heavyweight concretes are identified in terms of their applications.
- 1.5 Storage and plant layout for batching and mixing concrete is described in terms of required output, situation, ground conditions, access and site facilities.

- 1.6 The effects of types of admixture on the properties of fresh and hardened concrete are described in terms of classification and composition.
- 1.7 The efficiency of concrete mixes is tested to meet industry standards.

Outcome 2

Describe ready-mix concrete production.

Performance criteria

- 2.1 The methods used for producing and supplying ready-mix concrete are identified in terms of their advantages and applications.
- 2.2 The capacities, total laden weights and dimensions of ready-mix concrete trucks are described in terms of contractual basis of supply and method of checking the quantity.
- 2.3 Contingency plans are described in terms of a delay in discharge or delivery of concrete.
- 2.4 The quantity of ready-mix concrete is identified in terms of the organisation's staffing and facilities for production.

Outcome 3

Describe concrete supply.

Performance criteria

- 3.1 The methods and procedures for selecting and storing materials are identified in terms of storage, stacking and testing.
- 3.2 The handling properties of materials are described in terms of actions taken to minimise problems.
- 3.3 Quantities of materials, delivery rate and storage capacity for a concreting programme are identified in terms of mix data and available materials.
- 3.4 Site mixed and ready mixed concrete are compared in terms of advantages and economics.
- 3.5 The procedure for supplying ready-mix concrete is explained in terms of purchaser and supplier agreements.

Outcome 4

Describe Portland cements.

Performance criteria

- 4.1 Types of Portland cement are described in terms of raw materials, manufacturing processes, and applications.
- 4.2 Chemical compounds in Portland cement are identified in terms of their effects on the properties of concrete.

Outcome 5

Describe non Portland cements.

Performance criteria

- 5.1 The manufacturing processes of high alumina and supersulphated cements are described in terms of raw materials and chemical compounds.
- 5.2 The properties of concretes made with high alumina and supersulphated cements are compared in terms of Portland cement concrete types.
- 5.3 The conversion of high alumina cement concrete is explained in terms of precautions necessary to minimise the effects of conversion.

This unit standard is expiring. Assessment against the standard must take place by the last date for assessment set out below.

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	23 May 2001	31 December 2023
Revision	2	16 July 2004	31 December 2023
Rollover and Revision	3	25 January 2008	31 December 2023
Rollover and Revision	4	17 November 2011	31 December 2023
Review	5	27 January 2022	31 December 2023

Consent and Moderation Requirements (CMR) reference	0048
--	------

This CMR can be accessed at <http://www.nzqa.govt.nz/framework/search/index.do>.