Title	**Perform tensile concrete testing in a concrete production plant**		
Level	**4**	**Credits**	**30**

Purpose	This unit standard is intended for people working in the concrete production industry. People credited with this unit standard are able to perform tensile concrete testing to the level of performance required of a commercially competent concrete production operator.

Classification	Concrete > Concrete Production

Available grade	Achieved

Prerequisites	Unit 32760, *Demonstrate knowledge fresh and hardened concrete testing* and Unit 32438, *Perform fresh and hardened concrete testing*, or demonstrate equivalent knowledge and skills.

Guidance Information

1 Assessment
This unit standard is intended to align with the *New Zealand Certificate in Concrete Production – Specifications* and the New Zealand Certificate in Concrete Production (Level 4) [Ref: 4187].

Evidence for this standard must reflect commercial competence.

Commercial competence refers to the ability to demonstrate knowledge and skills in the context of the currently accepted requirements of a business operating in a commercial environment.

Commercial competence must be confirmed by a person with current expertise in concrete production.

2 Definitions
The *Plant Audit Scheme* sets out the operating regulations and practices for each production plant, so accreditation requirements are met with the Concrete NZ Readymix Sector Group.
Tensile concrete testing measures the amount of force required to fracture a hardened concrete sample when it is being stretched or bent.
Workplace procedures refers to the documented procedures specific to a workplace that set out the standards and required practices of that workplace.

3 Legislation, standards and guidance information relevant to this standard includes the following, and any subsequent amendments and replacements:
New Zealand Certificate in Concrete Production – Specifications, BCITO, October 2020, available from www.bcito.org.nz.

Legislation accessed at www.legislation.govt.nz
- Building Act 2004
- Hazardous Substances and New Organisms Act 1996
- Health and Safety at Work Act 2015
- The New Zealand Building Code.

Standards accessed at www.standards.govt.nz
- NZS 3104:2003 *Specification for concrete production*
- NZS 3111:1986 *Methods of Test for Water and Aggregate for concrete*
- NZS 3112.2:1986 *Methods of Test for Concrete – Tests relating to the determination of strength of concrete*
- AS 1012:1996 *Methods of Testing Concrete*.

Guidelines and Approved Codes of Practice
- *The Absolutely Essential Health and Safety Toolkit for Small Construction Sites*, and other WorkSafe NZ publications available from www.worksafe.govt.nz
- *A Guide to Concrete Construction* available from www.concretenz.org.nz
- *The Plant Audit Scheme* available from www.concretenz.org.nz.

Skill specification and performance level guidance

Skill specification

Perform tensile concrete testing in a concrete production plant.

Knowledge

The procedures and requirements for material sieve analysis to sample aggregates as part of tensile testing.

Range different aggregates, different sieve sizes, sieve cleanliness.

The procedures and requirements for splitting tensile testing.

Range locating jig, destruction test, calculation of splitting strength.

The procedures and requirements for flexural tensile testing.

Range loading method of beams, destruction test, calculation of flexural strength.

The procedures and requirements for testing the drying shrinkage of concrete samples.

Range shrinkage mould preparation, beam construction, stripping and curing beam, drying room transportation.

Skills

Perform material sieve analysis of fine and coarse aggregates by analysing aggregate samples.

Range visual size and shape, moisture content absorption, gap gradings.

Perform compression testing on drilled concrete samples.

Perform splitting tensile testing of moulded concrete samples in locating jig.

Perform flexural tensile testing on cured concrete beams to determine flexural tensile strength.

Perform drying shrinkage tests.

Record and report testing results as required.

Performance level guidance

Performance must reflect plant audit scheme requirements, NZS 3104, NZS 3111, NZS 3112, AS 1012, and workplace procedures.

Planned review date	31 December 2026

Status information and last date for assessment for superseded versions

Process	Version	Date	Last Date for Assessment
Registration	1	24 June 2021	N/A

Consent and Moderation Requirements (CMR) reference	0048

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

Comments on this unit standard

Please contact the Building and Construction Industry Training Organisation national.office@bcito.org.nz if you wish to suggest changes to the content of this unit standard.