



Australian Government

MSL973022 Conduct laboratory-based acceptance tests for construction materials

Release: 1

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Modification History

Release	Comments
Release 1	This version was released in <i>MSL Laboratory Operations Training Package Release 2.0</i>. Supersedes and equivalent to MSL973010 Conduct laboratory-based acceptance tests for construction materials. Foundation skill information added. Range of conditions removed. Assessment requirements amended.

Application

This unit of competency describes the skills and knowledge to conduct laboratory tests to confirm the acceptability of raw and/or manufactured construction materials. Personnel will have access to established test methods, workplace procedures and readily available advice. They are expected to obtain reliable test results safely and efficiently. In general, these personnel do not calibrate equipment and make only limited adjustments to the controls. The unit of competency does not cover interpretation or analysis of results or troubleshooting equipment problems.

This unit of competency applies to laboratory personnel working in the geotechnical and construction material testing industry sectors who conduct control and compliance tests in consulting laboratories or laboratories at extractive, manufacturing or construction sites using established test methods. These tests could involve aggregates, concrete, soils, road pavement or other specialised construction materials and products.

The unit of competency could also be relevant to laboratory technicians working in the water/wastewater and trade waste industry sectors.

No licensing or certification requirements exist at the time of publication. However, regulations and/or external accreditation requirements for laboratory operations exist, so local requirements should be checked. Relevant legislation, industry standards and codes of practice within Australia must also be applied.

Pre-requisite Unit

Nil

Competency Field

Testing

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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| 1 | Prepare for laboratory-based acceptance tests | 1.1 | Access relevant job instructions from laboratory information management system (LIMS) |
| | | 1.2 | Interpret test request to confirm samples to be tested, the test method and equipment involved |
| | | 1.3 | Identify hazards and workplace controls associated with the sample, preparation methods, reagents and/or equipment |
| | | 1.4 | Assemble all required equipment and materials |
| | | 1.5 | Plan work sequences for optimum efficiency and/or throughput of multiple samples |
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| 2 | Prepare samples or test pieces | 2.1 | Retrieve samples and/or test pieces from storage and record their general appearance |
| | | 2.2 | Check the accuracy and completeness of accompanying labels and documentation to ensure traceability |
| | | 2.3 | Check that the storage/curing conditions of samples and/or test pieces were appropriate |
| | | 2.4 | Compare samples and/or test pieces with test specifications, record observations and report discrepancies |
| | | 2.5 | Prepare samples and/or test pieces in accordance with appropriate test method |
| | | | |
| 3 | Check test equipment before use | 3.1 | Set up equipment in accordance with test method |
| | | 3.2 | Perform pre-use and safety checks in accordance with workplace procedures |
| | | 3.3 | Identify faulty or unsafe equipment and report to appropriate personnel |
| | | 3.4 | Check calibration status of instruments and report any out-of-calibration items to appropriate personnel |

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|---|---|-----|---|
| 4 | Perform laboratory tests | 4.1 | Conduct tests in accordance with test method and workplace procedures |
| | | 4.2 | Record data and observations in accordance with workplace procedures |
| | | 4.3 | Recognise obvious errors or atypical data and take appropriate corrective actions |
| | | 4.4 | Perform calculations as set out in test method |
| | | 4.5 | Compare calculated results with expected values and report atypical results promptly to appropriate personnel |
| | | 4.6 | Complete technical/administrative records and test reports in accordance with workplace procedures |
| | | 4.7 | Seek advice to deal with any situation beyond own technical competence |
| | | | |
| 5 | Maintain a safe work environment | 5.1 | Use safe work procedures and personal protective equipment (PPE) to ensure personal safety and that of others |
| | | 5.2 | Minimise generation of waste and environmental impacts of testing |
| | | 5.3 | Collect and/or dispose of all waste in accordance with environmental/quarantine requirements and workplace procedures |
| | | 5.4 | Care for and store equipment, used test pieces and back-up samples in accordance with workplace procedures |

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

- Numeracy skills to estimate and accurately calculate simple scientific quantities, such as density and moisture content.

Other foundation skills essential to performance are explicit in the performance criteria of this unit.

Unit Mapping Information

Equivalent to MSL973010 Conduct laboratory-based acceptance tests for construction materials, Release 1.

Links

MSL Laboratory Operations Companion Volume Implementation Guide is available from VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa>

Assessment Requirements for MSL973022 Conduct laboratory-based acceptance tests for construction materials

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Performance Evidence

There must be evidence the candidate has completed the tasks outlined in the elements and performance criteria of this unit, and:

- safely prepared at least 3 different laboratory samples or test pieces and conducted laboratory tests on them to confirm their acceptability
- safely conducted laboratory-based acceptance tests in accordance with workplace procedures and test methods to provide reliable data within the required timeframe.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- the purpose and principles of construction materials tests performed as part of job role and key preparation/measurement steps in the test methods
- the properties of construction materials under test
- calculation steps to give results in appropriate units and precision
- expected values for sample type and sources of uncertainty (and methods for control) in construction materials tests routinely used in job role
- workplace procedures for:
 - pre-use checks and operating test equipment routinely used in job role
 - recording and reporting test results, calculations, test observations, and unexpected or atypical results and equipment problems
 - ensuring traceability of samples, test pieces, test data and results
 - confidentiality
 - waste minimisation and safe disposal
 - sampling and testing procedures for specific sites, clients and samples
 - workplace safety

- awareness of environmental sustainability issues as they relate to the work task
- legal, ethical and workplace requirements specific to the work task.

Assessment Conditions

Skills must have been demonstrated in the workplace or in a simulated environment that reflects workplace conditions and contingencies. The following conditions must be met for this unit:

- use of suitable facilities, equipment and resources, including:
 - sample preparation and test equipment and materials specified in the test method
 - test methods and description of test set-up, data sets and records
 - calculator and/or computer and relevant software or laboratory information system.

Assessors must satisfy the NVR/AQTF mandatory competency requirements for assessors.

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