



Australian Government

MSL973009 Conduct field-based acceptance tests for construction materials

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSL973009A Conduct field-based acceptance tests for construction materials

Application

This unit of competency covers the ability to conduct in situ tests to confirm the acceptability of raw or manufactured, construction materials prior to or after their use. Personnel are expected to be able to work independently and liaise with site personnel to ensure that testing is conducted safely and efficiently. They may transport samples and/or equipment to and from the site, as necessary, and prepare test pieces on-site for later laboratory testing.

This unit of competency is applicable to laboratory personnel working in the geotechnical and construction material testing industry sectors who conduct relatively quick and straightforward control and compliance tests using established test methods. These tests could involve aggregates, concrete, soils, road pavement or other specialised construction materials.

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

While no specific licensing or certification requirements apply to this unit at the time of publication, laboratory operations are governed by relevant legislation, regulations and/or external accreditation requirements. Local requirements should be checked.

Pre-requisite Unit

Nil

Competency Field

Testing

Unit Sector

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 field-based acceptance tests | 1.1 | Review job request to identify the test method and equipment involved, samples to be collected and/or test pieces to be prepared |
| | | 1.2 | Identify hazards and workplace safe work procedures associated with the site, samples, test methods and equipment used |
| | | 1.3 | Confirm site location, access, timing and any special test requirements |
| | | 1.4 | Assemble all required equipment/materials and check that they are fit for purpose |
| | | 1.5 | Stow equipment/materials to ensure their safe transport, as necessary |
| | | 1.6 | Arrange transport to site, as necessary |
| | | 1.7 | Liaise with appropriate personnel on arrival at site to ensure safety and minimise disruption to other workers during testing/sampling |
| 2 | Perform field tests | 2.1 | Identify locations for in situ tests in accordance with test method or client instructions |
| | | 2.2 | Set up, check and operate test equipment safely and in accordance with workplace procedures and test method |
| | | 2.3 | Perform tests as specified in test method or workplace procedures |
| | | 2.4 | Take sufficient test measurements to ensure reliable data |
| | | 2.5 | Recognise obvious errors or atypical data and take appropriate corrective actions |
| | | 2.6 | Recognise and record details of site conditions that may impact on data quality |

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| | | 2.7 | Seek advice to deal with any situation beyond own technical competence |
| 3 | Collect site samples and prepare test pieces | 3.1 | Identify locations for sample collection in accordance with test method or client instructions |
| | | 3.2 | Seek advice if samples cannot be collected or if sampling procedures require modification |
| | | 3.3 | Obtain required samples and maintain their integrity in accordance with sampling procedures or test method |
| | | 3.4 | Label all samples to ensure their traceability |
| | | 3.5 | Recognise and record any information about the sample appearance or site conditions that may impact on sample integrity |
| | | 3.6 | Prepare required test pieces and organise their safe curing, storage and/or transport in accordance with test method |
| 4 | Finalise field testing | 4.1 | Re-instate all disturbed surfaces in accordance with workplace procedures |
| | | 4.2 | Clean all equipment (and vehicle as necessary) to avoid environmental damage, including stormwater run-off and/or transfer of pests |
| | | 4.3 | Check that all equipment/materials are present and undamaged prior to re-stowing them for safe transport, as necessary |
| | | 4.4 | Notify appropriate site personnel on completion of tests and prior to leaving site |
| | | 4.5 | Check serviceability of test equipment on return to base, before storage |
| | | 4.6 | Complete site safety plans, equipment logs and test reports in accordance with workplace procedures |

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| 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 environmental impacts of testing/sampling and generation of waste |
| | | 5.3 | Collect and/or dispose of all waste in accordance with environmental/quarantine requirements and workplace procedures |

Foundation Skills

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

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Standards, codes, procedures and/or workplace requirements

Standards, codes, procedures and/or workplace requirements include the latest version of one or more of:

- Australian and international standards covering the requirements for the competence of testing and calibration laboratories, laboratory safety and quality management
- national work health and safety (WHS) standards and codes of practice, national measurement regulations and guidelines, and environmental legislation and regulations
- standard methods for testing construction materials, such as soils, aggregates, concrete and asphalt
- specific codes, guidelines, procedures and methods, such as:
 - AustRoads test methods, State/Territory Road Authority test methods
 - National Association of Testing Authorities (NATA) documents regarding construction materials testing (Field application document)
- workplace documents, such as standard operating procedures (SOPs); quality and equipment manuals; calibration and maintenance schedules; material safety data sheets (MSDS) and safety procedures; material, production and product specifications; production and laboratory schedules; workplace recording and reporting procedures; waste minimisation and safe disposal procedures; and maps, site plans and site safety plans
- sampling and testing procedures for specific sites, clients and samples

Field-based acceptance tests

Field-based acceptance tests include, but are not limited to, one or more of:

- testing of concrete, such as:
 - consistency (e.g. slump)
 - making and curing of concrete cylinders
 - air content
 - Schmidt hammer
- testing of soils, such as:
 - field density (e.g. compaction control)
 - coarse particle distribution (e.g. rock protection layers and embankments)

- dynamic cone penetration (DCP)
- Clegg hammer
- sample cores from stabilised pavements
- testing of asphalt and bitumen seals, such as:
 - temperature of freshly laid asphalt
 - field density
 - texture depth
 - permeability
 - aggregate spread rate and binder spray rate

Appropriate corrective actions

Appropriate corrective actions include one or more of:

- carefully re-reading of procedures and checklists
- logically checking equipment set-up
- checking calibration, zero error and drift for the measuring instrument
- repeating test measurements
- checking data entry and transcription for errors
- seeking advice

Site samples and test pieces

Site samples and test pieces include, but are not limited to, one or more of:

- site samples of aggregates, soil, concrete and road pavement
- beams and cylinders for subsequent laboratory testing, such as Brazil test and Marshall stability/flow test
- asphalt cores and slabs for testing wheel tracking and fatigue

Workplace safety procedures

Workplace safety procedures include, but are not limited to, one or more of:

- recognising and observing hazard warnings and safety signs/barriers
- labelling of samples, reagents and hazardous materials
- use of PPE, such as hard hats, hearing protection, gloves, safety glasses, coveralls, respirators and safety boots
- handling and storing hazardous material and equipment in accordance with labels, MSDS, manufacturer instructions, and workplace procedures and regulations
- following established safe handling procedures for tasks involving manual handling
- cleaning and decontaminating equipment and work areas

regularly using recommended procedures

WHS and environmental management requirements

WHS and environmental management requirements include:

- complying with WHS and environmental management requirements at all times, which may be imposed through state/territory or federal legislation. These requirements must not be compromised at any time
- applying standard precautions relating to the potentially hazardous nature of samples

Unit Mapping Information

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Links

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>