



Australian Government

**Assessment Requirements for MSL974012
Perform tests to determine the properties of
construction materials**

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSL974012A Perform tests to determine the properties of construction materials

Performance Evidence

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- safely preparing at least three (3) different laboratory samples or test pieces and conducting multi-stage tests on them to determine their properties
- accurately interpreting client's test requests, test methods, workplace procedures and safety information
- planning efficient work sequences involving multiple/parallel tasks
- checking, operating, cleaning, maintaining and storing test equipment in accordance with workplace procedures
- safely conducting laboratory-based acceptance tests in accordance with workplace procedures and test methods to provide reliable data within the required timeframe
- processing data and recording and reporting results accurately and legibly
- estimating and calculating scientific quantities, such as stress, strain and stiffness
- interpreting gross features of data and graphs (e.g. Mohr circles) and making logical conclusions
- identifying atypical data, errors and unexpected results, tracing any obvious causes and taking corrective action
- maintaining security, integrity and traceability of all samples/test pieces, data/results and technical records
- seeking advice from a supervisor when needed
- communicating with clients or outside service technician in accordance with workplace procedures
- minimising environmental impacts, including safe collection, storage and appropriate disposal of waste.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- relationship between properties and uses of construction materials
- details of construction materials test methods routinely used in job role, including:
 - purpose and principles of test
 - relationship between the properties and uses of construction materials
 - sample preparation procedures
 - key treatment/measurement stages
 - calculation steps to give results in appropriate units and precision
 - expected values for sample type
 - sources of uncertainty and methods for their control
- principles and concepts underpinning the test method, such as:
 - mass, weight, forces, pressure, energy, density, friction and slip resistance
 - elasticity, hardness, strength of materials, plasticity, permeability and dispersion
 - electrical safety concepts, including voltage, current, resistance, conductors/insulators and AC/DC
 - chemical ions, pH and solubility
- principles and concepts related to equipment/instrument operation and testing, including the function of key components and effects on test of modifying variables
- pre-use checks and operating procedures for test equipment/instruments routinely used in job role
- basic equipment/method troubleshooting procedures
- corrective actions, including:
 - checking accuracy of data entry and transcription
 - logical checking of equipment set-up
 - checking calibration, zero error and drift for basic instruments
 - careful re-reading of procedures
 - repeating test measurements
 - seeking advice
- procedures for ensuring traceability of samples, test pieces, test data and results
- procedures for recording and reporting test results, calculations, test observations and unexpected or atypical results and equipment problems
- confidentiality requirements
- hazards associated with construction material testing, relevant work health and safety (WHS) and environmental management requirements.
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Assessment Conditions

- Judgment of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event.

- This unit of competency is to be assessed in the workplace or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept in each case).
- This unit of competency may be assessed with:
 - MSL924001 Process and interpret data
 - MSL943002 Participate in laboratory or field workplace safety
 - MSL953001 Receive and prepare samples for testing
- Holistic assessment methods include:
 - review of test data, results and records generated by the candidate
 - feedback from supervisors and clients regarding the candidate's ability to conduct a range of multi-stage tests to determine the properties of samples reliably, safely and efficiently
 - questions to assess understanding of workplace procedures and multi-stage test methods relevant to job role.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
 - sample preparation and test equipment and materials specified in the test method
 - test methods and description of test set-up, data sets and technical/administrative records, and workplace procedures
 - calculator and/or computer and relevant software or laboratory information system.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competence and currency.
- Technical competence can be demonstrated through:
 - relevant VET or other qualification/Statement of Attainment AND/OR
 - relevant workplace experience.
- Currency can be demonstrated through:
 - performing the competency being assessed as part of current employment OR
 - having consulted with a laboratory about performing the competency being assessed within the last twelve months.

Links

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