



Australian Government

MSL973001 Perform basic tests

Release: 1

MSL973001 Perform basic tests

Modification History

Release 1. Supersedes and is equivalent to MSL973001A Perform basic tests

Application

This unit of competency covers the ability to prepare samples and perform tests and measurements using standard methods with access to readily available advice from supervisors.

This unit of competency is applicable to laboratory/field assistants working in all industry sectors. In general, they do not calibrate equipment and make only limited adjustments to the controls. They do not interpret or analyse results or troubleshoot equipment problems.

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.

1	Interpret test requirements	1.1	Review test request to identify samples to be tested, test method and equipment involved
		1.2	Identify hazards and workplace controls associated with the sample, preparation methods, reagents and/or equipment
2	Prepare sample	2.1	Record sample description, compare with specification, record and report discrepancies

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| | | 2.2 | Prepare sample in accordance with appropriate standard methods |
| 3 | Check equipment before use | 3.1 | Set up test equipment in accordance with test method |
| | | 3.2 | Perform pre-use and safety checks in accordance with workplace procedures and manufacturer instructions |
| | | 3.3 | Identify faulty or unsafe equipment and report to appropriate personnel |
| | | 3.4 | Check calibration status of equipment and report any out-of-calibration items to appropriate personnel |
| 4 | Perform tests on samples | 4.1 | Identify, prepare and weigh or measure sample and standards to be tested |
| | | 4.2 | Conduct tests in accordance with workplace procedures |
| | | 4.3 | Record data in accordance with workplace procedures |
| | | 4.4 | Perform calculations on data as required |
| | | 4.5 | Identify and report out of specification or atypical results promptly to appropriate personnel |
| | | 4.6 | Shut down equipment in accordance with operating procedures |
| 5 | Maintain a safe work environment | 5.1 | Use established safe work practices and personal protective equipment (PPE) to ensure personal safety and that of other laboratory personnel |
| | | 5.2 | Minimise the generation of wastes and environmental impacts |
| | | 5.3 | Ensure safe disposal of laboratory and hazardous wastes |
| | | 5.4 | Clean, care for and store equipment and reagents as required |

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, and national measurement regulations and guidelines
- standard methods for basic tests
- 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; and waste minimisation and safe disposal procedures

Sample preparation

Sample preparation processes include one or more of:

- sub-sampling or splitting using procedures, such as riffing, coning and quartering, manual and mechanical splitters
- diluting samples
- physical treatments, such as ashing, dissolving, filtration, sieving, centrifugation and comminution
- moulding, casting or cutting specimens

Typical basic tests carried out by laboratory/field assistants

Typical basic tests carried out by laboratory/field assistants include, but are not limited to, one or more of:

- visual/optical tests of appearance, such as colour, texture, identity, turbidity and refractive index (alcohol content and Baume/Brix)
- physical tests, such as:

- density, specific gravity and compacted density
- moisture content and water activity
- particle size, particle shape and size distribution
- chemical tests, such as:
 - gravimetric, colorimetric, electrical conductivity (EC) and pH
 - specific ions using dipsticks and kits
 - nutrients (e.g. nitrates and orthophosphates) using kits
 - ashes, including sulphated ashes
- biological/environmental tests, such as:
 - pH, oxygen reduction potential (ORP), dissolved oxygen (DO) and EC
 - E coli using test kits, and surface hygiene/presence of microbes
- packaging tests, such as:
 - tearing resistance, bursting strength and impact resistance
 - permeability and/or leakage
- mechanical tests, such as:
 - Emerson class
 - concrete slump

Measurements

Measurements include, but are not limited to, one or more of:

- simple ground surveys
- meteorological parameters, such as wind direction/strength, rainfall, maximum/minimum temperature, humidity and solar radiation
- simple background radiation survey
- production/process parameters, such as temperature, flow and pressure
- gas levels in a confined space

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
- accessing and applying current industry understanding of infection control issued by the National Health and Medical Research Council (NHMRC) and State and Territory

Departments of Health, where relevant

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

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

Assessment Requirements for MSL973001 Perform basic tests

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Performance Evidence

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

- accurately interpreting workplace procedures and standard methods
- preparing samples using at least three (3) different processes
- performing at least five (5) basic tests or measurements using standard methods and procedures
- checking test equipment before use
- completing all tests within the required timeline without sacrificing safety, accuracy or quality
- demonstrating close attention to the accuracy and precision of measurements and the data obtained
- calculating simple quantities using appropriate equations, units, uncertainties and precision
- recording and presenting results accurately and legibly
- maintaining the security, integrity and traceability of all samples, data/results and documentation
- following procedures for working safely and minimising environmental impacts.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- concepts of metrology, including:
 - all measurements are estimates
 - measurements belong to a population of measurements of the measured parameters
 - precision, accuracy and significant figures
 - sources of error, uncertainty and repeatability
 - traceability
- international system of units (SI)
- purpose of tests performed as part of job role and principles of the standard methods/specifications used
- function of key components of the test equipment, pre-use equipment and safety checks
- sources of uncertainty in measurement and methods for control
- workplace and/or legal traceability requirements
- interpretation and recording of test result, including simple calculations
- procedures for recognising and reporting of unexpected or unusual results

- relevant hazards, work health safety (WHS) and environment requirements.

Assessment Conditions

- Judgement 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:
 - MSL922001 Record and present data
- Holistic assessment methods include:
 - review of the quality of test data/results achieved by the candidate over time
 - inspection of records and workplace documentation completed by the candidate
 - observation of the candidate performing a range of basic tests
 - feedback from peers and supervisors
 - oral or written questioning to check required knowledge of basic test procedures.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
- a standard laboratory equipped with basic test equipment, common measuring instruments, materials, standard methods, workplace procedures, MSDS and equipment manuals.
- 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.

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