



Australian Government

MSL974016 Perform physical and mechanical tests

Release: 1

MSL974016 Perform physical and mechanical tests

Modification History

Release	Comments
Release 1	New unit. Created by combining MSL974005 Perform physical tests and MSL974010 Perform mechanical tests.

Application

This unit of competency describes the skills and knowledge to interpret physical and mechanical test requirements, prepare samples, conduct pre-use and calibration checks on equipment and perform routine physical tests. These tests will involve several measurement steps. The unit includes, but is not limited to, data processing and interpretation of results and tracking of test malfunctions where the procedure is standardised. However, personnel are not required to analyse data, optimise tests or procedures for specific samples or troubleshoot equipment problems where the solution is not apparent.

This unit applies to laboratory or technical assistants and instrument operators working in the manufacturing, environment, food, construction materials and healthcare testing 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.

- | | | | |
|---|------------------------------------|-----|--|
| 1 | Interpret and schedule test | 1.1 | Review test request to identify samples to be tested, test method and equipment/instruments involved |
|---|------------------------------------|-----|--|

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
	requirements	1.2	Identify hazards and workplace control measures associated with the sample, preparation/test methods and equipment
		1.3	Plan work sequences to optimise throughput of multiple samples
2	Receive and prepare samples	2.1	Log samples using standard operating procedures (SOPs)
		2.2	Record sample description, compare with specification and note and report discrepancies
		2.3	Prepare samples and standards in accordance with physical and mechanical testing requirements
		2.4	Ensure traceability of samples from receipt to reporting of results
3	Check equipment before use	3.1	Set up equipment/instruments in accordance with test method requirements
		3.2	Perform pre-use and safety checks in accordance with relevant workplace and operating procedures
		3.3	Identify faulty or unsafe components and equipment and report to appropriate personnel
		3.4	Check equipment calibration using specified procedures
		3.5	Quarantine out-of-calibration equipment/instruments
4	Test samples to determine physical properties	4.1	Operate equipment/instruments in accordance with test method requirements
		4.2	Perform tests/procedures on all samples and standards in accordance with specified methods
		4.3	Shut down equipment/instruments in accordance with operating procedures

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
5	Process and interpret data	5.1	Record test data noting atypical observations
		5.2	Ensure calculated values are consistent with expectations
		5.3	Estimate and document uncertainty of measurement in accordance with workplace procedures
		5.4	Record and report results in accordance with workplace procedures
		5.5	Interpret trends in data and/or results and report out-of-specification or atypical results promptly to appropriate personnel
		5.6	Determine if obvious procedure or equipment problems have led to atypical data or results
6	Maintain a safe work environment	6.1	Use established safe work practices and personal protective equipment (PPE) to ensure personal safety and that of other laboratory personnel
		6.2	Minimise the generation of wastes and environmental impacts
		6.3	Ensure the safe collection of laboratory and hazardous waste for subsequent disposal
		6.4	Care for and store equipment and materials as required
7	Maintain laboratory records	7.1	Enter approved data into laboratory information management system (LIMS)
		7.2	Maintain confidentiality and security of workplace information and laboratory data
		7.3	Maintain equipment and calibration logs 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:
 - process data, interpret gross features of data/results and making relevant conclusions
 - prepare calibration graphs and calculate results using appropriate equations, units, uncertainties and precision
- Problem-solving skills to:
 - trace and source causes of artefacts, track test malfunctions of standardised procedures, and troubleshoot basic equipment and methods

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

Unit Mapping Information

Equivalent to MSL974005 Perform physical tests or MSL974010 Perform mechanical tests.

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 MSL974016 Perform physical and mechanical tests

Modification History

Release	Comments
Release 1	New unit. Created by combining MSL974005 Perform physical tests and MSL974010 Perform mechanical tests.

Performance Evidence

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

- safely and accurately performed at least 5 physical and/or mechanical tests that involve several measurement steps.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- relevant physical and mechanical principles and concepts including:
 - matter, interatomic and intermolecular forces and states of matter
 - mechanical concepts, such as mass and weight; forces, friction, slip resistance, cohesive/adhesive forces; pressure, hydrostatic pressure; fluid flow; viscosity and energy
 - electrical concepts, such as electric field, voltage, current, resistance and AC/DC, and electrical safety
- purpose of tests or procedures conducted
- concepts of metrology, principles and concepts related to equipment and instrument operation, and test or procedure
- function of key components of equipment/instrument and effects on the test of modifying equipment and instrument variables
- sample preparation procedures
- calibration and basic equipment and method troubleshooting procedures
- preparation of sample methods
- typical tests and procedures
- workplace and/or legal traceability requirements
- 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:
 - a standard laboratory equipped with appropriate sample preparation and test equipment/instruments, standards and materials
 - workplace procedures and standard methods
 - records, including test and calibration results; equipment use, maintenance and servicing history, and faulty or unsafe equipment.

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

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>