



Australian Government

MSL974020 Perform food tests

Release: 1

MSL974020 Perform food tests

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 MSL974004 Perform food tests. Changes to performance criteria. Foundation skill information added. Range of conditions removed. Assessment requirements amended.

Application

This unit of competency describes the skills and knowledge to interpret food test requirements, prepare samples, conduct pre-use and calibration checks on equipment, and perform routine testing of raw food materials, in-process materials and final products. These tests will involve several measurement steps. The unit includes data processing and some interpretation of results and tracking of obvious test malfunctions where the procedure is standardised. However, personnel are not required to analyse data, optimise tests/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 food and beverage processing 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.

Elements describe the essential outcomes.		Performance criteria describe the performance needed to demonstrate achievement of the element.	
1	Interpret and schedule test requirements	1.1	Review test request to identify samples to be tested, test method and equipment/instruments involved
		1.2	Identify hazards and workplace controls associated with the sample, preparation/test methods, reagents and/or equipment
		1.3	Plan parallel work sequences to optimise throughput of multiple sets of samples
2	Receive and prepare food 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 food testing requirements
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	Check equipment calibration using specified standards and procedures
		3.4	Inspect reagents required for quality issues including visual checks and expiry
4	Test samples to determine food components and characteristics	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 data | 5.1 | Record test data noting atypical observations |
| | | 5.2 | Construct calibration graphs and compute results for all samples from these graphs |
| | | 5.3 | Ensure calculated values are consistent with reference standards and expectations |
| | | 5.4 | Record and report results in accordance with workplace procedures |
| | | 5.5 | Determine if basic 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 reagents as required |
| | | | |
| 7 | Maintain laboratory records | 7.1 | Make entries on report forms or into a laboratory information management system accurately calculating, recording or transcribing data as required |
| | | 7.2 | Ensure traceability of sample from receipt to reporting of results |

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 make relevant conclusions

- prepare calibration graphs and calculate results using appropriate equations, units, uncertainties and precision
- Problem-solving skills to:
 - identify atypical results as either out-of-normal range or an artefact
 - trace and source obvious causes of an artefact, track obvious test malfunctions for 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 MSL974004 Perform food tests, 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 MSL974020 Perform food tests

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 MSL974004 Perform food tests. Changes to performance criteria. Foundation skill information added. Range of conditions removed. Assessment requirements amended.

Performance Evidence

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

- performed at least 5 routine food tests or procedures involving several measurement steps including at least 4 of the following:
 - sensory tests
 - visual tests
 - package integrity and compatibility test
 - physical/mechanical tests
 - chemical tests
 - thermal tests including stability of products and effectiveness of heat treatments
- prepared samples using 3 different processes including at least 2 of the following:
 - grinding and milling
 - preparation of discs
 - digestion
 - extracting
 - refluxing
 - degassing
 - enzymatic treatment
 - washing and drying
 - ashing and temperature equilibration
 - precipitation and centrifugation
 - filtration
 - flocculation
 - evaporation.

Knowledge Evidence

There must be evidence the candidate has knowledge of:

- basic principles and concepts underpinning the food tests or procedures including:
 - ions, atoms, molecules, bonding, affinities and related properties
 - chemical reactions (acid/base and compleximetric)
 - structure and properties of proteins, lipids, carbohydrates, vitamins and minerals
 - food additives, flavourings and essences
 - nutrient value of major food groups
 - interaction of water with food components
 - chemical and microbial changes in food
 - food preservation techniques including atmosphere and modified atmosphere in relation
 - basic biochemistry of fermentation reactions
 - function of packaging for product integrity and controlled atmosphere
 - electromagnetic spectrum and absorption, emission and refraction of light
 - quality control program for raw materials, process control and finished product inspection
- purpose of the food tests or procedures conducted
- basic principles and concepts related to equipment and instrument operation and tests or procedures implemented
- concepts of metrology, including:
 - all measurements are estimates
 - precision, accuracy and significant figures
 - sources of error, uncertainty and repeatability
 - traceability
- function of key components of the equipment/instrument used
- effects on the test of modifying equipment/instrument variables
- common sample preparation processes relevant to job role
- types of food tests and procedures:
 - sensory tests
 - visual tests of content and package
 - physical/mechanical tests
 - chemical analysis
 - microbiological tests
 - molecular tests
 - thermal tests including stability of products and effectiveness of heat treatments
- workplace and/or legal traceability requirements
- awareness of environmental sustainability issues as they relate to the work task
- legal, ethical and work health and safety (WHS) 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 test equipment, instruments, standards and materials
 - workplace procedures and standard methods
 - records, including:
 - test and calibration results
 - equipment use, maintenance and servicing history.

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>