



Australian Government

Department of Education, Employment and Workplace Relations

PMLTEST300B Perform basic tests

Release: 1

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Modification History

Unit Descriptor

This unit of competency covers the ability to perform tests using standard methods and with access to readily available advice. Personnel are required to demonstrate close attention to the accuracy and precision of measurements and the data obtained. In general, they do not calibrate equipment and make only limited adjustments to the controls. The unit of competency does not cover interpretation or analysis of results or troubleshooting equipment problems.

This unit competency has no prerequisites.

This unit of competency is applicable to laboratory/field assistants working in all industry sectors.

Industry representatives have provided case studies to illustrate the practical application of this unit of competency and to show its relevance in a workplace setting. These are found at the end of this unit of competency under the section This competency in practice.

Application of the Unit

Licensing/Regulatory Information

Pre-Requisites

Employability Skills Information

Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.

Performance Criteria describe the level of performance required to demonstrate achievement of the element.

Elements and Performance Criteria

Elements and Performance Criteria

Element	Performance Criteria
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 enterprise 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 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 enterprise procedures and manufacturer's 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 enterprise procedures 4.3 Record data in accordance with enterprise 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 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.

Required Skills and Knowledge

Evidence Guide

The Evidence Guide describes the underpinning knowledge and skills that must be demonstrated to prove competence.

Critical aspects of competency

Competency must be demonstrated in the ability to perform consistently at the required standard. In particular, assessors should look to see that the candidate:

- interprets enterprise procedure or standard methods accurately
- uses safety information (for example, MSDSs) and performs procedures safely
- checks test equipment before use
- completes all tests within required timeline without sacrificing safety, accuracy or quality
- calculates, records and presents results accurately and legibly
- maintains security, integrity and traceability of all samples, data/results and documentation
- cleans and maintains equipment.

Underpinning knowledge

Competency includes the ability to apply and explain:

- purpose of test
- principles of the standard method
- pre-use equipment checks
- relevant standards/specifications and their interpretation
- sources of uncertainty in measurement and methods for control
- enterprise and/or legal traceability requirements
- interpretation and recording of test result, including simple calculations
- procedures for recognition/reporting of unexpected or unusual results
- relevant health, safety and environment requirements.

Assessment context and methods

This unit of competency is to be assessed in the workplace or simulated workplace environment.

The following assessment methods are suggested:

- review of the quality of test data/results achieved by the candidate over time
- inspection of records and workplace documentation completed by the candidate
- feedback from peers and supervisors
- observation of the candidate performing a range of basic tests
- oral or written questioning to check underpinning knowledge of test procedures.

In all cases, practical assessment should be supported by questions to assess underpinning knowledge and those aspects of competency which are difficult to assess directly. Questioning techniques should suit the language and literacy levels of the candidate.

Interdependent assessment of unit

This unit of competency may be assessed with:

PMLDATA200A Record and present data.

Resource implications

Resources may include:

- standard laboratory equipped with appropriate equipment standards and materials
- enterprise procedures and standard methods, equipment manuals
- material safety data sheets (MSDSs).

This competency in practice

Manufacturing

Standard testing methods may be viewed as 'legal' requirements that must be followed to ensure that a product manufactured in a chemical plant meets the specification by which it is sold to the customer. Technical assistants perform tests in a quality control laboratory to ensure that material meets 'legal' requirements and the material is safe and effective in use. Peroxides may be present in ether as a result of light-catalysed air oxidation. Peroxides are toxic and can give rise to mixtures which are explosive when distilled. Technical assistants test ether to ensure that the level of peroxide is within acceptable limits. The test is done by shaking ether with a solution of potassium iodide. After standing for 30 minutes in the dark the yellow colour of the aqueous phase, due to the liberation of iodine, must not be more intense than a prepared standard solution. These tests ensure the quality and safety of the ether.

Food processing

A Snack Food Company produces a range of high quality, impulse purchase snack foods. Some of these products are moisture and/or oxygen sensitive and are therefore packaged in multi-layer flexible packaging to provide optimum shelf-life. The packaging must also be able to withstand the rigours of the production and distribution process. While the packaging is purchased to meet the shelf-life and distribution specifications, the quality assurance program requires the periodic evaluation of the packaging materials against these specifications. A laboratory assistant uses standard methods to test the tearing resistance, bursting strength, impact resistance and permeability and/or leakage of the snack food packaging. Tests are also conducted on aspects of the manufacturing process that can affect shelf-life. These tests involve the measuring of the heat-seam strength and the sealing performance of the closure process. The test results are recorded by the laboratory assistant to verify the conformance of the materials to the supplier specifications and of the process to the manufacturing specifications. The assistant reports any anomalies or non-conformances to the appropriate personnel.

Key Competencies

The seven key competencies represent generic skills considered for effective work participation. The bracketed numbering against each of the key competencies indicates the performance level required in this unit. These are stand-alone levels and do not correspond to levels in the Australian Qualifications Framework (AQF).

Level (1) represents the competence to undertake tasks effectively

Level (2) represents the competence to manage tasks

Level (3) represents the competence to use concepts for evaluating and reshaping tasks.

Collecting, analysing and organising information	Communicating ideas and information	Planning and organising activities	Working with others and in teams	Using mathematical ideas and techniques	Solving problems	Using technology
Level 1	Level 1	Level 1	Level 1	Level 1	Level 1	Level 1

Range Statement

The range of variables relates to the unit of competency as a whole. It allows for different work environments and situations that will affect performance.

Where reference is made to industry Codes of Practice, and/or Australian/international standards, it is expected the latest version will be used.

This unit of competency describes the work conducted by supervised laboratory assistants who perform a range of basic tests and measurements.

All operations must comply with relevant standards, appropriate procedures and/or enterprise requirements. These procedures include or have been prepared from:

Australian and international standards, such as:

AS ISO/IEC 17025 General requirements for the competence of testing and calibration laboratories

AS/NZS 2243.2 Chemical aspects

AS 2243.6 Mechanical aspects

AS 2243.10 Storage of chemicals

AS 2830 Good laboratory practice

Codes of Practice (such as GLP and GMP)

material safety data sheets (MSDSs) and safety procedures

standard operating procedures (SOPs)

equipment manuals

equipment startup, operation and shutdown procedures

calibration and maintenance schedules

quality manuals

enterprise recording and reporting procedures

production and laboratory schedules

material, production and product specifications.

Codes of Practice.

Preparation of samples can include:

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 tests carried out by laboratory/field assistants could include:

visual/optical tests of appearance, colour, texture, identity, turbidity, refractive index (alcohol content, Baume/Brix)

physical tests, such as:

density, specific gravity, compacted density

moisture content, water activity

particle size, particle shape, size distribution

chemical tests, such as:

gravimetric

colorimetric

electrical conductivity (EC), pH

specific ions using dipsticks and kits

nutrients (for example nitrates, orthophosphates) using basic kits

ashes, including sulphated ashes
biological/environmental tests, such as:
pH, oxygen reduction potential (ORP), dissolved oxygen (DO), electrical conductivity
E coli using test kits
surface hygiene/presence of microbes
packaging tests, such as:
tearing resistance, bursting strength, impact resistance
permeability and/or leakage
mechanical tests, such as:
Emerson class
concrete slump
Other measurements may include:
simple ground surveys
meteorological parameters, such as: wind direction/strength, rainfall, max./min. temperature, humidity, solar radiation
simple background radiation survey
production/process parameters, such as temperature, flow, pressure
gas levels in a confined space.
Common measuring equipment may include:
dimension apparatus
dissolved oxygen (DO), electrical conductivity (EC)
analogue and digital meters, charts/recorders
basic chemical and biological test kits
dipsticks and site test kits (for example, HACK)
timing devices
temperature measuring devices, such as thermometers, thermocouples.
Hazards may include:
electric shock
biohazards, such as microbiological organisms and agents associated with soil, air, water, blood and blood products, human or animal tissue and fluids
solar radiation, dust, noise
chemicals, such as: sulphuric acid, fluorides, hydrocarbons
aerosols
sharps, broken glassware and hand tools
flammable liquids
dry ice and liquid nitrogen
fluids under pressure
sources of ignition
occupational overuse syndrome, slips, trips and falls
manual handling, working at heights and in confined spaces
crushing, entanglement, cuts associated with moving machinery or falling objects.
Enterprise controls to address hazards may include:
use of material safety data sheets (MSDS)
use of signage, barriers and service isolation tags
use of personal protective equipment, such as hard hats, hearing protection, sunscreen lotion, gloves, safety glasses, goggles, face guards, coveralls, gown, body suits, respirators and safety boots

use of appropriate equipment, such as biohazard containers and cabinets, laminar flow cabinets
recognising and observing hazard warnings and safety signs
labelling of samples, reagents, aliquoted samples and hazardous materials
handling and storage of all hazardous materials and equipment in accordance with labelling, materials safety data sheets and manufacturer's instructions, enterprise procedures and regulations
cleaning and decontaminating equipment and work areas regularly using recommended procedures
following established manual handling procedures for tasks involving manual handling.
Minimising environmental impacts may involve:
recycling of non-hazardous waste, such as chemicals, batteries, plastic, metals, glass
appropriate disposal of hazardous waste
correct disposal of excess sample/test material
correct storage and handling of hazardous chemicals.

Health, safety and environment

All operations to which this unit applies are subject to stringent health, safety and environmental (HSE) requirements, which may be imposed through State or Federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and HSE requirements, the HSE requirements take precedence.

All operations assume the potentially hazardous nature of samples and require standard precautions to be applied. Users should access and apply current industry understanding of infection control issued by the National Health and Medical Research Council and State and Territory Departments of Health. All operations are performed in accordance with standard operating procedures.

Unit Sector(s)