



**Australian Government**

# **Assessment Requirements for MSL974001 Prepare, standardise and use solutions**

**Release: 1**

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## Modification History

Release 1. Supersedes and is equivalent to MSL974001A Prepare, standardise and use solutions

## Performance Evidence

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

- preparing and standardising at least three (3) different solutions in accordance workplace procedures and/or standard methods
- using balances and volumetric glassware accurately
- selecting and using primary and secondary standards and indicators
- performing titrations using laboratory procedures with required accuracy and precision and within required timelines
- determining equivalence points using indicators and graphical methods
- calculating the concentration of the solution with appropriate units and uncertainties given the chemical reaction for the titration
- performing quality assurance checks for solution performance
- recognising control results that are not within acceptable range
- recording and reporting results in accordance with workplace procedures
- labelling and storing solutions, safely cleaning up spills and collecting and disposing of waste in accordance with workplace procedures
- working safely at all times by following established safe work practices and using safety information and safety equipment.

## Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- solution terminology
- the chemistry of acids, bases, buffers and redox reactions
- Moles and Molarity
- scientific terminology for different types of solutions
- chemical symbols and Atomic Mass
- formulae for calculating concentration
- 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)
- grades of glassware, reagents and their use
- reactions used for standardisation and desirable characteristics
- workplace procedures, standard methods and calculations used for preparing, standardising and monitoring the quality of solutions used in job role
- workplace communication and reporting procedures
- relevant hazards, work health and safety (WHS) and environment requirements.

## 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:
  - relevant MSL974000 series units of competency, and
  - relevant MSL975000 series units of competency dealing with sampling, tests and measurements
- Holistic assessment methods include:
  - inspection and/or testing of solutions prepared by the candidate
  - review of records and workplace documentation completed by candidate
  - review of work outputs by the candidate over time to ensure accuracy, consistency and timeliness
  - observation of the candidate preparing, standardising and using a range of solutions
  - feedback from peers and supervisors about the candidate's ability to consistently prepare and standardise solutions that are fit for purpose
  - oral/written questions about key steps in solution preparation and standardisation, calculations, common hazards and safety 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 appropriate reagents and equipment to prepare and standardise solutions, such as pH meters; balances; magnetic stirrers, water baths and hot plates; measuring cylinders, beakers, conical flasks, volumetric flasks, pipettes and burettes; filter papers and funnels; and fume cupboards
  - standard methods and workplace procedures
  - containers and storage facilities.
- 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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## **Links**

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