



**Australian Government**

# **MSL974001 Prepare, standardise and use solutions**

**Release: 1**

# MSL974001 Prepare, standardise and use solutions

## Modification History

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

## Application

This unit of competency covers the ability to prepare, standardise and monitor the quality of solutions.

This unit of competency is applicable to laboratory technicians working in all industry sectors.

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.

- |                            |     |   |
|----------------------------|-----|---|
| <b>1 Prepare solutions</b> | 1.1 | Select appropriate procedure for solution preparation                                 |
|                            | 1.2 | Select equipment, materials and solvent of specified purity                           |
|                            | 1.3 | Measure appropriate quantities of reagents for solution preparation and record data.  |
|                            | 1.4 | Select and assemble specified laboratory equipment and appropriate grade of glassware |

- 1.5 Perform specified dilutions
  - 1.6 Prepare solutions to achieve homogeneous mix of the specified concentration
  - 1.7 Label and store solutions to maintain identity and stability
- 2     **Standardise and use volumetric solutions**
- 2.1 Assemble appropriate laboratory equipment
  - 2.2 Perform serial dilutions as required
  - 2.3 Standardise the solution to the required specified range and precision
  - 2.4 Label and store solutions to maintain identity and stability
  - 2.5 Use standard volumetric solutions to determine concentration of unknown solutions
- 3     **Calculate and record data**
- 3.1 Calculate specified concentrations
  - 3.2 Use authorised procedure if data is to be modified
  - 3.3 Estimate and document uncertainty of measurement in accordance with workplace procedures, as required
  - 3.4 Record all relevant details according to laboratory procedures and report results
  - 3.5 Report concentration with appropriate units
- 4     **Monitor the quality of laboratory solutions**
- 4.1 Check solutions for visual deterioration and expiry date
  - 4.2 Re-standardise or dispose of dated or deteriorated solutions
  - 4.3 Record details and label solutions according to laboratory procedures

- |   |   |     |  |
|---|---|-----|--|
| 5 | <b>Maintain a safe work environment</b> | 5.1 | Use established safe work practices and personal protective equipment (PPE) to ensure personal safety and that of other laboratory personnel |
|   |   | 5.2 | Clean up spills using appropriate techniques to protect personnel, work area and environment   |
|   |   | 5.3 | Minimise generation of waste and environmental impacts   |
|   |   | 5.4 | Ensure the safe collection of laboratory and hazardous waste for subsequent disposal   |
|   |   | 5.5 | 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, quality management, laboratory glassware and international system of units (SI)
- national work health and safety (WHS) standards and codes of practice, national environmental protection measures, and national measurement regulations and guidelines
- specific codes, guidelines and procedures, such as National Association of Testing Authorities (NATA) accreditation requirements, principles of good laboratory practice (GLP), and Australian code of good manufacturing practice for medicinal products (GMP)
- 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
- workplace procedures and standard methods for preparing working solutions

### **Solutions**

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

- solutions of strong/weak acids and bases
- oxidising/reducing agents
- solutions used for complexometric or precipitation titrations
- stains for cells and tissues, enzymes, buffers and antibodies
- diluents for maintaining isotonicity
- organic solutions and histological fixatives

### **Checking useability of solutions**

Checking useability of solutions includes, but is not limited to, one or more of:

- examining stained samples for correct staining reactions
- performing pH checks

- confirming enzyme activity
- checking red cell suspensions for haemolysis
- ferric chloride for phenolic solutions
- isotonicity for saline

**Established safe work practices**

Established safe work practices include, but are not limited to, one or more of:

- use of PPE, such as safety glasses, gloves and coveralls
- correctly labelling reagents and hazardous materials
- handling and storing hazardous material and equipment in accordance with labels, MSDS, manufacturer instructions, and workplace procedures and regulations
- regular cleaning and/or decontamination of equipment and work areas
- prompt clean-up of spills in accordance workplace procedures

**WHS and environmental management requirements**

WHS and environmental management requirements

- 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**

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

**Links**

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