



Australian Government

MSL963001 Operate basic handblowing equipment

Release: 1

MSL963001 Operate basic handblowing equipment

Modification History

Release 1. Supersedes and is equivalent to MSL963001A Operate basic handblowing equipment

Application

This unit of competency covers the ability to operate handblowing equipment to perform basic glasswork. Personnel may be less experienced workers working under the guidance of an experienced scientific glassblower.

This unit of competency is applicable to personnel working with experienced scientific glassblowers, generally in scientific educational institutions.

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

Scientific glassblowing

Unit Sector

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Prepare for handblowing operations	1.1	Identify job, appropriate procedure, hazards and safety requirements
		1.2	Use safety equipment, safety procedures and personal protective equipment (PPE) specified for the job and materials to be used
		1.3	Record description of the job to be undertaken, compare with specification and report any variations
		1.4	Select and prepare tools and equipment in accordance with job requirements

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| | | 1.5 | Identify glass stocks and components required for the job |
| 2 | Follow sequence of operations for glasswork procedure to be performed | 2.1 | Prepare glass stocks and components as required for the job |
| | | 2.2 | Check and adjust equipment and tools for the job as applicable |
| | | 2.3 | Start up equipment using workplace procedures |
| | | 2.4 | Carry out glasswork procedure using the appropriate standard method |
| | | 2.5 | Monitor process and rectify routine problems |
| | | 2.6 | Follow equipment shutdown procedures |
| 3 | Use annealing equipment | 3.1 | Prepare annealing equipment for the job |
| | | 3.2 | Start up, operate and shut down annealing equipment using workplace procedures |
| | | 3.3 | Monitor, adjust and record annealing operation |
| | | 3.4 | Rectify routine problems |
| 4 | Maintain a safe work environment | 4.1 | Follow established safe work practices to ensure own safety and that of others |
| | | 4.2 | Minimise the generation of wastes |
| | | 4.3 | Ensure the safe disposal of wastes |
| | | 4.4 | Clean, care for and maintain work area, equipment and tools |
| | | 4.5 | Report any hazards or incidents according to workplace procedures |
| 5 | Maintain records | 5.1 | Record data in accordance with workplace requirements |

- 5.2 Maintain equipment logs in accordance with workplace requirements
- 5.3 Maintain security and confidentiality of workplace information

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 laboratory safety; quality and environmental management; and labelling, storage, handling and transport of hazardous materials
- national work health and safety (WHS) standards and codes of practice
- specific codes, guidelines and procedures, such as principles of good laboratory practice (GLP)
- workplace documents, such as standard operating procedures (SOPs); quality and equipment manuals; maintenance schedules; material safety data sheets (MSDS); safety procedures; material, production and product specifications; production and laboratory schedules; workplace recording and reporting procedures; and waste minimisation and safe disposal procedures

Hazards

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

- glass dust
- sharps and broken glassware
- heat sources, such as burners and ovens
- fluids under pressure (acetylene and oxygen)

- cuts associated with glass grinders and cutters
- manual handling of heavy bags and containers

Safety procedures

Safety procedures include, but are not limited to, one or more of:

- ensuring access to service shut-off points
- recognising and observing hazard warnings and safety signs
- correct labelling of samples and hazardous materials
- extracting dust
- following established manual handling procedures
- handling and storing hazardous materials and equipment in accordance with labels, MSDS, manufacturer instructions, and workplace procedures and regulations
- regular cleaning and/or decontamination of equipment and work areas
- using PPE, such as heat resistant gloves, safety glasses, goggles, face guards, coveralls, respirators and safety boots

WHS and environmental management requirements

WHS and environmental management requirements include:

- 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 MSL963001A Operate basic handblowing equipment

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=5c63a03b-4a6b-4ae5-9560-1e3c5f462baa>

Assessment Requirements for MSL963001 Operate basic handblowing equipment

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Performance Evidence

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

- selecting appropriate grades of glass and preparing them for use
- safely operating handblowing equipment to produce at least three (3) examples of basic glasswork
- using basic bench/hand glasswork techniques and equipment to fabricate at least three (3) items of general glass apparatus involving:
 - cutting, heating, bending, shaping, sealing and related glassworking techniques
 - maintaining temperature and stress parameters and safe working pressures
- making and grinding at least two (2) components, such as stopcocks, that meet specifications
- storing glass appropriately
- starting up, setting up, shutting down and maintaining equipment in accordance with work instructions
- optimising of equipment operating parameters
- reporting atypical results and problems to appropriate personnel according to workplace procedures
- completing workplace documentation accurately and communicating work results
- maintaining work area, equipment and tools in accordance with workplace procedures.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- composition and nature of glass types
- basic chemical and physical concepts relating to properties and behaviour of glass
- critical material properties and appropriate glassworking parameters
- function and correct use of apparatus, safe start-up and shutdown procedures
- pre-heating procedures
- basic theory of re-entry angles and stress points
- set-up and annealing/conditioning process
- relationship of temperature and temporary and permanent stress
- pre-annealing, annealing and post-annealing processes
- potential quality problems, including:

- temperature and strain problems
- devitrification
- non-uniform thickness of seals or joints
- equipment problems
- poor optics, distortion, excessive breakage, non-uniform break pattern, incorrect cross bend, excessive bow, scratches and poor glass shape
- loss of utilities
- relevant hazards, work health and safety (WHS) and environment requirements.

Assessment Conditions

- Judgement 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. The timeframe must allow for assessment of operation under all normal and a range of abnormal conditions.
- 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).
- Holistic assessment methods include:
 - inspection of glasswork and workplace documentation completed by the candidate
 - review of candidate's work outputs over a period of time to assess accuracy, consistency and timeliness
 - feedback from supervisors and/or customers
 - observation of the candidate safely operating basic handblowing equipment
 - oral or written questioning about properties of glass, fabrication techniques, quality problems and safe work procedures.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
 - a scientific glassblowing facility, appropriate safety equipment, materials and safe work procedures, and fabrication methods
 - bench burner, hand torch, micro torch and ribbon burner, gas supplies and gas economiser

- hand tools, such as carbon paddles and mandrels, range of forceps, glass tubing gauges, angle setting jigs, calipers, glass support rollers, brass shapers, carbon rods, glass knife, stainless steel gauze, vernier calipers and other measuring tools, and strain viewer, dydinium glasses and polariscope
- glassworking lathe, mechanical glass cutters and saws, and mechanical glass grinding equipment
- annealing oven
- measuring and recording equipment.
- 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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