



**Australian Government**

**Department of Education, Employment and Workplace Relations**

# **LMFGG3010C Set up and operate glass toughening equipment**

**Release: 1**

## **LMFGG3010C Set up and operate glass toughening equipment**

### **Modification History**

Updated format, revised Evidence Guide. Outcome equivalent.

### **Unit Descriptor**

This unit of competency covers the skills and knowledge required to set up and operate glass toughening equipment. It includes operator maintenance.

### **Application of the Unit**

This unit covers work involving the set-up, operation and monitoring of equipment used to toughen glass. It requires individuals to demonstrate discretion, judgement and problem solving in the set-up and operation of glass toughening machines and equipment. The work is generally performed individually or in a team environment, with general supervision, and may be part of a production process.

### **Licensing/Regulatory Information**

Not applicable.

### **Pre-Requisites**

Not applicable.

### **Employability Skills Information**

This unit contains employability skills.

### **Elements and Performance Criteria Pre-Content**

Elements describe the essential outcomes of a unit of competency.

Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.

## Elements and Performance Criteria

- |   |                                     |     |                                                                                                                                                                                               |
|---|-------------------------------------|-----|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 | Prepare for work                    | 1.1 | <b>Work requirements</b> are determined from work instructions                                                                                                                                |
|   |                                     | 1.2 | Occupational health and safety (OHS) requirements relevant to operating <b>glass toughening equipment</b> , including <b>personal protective equipment</b> , are observed throughout the work |
|   |                                     | 1.3 | Work sequence is planned in a logical order to suit the job and <b>workplace procedures</b>                                                                                                   |
|   |                                     | 1.4 | <b>Tools, equipment</b> and <b>materials</b> are selected and checked prior to use to ensure they are appropriate for the work, of the required quality, serviceable and in a safe condition  |
|   |                                     | 1.5 | Machines are identified and checked for safe and effective operation, including emergency stops, gauges, guards and controls                                                                  |
|   |                                     | 1.6 | Procedures for checking the quality of materials and items produced, working condition of equipment, and quality requirements for each stage of the toughening process are identified         |
|   |                                     | 1.7 | Communication with others involved with the work is established and maintained to ensure efficient workflow coordination, personnel cooperation and safety throughout the work                |
| 2 | Set up equipment                    | 2.1 | <ul style="list-style-type: none"><li>• Machine settings and adjustments are made in accordance with job requirements and machine and tool manufacturer instructions</li></ul>                |
|   |                                     | 2.2 | Trial runs are conducted to check machine operation, accuracy and quality of finished work and any necessary adjustments made to machine settings                                             |
| 3 | Conduct glass toughening operations | 3.1 | Glass to be toughened is prepared for process in accordance with workplace procedures or industry practice                                                                                    |
|   |                                     | 3.2 | Glass to be toughened is positioned on furnace load table and stamped with product identification in accordance with workplace procedures or industry practice                                |

- 3.3 Glass is loaded into furnace in accordance with manufacturer instructions and workplace procedures
  - 3.4 Correct *furnace pre-start, start-up and set-up procedures* are completed in accordance with manufacturer instructions and workplace procedures
  - 3.5 Furnace operation is monitored and adjustments made, as required, in accordance with manufacturer instructions or workplace procedures
  - 3.6 Problems occurring during work operations are identified and reported to appropriate persons
  - 3.7 Correct furnace shutdown and end of shift procedures are followed in accordance with manufacturer instructions and workplace procedures
  - 3.8 Glass is unloaded from furnace in accordance with manufacturer instructions and workplace procedures
- 4 Complete work and maintain equipment
- 4.1 Product is inspected for quality of work and items which do not meet quality requirements discarded or returned for reprocessing in accordance with workplace procedures
  - 4.2 Completed work is placed in holding area in accordance with workplace procedures
  - 4.3 Work area is cleaned and rubbish disposed of, as appropriate
  - 4.4 Equipment is cleaned and inspected for serviceability, unserviceable equipment tagged, and faults identified and reported in accordance with workplace procedures
  - 4.5 Equipment is maintained in accordance with workplace procedures
  - 4.6 Tools, equipment and unused materials are removed and stored appropriately
  - 4.7 Workplace documentation is completed in accordance with workplace requirements

## Required Skills and Knowledge

This section describes the skills and knowledge required for this unit.

### Required skills include:

- collecting, organising and understanding information related to work orders, basic plans and safety procedures
- using communication skills to the level required to confirm work requirements and specifications; communicate effectively regarding work requirements with supervisors, other workers and customers; report work outcomes and problems; and relate to people from a range of social, cultural and ethnic backgrounds, and of varying physical and mental abilities
- using literacy skills to the level required to understand information related to work orders, including common industry terminology, plans and safety procedures; prepare reports; and interpret technical information and specifications
- planning and organising activities, including the preparation and layout of the work area and the obtaining of equipment and materials to avoid any backtracking, workflow interruptions or wastage
- working with others and in a team by recognising dependencies and using cooperative approaches to optimise workflow and productivity
- using mathematical ideas and techniques to correctly complete measurements, calculate work requirements, optimise glass sizes for handling and processing, and assemble required materials
- using pre-checking and inspection techniques to plan work, and avoid re-working and wastage
- using the workplace technology related to the operation of glass toughening equipment
- modifying activities to cater for variations in workplace contexts and environment

### Required knowledge includes:

- correct procedures for the set-up, operation and operator maintenance of glass toughening equipment
- workflow requirements relating to the operation of glass toughening equipment
- workplace procedures for the reporting of material, product or equipment faults
- characteristics of materials used and uses of products produced in the glass toughening process
- correct identification of relevant equipment, processes and procedures
- workplace safety system requirements related to the operation of glass toughening equipment

## Evidence Guide

The evidence guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.

Overview of assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language, literacy and numeracy capacity of the candidate and the work being performed.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Assessors must be satisfied that the candidate can competently and consistently:</p> <ul style="list-style-type: none"> <li>• interpret work order/job instruction and locate and apply relevant information to operate glass toughening equipment</li> <li>• plan the conduct of glass toughening operations</li> <li>• set up, operate, monitor and perform operator maintenance of glass toughening equipment</li> <li>• apply safe handling requirements for equipment, products and materials, including use of personal protective equipment</li> <li>• follow work instructions, operating procedures and inspection practices to:             <ul style="list-style-type: none"> <li>• minimise the risk of injury to self and others</li> <li>• prevent damage to goods, equipment and products</li> <li>• maintain required production output and product quality</li> </ul> </li> <li>• as a minimum:             <ul style="list-style-type: none"> <li>• identify the features of the glass toughening process, including the principles, purpose and properties of toughened glass</li> <li>• identify the procedures required in the glass toughening process</li> <li>• perform pre-inspection and preparation procedures on glass for toughening</li> <li>• safely load and operate a glass toughening furnace</li> <li>• perform testing, classification and marking of toughened glass in accordance with AS/NZS 2208:1996 Safety glazing materials in buildings</li> </ul> </li> <li>• work effectively with others.</li> </ul>
Context of and specific resources for assessment	The application of competency is to be assessed in the workplace or realistically simulated workplace.

	<p>Assessment is to occur under standard and authorised work practices, safety requirements and environmental constraints.</p> <p>Assessment of essential underpinning knowledge, other than confirmatory questions, will usually be conducted in an off-site context.</p> <p>Assessment is to comply with relevant regulatory or Australian Standard requirements.</p> <p>The following resources should be made available:</p> <ul style="list-style-type: none"> <li>• glass toughening equipment</li> <li>• workplace operating procedures</li> <li>• unprocessed materials</li> <li>• personal protective equipment</li> <li>• an appropriate work area.</li> </ul>
Method of assessment	<p>Assessment must satisfy the endorsed Assessment Guidelines of the LMF02 Furnishing Industry Training Package.</p> <p>Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge.</p> <p>Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure correct interpretation and application.</p> <p>Assessment may be applied under project-related conditions (real or simulated) and require evidence of process.</p> <p>Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances.</p> <p>Assessment may be in conjunction with assessment of other units of competency.</p>
Guidance information for assessment	

## Range Statement

The range statement relates to the unit of competency as a whole. It allows for different work

environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

<b><i>Work requirements may include:</i></b>	<ul style="list-style-type: none"> <li>• material to be used</li> <li>• process required to complete work tasks</li> <li>• the required machine settings and adjustments</li> <li>• number of sheets to be toughened and holding area for completed items</li> </ul>
<b><i>Glass toughening equipment includes:</i></b>	<ul style="list-style-type: none"> <li>• equipment and machines involved in the process of toughening glass. This involves the controlled heating and cooling of glass</li> </ul>
<b><i>Personal protective equipment includes:</i></b>	<ul style="list-style-type: none"> <li>• that prescribed under legislation, regulation and enterprise policies and practices, and may include: <ul style="list-style-type: none"> <li>• gauntlets</li> <li>• gloves</li> <li>• safety glasses</li> <li>• hard hats</li> <li>• safety footwear</li> <li>• aprons and overalls</li> </ul> </li> </ul>
<b><i>Workplace procedures include:</i></b>	<ul style="list-style-type: none"> <li>• workplace procedures relating to the setting up and operation of glass toughening equipment</li> <li>• machine manufacturer specifications and operational procedures</li> <li>• workplace procedures relating to the handling and movement of glass</li> <li>• work instructions, including job sheets, cutting lists, plans, drawings and designs</li> <li>• safety standards, including personal protective equipment, OHS regulations and enterprise requirements</li> <li>• AS/NZS 2208:1996 Safety glazing materials in buildings</li> </ul>
<b><i>Tools and equipment are to include:</i></b>	<ul style="list-style-type: none"> <li>• glass washing machines and toughening furnaces</li> </ul>
<b><i>Materials are to include, but are not limited to:</i></b>	<ul style="list-style-type: none"> <li>• clear glass</li> <li>• tinted and patterned annealed glass</li> </ul>
<b><i>Furnace pre-start, start-up and set-up procedures may include, but are not limited to:</i></b>	<ul style="list-style-type: none"> <li>• operating controls</li> <li>• lift</li> <li>• pump</li> <li>• furnace lever</li> <li>• furnace rollers</li> </ul>



	<ul style="list-style-type: none"><li>• quench potentiometer</li><li>• fans</li><li>• dampers</li><li>• actuators</li><li>• inlet veins and gearboxes</li></ul>
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## Unit Sector(s)

Glass and glazing

## Custom Content Section

Not applicable.