



Australian Government

Department of Education, Employment and Workplace Relations

PMC552047C Operate primary annealing equipment

Revision Number: 1

PMC552047C Operate primary annealing equipment

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers the preparation and operation of annealing equipment in the forming of glass products from a melting furnace. It involves setting up and tuning the process, monitoring ribbon quality, dimensions and temperature, undertaking routine checks and rectifying routine problems.
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Application of the Unit

Application of the unit	<p>This unit of competency applies to operators who are responsible for operating and maintaining primary annealing equipment within the manufactured mineral products industry.</p> <p>This unit does NOT include secondary processes involved in reheating of glass for laminating or toughening processes, which are covered by <i>PMC552041C Operate process ovens</i>.</p> <p>This competency includes the operation of all ancillary equipment.</p> <p>This competency is typically performed by operators working either independently or as part of a work team. At all times they would be liaising with other members of the team.</p>
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units		

Employability Skills Information

Employability skills	This unit contains employability skills.
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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.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Prepare the annealing equipment	1.1. Identify the location and function of annealing equipment 1.2. Interpret job specifications and set up the appropriate line/equipment 1.3. Check that the quality and quantity of input glass is suitable for production run as per company requirements 1.4. Undertake equipment preparation and prestart checks according to established procedures. 1.5. Undertake pre-startup checks in accordance with procedures
2. Start up and shut down annealing equipment	2.1. Complete the steps for setting up and preparing to start annealing equipment in normal and abnormal situations 2.2. Complete the steps preparing for shutting down annealing equipment in normal and abnormal situations 2.3. Start up the annealing equipment as required 2.4. Shut down the annealing equipment as required
3. Operate annealing equipment	3.1. Operate annealing equipment to ensure quality specifications are met 3.2. Make operation adjustments according to established procedures and ensure product quality and specifications are maintained 3.3. Use and observe ancillary equipment and safety procedures in accordance with enterprise requirements 3.4. Document and maintain records and production results according to enterprise requirements
4. Monitor, adjust and record annealing operation	4.1. Monitor equipment operation to maintain product quality and specifications 4.2. Measure and record operating parameters according to enterprise requirements 4.3. Conduct product sampling and quality control checks according to standard procedures to ensure and maintain annealing specifications 4.4. Adjust annealing equipment controls to ensure glass parameters are maintained to job specifications 4.5. Record results in accordance with work instructions

ELEMENT	PERFORMANCE CRITERIA
5. Rectify routine problems	5.1. Identify the range of faults that can occur during the operation 5.2. Determine and rectify fault causes in accordance with procedures 5.3. Identify and rectify equipment failure causes in accordance with procedures 5.4. Ensure appropriate records and log books of equipment operations are maintained to meet procedures 5.5. Identify non-routine problems and report to designated person
6. Control hazards.	6.1. Identify hazards from the job to be done 6.2. Identify other hazards in the work area 6.3. Assess the risks arising from those hazards 6.4. Implement measures to control those risks in line with procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Required skills include:

- recognising process conditions which will lead to out of specification production
- implementing the enterprise's standard procedures and work instructions and relevant regulatory requirements within appropriate time constraints and in a manner relevant to the operation of the process and equipment
- reading and numeracy to interpret workplace documents and technical information

Required knowledge

Required knowledge includes:

- composition and nature of the glass
- startup and shutdown processes
- setup and annealing/conditioning process
- temperature and temporary and permanent stress
- pre-annealing, annealing and post-annealing processes
- construction and limitations of the reheating equipment
- out of specification situations
- quality problems such as:
 - poor optics
 - distortion
 - excessive breakage
 - non-uniform break pattern
 - incorrect cross bend
 - excessive bow
 - scratches
 - poor glass shape
- distinguish between causes of faults such as:
 - raw materials/ribbon faults
 - equipment
 - types of defects/faults
 - electrical/instrumental

Evidence Guide

EVIDENCE GUIDE	
<p>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.</p>	
<p>Overview of assessment</p>	<p>The unit will be assessed in as holistic a manner as is practical and may be integrated with the assessment of other relevant units of competency.</p>
<p>Critical aspects for assessment and evidence required to demonstrate competency in this unit</p>	<p>It is essential that the reheating equipment be understood and that the importance of critical material properties, settings and readings is known. Competence must be demonstrated in the ability to recognise and analyse potential situations requiring action and then in implementing appropriate corrective action.</p> <p>Consistent performance should be demonstrated. In particular look to see that:</p> <ul style="list-style-type: none"> • temperatures and stress parameters are maintained within limits • equipment set up is completed in accordance with work instructions • startup and shutdown occur first time • signals and alarms are responded to immediately • process measurements are continually made, observed and interpreted • quality is maintained to customer specifications. <p>Competence must be demonstrated in the operation of all ancillary equipment to the level required for this unit of competency.</p>
<p>Context of and specific resources for assessment</p>	<p>Assessment will require access to an operating plant over an extended period of time, or a suitable method of gathering evidence of operating ability over a range of situations.</p> <p>Assessment will occur over a range of situations which will include disruptions to normal, smooth operation.</p> <p>Simulation or case studies/scenarios may be required to allow for timely assessment of parts of this unit of competency. Simulation should be based on the actual plant and will include 'walk-throughs' of the relevant competency components. A bank of scenarios/case studies/what ifs and questions will be required to probe</p>

EVIDENCE GUIDE	
	the reasoning behind observable actions.
Method of assessment	<p>In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units.</p> <p>Individual enterprises may choose to add prerequisites or co-requisite units relevant to their processes.</p>
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

RANGE STATEMENT	
<p>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.</p>	
Procedures	All operations are performed in accordance with standard procedures and work instructions
Finishing equipment	<p>This unit includes finishing equipment applicable to each of the specific areas of glass products manufacture, including:</p> <ul style="list-style-type: none"> • flat glass • packaging, bottles and jars
Equipment	<p>Equipment may include:</p> <ul style="list-style-type: none"> • lehr and associated equipment • gas burners • instrumentation • computers • measuring and recording equipment • communication equipment • hand tools • safety clothing and equipment
Typical problems	<p>Typical problems may include:</p> <ul style="list-style-type: none"> • process problems • equipment problems • quality problems • temperature and strain problems • equipment problems • quality problems • loss of utilities
Occupational health and safety (OHS)	All operations are subject to stringent OHS requirements and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and OHS requirements, the OHS requirements take precedence

Unit Sector(s)

Unit sector	Operational/technical
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		