



Australian Government

Department of Education, Employment and Workplace Relations

PMC552007B Heat accelerate the curing of precast concrete

Revision Number: 1

PMC552007B Heat accelerate the curing of precast concrete

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers high and low pressure steam curing of precast concrete pipes and other concrete products. It involves preparing, operating and monitoring equipment, resolving routine problems and preparing equipment for maintenance.
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Application of the Unit

Application of the unit	<p>This unit of competency applies to operators who are responsible for steam curing of precast concrete pipes and other concrete products. This unit of competency also includes operation of all ancillary equipment.</p> <p>This unit of competency is typically performed by operators working either independently or as part of a work 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 equipment for production	1.1. Conduct equipment pre-startup procedure and visual checks according to enterprise procedures 1.2. Set up and configure equipment startup function in accordance with procedures/work instructions 1.3. Ensure appropriate presetting period has been observed 1.4. Load mould (containing green concrete product) onto transfer car and move to steam chamber in accordance with procedures/work instructions 1.5. Cover mould as specified 1.6. Close and secure the steam chamber in accordance with procedures/work instructions
2. Operate equipment	2.1. Start up equipment in accordance with procedures/work instructions 2.2. Ensure equipment is operated in accordance with established enterprise procedures
3. Monitor and record operation	3.1. Monitor equipment performance in accordance with work instructions and manufacturer's specifications 3.2. Monitor operating pressures and temperatures 3.3. Ensure the rate at which the concrete temperature increases is even, and that it doesn't exceed maximum temperature specified 3.4. Adjust and control equipment to ensure correct product quality 3.5. Complete appropriate records and logs
4. Rectify routine problems	4.1. Identify the range of faults that can occur during the operation 4.2. Determine and rectify fault causes by procedures/work instructions 4.3. Identify and rectify equipment failure causes in accordance with procedures/work instructions 4.4. Ensure appropriate records and log books of equipment operations are maintained to meet procedures/work instructions 4.5. Identify non-routine problems and report to designated person
5. Shut down equipment	5.1. Shut down steam and depressurise chamber in accordance with work instructions 5.2. Allow product to cool gradually and evenly

ELEMENT	PERFORMANCE CRITERIA
	5.3. Open the chamber and discharge cured product 5.4. Complete appropriate records and logs 5.5. Ensure transfer cars are clear of all product and left ready for reuse 5.6. Shut down equipment in an emergency situation
6. Prepare equipment for maintenance	6.1. Isolate equipment in accordance with work instructions 6.2. Remove any broken materials safely 6.3. Make sure area is clear and safe for maintenance
7. Control hazards	7.1. Identify hazards from the job to be done 7.2. Identify other hazards in the work area 7.3. Assess the risks arising from those hazards 7.4. 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 conditions which will lead to out of specification product
- implementing the enterprise's procedures within time constraints and in a manner relevant to the correct use of the equipment
- conveying information relevant to the operation clearly and effectively
- maintaining appropriate levels of quality assurance
- reading and numeracy to interpret workplace documents and technical information

Required knowledge

required knowledge includes:

- isolation procedures
- steam hazards
- operational processes and functions, including start up and shut down processes
- composition and nature of finished product
- construction and limitations of the equipment
- out of specification situations
- types of defects/faults
- underlying causes of faults such as precipitated by:
 - electrical/instrumental failures
 - steam pressure differentials
 - time cycle irregularities

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 equipment and the process be understood and that the importance of critical settings and readings are known.</p> <p>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"> • startup and shutdown procedures are applied without variation • signals and alarms are responded to immediately • isolation procedures for maintenance are followed • all OHS requirements are followed. <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 the reasoning behind observable actions.</p>
<p>Method of assessment</p>	<p>Individual enterprises may choose to add prerequisites</p>

EVIDENCE GUIDE	
	and co-requisites relevant to their processes.
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.
Operation of steam chambers	<p>This unit includes the operation of various steam chambers for the curing of concrete products and pipes and may include:</p> <ul style="list-style-type: none"> • purpose built, low pressure steam chambers • autoclaves (high or low pressure) • temporary means of retaining low pressure steam near the curing concrete product
Variations	<p>Variations include:</p> <ul style="list-style-type: none"> • nature and type of plant configuration • nature of curing process (e.g. hot water, low pressure steam, high pressure steam, autoclaving) • nature and type of steam chamber (e.g. tarpaulin cover, steam chamber and autoclave) • nature and type of product to be cured • safe work practices and the use of protective clothing, hard hats and safety glasses
Checking equipment	<p>Checking equipment includes:</p> <ul style="list-style-type: none"> • chamber doors and locking equipment • transfer cars to fill chambers • steam and pressure generation equipment • pressure and temperature gauges
Equipment	<p>Equipment may include:</p> <ul style="list-style-type: none"> • instruments and PLCs but not control panels • measuring and/or recording equipment • communication equipment • tarpaulins used to cover concrete
Typical problems	Typical problems may include:

RANGE STATEMENT	
	<ul style="list-style-type: none"> • equipment malfunctions • temperature or pressure fluctuations • product quality variations • material/feed variations • chamber pressure losses
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		