



**Australian Government**

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

# **PMC552094B Prepare for and apply shotcrete for installation**

**Revision Number: 1**

## PMC552094B Prepare for and apply shotcrete for installation

### Modification History

Not applicable.

### Unit Descriptor

<b>Unit descriptor</b>	This unit of competency cover the use of the gunit/shotcrete technique to apply refractory materials. The refractory may be applied by wet or dry processes..
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### Application of the Unit

<b>Application of the unit</b>	<p>This unit of competency applies to operators who are responsible for using the shotcrete technique to apply refractory materials. Shotcrete is often referred to by trade name of gunit and so the process is sometimes referred to as guniting. It involves setting out work, installing and applying guniting materials, assembling and operating guniting equipment, and removing and reinstating guniting materials. It includes the use of tools and ancillary equipment.</p> <p>Shotcrete work may be the total requirement for the job, or it may need to join to brick/block, moulded or cast refractory.</p> <p>This competency will typically be performed by a team of operators working under direction and to a specification and/or procedures.</p>
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### Licensing/Regulatory Information

Not applicable.

## Pre-Requisites

<b>Prerequisite units</b>		

## Employability Skills Information

<b>Employability skills</b>	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. Establish the suitability of resources	<ul style="list-style-type: none"><li>1.1. Check all information conforms with resources</li><li>1.2. Record discrepancies in information</li><li>1.3. Report any inaccuracies in information to the person in charge</li><li>1.4. Identify and select materials, components, tools and equipment</li></ul>
2. Apply shotcrete to prepared surface	<ul style="list-style-type: none"><li>2.1. Prepare backgrounds, cutting out, demolition and keying</li><li>2.2. Mix shotcrete</li><li>2.3. Assemble and operate shotcreting equipment</li><li>2.4. Apply shotcrete</li><li>2.5. Remove and reinstate damaged shotcrete material</li><li>2.6. Maintain tools and equipment</li></ul>
3. Contribute to controlling hazards in work area	<ul style="list-style-type: none"><li>3.1. Identify hazards in work area</li><li>3.2. Assess risks arising from those hazards</li><li>3.3. Take appropriate action to control risks to procedures and duty of care</li></ul>

## Required Skills and Knowledge

### REQUIRED SKILLS AND KNOWLEDGE

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

#### Required skills

Required skills include:

- observing and monitoring work procedures
- adjusting/correcting/responding to work requirements
- identifying and solving problems
- manual skills
- physical handling skills
- using tools and equipment correctly and safely
- working in a team or individually, as required
- reading and numeracy to interpret workplace documents and technical information

#### Required knowledge

Required knowledge includes:

- methods of preparing background surfaces
- types, uses and operation of tools and equipment
- types, uses and operation of shotcreting equipment
- types and characteristics of shotcreting materials
- methods of mixing and applying shotcreting materials
- methods of avoiding lamination of applied shotcreting materials
- methods of protecting applied shotcreting material during application and curing
- types and methods of finishing the surface of the shotcrete
- curing shotcrete
- reasons for, and timing of, dedicated curing and heat-up programs and the consequences of the installed concrete if the program is not correctly followed
- types and uses of temporary support/formwork
- methods of protecting work during installation
- reasons for, and methods of, providing test panels
- methods of cutting
- safeguards to take during reinstatement
- methods of removing damaged refractory
- methods of keying and bonding new to existing refractories
- reasons for, and methods of, obtaining seals between new and existing refractory
- materials sources
- materials types/categorisation
- methods of production
- familiarity with installation techniques

**REQUIRED SKILLS AND KNOWLEDGE**

- familiarity with principles of selection
- familiarity with variety of applications

## Evidence Guide

<b>EVIDENCE GUIDE</b>	
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.	
<b>Overview of assessment</b>	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.
<b>Critical aspects for assessment and evidence required to demonstrate competency in this unit</b>	<p>Competence must be demonstrated in the operation of all ancillary equipment to the level required for this unit of competency.</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"> <li>• a uniform coating has been applied</li> <li>• it adheres appropriately the surface</li> <li>• it is of the desired thickness and consistency.</li> </ul>
<b>Context of and specific resources for assessment</b>	<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>
<b>Method of assessment</b>	<p>In all plants it may be appropriate to assess this unit concurrently with relevant teamwork and communication units.</p> <p>It may be appropriate to assess this unit concurrently with other relevant units</p>
<b>Guidance information for</b>	Assessment processes and techniques must be culturally

<b>EVIDENCE GUIDE</b>	
<b>assessment</b>	appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.



## Range Statement

<b>RANGE STATEMENT</b>	
<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>	
<b>Procedures</b>	All operations are performed in accordance with standard procedures and work instructions
<b>Shotcrete</b>	<p>Shotcrete is the generic term used to describe the placement of cementitious products such as</p> <ul style="list-style-type: none"> <li>concrete or refractory monolithics, by high volume and high velocity air</li> </ul>
<b>Tools and equipment</b>	<p>Tools and equipment include:</p> <ul style="list-style-type: none"> <li>mixing equipment</li> <li>air compressors</li> <li>water addition equipment</li> <li>gunning equipment/nozzles</li> <li>equipment allowing access</li> </ul>
<b>Installation</b>	<p>Installation includes:</p> <ul style="list-style-type: none"> <li>correct thickness of course</li> <li>correct compaction</li> <li>conforming to required curves and angles</li> <li>tying to structure</li> <li>keying to existing refractory</li> </ul>
<b>Occupational health and safety (OHS)</b>	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)

<b>Unit sector</b>	Operational/technical
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## Competency field

Competency field	
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## Co-requisite units

Co-requisite units		