



Australian Government

Department of Education, Employment and Workplace Relations

PMC557098A Specify refractory installation systems

Revision Number: 1

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Modification History

Not applicable.

Unit Descriptor

Unit descriptor	This unit of competency covers developing the specification for a refractory installation system and ensuring it complies with the specification. It is intended for refractory experts who will most likely also have some management responsibility.
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Application of the Unit

Application of the unit	This unit of competency requires the application of knowledge of refractory installation requirements, structures and mechanics to determine an appropriate installation system. It covers installation systems for both monolithic and block type installations as well as repairs. This unit does NOT cover the specification of the installation or repair, refer to relevant units. The units are obviously related and it may be appropriate to consider this unit concurrently with installation units. This unit applies to individuals who may design a refractory installation and may also monitor the installation of refractory. They may be working in liaison with other refractory specialists or they may be the sole refractory specialist for this job/in their organisation. They will typically be liaising with a range of other technical experts as well as management and maybe accounts. This unit may apply to individuals working for an organisation which supplies and installs refractories, is a refractory consulting organisation or a client organisation which buys and uses the refractory.
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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. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Analyse installation/repair specification	1.1. Determine personnel access requirements 1.2. Determine equipment and material access requirements 1.3. Determine lifting and positioning requirements 1.4. Determine site restrictions 1.5. Determine restrictions caused by the refractory and/or job 1.6. Compile installation system requirements
2. Develop scaffolding requirements	2.1. Calculate required size of work platforms 2.2. Calculate load and load distribution on scaffold 2.3. Identify appropriate load bearing surfaces for scaffold base 2.4. Identify tie points for scaffold, if any 2.5. Select appropriate scaffold type for application 2.6. Develop draft scaffold specification 2.7. Check compliance of draft specification with regulations 2.8. Develop scaffolding requirements in liaison with a licensed scaffolder or scaffold supplier 2.9. Identify scaffold related health, safety and environment (HSE) hazards 2.10. Determine appropriate hazard controls 2.11. Check for discrepancies or conflicts and take appropriate action
3. Develop lifting and/or supporting requirements	3.1. Calculate loads to be lifted/supported 3.2. Calculate loads on supports and running gear 3.3. Determine support needs during placement of refractory or equipment 3.4. Calculate impact on loads of placement needs 3.5. Determine design loads 3.6. Select appropriate lifting/supporting means 3.7. Check compliance with any relevant regulation 3.8. Modify scaffold specification if required 3.9. Identify lifting/supporting related HSE hazards 3.10. Determine appropriate hazard controls 3.11. Check for discrepancies or conflicts and take appropriate action 3.12. Prepare lifting/supporting specification

ELEMENT	PERFORMANCE CRITERIA
4. Ensure installation system complies with specification	4.1. Liaise with contractors and others to ensure specifications are understood 4.2. Implement checking mechanisms to ensure system complies with specification 4.3. Take appropriate action on non-conformances as required 4.4. Report during project as required 4.5. Complete end of project documentation on completion

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Required skills include:

- solving problems
- communicating at all levels
- using organisation knowledge system
- investigating
- analysing
- interpreting data
- negotiating
- calculating
- technical reporting

Required knowledge

Required knowledge includes:

- properties of all common refractory materials
- common installation methods
- scaffolding systems and regulations
- lifting/hoisting/supporting systems and regulations
- structures, moments and beam reactions
- point vs. distributed loads
- mechanics of levers, pulleys and jacks
- tension, compression, shear and torsion
- relevant terms
- relevant calculations

Evidence Guide

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 of this unit should include demonstrated competence in a workplace based project or a simulated workplace project.

Access should be available to all normally accessed tables, data etc which would be available to and used by a competent refractory specialist performing this assignment.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Competence must be demonstrated in the ability to select an appropriate material and write the required specification.

Context of and specific resources for assessment

Assessment may occur on the job or in an appropriately simulated environment. Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices.

Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability.

Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.

Method of assessment

- Assessment must satisfy the endorsed assessment guidelines of the Manufactured Mineral Products Training Package.
- 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.
- Assessment methods which include direct observation of tasks should also include questioning on underpinning knowledge to ensure its correct interpretation and application.
- Assessment may be applied under project related conditions (real or simulated) and require evidence of

EVIDENCE GUIDE	
	process. • 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. • Assessment may be in conjunction with assessment of other units of competency where required.
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

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. 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.

Restrictions caused by refractory/ job

Restrictions caused by refractory include:

- fragility preventing use as a footing
- need to refractory clad area being used for support
- lack of tie points
- low coefficient of friction making it unsuitable for support

Types of scaffold

Types of scaffold include:

- trestle scaffold
- tower scaffold
- putlog scaffold
- independent scaffold
- working platforms

HSE hazards

HSE hazards may include:

- access/egress restrictions
- ventilation restrictions
- moving objects/loads
- cables under tension

Hazard control

Appropriate hazard control should be determined by:

- applying the hierarchy of control

Lifting supporting means

Lifting supporting means include:

- gin wheel
- scaffold crane
- elevator
- scissor lift
- fixed hoist

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		