



Australian Government

PMC554090 Undertake simple refractory design

Release: 1

PMC554090 Undertake simple refractory design

Modification History

Release 1. Supersedes and is equivalent to PMC554090B Undertake simple refractory design.

Application

This unit of competency covers the skills and knowledge required to undertake simple refractory design. It applies to refractory design that can be achieved by the application of standard products/components in a standard manner and that is not required to be done by a registered engineer.

This unit of competency applies to operators who are required to confirm technical requirements for the refractory and determine the materials and installation methods to meet those requirements.

This unit of competency applies to technician applying specialised theoretical and technical knowledge and well developed skills in situations that require autonomy, discretion and judgement. The person may work alone or as a member of a team or group and will work in liaison with customers, installers, engineers and technical experts, as appropriate.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Pre-requisite Unit

Nil

Competency Field

Technical

Unit Sector

Not applicable

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

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|---|---|-----|--|
| 1 | Establish the suitability of resources | 1.1 | Check all information conforms with resources |
| | | 1.2 | Record discrepancies in information |
| | | 1.3 | Report any inaccuracies in information to the person in charge |
| | | 1.4 | Identify and select materials, components, tools and equipment |
| | | | |
| 2 | Undertake mechanical design | 2.1 | Determine strength requirements |
| | | 2.2 | Determine operating temperature range |
| | | 2.3 | Select materials/mix with appropriate mechanical strength |
| | | 2.4 | Identify hazards of materials and processes to be used and apply hierarchy of control to control hazards |
| | | 2.5 | Determine expansion which will occur for this material |
| | | 2.6 | Adjust material/mix to be suitable for temperatures |
| | | | |
| 3 | Undertake thermal design | 3.1 | Determine heat flow through the refractory |
| | | 3.2 | Determine interface temperatures for multi-component linings |
| | | 3.3 | Use simple software |
| | | 3.4 | Determine interface bonding/anchor issues |
| | | | |
| 4 | Specify refractory design | 4.1 | Specify materials to be used |
| | | 4.2 | Specify installation method to be used |
| | | 4.3 | Confirm specification meets customer needs and installer requirements |

Foundation Skills

This section describes those required skills (language, literacy and numeracy) that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.

Regulatory framework The latest version of all legislation, regulations, industry codes of practice and Australian/international standards, or the version specified by the local regulatory authority, must be used.

Applicable legislation, regulations, standards and codes of practice include:

- health, safety and environmental (HSE) legislation, regulations and codes of practice relevant to the workplace, equipment and production processes and hazardous materials
- Australian/international standards relevant to the materials being used and products being made
- any relevant licence and certification requirements.

All operations to which this unit applies are subject to stringent HSE requirements, which may be imposed through state/territory or federal legislation, and these must not be compromised at any time. Where there is an apparent conflict between performance criteria and such requirements the legislative requirements take precedence.

Procedures All operations must be performed in accordance with relevant procedures.

Procedures are written, verbal, visual, computer-based or in some other form, and include one or any combination of:

- manufacturer's technical information
- job cards
- drawings
- emergency procedures
- work instructions
- standard operating procedures (SOPs)
- safe work method statements (SWMS)
- formulas/recipes
- batch sheets
- temporary instructions
- any similar instructions provided for the smooth running of the plant.

Hazards Hazards must be identified and controlled. Identifying hazards requires consideration of:

- health and safety risks
- sustainability risks
- regulatory risks.

Unit Mapping Information

Release 1. Supersedes and is equivalent to PMC554090B Undertake simple refractory design.

Links

Companion Volume implementation guides are found in VETNet -
<https://vetnet.education.gov.au/Pages/TrainingDocs.aspx?q=45a7f1d5-61a5-447a-9688-7abbd7e1a5c7>