



Australian Government

MEM48014 Recommend a refractory for an application

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSATCM503A Recommend a refractory for an application.

Application

This unit of competency defines the knowledge and skills required to recommend a refractory for an application based on knowledge of the properties, application and modes of failure of the principal refractories.

It applies where a technician is involved with the development of a new product or process, or the improvement or redesign of an existing product or process. As part of this, the requirements for an appropriate refractory material will need to be considered and a recommendation as to the type of refractory which will be appropriate for the situation is made.

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

Pre-requisite Unit

Nil

Competency Field

Metallurgy

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine job requirements	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Identify job requirements from specifications, job sheets or work instructions
2. Identify the process requirements for a refractory	2.1 Identify the pH of the metallurgical slags 2.2 Determine the insulating requirements from the refractory 2.3 Determine other process requirements from the refractory

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	2.4 Identify likely process causes of refractory failure 2.5 Specify refractory needs in terms of physical and chemical properties required
3. Recommend type of refractory material	3.1 Select a refractory class suitable for the pH of the metallurgical slag 3.2 Shortlist refractory materials within that class suitable for the insulating and other process demands 3.3 Contrast the principal modes of failure for each short-listed refractory with the likely process causes of refractory failure 3.4 Recommend suitable refractory materials for the job
4. Consider economic and technical implications of different modes of installation	4.1 Compare possible alternative refractory materials 4.2 Compare possible alternative installation methods 4.3 Consider alternative materials with different installation methods and their overall technical and economic performance 4.4 Recommend a refractory material and a method of installation which delivers the best economic and technical performance for the application

Foundation Skills

This section describes those language, literacy, numeracy and employment skills 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.

Principal refractories include:	• silica • alumino silicates • dolomite • magnesite-chrome • chrome-magnesite
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	• chrome • insulation and insulating refractories • special refractories including graphite and silicon carbide • monolithic refractories including cement, plastics, ramming mixes and castables.
Modes of installation includes one or more of the following:	• monolithic • fired shape structures • bricks • sprayed.

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>