



Australian Government

MEM48013 Identify and select equipment for mineral and chemical processing plants

Release: 1

MEM48013 Identify and select equipment for mineral and chemical processing plants

Modification History

Release 1. Supersedes and is equivalent to MSATCM502A Identify and describe equipment for mineral and chemical processing plants.

Application

This unit of competency defines the skills and knowledge required to apply scientific principles and techniques to identify and describe processing equipment in mineral and chemical processing plants from a metallurgical perspective.

It requires application of scientific principles and techniques as a member of a design and development team or similar in support of specifying basic mineral extraction processes associated with metals production.

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

Pre-requisite Unit

MEM48004 Interpret basic binary phase diagrams

MEM48011 Apply basic chemical principles to metallurgy

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 work information
2. Research and identify scientific principles and techniques relevant to mineral and chemical	2.1 Research and report information about scientific principles relating to mineral and chemical processing from appropriate sources and from examination of applications 2.2 Identify the techniques and associated technologies, software and

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
processing plants	hardware required to implement scientific principles
3. Select and apply scientific principles and techniques relevant to equipment in mineral and chemical processing plants	3.1 Select scientific techniques and principles relevant to mineral and chemical processing situations 3.2 Select relevant techniques and associated technologies including software and hardware for mineral and chemical processing situations

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.

Sources of information include one or more of the following:	• reference texts • manufacturer's catalogues • industrial and professional magazines and journals • colleagues • websites • information gathered using communications technology.
Equipment in mineral and chemical processing plants is used for one or more of the following:	• transport and storage of materials • heat transfer • solids drying • phase dispersion and separation • gas solid operations • liquid operations • liquid solid operations • solid operations • size reduction and size enlargement

	• bulk solid handling • packaging of solids and liquids • chemical reactors • waste management • process safety • energy generation and utilisation.
Scientific techniques and principles include:	• principles of mineral processing • principles of chemical processing • function of each type of equipment • flow diagrams • processes for particle size change • processes for separation of materials • processes for mixing of materials • processes for chemical change.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MSATCM502A Identify and describe equipment for mineral and chemical processing plants.

Links

Companion Volume implementation guides are found in VETNet -

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

Assessment Requirements for MEM48013 Identify and select equipment for mineral and chemical processing plants

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- selecting appropriate scientific principles to suit mineral processing and metals production applications on at least two occasions
- applying scientific principles to particular processing situations
- referring solutions to the original aim of the application
- communicating solutions in appropriate units using appropriate significant figures
- communicating limitations of solutions due to assumptions, scientific principles and techniques used
- presenting solutions referring to the original aim of the application on at least two occasions.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures
- sources of information
- purpose of equipment used in mineral and chemical processing plants
- basic scientific principles, their use and limitations
- basic mineral and chemical processing techniques and technologies including software and hardware associated with implementing scientific principles in mineral and chemical processing situations related to metals production
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Assessment Conditions

- Assessors must:

- have vocational competency in identifying and selecting equipment for mineral and chemical processing plants at least to the level being assessed with relevant industry knowledge and experience
- satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions that cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
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