



Australian Government

MEM23138 Evaluate suitability of materials for engineering-related applications

Release: 1

MEM23138 Evaluate suitability of materials for engineering-related applications

Modification History

Release 1. Supersedes and is equivalent to MEM23138A Evaluate suitability of materials for engineering-related applications.

Application

This unit of competency defines the skills and knowledge required to evaluate materials used in manufacturing, engineering or related applications for their suitability in engineering-related projects or processes. It requires consideration of materials with regard to design requirements, sustainability, product manufacturability, facilities, services, plant and tooling, and safe use.

It is suitable for people working as manufacturing, maintenance, design and drafting technicians or paraprofessionals, and those pursuing manufacturing engineering or related technical qualifications.

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

Pre-requisite Unit

MEM23004 Apply technical mathematics

Competency Field

Engineering science

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 scope of materials evaluation	1.1 Identify materials to be evaluated and their related manufacturing or engineering-related applications 1.2 Confirm stakeholders to be consulted on the evaluation 1.3 Confirm appropriate support, including technical and professional assistance, is available 1.4 Identify relevant work health and safety (WHS) and regulatory requirements, standards, codes of practice, risk management and organisational procedures

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. Prepare for evaluation	2.1 Review design information about related products and processes for material specifications 2.2 Identify analysis principles and techniques relevant to the materials, processes, services, plant and tooling covered by the evaluation 2.3 Identify appropriate analysis software and software validation techniques 2.4 Investigate sustainability implications of materials and related manufacturing or engineering processes
3. Evaluate materials and processes for an application	3.1 Determine properties of materials under evaluation, and supervise any required tests 3.2 Assess materials and related processes for compliance with WHS and other regulatory and risk management requirements 3.3 Assess material, product and processes for sustainability 3.4 Review materials for product and process suitability and process optimisation 3.5 Apply systems thinking, continuous improvement, problem-solving and decision-making, and constraint and contingency management principles and techniques to evaluation
4. Report results	4.1 Record results of evaluation 4.2 Provide documentation including tool, product and process analysis, and computer-aided design (CAD) files

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.	
Appropriate technical and professional assistance includes:	• technical support and advice relating to elements which have intrinsic dangers • professional support for technologies.
WHS, regulatory requirements and organisational procedures include:	• WHS acts, regulations and relevant standards • codes of practice from Australian and overseas engineering and technical associations and societies • risk assessments • registration requirements • safe work practices • state and territory regulatory requirements applying to electrical work.
Sustainability includes:	• meeting all regulatory requirements • conforming to all industry covenants, protocols and best practice guides • minimising ecological and environmental footprint of process, plant and product • maximising economic benefit of process plant and product to the organisation and the community • minimising the negative WHS impact on employees, community and customer.

Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM23138A Evaluate suitability of materials for engineering-related applications.

Links

Companion Volume Implementation Guides are available on VETNet -

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