



**Australian Government**

# **MEM22015 Source and estimate engineering materials requirements**

**Release: 1**

# MEM22015 Source and estimate engineering materials requirements

## Modification History

Release 1. Supersedes and is equivalent to MEM22015A Source and estimate engineering materials requirements.

## Application

This unit of competency defines the skills and knowledge required to work in engineering or related industries in planning, purchasing or quantity surveying. It includes locating and approving a materials source, estimating materials requirements against a specification or bill of materials for engineering-related operations and considering quantities, quality and capacity of suppliers to supply in accordance with a supply plan.

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

## Pre-requisite Unit

MEM16006 Organise and communicate information

## Competency Field

Management and organisation

## 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. Participate in planning and budgeting for materials resourcing | <ul style="list-style-type: none"><li>1.1 Follow standard operating procedures (SOPs)</li><li>1.2 Comply with work health and safety (WHS) requirements at all times</li><li>1.3 Review operational objectives and identify information that informs materials resource planning</li><li>1.4 Contribute to organisational and supply chain management</li><li>1.5 Evaluate sustainability implications of materials and components being sourced</li><li>1.6 Participate in the selection or development of materials information systems based on operational needs</li></ul> |

| <b>Elements</b>                                            | <b>Performance Criteria</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Elements describe the essential outcomes.</i>           | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
|                                                            | 1.7 Review suitability of software packages for materials estimation, sourcing and related purposes                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| 2. Estimate quantities                                     | 2.1 Consult with operations and project teams regarding their materials needs<br>2.2 Estimate quantities against operations or project specifications, drawings and bill of materials documents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| 3. Contribute to the development of supply chain relations | 3.1 Contribute to supply chain requirements, and evaluation<br>3.2 Assist in developing tender and contract documents                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| 4. Locate, source and confirm material suppliers           | 4.1 Locate, source and evaluate materials suppliers against specifications<br>4.2 Evaluate supply agreements, quality and delivery parameters against operation or project requirements<br>4.3 Coordinate approval of samples, testing and certification in accordance with specification requirements<br>4.4 Confirm or recommend suppliers according to enterprise procedures                                                                                                                                                                                                                                                                                                                                                                                                           |
| 5. Monitor and review materials and supply chain           | 5.1 Participate in development of performance indicators or parameters for materials supply chain<br>5.2 Consult, negotiate and co-operate with suppliers in relation to supply chain efficiency improvements<br>5.3 Provide feedback on quality, efficiency and continuous improvement processes to supply chain members and internal stakeholders<br>5.4 Identify and monitor WHS and regulatory requirements related to materials supply, transport, handling, storage and processing<br>5.5 Monitor sustainability of sourced materials and coordinate responses in accordance with sustainability policy and procedures<br>5.6 Apply systems thinking, constraints and contingency management and continuous improvement techniques in response to materials and supply chain issues |
| 6. Report and document outcomes                            | 6.1 Provide reports on material sourcing in accordance with procedures<br>6.2 Maintain documentation on estimations, sources of supply, supply chain analysis performance, continuous improvement and training, WHS and regulatory requirements, and risk assessment                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

## Foundation Skills

### 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.

|                                                                                          |                                                                                                                                                                                                                                                                                                                                                                         |
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| Work health and safety (WHS), regulatory requirements and enterprise procedures include: | <ul style="list-style-type: none"> <li>• WHS acts, regulations and relevant standards</li> <li>• codes of practice from Australian and overseas engineering and technical associations and societies</li> <li>• risk assessments</li> <li>• registration requirements</li> <li>• safe work practices</li> <li>• state and territory regulatory requirements.</li> </ul> |
| Sustainability implications include:                                                     | <ul style="list-style-type: none"> <li>• resource consumption</li> <li>• energy consumption and conservation</li> <li>• processing needs</li> <li>• minimisation and processing of waste</li> <li>• transport, distribution, life cycle</li> <li>• reuse, recycle and disposal.</li> </ul>                                                                              |
| Organisational management process includes:                                              | <ul style="list-style-type: none"> <li>• feasibility studies</li> <li>• costing and value engineering</li> <li>• cost-benefit and break-even analysis</li> <li>• consideration of contract law pertaining to supply arrangements</li> <li>• life cycle costing.</li> </ul>                                                                                              |
| Supplier performance includes:                                                           | <ul style="list-style-type: none"> <li>• cost</li> <li>• delivery reliability</li> <li>• conformance to quality and quantity specifications</li> <li>• conformance to contract and regulatory requirements</li> <li>• participation in efficiency improvement processes</li> <li>• flexibility.</li> </ul>                                                              |
| Software packages include one or more of the following:                                  | <ul style="list-style-type: none"> <li>• spreadsheets</li> <li>• databases</li> <li>• word processor</li> <li>• presentation</li> <li>• project management</li> <li>• cost control</li> <li>• system control and data acquisition (SCADA)</li> <li>• Manufacturing Resource Planning (MRPII)</li> </ul>                                                                 |

|                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                       |
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|                                                                                         | <ul style="list-style-type: none"><li>• Enterprise Resource Planning (ERP).</li></ul>                                                                                                                                                                                                                                                                                                                                 |
| Constraints and contingencies include:                                                  | <ul style="list-style-type: none"><li>• financial, organisational, procedural or cultural</li><li>• sudden changes to schedules or delivery by a supplier</li><li>• physical constraints including limits to resources, site access or logistical limitations.</li></ul>                                                                                                                                              |
| Continuous improvement implementation includes one or more of the following techniques: | <ul style="list-style-type: none"><li>• balanced scorecard</li><li>• current and future state mapping</li><li>• measuring performance against benchmarks</li><li>• process improvement, problem-solving and decision-making</li><li>• data management, generation, recording, analysing, storing and use of software</li><li>• training for improvement systems participation</li><li>• technical training.</li></ul> |

## Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM22015A Source and estimate engineering materials requirements.

## 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 MEM22015 Source and estimate engineering materials requirements

## Modification History

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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
- planning for materials resourcing
- estimating quantities, sourcing and evaluating materials suppliers on at least two occasions
- developing tender and contract documents, materials requirement and purchasing schedule, purchasing budgets, and performance indices for materials supply chain on at least two occasions
- using materials sourcing and planning software packages on at least two occasions
- participating, communicating, cooperating, and negotiating with stakeholders on policy and procedures development and implementation
- monitoring supply of materials against contract requirements and key performance indicators (KPIs)
- contributing to organisational management processes, and materials supply chain management
- reporting and documenting results of evaluations and tender analysis and material sourcing in accordance with standard operating procedures (SOPs).

*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
- planning procedures for materials resourcing in the context of operations, project, strategic and business plans and budgets
- use of systems and software packages to assess materials requirements information, data processing, bill of materials, estimating, supplier database and purchasing budget control
- systems for cost estimation and planning, value engineering, feasibility studies, cost-benefit analysis, life cycle costing and valuation

- supply chain management and value analysis, performance indices or parameters, and monitoring processes
- tender and contract documents, supply agreements, quality and delivery parameters, and terms of payment
- supply chain communications, feedback on quality, supply chain efficiency and continuous improvement processes
- sustainability policies, procedures and implications
- work health and safety (WHS), regulatory and risk management requirements with particular emphasis on handling and use of resources
- WHS and regulatory compliance requirements, safety data sheets (SDS), test results, and risk management related to handling and storage
- use of systems thinking, constraints and contingency management, problem- solving and decision-making, and continuous improvement techniques
- typical constraints for sourcing of engineering materials.

## Assessment Conditions

- Assessors must:
  - have vocational competency in sourcing and estimating engineering materials requirements 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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