



Australian Government

Department of Education, Employment and Workplace Relations

MSAPCII298A Make an object from metal

Revision Number: 1

MSAPCII298A Make an object from metal

Modification History

Not applicable.

Unit Descriptor

Unit descriptor	<p>This competency standard covers the skills required to make an object from metal in accordance with the requirements of an established design and in a simulated or trial manufacturing environment where there is a high degree of direct supervision. .</p> <p>The elements of this unit should always be assessed in conjunction with other units that relate to the requirements of a specified work or job function.</p>
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Application of the Unit

Application of the unit	<p>This unit applies to a learning and assessment environment where access to normal production operations is not available. A typical environment will be for application in a VET in Schools delivery environment or other simulated or trial manufacturing environment where a high degree of supervision exists.</p> <p>This unit applies to the manufacture of a simple metal object such as: small decorative box, with or without a lid; desk pencil holder; metallic photo album; cabinet; shelving; CD rack; metallic picture frame etc.</p> <p>Training and assessment against this competency unit must incorporate all relevant OHS and related legislative requirements.</p> <p>The unit should be regarded as an integrating unit which has application in Certificate I and II qualifications that act as general introductory qualifications to manufacturing industry. It should be applied to a specific 'project' or task which has a defined beginning, middle and end, occurs over an extended period of time, and is reflective of the particular sector of the Manufacturing industry and/or organisation.</p>
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Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Prerequisite units	

Employability Skills Information

Employability skills	This unit contains employability skills.
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Elements and Performance Criteria Pre-Content

Elements describe the essential outcomes of a unit of competency.	Performance criteria describe the performance needed to demonstrate achievement of the element. Where bold italicised text is used, further information is detailed in the required skills and knowledge section and the range statement. Assessment of performance is to be consistent with the evidence guide.
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Elements and Performance Criteria

ELEMENT	PERFORMANCE CRITERIA
1. Identify job requirements	1.1. Specifications for <i>metal</i> item are identified from <i>work instructions</i> 1.2. Design is interpreted to determine process, tool, equipment and materials requirements 1.3. <i>OH&S requirements</i> are considered and observed throughout the <i>workplace</i>
2. Prepare for work	2.1. <i>Suitable work area</i> is selected for the task 2.2. Work area is prepared according to OH&S and ergonomic requirements 2.3. <i>Appropriate tools, equipment</i> and <i>materials</i> are selected in accordance with the specifications determined for the work 2.4. Equipment and machinery is cleaned, checked, and prepared for operation in accordance with OH&S requirements and workplace procedure 2.5. <i>Potential hazards</i> associated with the use of tools, equipment, materials and the workplace are identified and steps taken to eliminate them in accordance with OH&S legislative requirements and established workplace procedures. 2.6. Where required, <i>records</i> are kept in accordance with workplace requirements
3. Produce work	3.1. Dimensions are transferred from job specifications and/or drawings or sketches and material is marked out to conform to <i>specifications</i> and templates are <i>formed</i> using appropriate machinery or tools 3.2. Edges and surfaces are <i>prepared</i> according to specifications. 3.3. Components are <i>joined</i> according to project requirements 3.4. Work is checked for conformance with specifications. 3.5. Non-conformity with specifications or quality standard is <i>rectified</i> 3.6. Work is <i>finished</i> according to specifications and quality standards
4. Complete work	4.1. Completed work is checked against required quality standards 4.2. Unused materials are returned to storage and waste and scrap are dealt with following workplace

ELEMENT	PERFORMANCE CRITERIA
	procedures 4.3. Work area is cleaned, tools and equipment are returned to storage 4.4. Where required, documentation and records are completed and maintained following workplace procedures

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

This section describes the skills and knowledge required for this unit.

Required skills

- apply occupational health and safety standards
- observe relevant statutory requirements and codes of practice
- use, update and where appropriate produce sketches and basic drawings
- select materials and resources
- use and apply basic quality standards
- apply quality procedures
- communicate effectively
- communicate ideas and information to obtain confirmation of work requirements and specifications, coordination with other workers and the reporting of work outcomes and problems.
- collect, organise and understand information related to work orders, basic plans and safety procedures.
- plan and organise activities, including preparation for work and obtaining equipment and materials.
- work with others and in a team to optimise efficient workflow and productivity.
- apply pre-checking and quality techniques to anticipate construction problems, avoid reworking and avoid wastage.
- use of routine workplace tools, equipment, materials and measuring devices.

Depending on the object to be made required skills may also include:

- use cutting and heating equipment
- use of mechanical cutting equipment
- use of workshop plant and equipment
- use of hand and portable power tools

Required knowledge

- the interpretation of a plan representing the product to be made
- the concept of workflow and its relation to manufacture of objects
- identification of appropriate hand and power tools, materials, equipment, processes and procedures.
- occupational health and safety standards and practices.
- relevant statutory requirements and codes of practice
- hand and portable power tools and their application
- mechanical cutting techniques
- paints, sealants and glues
- jigs and templates
- workshop plant and equipment

REQUIRED SKILLS AND KNOWLEDGE

- manufacture and assembly techniques
- common materials used in the manufacture of metal objects
- mathematical techniques
- communication principles

Evidence Guide

EVIDENCE GUIDE	
<p>The Evidence Guide provides advice on assessment and must be read in conjunction with the performance criteria, required skills and knowledge, range statement and the Assessment Guidelines for the Training Package.</p>	
Overview of assessment	
Critical aspects for assessment and evidence required to demonstrate competency in this unit	<p>Knowledge and application of relevant sections of:</p> <ul style="list-style-type: none"> • occupational, health and safety legislation; statutory legislation; • enterprise/site safety procedures; • enterprise/site emergency procedures • preparation and planning of work • lay out, marking off/out and developing techniques and procedures • fabrication techniques • shaping techniques • cutting techniques • perform normal operator maintenance of work area to enable work to be conducted safely and efficiently • relevant standards and procedures • completion of work procedures
Context of assessment	<p>Assessment may occur on the job or in a workplace simulated facility with relevant equipment, materials, work instructions and deadlines.</p>
Specific resources required for assessment	<p>Access to plans, hand and/or power tools, equipment, materials and a work area.</p> <p>Access is required to opportunities and appropriate resources to either:</p> <ul style="list-style-type: none"> • carry out a range of suitably simulated practical and knowledge assessments that demonstrate the skills and knowledge to work safely (usually as part of a holistic assessment involving other competency units; and/or • participate in actual workplace activities that demonstrate the skills and knowledge to work safely

Range Statement

RANGE STATEMENT

The range statement relates to the unit of competency as a whole. It allows for different work environments and situations that may affect performance. Bold italicised wording, if used in the performance criteria, is detailed below. Essential operating conditions that may be present with training and assessment (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) may also be included.

What can metal include?

Metal *may include*:

- mild steel
- galvanised steel
- stainless steel
- aluminium
- brass

What can object from metal include?

An object from metal can include:

- a small decorative box, with or without a lid
- desk pencil holder
- metallic photo album
- cabinet
- shelving
- CD rack
- metallic picture frame.

What are the work instructions?

Work instructions may include:

- job sheets
- patterns
- plans
- drawings and sketches
- verbal or illustrated directions from supervisor
- number and type of objects to be produced
- quality requirements.
- OH&S requirements
- environmental requirements

What can OH&S requirements include?

OH&S requirements may include:

- legislative requirements
- hazardous and dangerous goods codes
- safe operating procedures
- specific workplace rules regarding personal protective wear and equipment such as disposable overalls, dust mask, eye and ear

RANGE STATEMENT	
	protection and gloves.
Workplace	<p>Workplace for this unit means a manufacturing environment specifically established for learning introductory manufacturing skills. It may be:</p> <ul style="list-style-type: none"> • a school classroom or workshop equipped to teach manufacturing principles and practices • RTO premises equipped to teach manufacturing principles and practices • an enterprise environment where above average supervision exists and training is occurring. The normal production imperatives have been modified to take into account the training being delivered.
What can a suitable work area include?	<p><i>A suitable work area</i> may include:</p> <ul style="list-style-type: none"> • workbench • desk or table • workshop • shed • durable space
What can appropriate tools, equipment and materials include?	<p><i>Appropriate tools</i> will vary according to the project, but may include:</p> <ul style="list-style-type: none"> • measuring tapes or rulers • hammers • mallets • squares • bevels • chisels • files • planes • hand saws • cordless drills/ screwdrivers • fixing and joining devices • jigs • clamping devices • pincers <p><i>Appropriate equipment</i> could include:</p> <ul style="list-style-type: none"> • power saws • power drills • band saws

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	<ul style="list-style-type: none"> • vertical drill presses • protective eye ware • protective gloves • dust masks • overalls or protective clothing <p><i>Appropriate materials</i> could include:</p> <ul style="list-style-type: none"> • metal • adhesives • screws • nuts • bolts • hinges and metal fasteners • pencils and markers • paints.
What potential hazards include?	<p><i>Potential hazards</i> may include:</p> <ul style="list-style-type: none"> • broken or faulty equipment • unnoticed sharp objects • poor lighting • inadequate ventilation • inadequate attention to the activities of others • electrical shortages and power overload • disorganised or cluttered workspace (poor housekeeping) • poor attention when dealing with tools and equipment. • environmental chemicals, heat, dust, noise, gas and oil.
What could records include?	<p><i>Records</i> could include:</p> <ul style="list-style-type: none"> • plant and maintenance records • job cards • check sheets • reporting requirements • documenting equipment and/or material defects • workplace procedures relating to the use of tools and equipment.
What could specifications include and what does it mean for materials to be formed?	<p><i>Specifications</i> could include:</p> <ul style="list-style-type: none"> • measurements and dimensions

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	<ul style="list-style-type: none"> forming methods could include cutting, bending, rolling, beading.
What is involved in making sure edges and surfaces are prepared?	<p><i>Preparing edges and surfaces</i> could include:</p> <ul style="list-style-type: none"> filing sanding cleaning grinding polishing
What is involved in making sure metal pieces are joined?	<p><i>Joining metal pieces</i> could include attaching pieces together with:</p> <ul style="list-style-type: none"> screws, rivets, nuts and bolts hinging soldering
What is involved in making sure non-conformities are rectified?	<p><i>Rectifying non-conformities</i> could involve:</p> <ul style="list-style-type: none"> deconstructing the assembled pieces reshaping /resizing or re-cutting elements reassembling elements.
What is involved in making sure work is finished?	<p><i>Finishing work</i> can include:</p> <ul style="list-style-type: none"> filing polishing grinding painting and decorating.

Unit Sector(s)

Unit sector	Manufacturing Pathways
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Competency field

Competency field	
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Co-requisite units

Co-requisite units		