



Australian Government

Department of Education, Employment and Workplace Relations

MEM19013B Produce jewellery metal masters

Release: 1

MEM19013B Produce jewellery metal masters

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers the manufacturing jewellery master pattern(s) for jewellery reproduction, mainly by hand held application of processes. It requires the application of precision measurement and hand-making/machine skills to a greater level than that required in Unit MEM19005B (Produce three-dimensional precision items).
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Application of the Unit

Application of the unit	This unit applies to the manufacture of jewellery master pattern(s) for jewellery reproduction, mainly by the hand held application of processes. Work would be mainly autonomous in a jewellery manufacturing environment. Understanding the principles of casting/moulding/shrinkage and wax injection is required. General production processes used to finish the reproductions must be understood. Competency in this unit cannot be fully met without appropriate comparison to the finished production item. Where machining is required as a major component of this manufacturing concept, then unit MEM07005C (Perform general machining) should be selected. The equipment used may include hand and power tools, lathes and non-CNC machines. Where component(s) require preparation or manufacture by NC/CNC/CAD/CAM as an integral part of this process by the person working autonomously, the relevant competencies should be accessed. If electro-deposition and/or electro-forming of metal is required, MEM07024B (Operate and monitor machine/process) or Unit MEM08003C (Perform electroplating operations) should also be selected. This unit has dual status and is to be regarded as both a Specialisation band A unit and Specialisation band B unit for progression to C5 (AQF level V). Band: A Unit Weight: 4
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM08010B	Manually finish/polish materials
	MEM13004B	Work safely with molten metals/glass
	MEM16006A	Organise and communicate information
	MEM19001B	Perform jewellery metal casting

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. Determine master pattern requirements	1.1. Specifications and drawings are interpreted for required pattern information. 1.2. Technique/process to achieve suitable quality finish for masters are selected. 1.3. Materials to produce given item are selected. 1.4. Tools, equipment and processes appropriate to task are selected.
2. Produce master	2.1. Materials are marked out and/or construction plan developed to meet specifications/stages of process. 2.2. Pattern material(s) are prepared. 2.3. Master is produced.
3. Finish and inspect work	3.1. Item is checked for compliance with specifications. 3.2. Weights and measurements are recorded. 3.3. Sprue material is fitted if necessary. 3.4. Final finish is applied, where appropriate, and item is stored. 3.5. Master is evaluated and compared to production sample.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills

Look for evidence that confirms skills in:

- reading, interpreting and following information on written job instructions, specifications, standard operating procedures, charts, lists, drawings and other applicable reference documents
- following procedures
- planning and sequencing operations
- checking and clarifying task-related information
- entering information onto proformas and other workplace forms
- checking for conformance to specifications
- using precision measurement equipment

REQUIRED SKILLS AND KNOWLEDGE

- measuring items to specified tolerances
- undertaking numerical operations and calculations/formulae within the scope of this unit
- following verbal instructions
- orally reporting information
- collecting and assessing data for practical applications
- selecting methods, materials and tools/equipment
- selecting and using tools/equipment/processes
- applying a working knowledge of metals and materials
- pre-forming/producing item/components to size and shape
- checking product for compliance to specifications and design outcomes
- matching product to original design concept/drawings/ specifications
- inspecting surface condition for pre-treatment/plating process
- making allowance for sequential processes
- recording statistical evidence
- positioning/securing sprue section
- undertake final treatments according to standard operating procedures and OH&S
- handling and storing products
- comparing/calculating design specifications

Required knowledge

Look for evidence that confirms knowledge of:

- understanding of the principles of casting, moulding, shrinkage, and wax injection
- location of information/specifications
- clarification approval processes
- collective information/drawings/specification/product development plans
- wrought, forge, machine and cast techniques and applications
- the appropriate properties/function of materials
- prerequisite working specifications/abilities/limitations of selected materials
- stored data on specifications and processes
- planning/process stages
- the difference between master and finished item specifications
- fine detail work processes
- levels of acceptable performance and productivity outcomes
- finishing processes
- sequential processes required for design outcomes
- inspection and compliance checks
- surface/parts/areas appropriate for post production processes for setting/electroplating/enamelling, and for the subsequent processes of moulding and waxing

REQUIRED SKILLS AND KNOWLEDGE

- reasons for the recording of specifications
- appropriate measuring devices and recording methods
- handling and design needs associated with sprue placement
- appropriate knowledge of wax injection, moulding, casting, molten metal flow/solidification
- procedures for final treatment/safe handling/storage of item
- relevancy of calculations/specifications
- appropriate techniques, tools and equipment to measure machined components
- hazards and control measures, including housekeeping
- use and application of personal protective equipment
- safe work practices and procedures
- reasons tools, equipment, resources and reference material are stored in accordance with OH&S and standard operating procedures

Evidence Guide

EVIDENCE GUIDE

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.

Overview of assessment

A person who demonstrates competency in this unit must be able to produce jewellery metal masters. Competency in this unit cannot be claimed until all prerequisites have been satisfied.

Critical aspects for assessment and evidence required to demonstrate competency in this unit

Assessors must be satisfied that the candidate can competently and consistently perform all elements of the unit as specified by the criteria, including required knowledge, and be capable of applying the competency in new and different situations and contexts.

Context of and specific resources for assessment

This unit may be assessed on the job, off the job or a combination of both on and off the job. Where assessment occurs off the job, that is the candidate is not in productive work, then an appropriate simulation must be used where the range of conditions reflects realistic workplace situations. The competencies covered by this unit would be demonstrated by an individual working alone or as part of a team. The assessment environment should not disadvantage the candidate.

This unit could be assessed in conjunction with any other units addressing the safety, quality, communication, materials handling, recording and reporting associated with producing jewellery metal masters or other units requiring the exercise of the skills and knowledge covered by this unit.

Method of assessment

Assessors should gather a range of evidence that is valid, sufficient, current and authentic. Evidence can be gathered through a variety of ways including direct observation, supervisor's reports, project work, samples and questioning. Questioning techniques should not require language, literacy and numeracy skills beyond those required in this unit of competency. The candidate must have access to all tools, equipment, materials and documentation required. The candidate must be permitted to refer to any relevant workplace procedures, product and manufacturing specifications, codes, standards, manuals and reference materials.

EVIDENCE GUIDE**Guidance information for assessment****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.

Technique/process

High polish

Materials

Jewellery alloys and/or their base metals

Unit Sector(s)**Unit sector****Co-requisite units****Co-requisite units**

Competency field

Competency field	Jewellery and horological
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