



Australian Government

Department of Education, Employment and Workplace Relations

MEM19001B Perform jewellery metal casting

Release: 1

MEM19001B Perform jewellery metal casting

Modification History

Not Applicable

Unit Descriptor

Unit descriptor	This unit covers casting jewellery primarily by the 'lost wax' method of investment casting.
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Application of the Unit

Application of the unit	This unit applies to jewellery metal casting, primarily by the 'lost wax' method of investment casting, but may include cuttlebone and sand processes as extensions. It may apply in a jewellery manufacturing or casting environment. Band: A Unit Weight: 6
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Licensing/Regulatory Information

Not Applicable

Pre-Requisites

Prerequisite units		
Path 1	MEM13004B	Work safely with molten metals/glass

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. Prepare metals for casting	1.1. Metals and alloys are selected in appropriate proportions. 1.2. Metals and alloys are weighed out correctly and in correct wax-to-metal ratios. 1.3. Relevant data is recorded.
2. Conduct pre-casting operations	2.1. Equipment is prepared according to standard operation procedures. 2.2. Inert gas supply/delivery and vacuum systems are checked, if applicable. 2.3. Preheating/glazing is carried out, if applicable. 2.4. Temperature of invested flask is maintained.
3. Melt jewellery metal	3.1. Protective coating is applied to jewellery metal as appropriate. 3.2. Jewellery metal is heated. 3.3. Jewellery metal casting temperature is achieved.
4. Cast metals	4.1. Burn-out flask is positioned correctly. 4.2. Molten metal is tapped. 4.3. Allowance is made for adequate solidification time. 4.4. Furnace is operated in accordance with work site procedures.
5. Perform post-casting operations	5.1. Casting flask is removed and stored in a safe manner. 5.2. Casting materials/consumables are cleaned/stored/disposed as appropriate.

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:

- identifying metals and their alloys
- weighing metals and their alloys
- setting up, checking and operating equipment

REQUIRED SKILLS AND KNOWLEDGE

- maintaining furnace temperatures
- heating metals and alloys
- applying safe casting procedures
- working within heating timeframe constraints
- housekeeping
- reading and interpreting routine information on written job instructions, specifications and standard operating procedures. May include drawings

Required knowledge

Look for evidence that confirms knowledge of:

- hazards related to casting
- safety clothing/apparatus for casting
- identification of precious metals and alloys
- calculations for proportions/quantities of alloys
- data recording procedures
- consequences of poor work practices
- equipment preparation and operating procedures
- burn-out cycles and testing of heat register/control device
- procedures for checking and maintaining inert gas supply/delivery seals and vacuum systems
- melting points of various metals/alloys
- furnace start-up and shut-down procedures
- housekeeping and equipment cleaning procedures
- safe work practices and procedures
- properties of jewellery metals in relation to casting

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 cast jewellery items using investment, vacuum/centrifugal casting procedures. 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 jewellery metal casting 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.

Metals and alloys

Gold, platinum, palladium, silver, copper, and their alloys

Equipment

Resistance/induction coils, and hand held torches fuelled by a variety of combinations of gas/propane/acetylene/air/oxygen

Protective coating

Protective coatings may include borax, fluxes and inert gases

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

Competency field

Competency field	Jewellery and horological
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