



Australian Government

Department of Education, Employment and Workplace Relations

MEM19035A Plan and apply casting techniques for jewellery and object designs

Release: 1

MEM19035A Plan and apply casting techniques for jewellery and object designs

Modification History

Not applicable.

Unit Descriptor

This unit of competency covers the skills and knowledge required to plan and apply casting techniques for constructing jewellery and object designs. It includes use of wax models and moulds and application of metal casting skills.

Application of the Unit

This unit applies to jewellery and object designers who make items according to design specifications, where casting and associated techniques are required for the production of jewellery and 3D objects.

Band A
Unit Weight 4

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

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| 1 | Examine design brief and prepare for work | 1.1 | Review design brief and all documentation to confirm specifications |
| | | 1.2 | Determine type of casting techniques and resources appropriate |
| | | 1.3 | Develop work plan for production |
| | | 1.4 | Identify and implement occupational health and safety (OHS) requirements for carrying out the tasks and for the work area |
| 2 | Produce wax models | 2.1 | Determine process requirements for production of wax models |
| | | 2.2 | Identify required equipment and prepare for use |
| | | 2.3 | Cut materials to required dimensions using appropriate tools |
| | | 2.4 | Sculpt wax model to specifications and minimise imperfections |
| | | 2.5 | Apply surface finishes as required |
| 3 | Produce moulds | 3.1 | Select appropriate moulding material for style of master, and burn out correctly |
| | | 3.2 | Carry out wax injection of moulds using appropriate tools, methods, if required |
| | | 3.3 | Vulcanise/cure rubber correctly, if appropriate |
| | | 3.4 | Release master pattern correctly using appropriate tools |
| 4 | Cast metals for jewellery and object designs | 4.1 | Establish casting requirements from source documentation and personnel, as required |
| | | 4.2 | Select metals and alloys in appropriate proportions and weights, correct wax-to-metal ratios |
| | | 4.3 | Prepare casting equipment according to established enterprise procedures |
| | | 4.4 | Carry out pre-heating/glazing, if applicable |
| | | 4.5 | Cast jewellery item or object using correct procedures with correct temperature, applying protective coating, if required, and handling metal |
| | | 4.6 | Allow for adequate solidification time |
| | | 4.7 | Clean up work area and equipment and dispose of waste according to environmental requirements |

Required Skills and Knowledge

Required knowledge includes:

- design casting process
- properties of metals and alloys
- making the master model
- moulding
- making the wax pattern
- investment
- burn out
- melting
- casting
- removing investment
- cutting
- finishing
- workshop procedures
- casting defects
- minimising casting defects

Required skills include:

- selecting appropriate quality materials for the production of wax model
- producing wax models to given specifications and minimising imperfections
- performing wax injection of mould, where applicable
- correctly vulcanising and curing rubber moulds where applicable
- using molten metal safely
- casting jewellery and objects using different techniques and materials
- applying appropriate finishing techniques to cast object

Evidence Guide

Overview of assessment	A person who demonstrates competency in this unit must be able to apply casting techniques required in the production of jewellery and object designs.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently: • implement OHS workplace procedures and practices, including the use of risk control measures • demonstrate the application of jewellery casting techniques on more than one occasion and in different contexts. This includes: • producing wax models • performing investment procedures • producing moulds for lost wax, cuttlefish or sand casting • casting jewellery objects.
Context of and specific resources for assessment	• Assessment may occur on the job or in an appropriately simulated environment. Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices. • Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. • Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.
Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of the MEM05 Metal and Engineering Training Package. • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge. • Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure its correct interpretation and application. • Assessment may be applied under project-related conditions (real or simulated) and require evidence of

	process. • Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances. • Assessment may be in conjunction with assessment of other units of competency where required.
Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.

Range Statement

OHS requirements	OHS requirements may include: • legislation • protective equipment • material safety management systems • hazardous substances and dangerous goods code • local safe operation procedures • awards provisions
Environmental requirements	Environmental requirements may relate to: • liquid waste • solid waste • gas, fumes, vapour, smoke emissions, including fugitive emissions, and dust • excessive energy and water use • excessive noise
Appropriate personnel	Appropriate personnel may include: • supervisor • foreman • manager • trainer • mentor • teacher • team member • client
Enterprise procedures	Enterprise procedures may include: • the use of tools and equipment • instructions, including job sheets, cutting lists, plans, drawings and designs • reporting and communication • manufacturer specifications • operational procedures
Surface finishes	Surface finishes may include: • fine emery • shellite
Casting methods	Casting methods may include: • cuttlefish • centrifugal • vacuum casting

	• delft clay
Wax injection	Wax injection may include: • primarily to organic/synthetic wax injection, but may include resin and plastic materials injected under pressure for investment and burn out aspects within 'lost wax' casting procedures
Casting	Casting may include: • primarily by the 'lost wax' method of investment casting, but may include cuttlebone and sand processes as extensions
Metals and alloys	Metals and alloys may include: • gold • platinum • palladium • silver • copper • pewter and their alloys

Unit Sector(s)

Jewellery and horological

Custom Content Section

Not applicable.