



Australian Government

Department of Education, Employment and Workplace Relations

MEM19046A Apply grain setting techniques

Release: 1

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Modification History

New unit

Unit Descriptor

This unit of competency covers the skills and knowledge required to apply grain setting techniques to set gem setting.

Application of the Unit

This unit applies to pre-manufactured jewellery items and must include application of pave', thread and grain, and single stone bead set techniques to produce a variety of completed settings.

Work includes use of gem setting equipment and cleaning and inspection of the work produced.

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

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.

Elements and Performance Criteria

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|---|---------------------------|-----|---|
| 1 | Prepare for grain setting | 1.1 | Identify and implement occupational health and safety (OHS) and environmental requirements for carrying out the tasks and for the work area |
| | | 1.2 | Define the characteristics and purpose of grain in a setting |
| | | 1.3 | Define the characteristics of pave', thread and grain, and single stone bead set |
| | | 1.4 | Plan grain setting procedure |
| | | 1.5 | Obtain and prepare equipment for the task and make modifications as required for work |
| | | 1.6 | Identify materials used and their essential characteristics |
| | | 1.7 | Handle gems in a manner which ensures damage is prevented |
| 2 | Prepare grain setting | 2.1 | Secure the item to be set in a manner which negates damage to the jewellery piece during the setting process |
| | | 2.2 | Drill and countersink the item producing a bearing to suit gem diameter |
| | | 2.3 | Seat the gem in the bearing opening checking the gem is at the correct height, straight and level |
| | | 2.4 | Raise the grains using various shaped gravers and bead the grains over to secure the gem |
| | | 2.5 | Form the grains into beads using a beading tool to secure the gem |

- 2.6 Perform the final bright cutting using either a flat or onglette graver
 - 2.7 Conduct work in accordance with environmental considerations
- 3 Finish work
 - 3.1 Remove any securing compound and clean the jewellery piece for inspection
 - 3.2 Apply techniques for inspection and quality control of the setting work produced through a 10X magnification
 - 3.3 Ensure that jewellery piece meets quality standards
 - 3.4 Complete workplace documentation
 - 3.5 Clean up and maintain production environment and equipment according to enterprise procedures

Required Skills and Knowledge

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

Required skills

Required skills include:

- selecting and preparing tools
- identifying metals
- identifying gem features
- adjusting, sharpening and maintaining tools
- preparing metals
- securing gems
- calculating required material size
- securing the jewellery item to be set without inflicting damage
- marking out and drilling the layout for the gem to be grain set
- selecting the appropriate depth at which to countersink and form a bearing reflective of the gem height
- seating the gem material level and straight in the bearing
- securing the gem by raising two or more grains over the gem
- using gravers to remove excess metal from around the gem to highlight the reflective properties of the gem
- choosing the correct size beading tool and form the grains into beads over the gem
- bright cutting the edges of the setting area using gravers to finish the setting work in accordance with industry standards
- applying techniques for handling gems safely and minimising stress during setting processes

Required knowledge

Required knowledge includes:

- setting terminology
- gem features and handling procedures
- maintenance of tools
- setting techniques, processes and procedures
- working properties of gems
- suitability of metal for carving and setting
- essential characteristics of various styles of grain settings
- various securing techniques for jewellery items to be set

- spacing and layout techniques for pave' setting
- safe operation all workshop equipment used

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 a variety of pave', thread and grain, and single stone bead settings.
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 to safely and effectively use grain setting equipment and processes • apply techniques for handling materials safely and minimising gem stress during setting processes • produce various styles of grain setting, including pave', thread and grain, and single stone bead setting.
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

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.

OHS requirements	OHS requirements may include: • legislation • personal protective equipment • material safety management systems • hazardous substances and dangerous goods code • local safe operation procedures • awards provisions
Gem materials	Gem materials may include: • gemstones • round brilliant and baguette shaped stones • natural stones • modified and synthetics gems • faceted and cabochon cut gems in either calibrated or free-form shapes • gold • silver • platinum • cast and handmade alloys
Grain setting tools and equipment	Grain setting tools and equipment may include: • gravers • grinders

	• micro motors • polishing machines • sharpening stones and beading tools • setters wax/cement • jewellers burrs/drills • 10X loupe or head set • emery paper • flat and half pliers • needle files • pocket knife • oil • blocks or dowels covered with setters cement • bench mate setters clamp • engravers vice • bench vice
Environmental requirements	Environmental requirements may relate to: • liquid waste • solid waste • gas, fume, vapour, smoke emissions, including fugitive emissions, and dust • excessive energy and water use • excessive noise

Unit Sector(s)

Jewellery

Custom Content Section

Not applicable.