



Australian Government

MEM19046 Apply grain setting techniques

Release: 1

MEM19046 Apply grain setting techniques

Modification History

Release 1. Supersedes and is equivalent to MEM19046A Apply grain setting techniques.

Application

This unit of competency defines the skills and knowledge required to apply grain setting techniques to set gem settings. It applies to pre-manufactured jewellery items and includes application of pave, thread and grain, and single stone bead set techniques.

This unit applies to individuals involved in jewellery manufacture in a small or large-scale production context. They use and adapt technical skills and knowledge to produce work that meets pre-determined design and production requirements.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM13015 Work safely and effectively in manufacturing and engineering

MEM16006 Organise and communicate information

Competency Field

Jewellery

Elements and Performance Criteria

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
1. Determine job requirements	1.1 Follow standard operating procedures (SOPs) 1.2 Comply with work health and safety (WHS) requirements at all times 1.3 Use personal protective equipment (PPE) in accordance with standard operating procedures (SOPs) 1.4 Identify job requirements from specifications
2. Prepare for grain setting	2.1 Plan grain setting procedure and associated materials and

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	equipment based on job requirements 2.2 Obtain and prepare equipment for the task 2.3 Identify materials to be used and their essential characteristics for impact on the work process 2.4 Handle gems in a manner that ensures damage is prevented
3. Prepare grain setting	3.1 Secure the item to be set in a manner that prevents damage to the jewellery piece during the setting process 3.2 Drill and countersink the item producing a bearing to suit gem diameter 3.3 Seat the gem in the bearing opening, checking the gem is at the correct height, straight and level 3.4 Raise the grains using shaped gravers and bead the grains over to secure the gem 3.5 Form the grains into beads using a beading tool to secure the gem 3.6 Perform the final bright cutting using either a flat or onglette graver 3.7 Conduct work in accordance with environmental considerations
4. Finish work	4.1 Remove any securing compound and clean the jewellery piece for inspection 4.2 Apply techniques for inspection and quality control of the setting work produced through a 10x magnification 4.3 Check jewellery piece against quality and client requirements and rectify any deficiencies 4.4 Complete workplace documentation in accordance with workplace procedures 4.5 Clean up and maintain production environment and equipment in accordance with SOPs

Foundation Skills

This section describes those language, literacy, numeracy and employment skills that are essential to performance.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, needs of the candidate, accessibility of the item, and local industry and regional contexts) are included.	
Specifications include one or more of the following:	• drawings • job sheets • work instructions.
Gem materials include one or more of the following:	• gemstones • round brilliant stones • 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 styles include the following:	• pave • thread and grain • single stone bead setting.
Grain setting tools and equipment include one or more of the following:	• gravers • grinders • micro motors • polishing machines • sharpening stones and beading tools • setters wax or cement • jewellers burrs and drills • 10x loupe or headset • emery paper • flat and half pliers • needle files • pocketknife • oil • blocks or dowels covered with setters cement • bench mate setters clamp • engravers vice • bench vice.

Environmental requirements include one or more of the following:	• liquid waste • solid waste • gas, fume, vapour, smoke emissions, including fugitive emissions and dust • excessive energy and water use • excessive noise.
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Unit Mapping Information

Release 1. Supersedes and is equivalent to MEM19046A Apply grain setting techniques.

Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM19046 Apply grain setting techniques

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include:

- following work instructions, standard operating procedures (SOPs) and safe work practices
- preparing for grain setting by identifying metals and gems
- applying techniques for handling gems safely and minimising stress during setting processes
- producing grain setting to industry standard on at least two occasions using gem setting tools and equipment
- 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 on at least two occasions
- 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 on at least two occasions
- choosing the correct size beading tool and forming 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 standard
- completing workplace documentation in accordance with procedures.

Note: Where a volume and/or frequency is not specified, demonstration must be provided at least once.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- characteristics and purpose of grain in a setting, including characteristics of pave, thread and grain, and single stone bead set
- gem materials

- setting terminology
- gem features and handling procedures
- grain setting styles, tools and equipment
- use and maintenance requirements 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, thread and grain, and single stone bead setting
- techniques for inspection and quality control of the setting work
- industry standards for setting work
- environmental considerations during grain setting.
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Assessment Conditions

- Assessors must:
 - have vocational competency in applying grain setting techniques at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Where possible, assessment must occur in operational workplace situations. Where this is not possible or where personal safety or environmental damage are limiting factors, assessment must occur in a sufficiently rigorous simulated environment that reflects realistic operational workplace conditions. This must cover all aspects of workplace performance, including environment, task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.
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