



Australian Government

MEM19064 Cut gemstone spheres and beads

Release: 1

MEM19064 Cut gemstone spheres and beads

Modification History

Release 1. New unit.

Application

This unit of competency defines the skills and knowledge required to produce gemstone spheres and beads, including the selection of the rough gemstone through to the drilling and final polishing. It is based on deleted unit CUVOPA404A Cut opal spheres and beads.

This unit applies to individuals processing gemstones in a small or large-scale production context. They use and adapt technical knowledge and skills to produce work.

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

Band: B

Unit Weight: 3

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 Identify job requirements from specifications 1.4 Investigate methods of making spheres and beads
2. Prepare to use bead and sphere making equipment	2.1 Set up bead mill, sphere-making equipment and drills in accordance with manufacturer's specifications

Elements	Performance Criteria
<i>Elements describe the essential outcomes.</i>	<i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>
	2.2 Complete manufacturer's maintenance checklist 2.3 Select materials suitable for making spheres or beads 2.4 Pre-form gemstones using saw or grinder to produce required shape 2.5 Grind shape corners to establish rounded form dop stone and work on pavilion first
3. Produce and drill gemstones beads	3.1 Use appropriate holder templates throughout the process 3.2 Grind pre-formed beads in bead mill until they are rounded 3.3 Remove and clean bead materials discarding faulty or broken gemstones 3.4 Select required beads for drilling 3.5 Place bead in bead vice, drill half way into the bead, turn over, check alignment and drill the other half ensuring a cut hole through the bead
4. Polish beads	4.1 Grind beads in a tumble polisher until requirements are met, using increasingly fine grinding medium 4.2 Clean tumbler and beads at every change over 4.3 Clean beads thoroughly after the final grind 4.4 Place ground beads in the tumbler with polishing medium and tumble to a high lustre 4.5 Clean finished beads thoroughly with water to meet requirements
5. Produce gemstone spheres	5.1 Select gemstones to make spheres and pre-form the spheres 5.2 Grind the spheres in a sphere maker with water and increasingly fine grinding medium 5.3 Clean spheres thoroughly at each change over 5.4 Polish cleaned sphere with polishing medium and water using leather sphere cups

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:	• client requirements • job sheets • work instructions.
Maintenance areas include:	• bead mill: • all bearings • all electrics • bead holders and wear factor • bottom rotating disc and wear factor • rubber pad on top rotating disc • sphere makers: • all electrics • assorted sphere cups • polishing pads • reduction boxes.
Materials suitable for making spheres and beads include one or more of the following:	• any gemstone material, taking into account a yield factor or recovery rate of only 10% to 15% from a given ounce of rough gemstone • beads of a variety of regular or free form shapes • spheres cut from any gemstone material, with consideration of yield factor.
Grinding mediums include one or more of the following:	• diamond powder (#80 through to #1200) • silicon carbide grit (#80 through to #1200).
Polishing mediums include one or more of the following:	• cerium or tin oxide • diamond powder (#3000 through to #100,000).

Unit Mapping Information

No equivalent unit.

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 MEM19064 Cut gemstone spheres and beads

Modification History

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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 standard operating procedures (SOPs) and complying with work health and safety (WHS) requirements at all times
- setting up gemstone sphere and bead cutting machinery and equipment and completing required maintenance checklist
- selecting gemstone pieces suitable for making spheres and beads
- cutting and polishing gemstone beads and spheres that meet industry standards on at least two occasions.

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:

- materials, equipment, tools, machinery and consumables used for cutting gemstone bead and spheres
- characteristics of rough gemstone pieces that make them suitable for production of beads and spheres
- techniques and processes used for producing gemstone beads and spheres
- industry standards for gemstone beads and spheres
- safety issues associated with the use of gemstone bead and sphere cutting and polishing:
 - materials
 - machinery
 - equipment
 - tools
 - consumables.
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Assessment Conditions

- Assessors must:

- have vocational competency in cutting and polishing gemstone beads and spheres 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 that 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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