



**Australian Government**

# **MEM19062 Production cut and polish gemstones**

**Release: 1**

# MEM19062 Production cut and polish gemstones

## Modification History

Release 1. New unit.

## Application

This unit of competency defines the skills and knowledge required to cut and polish gemstones to meet trade requirements and deadlines. It is based on deleted unit CUVOPA402A Production cut and polish opal.

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: 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)<br>1.2 Comply with work health and safety (WHS) requirements at all times<br>1.3 Identify job requirements from specifications |
| 2. Prepare for production cutting and polishing of gemstones | 2.1 Select the machinery, equipment and consumables for gemstone production cutting and polishing<br>2.2 Determine sources and cost of rough gemstones and obtain              |

| Elements                                                               | Performance Criteria                                                                                                                                                                                                                                                                                                |
|------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <i>Elements describe the essential outcomes.</i>                       | <i>Performance criteria describe the performance needed to demonstrate achievement of the element.</i>                                                                                                                                                                                                              |
|                                                                        | supplies<br>2.3 Determine sources and cost of consumables, including any backing material and obtain supplies<br>2.4 Record accurate information about suppliers and costs<br>2.5 Follow procedures for stock management                                                                                            |
| 3. Set up machinery and equipment for production cutting and polishing | 3.1 Review workshop layout in relation to production cutting and polishing and make adjustments to facilitate workflow<br>3.2 Set up multi-blade saw, grinder, polisher and lighting equipment to manufacturers' specifications<br>3.3 Set up dopping rack and other racks and containers based on job requirements |
| 4. Cut and polish gemstones to industry requirements                   | 4.1 Cut and polish gemstones to trade requirements within the predetermined time constraints<br>4.2 Use appropriate dopping techniques for production work<br>4.3 Ensure gemstones satisfy trade requirements for standard millimetre sizes for particular applications                                             |

## 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: | <ul style="list-style-type: none"> <li>client requirements</li> <li>job sheets</li> <li>work instructions.</li> </ul> |
| Machinery includes one or                            | <ul style="list-style-type: none"> <li>cabochon cutting machine</li> </ul>                                            |

|                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| more of the following:                                  | <ul style="list-style-type: none"> <li>• cabochon pre-former</li> <li>• diamond sintered wheel grinder</li> <li>• faceting unit pre-former</li> <li>• high speed polishing unit</li> <li>• multi-blade trim saw</li> <li>• pumice pre-polishing unit</li> <li>• soft diamond wheel polishing unit</li> <li>• spongy wheel polishing unit</li> <li>• triplet slicing machine</li> <li>• UV light box</li> <li>• vibratory tumbler.</li> </ul>                                                                                                                                                                 |
| Consumables include one or more of the following:       | <ul style="list-style-type: none"> <li>• #400 acid treated silicon carbide powder</li> <li>• backing material</li> <li>• blackening agent</li> <li>• dopping wax or adhesive</li> <li>• epoxy adhesive</li> <li>• grinding wheels</li> <li>• polishing powder (cerium oxide)</li> <li>• polishing wheels (diamond or felt)</li> <li>• red sealing wax</li> <li>• rough gemstone</li> <li>• grinding wheels (diamond or soft)</li> <li>• trim saw blades</li> <li>• triplet slicing blades: 120, 140, 160 and 180</li> <li>• triplet tops</li> <li>• UV adhesive</li> <li>• water and electricity.</li> </ul> |
| Backing materials include one or more of the following: | <ul style="list-style-type: none"> <li>• black jade</li> <li>• black potch (best)</li> <li>• boulder iron stone</li> <li>• clear or transparent potch</li> <li>• dark grey potch</li> <li>• glass (triplet only)</li> <li>• obsidian (black)</li> <li>• vitrolite (triplet only)</li> <li>• gemstone material.</li> </ul>                                                                                                                                                                                                                                                                                    |
| Stock management includes one or more of the following: | <ul style="list-style-type: none"> <li>• avoiding cutting irregular sizes or shapes to minimise slow stock</li> <li>• maintaining rough gemstone and consumable supplies</li> <li>• regularly checking continuity of consumables with suppliers</li> <li>• stocking popular sizes to meet new markets.</li> </ul>                                                                                                                                                                                                                                                                                            |
| Dopping techniques                                      | <ul style="list-style-type: none"> <li>• 5-minute epoxy glue</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |

|                                       |                                                                                                                                                                                                                                 |
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| include one or more of the following: | <ul style="list-style-type: none"><li>• aluminium, wooden or brass dop sticks</li><li>• collapsible rack for holding dop sticks</li><li>• green or red sealing wax</li><li>• vacuum dopping</li><li>• wood adhesives.</li></ul> |
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## 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 MEM19062 Production cut and polish gemstones

## Modification History

Release 1. New unit.

## 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
- obtaining supplies and recording details of sources, suppliers and costs
- identifying, selecting and using adhesives, consumables, tools, machinery and equipment appropriate to production cutting and polishing tasks
- assessing and organising the workshop for production cutting and polishing of gemstones
- cutting and polishing gemstones in a production environment on at least two occasions to meet meeting industry, quality and safety requirements
- working within commercial constraints.

*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 needed for cutting and polishing gemstones
- characteristics of gemstone pieces that make them suitable for production cutting and polishing
- techniques and processes used for production cutting, sanding and polishing gemstones
- sources of materials and supplies for gemstone production cutting and polishing
- industry standards for production cutting and polishing of gemstones
- safety issues associated with the use of gemstone production cutting and polishing:
  - materials
  - machinery
  - equipment
  - tools
  - consumables.
  -

## Assessment Conditions

- Assessors must:
  - have vocational competency in carving and polishing gemstones 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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## Links

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