



**Australian Government**

# **MEM19059 Complete pre-cutting processes for gemstone assemblies**

**Release: 1**

# MEM19059 Complete pre-cutting processes for gemstone assemblies

## Modification History

Release 1. New unit.

## Application

This unit of competency defines the skills and knowledge required to select and prepare gemstones and backing materials for cutting as assemblies. It is based on deleted unit CUVOPA205A Complete pre-cutting processes for opal doublets and triplets.

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: 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)<br>1.2 Comply with work health and safety (WHS) requirements at all times<br>1.3 Identify job requirements from specifications |
| 2. Prepare to cut assembly gemstones             | 2.1 Select materials suitable for cutting as a gemstone assembly based on market requirements and characteristics of the stone                                                 |

| 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 Determine best colour and mark that side<br>2.3 Check for flaws with a powerful light source and correct if necessary                                                                                                                                                                                            |
| 3. Flatten gemstone and base                     | 3.1 Flatten gemstone on marked side until surface is suitable grinding or sawing equipment<br>3.2 Select backing materials and flatten in accordance with job requirements<br>3.3 Lap gemstone and base until flat satin finish is achieved<br>3.4 Clean and dry gemstone and base sufficient for further processing |
| 4. Adhere components together                    | 4.1 Choose adhesive and mix in line with manufacturers' instructions<br>4.2 Ensure stone is cemented with the best colour face down<br>4.3 Adhere flattened surfaces together eliminating excess adhesive and air bubbles<br>4.4 Allow adhesive to harden following manufacturers' instructions                      |
| 5. Pre-form gemstones                            | 5.1 Grind stone to expose join between gemstone and backing<br>5.2 Grind stone to expose best colour<br>5.3 Grind to rough shape to meet job requirements                                                                                                                                                            |

## 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 | <ul style="list-style-type: none"> <li>client requirements</li> <li>job sheets</li> </ul> |
|----------------------------|-------------------------------------------------------------------------------------------|

|                                                          |                                                                                                                                                                                                                                                                                                                                                                                                                                     |
|----------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| or more of the following:                                | <ul style="list-style-type: none"> <li>• work instructions.</li> </ul>                                                                                                                                                                                                                                                                                                                                                              |
| Suitable materials include one or more of the following: | <ul style="list-style-type: none"> <li>• multiple bars of colour with potch between</li> <li>• off-cuts from solid production</li> <li>• gemstone from unsuitable boulder iron stone</li> <li>• gemstone prone to crack</li> <li>• gemstone shell skins</li> <li>• thin bar of colour in potch</li> <li>• thin seam gemstone</li> <li>• weak colour on a clear base (jelly gemstone)</li> <li>• other gemstone minerals.</li> </ul> |
| WHS requirements include:                                | <ul style="list-style-type: none"> <li>• complying with the safe operating procedures for each machine</li> <li>• good housekeeping</li> <li>• using personal protective equipment (PPE).</li> </ul>                                                                                                                                                                                                                                |
| Equipment includes one or more of the following:         | <ul style="list-style-type: none"> <li>• diamond grinder</li> <li>• diamond saw</li> <li>• free-hand saw</li> <li>• silicon carbide grinder</li> <li>• slab saw</li> <li>• trim saw.</li> </ul>                                                                                                                                                                                                                                     |
| Backing materials include one or more of the following:  | <ul style="list-style-type: none"> <li>• black jade</li> <li>• black potch</li> <li>• boulder iron stone</li> <li>• clear or transparent potch</li> <li>• dark grey potch</li> <li>• glass</li> <li>• obsidian (black)</li> <li>• vitrolite</li> <li>• other gemstone materials.</li> </ul>                                                                                                                                         |
| Adhesive includes one or more of the following:          | <ul style="list-style-type: none"> <li>• UV setting</li> <li>• slow setting</li> <li>• quick setting</li> <li>• epoxies</li> <li>• polyester resin.</li> </ul>                                                                                                                                                                                                                                                                      |
| Requirements for pre-cutting of gemstones include:       | <ul style="list-style-type: none"> <li>• producing a clean and dry gemstone and base</li> <li>• cementing the base and stone</li> <li>• grinding the stone.</li> </ul>                                                                                                                                                                                                                                                              |

## 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 MEM19059 Complete pre-cutting processes for gemstone assemblies

## 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
- selecting appropriate materials for making gemstone assemblies
- completing pre-cutting of gemstones for the assembly on at least two occasions to the required standard
- manufacturing a gemstone assembly on at least two occasions to the required standard.

*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 making gemstone assemblies
- the influence on cutting choices of:
  - market requirements
  - a stone's characteristics
- the techniques and processes for making gemstone assemblies
- techniques for:
  - detecting and correcting flaws
  - exposing the best colour
- safety issues associated with the use of gemstone cutting and polishing:
  - materials
  - machinery
  - equipment
  - tools
  - consumables.
  -

## Assessment Conditions

- Assessors must:
  - have vocational competency in completing pre-cutting processes for gemstone assemblies 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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