



Australian Government

Department of Education, Employment and Workplace Relations

CUVOPA09B Use a faceting machine

Release: 1

CUVOPA09B Use a faceting machine

Modification History

Not Applicable

Unit Descriptor

Unit descriptor

This unit encompasses the skills and knowledge to use a faceting machine to facet opal including selection of material, the process of pre-forming and the cutting and polishing of a selected stone. The machine may be used to produce a traditional faceted gemstone and also to complete a range of other tasks such as making cubes from opal material.

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

Application of the Unit

Application of the unit

This unit is applied in a workshop environment and requires the application of knowledge and skills to produce individual pieces that comply with commercial standards. The faceting requires access to faceting machines and consumables appropriate for use in faceting opals. Faceting machines may be used for a range of outcomes including traditional faceted gems or other shapes such as cubes.

Where appropriate the outcomes of this unit could be contextualised to apply to other gemstones. Examples of aspects of the unit that may need to be adjusted would include:

- the specific properties of each gemstones
- industry and market requirements
- underpinning knowledge
- Range Statement.

Licensing/Regulatory Information

Refer to Unit Descriptor

Pre-Requisites

Prerequisite units

This unit may be assessed on its own or it may be assessed with other units that cover related skills and knowledge.

Evidence is most relevant when provided through an integrated activity which combines the Elements of competency for the unit, or a cluster of units of competency.

Employability Skills Information

Employability skills

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

ELEMENT	PERFORMANCE CRITERIA
1 Set up faceting equipment.	1.1 Set up <i>faceting machines</i> to manufacturers' specifications identifying <i>machine components and laps</i> . 1.2 Complete manufacturers' <i>maintenance checklist</i> . 1.3 Investigate index wheels for quill and identify main and critical angles for opal.
2 select, pre-shape and dop selected opal piece.	2.1 Select piece of <i>opal suitable for faceting</i> . 2.2 Pre-shape using faceting machine or bench grinder to establish crown and pavilion. 2.3 Dop stone, pavilion to be worked first (dop on crown).
3 Grind, sand and polish pavilion.	3.1 Place dopped stone in quill and aligned to create girdle. 3.2 Grind girdle to desired shape on medium to fine lap. 3.3 Grind main facets at main <i>angle</i> on medium to fine lap. 3.4 Grind girdle break facets at girdle break angle on fine lap. 3.5 Grind culet facets at culet angle on fine or pre-polish lap. 3.6 Fine lap, pre-polish and polish all pavilion facets including girdle.
4 Transfer stone.	4.1 Transfer stone to suitable dop. 4.2 Remove crown dop and place new dop and stone in faceting quill.
5 Grind, pre-polish and polish crown.	5.1 Place girdle facet on lap at 90°, index setting 64 or 96 and lock quill. 5.2 Grind girdle break facets at break angle establishing girdle thickness, on a medium to fine lap.

ELEMENT**PERFORMANCE CRITERIA**

- 5.3 Grind main facets at main angle on fine lap.
- 5.4 Cut table facet on fine lap, to 40% of total width of stone.
- 5.5 Pre-polish all crown facets.
- 5.6 Grind star facets using pre-polish lap.
- 5.7 Polish all facets.
- 5.8 Remove stone from dop and clean.

Required Skills and Knowledge

REQUIRED SKILLS AND KNOWLEDGE

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

Required skills:

- faceting skills
- grinding and polishing skills
- equipment maintenance skills.

Required knowledge:

- the suitability of opal pieces for faceting
- opal faceting process - the equipment and consumables required
- industry standards.

Evidence Guide

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.

Critical aspects for

To achieve competency in this unit, a person must be

EVIDENCE GUIDE

assessment and evidence required to demonstrate competency in this unit

able to produce a faceted opal that satisfies industry standards.

The assessment must confirm the ability to select opal pieces suitable for faceting, and use faceting equipment to produce and polish a faceted opal that conforms to industry standards. All work must be done following OHS requirements for machinery and equipment procedures.

Competence in this unit must be assessed over a period of time in order to ensure consistency of performance over the range of variables and contexts applicable to the work environment.

Context of and specific resources for assessment

This unit may be assessed in a work environment, in a simulated work environment or in a combination of these situations.

Method of assessment

For valid and reliable assessment of this unit, evidence should be gathered through a range of methods to indicate consistent performance.

Assessment of this unit of competence will usually include observation of processes and procedures, oral and/or written questioning on underpinning knowledge and skills, evaluation of the final product and other methods as required.

Assessment methods should closely reflect workplace demands (e.g. literacy) and the needs of particular groups (e.g. people with disabilities, and people who may have literacy or numeracy difficulties such as speakers of languages other than English, remote communities and those with interrupted schooling).

Assessment of this competency requires access to:

- a faceting machine and appropriate consumables
- a qualified workplace assessor or assessment team.

Range Statement

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.

Faceting machines may include:

- FACETRON (USA)
- GEMMASTA (Aus)
- GRAVES (USA)
- Jamb-peg
- Platform
- POLY-METRICS (USA)
- Post
- RAYTECH (USA)
- ULTRA TEC (USA).

Faceting ***machine components and laps*** may include:

- components:
 - angle vernier (protractor)
 - coolant tank
 - forward/reverse switch
 - handpiece (quill)
 - height adjuster, coarse and fine
 - index wheel
 - master lap
 - radial vernier (cheater)
 - sliding post
 - variable speed control
- laps:
 - angle vernier (protractor)
 - coolant tank
 - forward/reverse swit
 - handpiece (quill)
 - height adjuster, coarse and fine
 - index wheel

RANGE STATEMENT

- master lap
- radial vernier (cheater)
- sliding post
- variable speed control.

Faceting laps diamond grit size may include:

- coarse #80, #100, #120, #180
- fine #800, #1000, #1200
- medium #220, #320, #360, #400, #600
- polish #14000, #50000, #10000
- pre-polish #2400, #3000, #8000.

Maintenance checklist may include:

- check electrics regularly for faults and water seepage
- cover machine when not in use
- keep all laps separate from each other
- keep whole machine clean
- oil and clean moving parts
- read manufacturers manual and keep near machine.

Opal suitable for faceting may include:

- Aus. Clear jelly opal
- Aus. Electric blue opal
- contra-luz
- Mexican cherry opal
- Mexican fire opal
- any transparent opal.

Angles may include:

- critical angle $43\frac{1}{2}^{\circ}$
- crown main 43°
- culet angle 44°
- girdle breaks, main angle plus 6° to 15°
- pavilion main 45°
- star facets, main angle minus 15°
- table facet 0° .

Unit Sector(s)

Not Applicable

Competency field

Competency field Opal cutting and polishing