



Australian Government

Department of Education, Employment and Workplace Relations

MEM19026A Investigate quality and application of jewellery materials

Release: 1

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Modification History

Not applicable.

Unit Descriptor

This unit of competency covers the skills and knowledge required to investigate the quality of materials used in jewellery construction and their applications in order to inform design and production. It includes conducting research into materials and selecting materials according to construction and design requirements.

Application of the Unit

This unit applies to those involved in jewellery construction as makers and/or designers who require a working knowledge of the benefits and limitations of materials used. It includes recognition of quality assessment processes and industry standardisation in order to identify quality of materials. Materials may also be used in construction of decorative objects.

Band A
Unit Weight 2

Licensing/Regulatory Information

Not applicable.

Pre-Requisites

Not applicable.

Employability Skills Information

This unit contains employability skills.

Elements and Performance Criteria Pre-Content

Not applicable.

Elements and Performance Criteria

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| 1 Research jewellery materials | <ul style="list-style-type: none">1.1 Identify materials typically used in jewellery construction and their range of uses1.2 Identify information sources and specialist expertise available to confirm uses and quality of materials1.3 Identify source/origin of materials and processes involved in extraction or development and known environmental impacts1.4 Identify recovery and recycling opportunities for materials used in jewellery1.5 Assess risk factors in using materials for various jewellery applications1.6 Select materials for construction of jewellery according to design, work and quality requirements |
| 2 Apply knowledge of metals to jewellery construction | <ul style="list-style-type: none">2.1 Describe the qualities, features, limitations and working characteristics of different metals used in jewellery2.2 Describe industry standards of purity for precious metals and the marking system used to identify grade of quality2.3 Describe the process of making metal alloys and impact of mix on final properties2.4 Conduct basic tests to assess purity of metal2.5 Determine costing implications of using metals of various purity in jewellery2.6 Select metals for construction of jewellery according to design, work and quality requirements |
| 3 Apply knowledge of gemstones to jewellery construction | <ul style="list-style-type: none">3.1 Identify types of gemstones and their key characteristics3.2 Identify processes used to determine quality of gemstones and interpret industry standards3.3 Identify range of facet cuts used on gems and range of applications in jewellery design3.4 Identify techniques used to enhance lower quality gemstones3.5 Determine costing implications of using various |

gemstones in jewellery

- 3.6 Identify requirements for handling and cleaning gemstones
- 3.7 Select gems for construction of jewellery according to design, work and quality requirements
- 4 Apply safe work practices in handling materials
 - 4.1 Conduct risk assessment for materials and processes to be used in construction
 - 4.2 Identify characteristics of chemicals and hazardous materials used in construction and ensure workplace safety procedures are applied
 - 4.3 Access, interpret and apply material safety data sheets (MSDS) and labelling information
 - 4.4 Use protective equipment required for handling and manipulating materials

Required Skills and Knowledge

Required knowledge includes:

- melting points of various metals/alloys
- properties of jewellery metals
- nomenclature used in describing and identifying jewellery materials
- physical and optical properties of gem materials
- uses and characteristics of less common materials used in jewellery
- industry standards for quality of materials
- safe work practices

Required skills include:

- identifying metals and their alloys
- measuring and handling gemstones
- recognising the range of materials used in jewellery
- interpreting industry technical information
- conducting research and accessing information to inform work
- applying quality standards to work
- undertaking numerical operations, geometry and calculations within the scope of the unit
- carrying out work according to occupational health and safety (OHS) practices

Evidence Guide

Overview of assessment	A person who demonstrates competency in this unit must be able to identify the features of materials used in jewellery construction and the processes used to confirm quality, and apply this knowledge in the selection and use of materials in the construction of jewellery items.
Critical aspects for assessment and evidence required to demonstrate competency in this unit	Assessors must be satisfied that the candidate can competently and consistently: • analyse and apply industry standards and information on material quality and grades • select materials to meet the needs of work outcomes • apply knowledge of metals and gemstones to work processes.
Context of and specific resources for assessment	• Assessment may occur on the job or in an appropriately simulated environment. Access is required to real or appropriately simulated situations, including work areas, materials and equipment, and to information on workplace practices and OHS practices. • Where applicable, reasonable adjustment must be made to work environments and training situations to accommodate ethnicity, age, gender, demographics and disability. • Access must be provided to appropriate learning and/or assessment support when required. Where applicable, physical resources should include equipment modified for people with disabilities.
Method of assessment	• Assessment must satisfy the endorsed Assessment Guidelines of the MEM05 Metal and Engineering Training Package. • Assessment methods must confirm consistency and accuracy of performance (over time and in a range of workplace relevant contexts) together with application of underpinning knowledge. • Assessment methods must be by direct observation of tasks and include questioning on underpinning knowledge to ensure its correct interpretation and application. • Assessment may be applied under project-related conditions (real or simulated) and require evidence of process. • Assessment must confirm a reasonable inference that competency is able not only to be satisfied under the particular circumstance, but is able to be transferred to other circumstances. • Assessment may be in conjunction with assessment of other units of competency where required.

Guidance information for assessment	Assessment processes and techniques must be culturally appropriate and appropriate to the language and literacy capacity of the candidate and the work being performed.
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Range Statement

Materials	Materials may include: • gemstones (e.g. diamonds, rubies, sapphires and emeralds) • ornamental materials (e.g. lapis lazuli and malachite) • biological gem materials (e.g. amber, coral and ivory) and their synthetics and imitations • rocks • non-crystalline materials (e.g. amorphous opal) • glass, plastic and composite stones • gold, silver, platinum, palladium, copper and their alloys
Qualities of materials	Quality of materials may include: • malleability • ductility • conductivity • strength • reaction to treatments and construction processes
Information sources and specialist expertise	Information sources and specialist expertise may include: • industry associations • Australian standards documentation • gemmologists • trade publications • internet • suppliers
Types of gemstones	Types of gemstones includes: • diamonds • beryl • quartz • agate • opal • jade

Basic tests to assess purity of metal	Basic tests to assess purity of metal may include: • acid testing • touch stone • electronic testing
Gem characteristics	Gem characteristics may include: • beauty • durability • rarity • cost • colouring • size • shape
Facet cuts used on gems	Facet cuts used on gems include: • emerald • pear cut • round brilliant • asscher cut • cushion cut • oval cut • radiant cut • marquise cut • princess cut • heart cut
Treatments and enhancement of gems	Treatments and enhancement of gems may include: • heat treatment • oiling • irradiation • coating • colouring

Unit Sector(s)

Jewellery and horological

Custom Content Section

Not applicable.