

**Specification of Competency Standards**  
**for the Jewellery Industry**  
**Unit of Competency**

Functional Area - Testing and Certification

Title	Know about the basic testing of gemstones
Code	109008L3
Range	This unit of competency is applicable to practitioners who work in gemmological laboratories and those with related duties in the jewellery industry. This unit of competency is applied in routine work environments relating to gemstone testing. Practitioners should have a basic understanding of the characteristics of gemstone materials and the various gemstone materials on the market, and be capable of operating the more commonly used gemstone identification equipment properly under instruction.
Level	3
Credit	9
Competency	<p>Performance Requirements</p> <p>1. Know about the characteristics of gemstone materials</p> <ul style="list-style-type: none"> <li>• Gemstone materials <ul style="list-style-type: none"> <li>○ The nature of gemstones</li> <li>○ Crystalline materials</li> <li>○ Durability of gemstone materials <ul style="list-style-type: none"> <li>▪ Hardness</li> <li>▪ Tenacity</li> <li>▪ Stability</li> <li>▪ Durability</li> </ul> </li> <li>○ Specific gravity (relative density)</li> <li>○ The nature of light</li> <li>○ Refraction</li> <li>○ Reflection and optical reflection effects</li> <li>○ Colour</li> <li>○ Plane polarized light</li> <li>○ Non-visible radiation and energy</li> <li>○ Optical magnification (observing the characteristics of the surface and inclusions)</li> </ul> </li> <li>• Know about the gemstone materials in the market <ul style="list-style-type: none"> <li>○ Inorganic gemstones such as: <ul style="list-style-type: none"> <li>▪ Precious gemstones/Semi-precious gemstones <ul style="list-style-type: none"> <li>▪ Diamonds</li> <li>▪ Coloured gemstones <ul style="list-style-type: none"> <li>▪ Ruby/Sapphire;</li> <li>▪ Emerald;</li> <li>▪ Tourmaline, etc.</li> </ul> </li> </ul> </li> <li>○ Organic gemstones such as: <ul style="list-style-type: none"> <li>▪ Amber;</li> <li>▪ Coral;</li> <li>▪ Pearl, etc.</li> </ul> </li> <li>○ Artificial gemstones <ul style="list-style-type: none"> <li>▪ Synthetic gemstones</li> <li>▪ Artificial stones</li> <li>▪ Composite stones</li> <li>▪ Reconstructed stones</li> </ul> </li> <li>○ Imitation gem materials</li> <li>○ Jewellery materials with special optical effects</li> </ul> </li> </ul> </li></ul>

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	<ul style="list-style-type: none"> <li>○ Treated gem materials</li> </ul> <p>2. Master the use of basic gemstone testing equipment</p> <ul style="list-style-type: none"> <li>● Know about the categories of the more commonly used gemstone testing equipment, such as: <ul style="list-style-type: none"> <li>○ Double pan balance/Direct-reading balance (mechanical balance /electronic balance)</li> <li>○ Spectroscope</li> <li>○ Dichroscope</li> <li>○ Fourier-transform infrared spectrometer</li> <li>○ Refractometer</li> <li>○ Gemstone microscope</li> <li>○ Polariscope</li> <li>○ Loupe</li> </ul> </li> <li>● Determine the existing calibration/certified mark of the gemstone testing equipment</li> <li>● Determine the basic principles, performance, functions, and advantages /disadvantages of the gemstone testing equipment</li> <li>● Operate the commonly used gemstone testing equipment properly</li> <li>● Install, maintain, repair and optimize the testing equipment/devices, and check their calibration status to meet the testing requirements</li> </ul> <p>3. Professionalism</p> <ul style="list-style-type: none"> <li>● Able to follow the requirements of the organizations, code of practice and safety guidelines and to use testing equipment to carry out tests on gemstones effectively in a professional attitude</li> <li>● Learn to use the latest gemstone identification/testing equipment constantly</li> </ul>
Assessment Criteria	<p>The integrated outcome requirements of this unit of competency are:</p> <ul style="list-style-type: none"> <li>● Able to clearly analyze the types and characteristics of gemstones; and</li> <li>● Properly use the gemstone testing equipment to carry out tests for gemstone products under instruction.</li> </ul>
Remark	<p>This unit of competency is written with reference to the following materials. Readers can study the relevant information according to their needs:-</p> <ul style="list-style-type: none"> <li>● Guobiao standards GB/T16552-2017 (Gems - Nomenclature);</li> <li>● The English-Chinese and Chinese-English Dictionary of Gems and Jewelry published by China University of Geosciences Press Co. Ltd.; and</li> <li>● Courses of The Gemmological Association of Great Britain (Gem-A), courses of The Gemological Institute of America (GIA), courses of The Swiss Gemmological Institute, courses of the International Gemological Institute, etc.</li> </ul>