

Specification of Competency Standards
for the Testing, Inspection and Certification Industry
Unit of Competency

Functional Area - Testing Operations

Title	Perform complex tests to measure chemical properties of materials
Code	105790L4
Range	This unit of competency (UoC) covers the abilities to isolate analytes from complex matrices, carry out multi-stage and/or multi-component analysis on the analytes independently by applying knowledge of analytical chemistry, and record and analyse test data accurately in testing laboratories.
Level	4
Credit	4 (For Reference Only)
Competency	<p>Performance Requirements Possess knowledge of analytical chemistry to perform complex tests</p> <ul style="list-style-type: none"> • Apply the principles and concepts underpinning the analysis, e.g.: <ul style="list-style-type: none"> ○ interference on analyte behaviour such as ionisation, complexation, precipitation, masking, ○ quantification methods such as internal standards, standard additions, recovery checks. • Identify the test methods and principles for inorganic analysis. • Identify the test methods and principles for organic analysis. • Describe the functions of key components of equipment, e.g. ion selective electrodes, thin layer chromatography, spectrometer, polarimeter. • Apply the equipment calibration, maintenance and troubleshooting techniques. • Describe sampling, sub-sampling and sample preparation procedures. • Describe the steps for calculating analyte concentrations with appropriate accuracy, precision, units and uncertainty. <p>2. Perform multi-staged and/or multi-component analysis</p> <ul style="list-style-type: none"> • Determine the test request and identify sample characteristics that may affect selection and application of test conditions and methods. • Apply appropriate test method and conditions in compliance with test requirements. • Prepare a representative analytical portion of the laboratory sample to reduce the sample complexity and for validation checks. • Set up and optimise equipment for measurements to suit sample/test requirements. • Carry out routine performance check of equipment according to manufacturer's instruction and/or relevant standard to ensure it is ready for chemical tests • Measure analyte response for calibration standards, validation and quality control checks, and samples independently according to requirements of test method. • Conduct sufficient measurements to obtain accurate and reliable test data. <p>3. Exhibit professionalism</p> <ul style="list-style-type: none"> • Troubleshoot analytical procedures or equipment in case of any atypical observations/data/results being identified during sample analysis or performance check. • Maintain security, integrity and traceability of test data, samples and documentation.
Assessment Criteria	<p>The integrated outcome requirements of this UoC are the abilities to:</p> <ul style="list-style-type: none"> • carry out multi-stage preparation and pre-treatment of the sample, • set up, optimise and operate equipment to carry out multi-stage and/or multi-component analysis on the sample independently according to the test method, • record and analyse accurate and reliable test data by conducting sufficient measurements and verifying validation and quality control check data.

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Remark	
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