



Australian Government

Assessment Requirements for MSL954002 Prepare mineral samples for analysis

Release: 1

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Modification History

Release 1. Supersedes and is equivalent to MSL954002A Prepare mineral samples for analysis

Performance Evidence

Evidence of competence in this unit must satisfy all of the requirements of the elements and performance criteria, and include demonstration of:

- safely reducing at least three (3) types of mineral samples to representative samples and preparing analytical portions of each that meet client requirements for analysis:
- representative
- free of contamination
- of specified quantity and particle size
- ready for analysis
- interpreting and closely following preparation methods
- achieving the required sample throughput
- recognising problems and invalid preparation steps and taking appropriate corrective actions
- recognising limitations and seeking timely advice
- minimising rework, waste and environmental impact
- completing preparation and production documentation accurately
- maintaining equipment/reagents and disposing of all waste, surplus and spent samples according to workplace procedures
- recognising hazards and using specified safety equipment and safe work procedures at all times.

Knowledge Evidence

Must provide evidence that demonstrates knowledge of:

- geological properties of samples used in job role, including sulphides, oxides and silicates
- terminology, including homogeneous, heterogeneous, integrity and segregation
- distribution of common analytes in a matrix
- chemical reactions associated with common preparation methods used in job role
- effects of reagents on the element of interest
- reaction and recovery rates, solubility and equilibria
- tracking analytes of interest during changes of state
- critical preparation steps that determine analytical accuracy and precision, including:
 - monitoring drying (incipient and total)
 - mixing to ensure homogeneity before sub-sampling
 - suitability of reagents for purpose (e.g. dryness)
 - accurate operation of dispensers and balances
 - critical/non-critical volumes and critical reagent quantities
 - temperature control during digests
 - loss of solution prior to/after mixing
 - type and acid strength in final solutions
 - mechanical loss of digest (sputtering, residues on glassware/plastic ware and filtering)
 - function of key components and operating procedures for sample preparation equipment
 - calculation steps in preparation methods (e.g. serial dilution)
- use of non-international system of units (SI) units (ppm, ppb) and SI units, and conversions
- workplace and/or legal traceability requirements
- relevant hazards, work health and safety (WHS) and environmental requirements, including use of material safety data sheets (MSDS) and antidotes for specific hazards, such as hydrofluoric acid and cyanide.

Assessment Conditions

- Judgement of competence must be based on holistic assessment of the evidence. Assessment methods must confirm consistency of performance over time, rather than a single assessment event.
- This unit of competency is to be assessed in the workplace or a simulated workplace environment. A simulated workplace environment must reflect realistic operational workplace conditions that cover all aspects of workplace performance, including the environment, task skills, task management skills, contingency management skills and job role environment skills.
- Foundation skills are integral to competent performance of the unit and should not be assessed separately.
- 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.
- Knowledge evidence may be collected concurrently with performance evidence or through an independent process, such as workbooks, written assessments or interviews (provided a record is kept in each case).
- This unit of competency may be assessed with:
 - MSL924001 Record and present data
 - MSL943002 Participate in laboratory or field workplace safety
- Holistic assessment methods include:
 - sizing checks and grind performance for samples prepared by candidate
 - review of quality control performance and analytical results traceable to samples prepared by the candidate
 - review of preparation and production documentation prepared by the candidate
 - feedback from supervisors and/or clients about the candidate's ability to safely prepare mineral samples that meet client requirements
 - observation of the candidate preparing mineral samples for analysis
 - oral or written questions about preparation methods, critical steps, typical problems and corrective actions.
- Access is required to instruments, equipment, materials, workplace documentation, procedures and specifications associated with this unit, including, but not limited to:
 - a variety of mineral samples, sample preparation methods, reagents, sample containers and labels
 - client requests/documentation, such as client profile; sample identification and sample receipts; required preparation methods, storage and analyses; and service charges
 - sample preparation equipment, such as splitters (e.g. riffles and rotary dividers), mills (e.g. ball, ring and rod), bowls (e.g. chrome-steel, tungsten-carbide and zirconia) and tumblers, crushers (e.g. cone, jaw and roll), grinders and disc pulverisers, sieves, ovens and muffle furnaces
 - laboratory equipment, such as ultrasonic baths, centrifuges and vacuum and pressure filtration, volumetric glassware/plastic ware and dispensers, analytical balances and auto-samplers
 - safety equipment and safe work procedures.
- Assessors must satisfy the assessor competency requirements that are in place at the time of the assessment as set by the VET regulator.
- The assessor must demonstrate both technical competence and currency.

- Technical competence can be demonstrated through:
 - relevant VET or other qualification/Statement of Attainment AND/OR
 - relevant workplace experience.
- Currency can be demonstrated through:
 - performing the competency being assessed as part of current employment OR
 - having consulted with a laboratory about performing the competency being assessed within the last twelve months.

Links

MSA Training Package Implementation Guides - <http://mskills.org.au/training-packages/info/>