

REGISTERED NATIONAL STANDARD



UNIT OF COMPETENCY

Title:	Install mosaic tiling ¹				
TQF Level:	4	Credits:	8	Version:	1
National standard code:	NS177-04				
Associated qualification (and code):	National Certificate in Wall and Floor Tiling Level 4 QR-04-NQ-028-04-1005-26-01				
Approval date:	10 September 2026		Review date:	10 September 2031	
Purpose:	This unit describes the skills and knowledge required to plan, set out, and install d mosaic tiles to wall and floor surfaces in accordance with project specifications and industry standards. It includes interpreting drawings and instructions, selecting materials, preparing work areas and substrates, setting out mosaic patterns or templates, cutting and positioning tiles, applying adhesives, and completing grouting and finishing processes. This unit applies to tilers working with a level of autonomy who are responsible for organising and completing tiling tasks. Work must comply with Tonga National Building Code, OHS, environmental requirements, manufacturer specifications, and workplace procedures. It emphasises precise layout, symmetry, alignment, and finish to ensure mosaic installations are durable, visually consistent, and meet required quality and safety standards. It ensures that learners can install mosaic tiles while working independently or as a member of a team. In successfully completing this unit standard, learners are able to: • Apply OHS and environmental procedures during all stages of mosaic tiling activities • Interpret drawings, specifications, and work instructions for mosaic tiling • Plan and organise work tasks and sequencing activities • Inspect and assess the worksite and identify hazards				

¹ Due to safety issues inherent in working with electricity and combustible substances, all training and assessment activities must be in accordance with Tonga National Building Code.

	• Select and prepare tools, equipment, and materials for mosaic tiling • Calculate material quantities required for installation • Prepare work areas for mosaic tiling tasks • Check mosaic tiles for conformity with size, colour, and pattern requirements • Set out mosaic layouts to achieve symmetry, balance, and minimal waste • Prepare substrates to required standards and conditions • Clean surfaces to remove contaminants prior to tiling • Mark mosaic tiles and layout positions accurately • Select and mix adhesives compatible with tile types and conditions • Apply adhesive and install mosaic tiles maintaining alignment and spacing • Position and adjust mosaic tiles to ensure joint consistency and surface accuracy • Finish tiled surfaces to achieve flush and level finishes • Grout tile joints and complete finishing processes • Clean and polish tiled surfaces to required standards • Protect completed tiling from damage • Clean up work areas and manage waste appropriately • Maintain and store tools and equipment • Dispose of waste materials, reuse, or recycle in accordance with environmental requirements and building code • Minimise environmental impact during plastering preparation tasks
Learning Outcome 1 (LO1)	Plan and prepare to install mosaic tiling
Performance standards	1.1 Read and interpret task work instructions; 1.2 Plan sequence of installing mosaic tiling work; 1.3 Plan all work to comply with OHS, environmental and workplace requirements, drawings and specifications; 1.4 Inspect work area, assess hazards and apply risk controls, including required signage and barricades; 1.5 Select and use personal protective equipment (PPE) as required for each stage of the task; 1.6 Select tools and equipment; 1.7 Calculate material quantities as per plans and specifications; 1.8 Select materials required for mosaic tiling task, handle safely and prepare and position ready for use.
Learning Outcome 2 (LO2)	Prepare materials and substrate for mosaic tiling

Performance Standards	2.1 Prepare work area for mosaic tiling; 2.2 Check mosaic tiles conform to the task size, pattern, colour and characteristics; 2.3 Set out mosaic work to be symmetrical, balanced and to produce minimal waste; 2.4 Prepare substrate surfaces; 2.5 Clean surface free of loose material and contaminants ready for tile installation.
Learning Outcome 3 (LO3)	Install mosaic tiles to flat surfaces
Performance standards	3.1 Mark prepared mosaic tiles; 3.2 Select and mix adhesive to usage and climatic conditions; <i>(Range to ensure light-coloured tiles are not darkened)</i> 3.3 Apply adhesive to substrate and install mosaic tiles maintaining alignment to the set-out lines and face surface of the tiles; 3.4 Position mosaic tiles prior to final set and adjust to ensure joints are consistent; 3.5 Adjust tile surface to finish flush with tile face; 3.6 Allow curing time.
Learning Outcome 4 (LO4)	Grout mosaic tiles
Performance standards	4.1 Clean and prepare joints to receive grout; 4.2 Mix and apply grout; 4.3 Clean and polish tiles; 4.4 Protect tiles from damage during remaining construction.
Learning Outcome 5 (LO5)	Clean up mosaic tiling area
Performance standards	5.1 Clear the work area and dispose waste following environmental requirements; 5.2 Clean tools and equipment, check for serviceability; 5.3 Report damage or faults to relevant personnel; 5.4 Store tools and equipment following workplace procedures; 5.5 Store materials for reuse or recycle; <i>(Range following workplace procedures)</i> 5.6 Report task completion.

Pre-requisites	NS133-03 Apply <i>Occupational Health and Safety</i> (OHS) requirements, policies and procedures
Co-requisites	N/A
Underpinning skill and knowledge	The following skills and knowledge underpin this unit standard: <u>Skills:</u> Planning and organising • Interpret drawings, specifications, and work instructions • Plan and sequence mosaic tiling activities efficiently • Calculate materials and organise work areas Tiling Techniques • Set out mosaic patterns and templates accurately • Prepare substrates and work surfaces • Cut and position mosaic tiles precisely • Apply adhesives and install tiles to required alignment • Adjust tiles to ensure consistency in joints and finish • Perform grouting, cleaning, and polishing tasks Measurements and calculations • Measure surfaces and layouts accurately • Calculate quantities of tiles, adhesives, and grout • Apply geometric principles for symmetry and balance Problem-solving Identify substrate defects or layout issues • Adjust patterns to suit site conditions • Select appropriate materials for different situations Communication • Communicate effectively with supervisors and team members • Follow instructions and report issues • Use appropriate workplace terminology Safety and compliance • Apply OHS requirements and safe work practices • Identify hazards and implement risk controls • Use PPE correctly Tool and equipment • Select and operate tiling tools and equipment safely

	• Maintain tools and ensure serviceability • Use cutting and measuring tools accurately Environmental and housekeeping • Dispose, reuse, or recycle materials appropriately • Maintain a clean and safe work environment <u>Knowledge:</u> Standards and compliance • Tonga National Building Code relating to floor tiling installation • OHS requirements, including Job Safety Analysis and PPE • Environmental requirements for waste and material handling • Types and characteristics of mosaic tiles: ○ Ceramic ○ Stone ○ Glass ○ Metal • Adhesive types and classifications • Grout types, including epoxy grout • Tile trims and accessories Substrate • Types of substrates and their preparation requirements • Compatibility of substrates with mosaic tiling materials Processes and techniques • Mosaic tiling methods and set-out procedures • Cutting and positioning techniques • Adhesive application and installation methods • Grouting and finishing techniques Measurement and calculation • Methods for calculating material requirements • Layout planning for symmetry and alignment Tools and equipment • Types and uses of tiling tools and equipment • Safe operation and maintenance procedures Quality requirements • Tolerances for alignment, spacing, and finish • Joint consistency and surface flatness • Standards for completed tiling work Safety and compliance
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	• Hazards associated with tiling (dust, cutting tools, adhesives) • Risk control measures and safe handling procedures • Job Safety Analysis (JSA) • Material Safety Data Sheets (MSDS) • Hazards related to adhesives, solvents, and grouts • Workplace safety and environmental requirements Environmental • Waste management and recycling practices • Environmental protection procedures on-site
Assessment requirements	<u>Assessment methods</u> may include more than one of the following: Direct Observation Assessment of learners while they are performing tasks in real time in a real simulated environment. • The learner performs practical tasks. • The assessor watches the learner complete these tasks against a checklist or performance standards. Assessor Requirements • Use a structured observation checklist aligned to performance standards • Observe multiple occasions to ensure consistency of competence. • Record evidence of safe work practices, correct use of equipment, etc. • Provide immediate feedback where appropriate. • Ensure conditions reflect real workplace standards. Oral Questioning Verbal questions asked to assess the learner's understanding of knowledge and reasoning. • Conducted during or after practical tasks. • Can be structured (planned questions) or informal (follow-up probing). Assessor Requirements • Ask questions that test underpinning knowledge • Use open-ended questions • Confirm learner understanding where practical performance is not enough. • Record responses clearly (notes or checklist).

- Adjust language to suit learner literacy levels.

Written Test

A structured assessment requiring learners to provide written responses.

- Short-answer questions, multiple choice, or case scenarios.
- Typically conducted off-site or in a classroom environment.

Assessor Requirements

- Design questions that assess knowledge.
- Ensure the test is clear, aligned to unit requirements and appropriate for language, literacy, numeracy levels
- Mark responses using a marking guide or model answers.
- Provide feedback and identify gaps in knowledge.
- Ensure results reflect the learner's independent performance.

Work-Based Activity

Assessment conducted in a real workplace while the learner performs actual job tasks.

- Learners complete normal workplace duties.
- Evidence is collected over time.

Assessor Requirements

- Coordinate with workplace supervisors.
- Gather evidence such as - Observation reports, Supervisor feedback, etc.
- Verify that tasks meet unit performance standards.
- Ensure authenticity (learner's own work).
- Confirm competence across different situations and timeframes.

Assessment should use a combination of the above methods to ensure sufficient, valid, authentic, and current evidence of competence in both skills and knowledge, in line with unit requirements.

Context of Assessment:

Competency is to be assessed in the workplace or a simulated workplace environment that accurately reflects a real workplace setting.

	Assessment is to comply with relevant regulatory or relevant standards' requirements. Assessment of essential knowledge will usually be conducted in an off-site situation.
Moderation arrangements	1. Training providers must have their own moderation system approved by TNQAB before accreditation is granted: a) Relevant internal moderation processes are documented; b) Assessment is planned for each unit, and moderation processes are integrated into such plan. 2. Unless specified elsewhere, external moderation is conducted by the National Qualifications unit of TNQAB for all unit components of a national qualification: a) Samples of assessed activities are submitted for moderation; b) Moderation (external) forms are available on request.
Resource requirements	1. Power point presentations 2. Trainer's Guide 3. Learner's Guide 4. Tonga National Building Code 5. Videos on installing mosaic tiles 6. Plans Specifications and design layouts 7. Mosaic tiles (ceramic, glass, stone, metal) 8. Adhesives and bonding agents 9. Grouts (cement-based and epoxy) 10. Tile trims and accessories 11. Tile cutters and scribes 12. Measuring tools (tapes, squares, levels, string lines) 13. Installation tools (trowels, spacers, floats) 14. Cutting tools (nippers, saws) 15. Grouting tools (sponges, buckets) 16. Mixing equipment 17. Hand and power tools Tape measures 18. Spirit levels 19. Straight edges 20. Squares 21. String lines

	22. Step ladder 23. Wet saws 24. Angle grinders 25. Hole saws 26. Trowels (notched) 27. Spacers and wedges 28. Floats 29. Sponges 30. Buckets 31. Mixing equipment (manual or mechanical mixers) 32. Hand and power tools 33. Mortar boards 34. Wheelbarrows 35. Personal Protective Equipment (PPE) 36. Safety signage and barricades 37. Safety Data Sheets (SDS) 38. Job Safety Analysis (JSA) 39. Cones and arm connector
Requirements to complete this unit	There are five (5) Learning outcomes and twenty-nine (29) performance standards to measure competence. To demonstrate competence, the person studying this unit is: - Required to demonstrate all LOs to the expected standards; - Required to attain an Achieved Grade (Competent) to fulfil the requirements of the Unit Standard; - Eligible to three (3) attempts to achieve the required competency within 14 days of the first attempt. Failure to achieve the required competency after three (3) attempts on the specific part of the assessment will require the person studying this Unit to re-enrol for the same Unit.
Important notes and definitions	<u>Notes:</u> - All training and assessment activities must be in accordance with Tonga National Building Code. - Assessors must comply with the Tonga national assessment and moderation requirements.

	<u>Definitions:</u> 1. <i>Adhesive</i> is a bonding material used to fix tiles to surfaces. 2. <i>Alignment</i> refers to proper positioning of tiles to maintain straight lines and patterns. 3. <i>Design Geometry</i> refers to use of shapes and measurements to form decorative patterns. 4. <i>Environmental Requirements</i> are regulations and workplace procedures aimed at reducing environmental impact, including waste management and recycling. 5. <i>Grout</i> refers to material used to fill joints between tiles. 6. <i>Hazard</i> refers to potential source of harm. 7. <i>Joint spacing</i> refers to consistency in spacing and positioning between tiles. 8. <i>JSEA (Job Safety and Environmental Analysis)</i> is the process to identify risks. 9. <i>Level</i> - horizontal alignment 10. <i>Mortar</i> is a mixture used for bedding tiles. 11. <i>Mosaic Tiles</i> are small tiles made from materials such as ceramic, glass, stone, or metal. 12. <i>Mosaic Tiling</i> refers to the installation of small tiles arranged in patterns or designs to form decorative surfaces. 13. <i>MSDS (Material Safety Data Sheet)</i> refers to information on safe handling of materials and chemicals. 14. <i>OHS (Occupational Health and Safety)</i> refers to workplace safety practices and regulations. 15. <i>Plumb</i> refers to vertical alignment 16. <i>Risk control</i> refers to measures to reduce workplace risks. 17. <i>Square</i> refers to right angle alignment 18. <i>Substrate</i> refers to the surface onto which tiles are fixed. 19. <i>Template / Pattern</i> is a layout guide used to position mosaic tiles accurately 20. <i>Tonga National Building Code</i> is a set of technical standards governing the design and construction of buildings in Tonga.
Public comments on unit	Please contact TNQAB National Qualifications Unit (email EnquireNQ@tnqab.to or Telephone 28136) if you like to discuss or suggest changes to the details of this unit.