

Domain	BRICKLAYING	Unit ID: 4
Title:	Manufacture bricks and blocks	
Level: 1		Credits: 4

Purpose

This unit standard specifies the competencies required for the small scale manufacturing of concrete bricks/ blocks. It includes the identification and selection of aggregates, mixing of concrete, moulding and de-moulding, curing of bricks/ blocks and assessing the quality of manufactured bricks/blocks. This unit standard is intended for those who work as bricklayers and plasterers.

Special Notes

1. Entry information:
 - Prerequisite
 - Unit 3 - *Apply safety rules and regulations in bricklaying operations* or demonstrated equivalent knowledge and skills.
2. To demonstrate competence, at a minimum, requires evidence of the preparation, finishing and curing of 100 solid and 100 hollow bricks/blocks to given dimension and in line with quality requirements for strength, density and surface texture. Perform these tasks ensuring correct identification of requirements and finishing of the tasks, correct selection and use of appropriate processes, tools and equipment and completing all work to specification.
3. Assessment evidence may be collected from a real workplace or a simulated real workplace or an appropriate realistic simulated environment in which bricklaying operations are carried out.
4. Glossary of terms:
 - *'block'* refers to a masonry unit with dimensions that meet any of the following conditions:
 - length between 300mm and 650mm
 - width between 130mm and 300mm
 - height between 120mm and 300mm.
 - *'brick'* refers to a masonry unit with dimensions that meet all of the following conditions:
 - length not exceeding 300mm
 - width not exceeding 130mm
 - height not exceeding 120mm.
5. All inspection, operation and maintenance procedures associated with the use of tools and equipment shall comply with manufacturers' guidelines and instructions.
6. *'Specifications'* refers to any, or all of the following: manufacturers' specifications and recommendations, site and workplace specific requirements.
7. Regulations and legislation relevant to this unit standard include the following:

- Labour Act No.6, 1992
- Occupational Health and Safety Regulations No.18, 1997 and all subsequent amendments.

Quality Assurance Requirements

This unit standard and others within this subfield may be awarded by institutions which meet the accreditation requirements set by the Namibia Qualifications Authority and the Namibia Training Authority and which comply with the national assessment and moderation requirements. Details of specific accreditation requirements and the national assessment arrangements are available from the Namibia Qualifications Authority and the Namibia Training Authority on www.nta.com.na

Elements and Performance Criteria

Element 1: Plan and prepare for work

Range

Planning and preparation is to include but is not limited to worksite inspection, equipment defect identification, assessment of conditions and hazards and determination of work requirements.

Tools and equipment are to include but are not limited to shovels, wheel barrows, brooms, brick/block making machine, batching containers, concrete mixer, moulds, trolleys, screed boards, trowels, rakes, hoses, sprinklers and plastic sheeting.

Materials are to include but not be limited to cement, aggregates and water.

Performance Criteria

- 1.1 Work instructions, including plans, specifications, quality requirements and operational details are obtained, confirmed and applied.
- 1.2 Safety requirements are followed in accordance with safety plans and policies.
- 1.3 Sign and barricade requirements are identified and implemented.
- 1.4 Plant, tools and equipment selected to carry out tasks that are consistent with the requirements of the job, checked for serviceability and any faults are rectified or reported prior to commencement.
- 1.5 Material quantity requirements are calculated in accordance with plans and/or specifications.
- 1.6 Materials appropriate to the work application are identified, obtained, prepared, safely handled and located ready for use.
- 1.7 Environmental protection requirements are identified are applied in line with environmental plans and regulatory obligations.

Element 2: Mix aggregates and cement

Range

Aggregates include fine and coarse sand, stone with a maximum size of 13mm for bricks or solid blocks and 10mm for hollow blocks.

Performance Criteria

- 2.1 Aggregates are inspected and selected to ensure they meet job requirements and are free of organic materials.
- 2.2 Quantities of cement, aggregate and water are determined according to job requirements.
- 2.3 Mixing equipment is set up and operated in line with manufacturers' instructions.
- 2.4 Cement, aggregate and water are mixed to meet job requirements.
- 2.5 Water content of mixture is monitored to prevent slumping when mould is removed.
- 2.6 Ancillary/extra equipment is used as required.

Element 3: Cast concrete into moulds

Range

Brick/block-making machines include stationary and egg layer machines.

Performance Criteria

- 3.1 Brick/block making machine is selected, inspected for damage or wear and operated according to manufacturers' instructions.
- 3.2 Concrete is poured and compacted into mould according to manufacturers' instructions.
- 3.3 De-moulding or removal of the mould is completed without damaging fresh bricks/blocks.
- 3.4 Density, strength and surface texture of trial batch of bricks/blocks is assessed by visual inspection, weighing and knocking bricks together.
- 3.5 Protection of freshly cast bricks/blocks is installed to minimise damage from rain and the drying impact of sun and wind.

Element 4: Cure and stack bricks/blocks

Performance Criteria

- 4.1 Bricks/blocks are removed from production area and are closely stacked and wetted in preparation for curing.
- 4.2 Bricks/blocks are stacked to avoid chipping of edges and corners.
- 4.3 Bricks/blocks are covered with plastic sheeting and kept continuously damp by spraying with water to ensure hydration and maximum strength.

Element 5: Assess quality of bricks/blocks

Performance Criteria

- 5.1 Bricks/blocks are inspected for strength, dimension and shrinkage.

Element 6: Clean up

Performance Criteria

- 6.1 Work area is cleared and materials disposed of, reused or recycled in accordance with relevant legislation, regulations and job specifications.
- 6.2 Plant, tools and equipment are cleaned, checked, maintained and stored in accordance with manufacturers' recommendations and standard work practices.

Registration Data

Subfield:	General Construction
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Body responsible for review:	Namibia Training Authority