



National Unit Specification: general information

UNIT Working with Traditional Mortars (SCQF level 6)

CODE F2FX 12

SUMMARY

This Unit is suitable for candidates with limited experience in the construction and heritage industries who wish to gain knowledge and understanding of traditional mortars used in historic buildings.

This Unit will help develop the candidate's ability to source traditional binders and mortars from local sites and produce materials safely for future use. It also develops the candidate's knowledge and understanding of the techniques of analysis of traditional mortars and the relevant safety requirement relating to the use of these materials.

OUTCOMES

- 1 Source and analyse local limestone materials.
- 2 Process limestone to a useable condition in line with health and safety legislation.
- 3 Produce mortars using locally sourced materials in line with health and safety legislation.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, it would be beneficial if candidates have prior experience in the industrial field of conservation masonry.

CREDIT VALUE

0.5 credit at Higher (3 SCQF credit points at SCQF level 6*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Administrative Information

Superclass: TG

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National Unit Specification: general information (cont)

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CORE SKILLS

There are opportunities to develop the Core Skills of Problem Solving at SCQF level 6 and Numeracy at SCQF level 5 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

National Unit Specification: statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit Specification. All sections of the statement of standards are mandatory and cannot be altered without reference to the Scottish Qualifications Authority.

OUTCOME 1

Source and analysis local limestone materials.

Performance Criteria

- (a) Source suitable local limestone materials using current published data.
- (b) Correctly analyse the limestone materials using appropriate techniques.

OUTCOME 2

Process limestone to a useable condition in line with health and safety legislation.

Performance Criteria

- (a) Construct and operate a small kiln to process limestone.
- (b) Handle the limestone in accordance with approved code of practice.
- (c) Handle and use flammable materials correctly.
- (d) Convert the limestone by hydration into a workable, useable product.
- (e) Store products from the kiln safely for later use.
- (f) Follow appropriate work safety practices at all times.

OUTCOME 3

Produce mortars using locally sourced materials in line with health and safety legislation.

Performance Criteria

- (a) Source as dug clay, sand and aggregates using current published data.
- (b) Analyse and grade aggregates using appropriate techniques.
- (c) Mix materials accurately and appropriately to produce a compatible mortar for repairs in accordance with specifications and the results of analysis.
- (d) Store the mortars correctly for later use.
- (e) Follow appropriate work safety practices at all times.

National Unit Specification: statement of standards (cont)

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EVIDENCE REQUIREMENTS FOR THIS UNIT

Evidence is required to demonstrate that the candidates have achieved all Outcomes and Performance Criteria.

For Outcome 1, written and/or oral recorded evidence is required to show that the candidate can source suitable local limestone materials using current published data and analyse these limestone materials. The evidence will be produced under controlled, supervised conditions with candidates having access to relevant published materials. Candidates will be expected to cross reference information relative to local limestone sources and Ordinance Survey maps to source local products.

Performance evidence supported by an assessor observation checklist and product evidence is required to show that the candidate has achieved the standard specified in Outcomes 2 and 3 and all related Performance Criteria.

The performance evidence will cover each candidate being observed in their ability to carry out the following tasks correctly and safely:

- ◆ build a small scale lime kiln and carry out the burning process required to produce quicklime
- ◆ use the correct methods to produce a hydrate from the resultant materials
- ◆ store products from the kiln safely for later use
- ◆ win clay, sand and aggregate materials and carry out simple field analysis
- ◆ produce mortars correctly with locally sourced materials
- ◆ store mortar properly for later use

The product evidence will be in the form of the lime the candidate has burned and the mortars the candidate has mixed. Where it is impractical to store and keep these products photographic evidence or video evidence will be acceptable.

The evidence will be produced at appropriate points throughout the Unit once candidates have acquired the necessary knowledge and skills.

National Unit Specification: support notes

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This part of the Unit Specification is offered as guidance. The support notes are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 20 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This Unit has been developed as a mandatory Unit in the National Progression Award in the Conservation of Masonry at SCQF level 6 and can also be delivered as a freestanding Unit

Candidates successfully completing this Unit will gain the underpinning knowledge relating to the way geology has shaped building practice on a regional basis; the practical applications and use of tools and equipment for converting limestone into building lime by processing materials in a small scale kiln and converting the product by hydration into a workable useable product; identifying, sourcing and extracting clay, sands and aggregates fit for the purpose; and mixing materials accurately and properly to produce a compatible mortar for repair.

The Unit is appropriate for candidates from the construction and related service industries and trades. The skills are transferable within different working environments but the Unit is aimed at candidates whose normal place of work would be a site, a conservation project or a similar working environment.

The Unit is applicable to all areas of construction or other related industries but specifically includes the safe working practices associated with working with lime based mortars and deals specifically with the analysis of regional indigenous materials and their uses in the local built environment, and is complemented by other building Units in Stonemasonry.

The following health and safety regulations, acts, approved codes of practice and any amendments or updates made by statutory bodies apply to all outcomes in this Unit:

- ◆ Health & Safety at Work Act 1974
- ◆ The Personal Protective Equipment at Work Regulations 1992 (as amended)
- ◆ The Provision and Use of Work Equipment Regulations 1998 (as amended)
- ◆ The Construction (Design & Management) Regulations 2007
- ◆ The Control of Substances Hazardous to Health 2002 (as amended)
- ◆ The Management of Health and Safety at Work Regulations 1999 (as amended)
- ◆ The Manual Handling Operations Regulations 1992 (as amended)
- ◆ The Workplace (Health ,Safety and Welfare) Regulations 1992 (as amended)

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The achievement of skills and underpinning knowledge required for this Unit will be assisted by the provision of information sources in the form of oral and/or written instructions; graphic and photographic materials; technical information and examples from current standards, codes of practice; statutory regulations; hands-on examination of sound and decayed lime-based mortars in masonry construction; hands-on exercises in selecting, extracting and converting limestone by calcinations and hydration; and sourcing and extracting clay, sands and aggregates.

National Unit Specification: support notes (cont)

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Teachers/ Lecturers should demonstrate practical elements step-by-step until the candidate feels competent enough to attempt them under assessment conditions. The requirement to adopt safe working practices and comply with safety legislation must be emphasised throughout.

It is recommended that this Unit be delivered in order of Outcomes as the order stated in the statement of standards is the logical order of the task regarding traditional mortars.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

Candidates will have opportunities to develop aspects of Problem Solving, that is in critical thinking, planning, organising, reviewing and evaluating as they undertake the Unit. They need to examine and take account of a range of issues affecting practical work with traditional mortars from local sites. This will include sourcing and analysing materials, before identifying their suitability for purpose. Candidates use an appropriate safe approach to mixing and firing, storage of materials and use of a kiln, to comply with current regulations. Review and reflective evaluation of achievement and opportunities to discuss results with assessor support would be best practice in formative and summative work and would enhance aspects of problem solving abilities.

Numeracy involves a wide range of skills in the interpretation and application of number and graphic communication and implies flexibility in responding to the needs and purposes of the task. The ability to calculate and apply complex data underpins competencies developed in the Unit. Candidates focus on practical analysis and calculation to source and analyse traditional mortars from local sites and to produce materials safely for future use. Knowledge and understanding of the techniques of analysis of traditional mortars and understanding and applying the relevant safety requirements relating to the use of these materials will be essential. It will involve on going use of numerical and graphical information relevant to historic sites and buildings. Practical exercises to support development of skills could be designed by centres, with an emphasis on Numeracy as a tool to be used and applied efficiently and critically in workplace contexts.

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

It is recommended that Candidates be assessed on an outcome by outcome basis as this reflects how the work would progress in real working environment. However centres may chose to assess a combination of all outcomes on a single assessment occasion.

In this Unit an appropriate instrument of assessment would be a series of practicable assignments which the candidates complete in a real or simulated workplace environment. In order to allow candidates to achieve all Outcomes and Performance Criteria candidates should be given a clear brief detailing the nature of the exercises involved.

Centres should retain written/oral evidence, observation checklists and product evidence in the form of either candidates completed work or photographic or video evidence.

National Unit Specification: support notes (cont)

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CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (www.sqa.org.uk).