



National Unit Specification: general information

UNIT Masonry Materials and Performance (SCQF level 6)

CODE F2FY 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 masonry materials and performance.

This Unit has been designed to develop the candidate's ability to identify basic masonry building materials and their performance requirements in relation to each other, location, environment, exposure and seasonal influences. Candidates who complete this Unit can progress to further study to develop a higher level of skill in this area. It also develops the candidate's knowledge and understanding of the types of masonry materials suitable for specific jobs and the performance of these materials.

OUTCOMES

- 1 Explain the effects of exposure and environmental conditions on masonry materials.
- 2 Test the compatibility of different materials using masonry performance criteria.

RECOMMENDED ENTRY

While entry is at the discretion of the centre, it may be beneficial if candidates had 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 aspects of the Core Skills of Problem Solving and Numeracy 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

Explain the effects of exposure and environmental conditions on masonry materials.

Performance Criteria

- (a) Explain the effects of exposure, environmental, and seasonal influences relative to performance of existing and new repair materials.
- (b) Explain detailing and the impact of extant detailing on short, medium and long term performance of new and existing work.
- (c) Explain the influence the location of the building will have on the choice of repair materials.
- (d) Explain why it is important to adequately protect masonry repairs through the working year.
- (e) Describe patterns of structural failures.

OUTCOME 2

Test the compatibility of different materials using masonry performance criteria.

Performance Criteria

- (a) Identify and record masonry and mortar that has been used in construction.
- (b) Identify and record in situ performance issues and principal elements of exposure.
- (c) Identify and record decay mechanisms and the reasons these caused decay.
- (d) Identify and record masonry materials suitable for repair.
- (e) Work in accordance with current health and safety legislation throughout.

EVIDENCE REQUIREMENTS FOR THIS UNIT

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

Written and/or recorded oral evidence is required which demonstrates that the candidate has achieved Outcome 1 and its Performance Criteria. The evidence for this should be obtained under closed-book, controlled, supervised conditions at an appropriate point in the Unit.

Performance Evidence supported by an Assessor observation checklist and product evidence will be required to demonstrate that the candidate has achieved the standard specified in Outcome 2 and its Performance Criteria. Each candidate will be observed in their ability to carry out the following tasks in laboratory conditions correctly and safely:

- ◆ test a range of masonry types, bedding, pointing and finishing mortars and their compatibility relative to their application and function and identify if any decay mechanisms are in action.

National Unit Specification: statement of standards (cont)

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- ◆ test principal elements of exposure, environment, location and seasonal impact on new and existing repair materials in relation to building location. Demonstrate competence in applying current standards and codes of practice where applicable.
- ◆ work in accordance with current health and safety legislation through out, including working safely with chemicals.

Product evidence will be in the form of the candidate's record made during the testing process.

The evidence will be produced at appropriate points throughout the Unit under supervised conditions.

National Unit Specification: support notes

UNIT Masonry Materials and Performance (SCQF level 6)

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 Conservation of Masonry at SCQF level 6 and can also be delivered as a freestanding Unit.

Candidates successfully completing this Unit will have the knowledge to determine the principle engines of decay in masonry buildings and structures, related to existing condition, exposure, location and environment and will have carried out a variety of laboratory tests to substantiate the relevant factors.

The Unit is appropriate to 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 use in the local environment, and is complemented by other building Units in the National Progression Award in Conservation of Masonry at SCQF level 6.

The following health and safety regulations, acts, approved codes of practice and any amendments or updates made by statutory bodies apply to both 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 such as examples of limes, sands and pre-mixed mortars; codes of practice; building standards; statutory regulations; hands-on examination of sound and decayed masonry and mortars in rubble masonry construction.

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 of materials performance.

OPPORTUNITIES FOR CORE SKILL DEVELOPMENT

Aspects of the Core Skill of Problem Solving, that is, critical thinking, planning and organising, and reviewing and evaluating, could be developed and enhanced in the Unit, which requires the application of theoretical knowledge to a practical task. Identifying and examining the relevance of all factors at various stages of carrying out masonry repairs will be essential to ensure successful results. Initially candidates will have to establish the extent of repair needed before analysing requirements for materials in a range of environmental and seasonal contexts, which will involve a high level of critical thinking. The ability to identify appropriate materials, test their properties, and select solutions which use appropriate approaches to working is a critical competence. Candidates will adopt an appropriate and safe approach to work based on assessment of performance characteristics, and demonstrates that they can comply with current and relevant Health and Safety legislation and regulations. Formative group discussion of issues such as site requirements, and the impact of environmental and seasonal factors may be useful to support decision making although candidates should independently identify and determine best practice. Class discussions with assessor support during formative work could encourage the analytical evaluation of typical repair strategies and would also be of value in developing problem solving skills.

The ability to calculate and consider the implications of data which may be presented numerically and graphically will underpin the competencies developed in the Unit. Candidates have to focus on practical analysis and calculation to determine and test the effects of exposure, environmental, and seasonal influences on the performance of existing and new repair materials. Knowledge and understanding of the mechanisms and effects of decay will be critical to the formulation of sound repair strategies. Practical exercises to support development of skills in the calculation and presentation of data could be undertaken as part of formative work and integrated with other work across the award, with an emphasis on Numeracy as a tool to be used and applied efficiently and critically in working contexts. The provision of appropriate reference materials in numeric and graphic format would assist this process.

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.

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

National Unit Specification: support notes (cont)

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Centre should retain written/oral evidence, observation check lists and the candidate's record made during the testing process.

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).