

National Unit Specification: General Information

UNIT Properties and Uses of Construction Materials (Intermediate 2)

NUMBER D923 11

COURSE

SUMMARY

This unit is suitable for candidates with no prior experience of construction materials. It gives candidates an introduction to the manufacturing processes involved in producing building materials, together with an introduction to the properties of materials and their identification by physical inspection. The unit will provide a good basis for further study in the Built Environment and could be used as an introductory unit prior to undertaking a higher in Construction or Building and Architectural Technology.

OUTCOMES

- 1 Describe the manufacture of common materials used in construction.
- 2 Describe the properties of common materials used in construction.
- 3 Identify and select common construction materials for use in specific situations.

RECOMMENDED ENTRY

Entry to this unit is at the discretion of the centre.

No prior experience of construction materials is required. However, some knowledge of building technology will be an advantage.

CREDIT VALUE

1 Credit at Intermediate 2.

CORE SKILLS

Information on the automatic certification of any core skills in this unit is published in *Automatic Certification of Core Skills in National Qualifications* (SQA, 1999).

Administrative Information

Superclass: TE

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National unit specification: statement of standards

UNIT Properties and Uses of Construction Materials (Intermediate 2)

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.

Note on range for the unit

The range statement for this outcome is fully expressed within the performance criteria.

OUTCOME 1

Describe the manufacture of common materials used in construction.

Performance Criteria

- a) Manufacturing processes are correctly described.
- b) Sources of raw materials are correctly explained.
- c) Quality control procedures are correctly described.

Evidence Requirements

Written and/or oral evidence of knowledge and understanding of the manufacturing processes for six construction materials from a range of eight selected by the centre.

OUTCOME 2

Describe the properties of common materials used in construction.

Performance Criteria

- a) Mechanical properties of the materials are correctly described.
- b) Physical properties of the materials are correctly described.

Evidence Requirements

Written and/or oral evidence of knowledge and understanding of 4 mechanical properties and 4 physical properties from a range of 8 construction materials selected by the centre.

OUTCOME 3

Identify and select common construction materials for use in specific situations.

Performance Criteria

- a) Construction materials are correctly identified by inspection.
- b) Construction materials are correctly selected for use in specific situations.

Evidence Requirements

Candidates should correctly identify by inspection 10 construction materials from a range of 12 construction materials selected by the centre. Candidates must also correctly select a specific location/use for each material in a building project.

National unit specification: support notes

UNIT Properties and Uses of Construction Materials (Intermediate 2)

This part of the unit specification is offered as guidance. None of the sections of the support notes is mandatory.

GUIDANCE ON CONTENT AND CONTEXT

Corresponding to outcomes 1-3:

Outcome 1

This outcome should cover the manufacturing processes associated with a range of common materials used in construction.

Materials to be covered in the lecture programme should include the following:

portland cement; building lime; clay bricks; dense concrete blocks; aerated concrete blocks; precast concrete units; concrete roof tiles; aggregates for concrete and mortar; concrete; building mortar; timber products; particle boards; glass; sealants; plaster; plasterboards and paint.

Quality control procedures should be stressed.

Outcome 2

This outcome should cover the properties of common materials used in construction.

Properties should include: strength; durability; density; appearance; moisture resistance and movement; permeability; porosity; absorption; fire resistance; resistance to frost, chemicals, atmospheric pollutants; thermal properties and movement; acoustic properties.

Outcome 3

The first part of this outcome should cover the identification by physical inspection of a range of common materials used in construction.

A guide to the materials which may be used in the lecture programme is given below:

portland cement; building lime; clay bricks; dense concrete blocks; aerated concrete blocks; precast concrete units (eg. caststone); natural sandstone; natural granite; natural slate; concrete roof tiles; aggregates for concrete and mortar; timber products; particle boards; glass; sealants; plaster; plasterboards; paint; lead; copper; aluminium; mild steel; stainless steel; insulation.

In the second part of the outcome candidates must identify specific situations where materials would be used in building construction.

National unit specification: support notes (cont)

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As an example, a candidate may correctly identify a sample of sheet lead and confirm that it may be used for chimney flashings, valley gutters or lead flat roofs or other appropriate use for lead in building. It is not expected at this level that candidates will identify the thickness of the lead confirming a more precise use for the material.

GUIDANCE ON TEACHING AND LEARNING APPROACHES

It is recommended that the outcomes be completed in the sequence presented. This should not preclude some integration of the outcomes during teaching, learning and assessment.

Site visits to examine the manufacture of materials eg. to brick manufacturing plant; cement manufacturing plant; precast concrete works; ready mixed concrete works or to a building site will help candidates to acquire underpinning knowledge. Useful videos are available on modern materials manufacture and these may be used for consolidation and to broaden candidates' knowledge of the range of materials available.

GUIDANCE ON APPROACHES TO ASSESSMENT

In outcomes 1, 2 and 3 assessment may be carried out by means of short answer questions.

In outcome 1 candidates may be asked to describe the manufacturing processes, raw materials used and quality control procedures for 6 materials from a choice of 8. Centres may decide which 8 materials to present to the candidate in the assignment.

In outcome 2 candidates must describe 4 mechanical and 4 physical properties from a range of 8 materials. Centres may decide which materials to present to the candidate in the assignment.

In outcome 3, candidates should be presented with samples of 12 common construction materials which centres may select from the list provided above under the heading 'Guidance on content and context' (Outcome 3). Candidates should be asked to correctly identify 10 of the materials and correctly selected the specific location for each material in a building project.

SPECIAL NEEDS

This unit specification is intended to ensure that there are no artificial barriers to learning or assessment. Special needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment and Certification Arrangements* (SQA, 1998).