National Unit Specification: general information

UNIT Timber and Timber Derivatives (Intermediate 2)

NUMBER DA9R 11

COURSE

SUMMARY
On completion of this unit the candidate will be competent in the identification and use of timbers, the different common species, board materials, veneers and the products which are manufactured from them including the use of adhesives in manufacturing processes.

OUTCOMES
1 describe the uses of identified common softwoods, hardwoods and board materials
2 describe methods of converting timber
3 describe methods of seasoning timber and related defects
4 illustrate the movement of timber caused by the change in its moisture content
5 outline the uses and applications of veneers and adhesives
6 Specify remedial measures for common defects and sources of deterioration of timber and timber derivatives

RECOMMENDED ENTRY
Candidates enrolling for this unit do not need any prior experience in this area.

CREDIT VALUE
1 credit at Intermediate 2 (6 SCOTCAT points*) at SCQF level 5.

**SCOTCAT 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 SCOTCAT points at an SCQF level. There are 12 SCQF levels, ranging from Access 1 to Doctorates.*

Administrative Information

Superclass: TG

Publication date: August 2003

Source: Scottish Qualifications Authority

Version: 01

© Scottish Qualifications Authority 2003

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

Additional copies of this unit specification can be purchased from the Scottish Qualifications Authority. The cost for each unit specification is £2.50. (A handling charge of £1.95 will apply to all orders for priced items.)

National Unit Specification: general information (cont)

UNIT Timber and Timber Derivatives (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, publication code BA0906).

National Unit Specification: statement of standards

UNIT Timber and Timber Derivatives (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.

OUTCOME 1
Describe the uses of identified common softwoods, hardwoods and board materials.

Performance criteria
a) The identification of softwoods, hardwoods and board materials is correct.
b) The description of the main uses of softwoods, hardwoods and board materials is correct.
c) The description of how and where board materials are used is correct.

Evidence requirements
Evidence of actual performance is needed to show the candidate can identify 3 hardwoods, 3 softwoods and 3 board materials derived from timbers and describe how and where they are used in the manufacture of timber products.

All working practises must be in line with current and relevant health and safety legislation and regulations.

OUTCOME 2
Describe methods of converting timber.

Performance criteria
a) The description of the main methods of converting timber is correct.
b) The description of the cuts of timber gained from conversion is correct.
c) The illustration of the basic grain pattern of different cuts of timber is correct.

Evidence requirements
Written or oral evidence is needed to show that the candidate can describe the main methods of conversion, the cuts that will be obtained and grain patterns.

All working practices must be in line with current relevant health and safety legislation and regulations.

National Unit Specification: statement of standards (cont)

UNIT Timber and Timber Derivatives (Intermediate 2)

OUTCOME 3
Describe methods of seasoning timber and related defects.

Performance criteria
a) The description of the main methods of seasoning timber is correct.
b) The stated moisture content of timbers for specific situations is correct.
c) The reasons for strict control of the seasoning process is stated correctly.
d) The defects which can occur in timber during seasonings are stated correctly.
e) The definition of equilibrium moisture content (emc) and second seasoning is accurate.

Evidence requirements
Written or oral evidence is needed to show the candidate can describe 3 methods of seasoning, the levels of m.c. attained by such methods, the levels of m.c. required for use in 5 specific situations in modern buildings and defects which may occur during seasoning.

OUTCOME 4
Illustrate the movement of timber caused by the change in its moisture content.

Performance criteria
a) The illustration of the degree of shrinkage to the tangential, radial and longitudinal axis is accurate.
b) The illustration of possible effects of shrinkage on timber sections is accurate.
c) The description of how a change in the moisture content level affects joinery items.
d) Methods of accommodating shrinkage are illustrated correctly.

Evidence requirements
Evidence of actual performance is needed to show the candidate illustrates the ratio shrinkage to the different axes of timber; illustrates the effects of increasing and decreasing m.c. content of timber; describes the effects of decreasing m.c. on jointed timbers and illustrate how shrinkage can be accommodated in two situations.

OUTCOME 5
Outline the uses and applications of veneers and adhesives.

Performance criteria
a) The identification of the main features of veneers is correct.
b) The description of the main reasons for the use of wood veneers is correct.
c) The description of the differences between interior and exterior wood adhesives is correct.
d) The identification of adhesives used for a stated range of applications is correct.
e) The identification of properties of timbers which would restrict the use of adhesives is correct.

National Unit Specification: statement of standards (cont)

UNIT Timber and Timber Derivatives (Intermediate 2)

Evidence requirements

Written or oral evidence is needed to show the candidate can identify three different cuts of veneer, two reasons for utilising veneers and describe the difference and applications of interior and exterior adhesives for wood, identify three adhesives for specific use and identify the properties of timber which would restrict the use of certain adhesives.

All working practises must be in line with current and relevant health and safety legislation and regulations.

OUTCOME 6

Specify remedial measures for common defects and sources of deterioration of timber and timber derivatives.

Performance criteria

a) The identification of natural defects in timber and timber derivatives is correct.
b) The identification for the remedial treatment required to arrest or eradicate the defect is correct.
c) The specification of preservative methods are correct.

Evidence requirements

Evidence is required to show the candidate can identify four natural defects in timber and timber derivatives before use, after use and describe the steps taken to arrest or eradicate two stated defects. Specify two methods of applying preservative.

All working practises must be in line with current and relevant health and safety legislation and regulations.

National Unit Specification: support notes

UNIT Timber and Timber Derivatives (Intermediate 2)

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 40 hours.

GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

The following should not be considered either as prescriptive or conclusive. It is intended as a guide to the timbers, timber derivatives, veneers, adhesives etc. utilised by the woodworking industries.

Outcome 1

Materials:

Common softwoods, hardwoods, plywoods (various), particle board, fibre boards, LDF, MDF and HDF, blockboard, laminboard.

Outcome 2

Conversion:

Through and through, labour saving, maximises timber gained from log: used on most softwoods and many hardwoods, flowered grain.

Quartering; rift or radial sawn, utilises ray tissue to enhance beauty or other wise straight grained timber, expensive and wasteful, alternative method of conversion reduces waste but also reduces enhancement and timber.

Outcome 3

Seasoning: natural and artificial.

Selection of timber from stack for seasoning ie. Species; size of section (or thickness of section) % moisture content.

(a) Natural seasoning period, lowest % m.c achieved relative to conditions prevalent in modern buildings.

(b) Artificial seasoning-kiln and chemical (kiln) duration of seasoning period, low % m.c achieved.

(c) Comparison of (a) and (b), advantages and disadvantages; combination of (a) and (b).

(d) Checking m.c empirically, introduce moisture meter.

Outcome 4

Moisture Movement

Moisture during and after seasoning, movement due to absorption of moisture, movement due to drying out, e.m – equilibrium moisture content – second seasoning, constructional techniques to accommodate movement.

National Unit Specification: support notes (cont)

UNIT Timber and Timber Derivatives (Intermediate 2)

Outcome 5
Veneers:

Main timbers used to obtain veneers, methods of veneer production, to obtain different features, to satisfy different techniques of veneering – examination and identification of samples.

Adhesives:

Properties/characteristics of natural and synthetic adhesives, interior, exterior adhesives, degree of resistance to moisture, colour and chemical compatibility, elimination of glue staining, rejection or breakdown. Other elements of suitability end use, setting time, production run, method of application. Pot life, shelf life, gap filling.

Outcome 6
Defects:

Log defects, defects due to seasoning, improper stacking and storage, wood boring beetle attack, fungal attack. Protection of timber, preservation of timber, remedial action.

GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

The following specifications may assist the assessor in judging the candidate performance against the performance criteria.

Outcome 1

The candidate will be presented with:

(a) a range of 12 samples, 4 common hardwoods, 4 common softwoods and 4 board materials to test the ability in identifying same.

An assignment based on a self-contained single storey building to test the candidates ability to state the use of 4 timbers for the main elements of the building and describe 4 situations where board material could be used.

Satisfactory performance in this outcome will be demonstrated by the candidate producing at least 3 correct responses for each question.

Outcome 2

The candidate will be presented with questions to test ability to:

(a) describe conversion of timber by the through and through method and quartering;
(b) describe and compare tangentially and radically cut timber;
(c) illustrate the basic grain pattern of tangentially and radically cut timber.

Satisfactory performance in this outcome will be demonstrated by the candidate producing 2 correct responses from each of (a) (b) and (c)

National Unit Specification: support notes (cont)

UNIT Timber and Timber Derivatives (Intermediate 2)

Outcome 3

The candidate will be presented with Restricted Response Questions and Short Answer Questions to test the ability to:

(a) describe 3 methods of seasoning timber;
(b) state the % moisture content of timber for specific situations;
(c) describe the need for strict control of the seasoning process to include, moisture reduction rate appropriate to timber being seasoned, to prevent seasoning defects and to achieve the required final % m.c;
(d) identify and describe how seasoning defects occur (from a range of 5 samples, slides or photos or illustrations presented by the examiner);
(e) define the concept of e.m.c equilibrium moisture content and the possible importance of second seasoning.

Satisfactory performance in this outcome will be demonstrated by the candidate meeting the performance criteria and evidence requirements.

Outcome 4

The candidate will be presented with questions to test the ability to:

(a) illustrate the degree of shrinkage of timber to the:
  (i) tangential axis;
  (ii) radial axis;
  (iii) longitudinal axis (short answer).

(b) illustrate:
  (i) the negative effects of shrinkage on a tangentially cut timber section (ie. Cupping);
  (ii) the effects of shrinkage on a radically cut timber section;
  (iii) a square cross-section of timber to show how shrinkage occurs.

(c) describe the effect of:
  (i) increased m.c on joinery items-in-situ;
  (ii) decreased m.c on joinery items-in-situ;
  (iii) decreased m.c on timbers jointed at right angles to each other, and mitre – jointed timbers. (Restricted Response).

(d) illustrate methods of accommodating shrinkage of:
  (i) solid timber panels;
  (ii) a solid timber table-top fixed to a sub frame.

Satisfactory performance in this outcome will be demonstrated by the candidate producing 3 correct responses to each of (a) and (c) and at least 2 correct responses from (b) and (d)

National Unit Specification: support notes (cont)

UNIT Timber and Timber Derivatives (Intermediate 2)

Outcome 5

The candidate will be presented with questions to test the ability to identify and name the main features of:

(a) (i) crown cut veneer;
(ii) radial cut veneer;
(iii) butt veneer;
(iv) burr veneer.

(b) describe 2 main reasons for the use of wood veneers (Restricted Response);

(c) describe the 2 main differences between interior and exterior wood adhesives (Restricted Response);

(d) name an adhesive suitable for use on:
(i) a laminated mahogany counter top;
(ii) a shaped glulam structure exposed to external atmosphere conditions;
(iii) a softwood interior corridor screen;
(iv) the joints of the sashes of a casement window (Short Answer).

(e) identify the properties of certain timbers which could restrict the use of adhesives.

Satisfactory performance in this outcome will be demonstrated by the candidate producing 3 correct responses from each of (a) and (d), 2 correct responses from (b), 2 correct responses from (c) and 1 correct response from (e)

Outcome 6

The candidate will be presented with questions to test the ability to:

(a) identify defects from actual samples, slides/photographs or illustrations of defects on:
(i) newly converted timber;
(ii) after seasoning;
(iii) due to moisture invasion;
(iv) insect attack;
(v) fungal attack (Short answer).

(b) describe the remedial action required to remedy any 3 of the above defects (Restricted Response);

(c) Specify three methods of applying preservative.

Satisfactory performance in this outcome will be demonstrated by the candidate achieving at least 4 correct responses to (a) at least 2 correct responses to (b) and at least 2 correct responses for (c).

National Unit Specification: support notes (cont)

UNIT Timber and Timber Derivatives (Intermediate 2)

GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

In order to achieve this unit, candidates are required to present sufficient evidence that they have met all the performance criteria for each outcome within the range specified. Details of these requirements are given for each outcome. The assessment instruments used should follow the general guidance offered by the SQA assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes.)

Accurate records should be made of the assessment instruments used showing how evidence is generated for each outcome and giving marking schemes and/or checklists, etc. Records for candidates' achievements should be kept. These records will be available for external

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 special alternative outcomes for units. For information on these, please refer to the SQA document *Guidance on Special Assessment Arrangements* (SQA, publication code AA0645).