



Higher National Unit specification

General information for centres

Unit title: Painting and Decorating: Technical Problem Solving

Unit code: F8RK 34

Unit purpose: This Unit is designed to enable the candidate to develop their knowledge and understanding in identifying potential sources and causes of technical problems, and specifying solutions and procedures to avoid potential problems.

On completion of the Unit the candidate should be able to:

- 1 Identify potential sources and causes of technical problems in response to the evidence of apparent faults.
- 2 Specify remedial works to eliminate faults.
- 3 Identify procedures and schedules to avoid potential problems.

Credit points and level: 1 HN credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*)

**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.*

Recommended prior knowledge and skills: Access to this Unit is at the discretion of centres. However it is recommended that candidates have completed the Professional Development Award in Painting and Decorating at SCQF level 6 or have the equivalent level of industrial experience and prior learning.

Core Skills: There are opportunities to develop the Core Skills of *Communication, Working with Others* at SCQF level 5 and *Information and Communication Technology* at SCQF level 4 although there is no automatic certification of Core Skills or Core Skills components.

Context for delivery: If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes. This Unit was developed as part of the Higher National Certificate in Painting and Decorating at SCQF level 7 and is aimed at candidates following a career in Painting and Decorating with current industrial experience.

General information for centres (cont)

Assessment: This Unit is assessed on the candidates` demonstrating their understanding of how paint coatings fail, the remedial processes used to correct them and recognising the problems within a specification guideline which could lead to premature coating failure.

In order to achieve this Unit, candidates are required to present sufficient evidence that they have met all the knowledge elements for each Outcome. Details of these requirements are given for each Outcome.

The assessment instruments used should follow the general guidance offered by the Scottish Qualifications Authority (SQA) assessment model and an integrative approach to assessment is encouraged.

Evidence will be gathered through assignments and assessments for all Outcomes. Assessment should be carried out under controlled, supervised conditions. Candidates must achieve all of the Knowledge and/or Skills and Evidence Requirements specified for each Outcome to gain this Unit. Centres may use the instrument of assessment which they consider to be most appropriate but are advised to use the Painting and Decorating Training and Assessment Programme (TAP) which has been developed centrally by SQA. Any other instruments of assessment used must be compatible to the TAP and have been through prior verification.

Accurate records should be made of the assessment instruments used showing how evidence is generated for each Outcome and giving marking schemes, checklists and recorded candidate feedback. Records of candidates` achievements should be retained. These records will be made available for external verification.

Higher National Unit specification: statement of standards

Unit title: Painting and Decorating: Technical Problem Solving

Outcome 1

Identify potential sources and causes of technical problems in response to the evidence of apparent faults

Knowledge and/or Skills

- ◆ Identify the nature of the fault
- ◆ Identify the cause of the fault
- ◆ Explain the remedial action necessary to rectify the fault

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ identify the faults and causes normally associated with the use of substrates
- ◆ identify the faults and causes normally associated with materials/manufacturing
- ◆ identify technical problems normally caused by design faults
- ◆ identify the faults and causes normally associated with application processes
- ◆ identify the problems normally associated with cross trade difficulties

All the Evidence Requirements must be met and all items in the knowledge and skills covered. Evidence should be gathered through an assessment outlining the nature and causes of faults and the methods of rectifying them in the decorating industry. Assessment should be conducted under open-book supervised conditions.

Assessment Guidelines

Five questions on each of the above sections should be answered and as the assessment is open-book the research work done for each section should be both comprehensive and correct.

The assessment shall consist of 5 photographs for each section, not necessarily in order, with candidates identifying the nature of the fault, the cause of the fault, and explaining how the fault will be rectified.

Higher National Unit specification: statement of standards (cont)

Unit title: Painting and Decorating: Technical Problem Solving

Outcome 2

Specify remedial works to eliminate faults

Knowledge and/or Skills

- ◆ Outline appropriate measures to rectify an apparent fault
- ◆ Detail in technical knowledge the remedial process

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ describe the remedial processes required
- ◆ prepare a comprehensive report for the remedial works
- ◆ demonstrate technical knowledge with the language clear and understood

All the Evidence Requirements must be met and all items in the knowledge and skills covered. Evidence should be gathered through an assessment outlining fault finding and the methods of rectifying them in the decorating industry. Assessment should be conducted under open-book supervised conditions.

Assessment Guidelines

This Outcome will be a written report on how a paint coating has prematurely failed. The assessment will be a photograph of a paint fault. The candidate will write a comprehensive technical report of the failure describing in detail why it has failed, and what should have been done from the outset. The content of this report will be written in a language that is clear and understood.

Outcome 3

Identify procedures and schedules to avoid potential problems

Knowledge and/or Skills

- ◆ Access information from various sources
- ◆ Demonstrate an understanding of specifications
- ◆ Explain the importance of scheduling of works

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ source information to ensure the life of a coating system
- ◆ identify discrepancies within a specification
- ◆ outline supervisory skills in the scheduling of work

Higher National Unit specification: statement of standards (cont)

Unit title: Painting and Decorating: Technical Problem Solving

All the Evidence Requirements must be met and all items in the knowledge and skills covered. Evidence should be gathered through an assessment outlining procedures for avoiding problems and scheduling work in the decorating industry. Assessment should be conducted under open-book supervised conditions.

Assessment Guidelines

Assessment will be in the form of a report. This Outcome will be directed at Corrosion and Corrosion Protection.

Source information:

- ◆ On quality control inspection to ensure the life of a coating system.
- ◆ On the problems that may be encountered when painting weathered or unweathered galvanised steel.
- ◆ On why maintenance painting of structures provides an economical means for preventing corrosion and metal loss.
- ◆ On why the correct type of abrasive in blast cleaning procedures should be used to prevent defects such as pinpoint corrosion.
- ◆ On why a specification for applying epoxy zinc — rich primer by brush is not recommended.
- ◆ On why a specification for applying a two — component epoxy coating on exterior structural steelwork is not recommended.
- ◆ On why a specification for applying a coal tar epoxy undercoat on exterior steelwork is not recommended unless it is top coated within 24 hours.
- ◆ On why the advanced scheduling of work is important.

Administrative Information

Unit code: F8RK 34

Unit title: Painting and Decorating: Technical Problem Solving

Superclass category: TG

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History of changes:

Version	Description of change	Date

Source: SQA

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Higher National Unit specification: support notes

Unit title: Painting and Decorating: Technical Problem Solving

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

This Unit has been developed as a mandatory Unit for the Higher National Certificate in Painting and Decorating at SCQF level 7 and may be delivered in a sequence suitable to individual candidates and centres.

Candidates following a career in Painting and Decorating and with current industrial experience will benefit from undertaking this Unit.

This Unit is designed to enable the candidate to develop their knowledge and understanding relevant to paint coating faults, their causes, and the remedial action taken to rectify them in conjunction with report writing and identifying problematic areas within a specification.

The candidate successfully completing this Unit will require underpinning knowledge in sourcing information from manufacturer's data/safety sheets and other relevant resources. Use of ICT will be encouraged.

The Knowledge and/or Skills for this Unit deal with potential sources and causes of technical problems and specifying solutions and procedures to avoid potential problems. It is complemented by other Units dealing with related aspects of painting and Decorating.

Research work of manufacturers' information and related articles eg The Code of Practice for Painting and Decorating should be encouraged.

Current Health and Safety should be fully emphasised throughout the delivery of this Unit.

Guidance on the delivery and assessment of this Unit

Outcome 1

This Outcome encompasses five sections relating to coating failure which are; substrates, materials/manufacturing, design, application and cross trade difficulties.

Five questions on each of the above sections should be answered and as the assessment is open-book the research work done for each section should be both comprehensive and correct.

The assessment shall consist of 5 photographs for each section, not necessarily in order, with candidates identifying the fault and explaining how the fault will be rectified. Use of ICT should be encouraged.

Higher National Unit specification: support notes (cont)

Unit title: Painting and Decorating: Technical Problem Solving

By working together candidates will come to an agreement as to the nature of these faults. The final presentation of work should be presented within a word document.

Outcome 2

This Outcome will be a written report on how a paint coating has prematurely failed. The assessment will be a photograph of a paint fault. The candidate will write a technical report of the failure describing in detail why it has failed, and what should have been done from the outset.

Candidate guidelines for producing a report:

- ◆ What was the substrate?
- ◆ What surface preparation was specified?
- ◆ Is there any pattern to the failure, such as horizontal surfaces failing when vertical surfaces do not?
- ◆ What was the specified paint to be used?
- ◆ What was the specified number of coats and thickness of each coat?
- ◆ What thinners were allowed?
- ◆ The relevant Material Safety Data Sheets.
- ◆ The relevant Technical Data Sheets.
- ◆ When was this job performed?
 - *Date?*
 - *Time of day?*
 - *Temperature?*
 - *Weather conditions?*
- ◆ Are any reports available?
- ◆ Original work specification?
- ◆ What conditions has this coating been subjected to since application?

Outcome 3

This Outcome will be directed at Corrosion and Corrosion Protection.

Questions should be directed at how to ensure the life of a coating system at the preparatory stage. In certain situations emphasis should be on specialist preparatory methods.

Questions should be directed at identifying discrepancies within a specification that may lead to premature coating failure. The importance of primer selection but showing technical knowledge of how the primer itself may be suspect of premature failure.

Questions should be directed at the importance of scheduling of works to enable the contract to operate smoothly from its outset through to completion.

Higher National Unit specification: support notes (cont)

Unit title: Painting and Decorating: Technical Problem Solving

As this assessment is ‘open-book’ the research work should be both comprehensive and correct. Use of ICT should be encouraged.

The final presentation of work should be presented within a word document.

If extensive research work is done for the Outcomes — from assignments through to assessments — work can be kept for their future career.

Opportunities for developing Core Skills

Working with Others at SCQF level 5 may be developed in assisting each other when identifying the faults in Outcome 1.

Communication skills at SCQF level 5 may be developed by the completion of Outcome 2 where a technical report has to be produced with language that is clear and understood.

Information and Communication Technology at SCQF level 4 may be developed by the candidates when researching material for the Unit.

Open learning

E-assessment is appropriate for this Unit. By e-assessment we mean assessment which is supported by information and communications technology (ICT), such as e-testing or the use of e-portfolios or e-checklists. Centres which wish to use e-assessment must ensure that the national standard is applied to all candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*. *SQA Guidelines on e-assessment for Schools (BD2625, June 2003)*.

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website

www.sqa.org.uk/assessmentarrangements

General information for candidates

Unit title: Painting and Decorating: Technical Problem Solving

This Unit is designed to develop your knowledge and skills in identifying faults that are related to premature coating failures. You will have the opportunity to demonstrate your understanding through the following; substrates, materials/manufacturing, design, application and cross trades. You will also have the opportunity to rectify a given problem by producing a report on a premature failing of a paint coating and adopting procedures to prolong the life of paint coatings.

Outcome 1; Identify potential sources and causes of technical problems in response to the evidence of apparent faults

You will be assessed on the completion of formative assignments and a summative assessment where you will be asked the fault, cause and remedy of technical problems which relate to substrate, materials/manufacturing, design, application and other trades which could provide problems for successful painting. The assessment will consist of 5 photographs for each section making a total of 25 in all, and the assessment will be 'open-book'.

By working together, candidates will come to an agreement as to the nature of these faults.

Outcome 2; Specify remedial works to eliminate faults

You will be assessed by producing a report on why a paint coating failed prematurely. A remedial process will be required where you will be asked to write a comprehensive report, demonstrating your technical knowledge in a language which is both clear and understood, and the assessment will be 'open-book'

You will receive guidance on how to prepare this report.

A photograph of a premature paint coating failure will be supplied for the purpose of this assessment.

General information for candidates (cont)

Unit title: Painting and Decorating: Technical Problem Solving

Outcome 3; Identify procedures and schedules to avoid potential problems

You will be assessed by answering questions on how to ensure the life of a coating system at the preparatory stage, and the importance of primer selection but showing technical knowledge of how the primer itself may be suspect of premature failure.

You will also answer questions on the importance of scheduling of works to enable the contract to operate smoothly from its outset through to completion.

This Outcome will be directed at Corrosion and Corrosion Protection.

If extensive research work is done for the Outcomes — from assignments through to assessments — work can be kept for your future career, and sourcing work within each Outcome for this Unit.

The assessment for the 3 Outcomes will be open-book and will be carried out in a supervised environment. You will have access to your own research material that you have personally prepared, but will not be permitted to bring other materials that are not your own work.

You will be assessed in supervised conditions to specified tolerances contained in an observation checklist. These tolerances should be fully explained and available to you prior to the assessment. You will be expected to work individually for the assessment and where required working with others. You will receive both oral and written feedback on your performance for the assessment.

There are opportunities for you to develop your Core Skills of *Communication*, *Working with Others*, and *Information and Communication Technology* all at SCQF level 5 within this Unit, although there is no automatic certification of Core Skills or Core Skills components.