



National Unit specification: general information

Unit title: Painting and Decorating: Applying Coatings to Metal Surfaces (SCQF level 6)

Unit code: H0HJ 12

Superclass: TG

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Summary

This Unit is suitable for candidates working towards a Modern Apprenticeship in Painting and Decorating and will develop the candidate's craft skills in applying coatings to metal surfaces. This Unit is designed to provide candidates with competence in the use of tools and equipment to prepare, coat and recoat both ferrous and non-ferrous metals, use hand tools and electric air and mechanical preparatory equipment. The candidate will also select prepare and apply a wide range of metal coatings and finishing systems, identify types of metals, coating defects, storage defects and types of corrosion. This Unit will enable candidates to develop their understanding and use of painting and decorating terminology, components, techniques and practices to apply surface coatings.

Outcomes

- 1 Demonstrate knowledge and understanding of terminology, components, techniques and practices used in applying surface coatings.
- 2 Identify ferrous and non-ferrous metals and outline their physical properties.
- 3 Identify a variety of coatings including preparatory and finishing systems.
- 4 Describe the process of corrosion and the factors involved.
- 5 Prepare surfaces to receive solvent and non solvent borne universal primers.
- 6 Prepare and apply primer, undercoats and finishing system to prepared surfaces.

Recommended entry

While entry is at the discretion of the centre, candidates undertaking the Professional Development Award in Painting and Decorating at SCQF level 6 must meet the requirements of the Modern Apprentices which include being employed in the relevant craft industry.

General information (cont)

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Credit points and level

1.5 National Unit credits at SCQF level 6: (9 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.*

Core Skills

Achievement of this Unit gives automatic certification of the following:

Complete Core Skill None

Core Skill component Critical Thinking @ SCQF level 5

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit Specification.

National Unit specification: statement of standards

Unit title: Painting and Decorating: Applying Coatings to Metal Surfaces (SCQF level 6)

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 SQA.

Outcome 1

Demonstrate knowledge and understanding of terminology, components, techniques and practices used in applying surface coatings.

Performance Criteria

- (a) Identify the correct terminology and components required for applying coatings.
- (b) Identify the correct preparation and application techniques required.
- (c) Identify the correct construction practices required.

Outcome 2

Identify ferrous and non-ferrous metals and outline their physical properties.

Performance Criteria

- (a) Identify metal types correctly.
- (b) Describe the physical properties of ferrous and non-ferrous metals correctly.

Outcome 3

Identify a variety of coatings including preparatory and finishing systems.

Performance Criteria

- (a) Correctly identify a variety of primers and undercoats suitable for both ferrous/non-ferrous metals.
- (b) Correctly identify a variety finishing systems suitable for both ferrous/non-ferrous metals.
- (c) Correctly identify solvent and non solvent borne universal primers, their properties and uses.

National Unit specification: statement of standards (cont)

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Outcome 4

Describe the process of corrosion and the factors involved.

Performance Criteria

- (a) Describe atmospheric corrosion correctly.
- (b) Describe destructive and protective corrosion processes correctly.

Outcome 5

Prepare surfaces to receive solvent and non solvent borne universal primers.

Performance Criteria

- (a) Describe the preparation processes for non-ferrous metals correctly.
- (b) Describe the preparation processes for ferrous metals correctly (both hand and powered methods)
- (c) Carry out the preparation processes for non-ferrous metals.
- (d) Carry out the preparation processes by hand and powered methods for ferrous metals.
- (e) Comply with current Health and Safety legislation during all work methods and activities.

Outcome 6

Prepare and apply primer, undercoats and finishing system to prepared surfaces.

Performance Criteria

- (a) Select an appropriate universal primer, undercoat and finishing system appropriate to surface.
- (b) Prepare an appropriate universal primer, undercoat and finishing systems appropriate to surface.
- (c) Select appropriate tools and equipment for applying an appropriate universal primer, undercoat and finishing system.
- (d) Apply an appropriate universal primer, undercoat and finishing systems in line with manufacturer's instructions.
- (e) Comply with current health and safety legislation during all work methods and activities.

National Unit specification: statement of standards (cont)

Unit title: Painting and Decorating: Applying Coatings to Metal Surfaces (SCQF level 6)

Evidence Requirements for this Unit

These Evidence Requirements will be met by the completion of the Painting and Decorating Training and Assessment Programme (TAP).

Evidence is required to demonstrate that the candidate has achieved this Unit to the standard specified in all Outcomes and Performance Criteria.

Written and/or oral recorded evidence is required to demonstrate that the candidate has achieved Outcomes 1, 2 and 3 to the standard specified in the Performance Criteria. Candidates will be required to demonstrate their knowledge of terminology, components, techniques and practices. They will also be required to identify different surface types and their properties and corrosion. This assessment will take the form of a question paper and will be conducted under controlled, closed-book supervised conditions.

Product and performance evidence is required to demonstrate that the candidate has achieved Outcomes 4, 5 and 6 to the standards specified in the Performance Criteria. Candidates will be required to prepare the surface area and apply coatings. Assessment of these Outcomes will be evidenced through observation of work processes and assessment of the completed work. Candidates must meet the given standards and tolerances during the practical assessments. An assessor observation checklist must be used to record this evidence. Assessment should be conducted under controlled, supervised conditions.

Outcome 4

Summary of standards (working towards industrial tolerances)	
Item	Measurement of standard
Remove corrosion from ferrous metal surface by use of hand tools: scrapers, wire brush, and abrasive cloth	
Select tools and prepare any materials	Tools, materials selected for use
Remove any corrosion using hand tools	Personnel protection taken appropriate to requirements of cleaning operation Leave surface area clean and free from any distortion and burnishing after all cleaning operations with each tool
Remove corrosion from ferrous metal surface by air power tools: pneumatic sander and pneumatic needle gun	
Select and prepare tools for use	Select correct Tools and equipment Pneumatic equipment checked and inspected prior to use Electrical equipment checked and inspected prior to use

National Unit specification: statement of standards (cont)

Unit title: Painting and Decorating: Applying Coatings to Metal Surfaces (SCQF level 6)

Outcome 4 (continued)

Item	Measurement of standard
Remove corrosion from ferrous metal surface by air power tools: pneumatic sander and pneumatic needle gun	
Remove corrosion by electrical/air operated sander	Lubricate air tools at required areas Appropriate Personnel Protective Equipment used during cleaning operations Demonstrate safe operation of power tools Leave surface area clean and free from any distortion and burnishing after all cleaning operations with each tool Equipment maintenance procedures carried out after use
Remove corrosion from ferrous metal surface by mechanical power tools: mechanical wire brush	
Select and prepare tools for use	Tools and equipment selected correctly Electrical equipment checked and inspected prior to use
Remove corrosion by use of mechanical wire brush	Appropriate Personnel Protective Equipment used during cleaning operations Demonstrate safe operation of power tools Leave surface area clean and free from any distortion and burnishing after all cleaning operations with tool Equipment maintenance procedures carried out after use
Remove corrosion from ferrous metals by mechanical needle gun (electric)	
Select and prepare tool for use	Tools selected and prepared
Remove corrosion by use of mechanical needle gun	Equipment inspected prior to use Appropriate Personnel Protective Equipment used during cleaning operations Demonstrate safe operation of power tools Procedure for replacing needles is correct Leave surface area clean and free from any distortion and burnishing after all cleaning operations with tool Equipment maintenance procedures carried out after use

National Unit specification: statement of standards (cont)

Unit title: Painting and Decorating: Applying Coatings to Metal Surfaces (SCQF level 6)

Outcome 5

Item	Measurement of standard
Remove previous paint systems from non ferrous metals (by liquid paint remover)	
Select tools, materials and equipment required to remove previous paint coatings	Tools, materials and equipment correctly selected
Use liquid paint remover, tools and equipment to remove existing paint coating/s	Appropriate Personnel Protective Equipment used during operation Paint remover applied to surface correctly Adequate time allowed for paint coating to soften Use appropriate stripping method for surface type Coating removed correctly from surface Paint residue disposed of correctly
Wash and Abrade surface clean	Remove all traces of liquid paint remover from surface by washing Use correct abrasive material to obtain smooth surface

Outcome 6

Summary of standards (working towards industrial tolerances)	
Item	Measurement of standard
Apply suitable Universal primer to ferrous metal panel (by brush)	
Select and prepare tools/equipment for use and apply appropriate universal primer to surface area	Correct tools and equipment selected for use
Apply suitable universal primer coat to surface area	Material prepared prior to use Primer coat applied in correct sequence Good laying off technique shown Even coating achieved Coating is free from runs, tears, fat edges and curtains Coating free from bits and nibs
Apply suitable Universal primer to non-ferrous metal panel (by brush)	
Select and prepare tools/equipment for use and apply appropriate universal primer to surface area	Correct tools and equipment selected for use
Apply suitable universal Primer coat to surface area	Material prepared prior to use Primer coat applied in correct sequence Good laying off technique shown Even coating achieved Coating is free from runs, tears, fat edges and curtains Coating free from excessive bits and nibs

National Unit specification: support notes

Unit title: Painting and Decorating: Applying Coatings to Metal Surfaces (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 60 hours.

Guidance on the content and context for this Unit

This Unit has been developed as a mandatory Unit in the Professional Development Award in Painting and Decorating at SCQF level 6.

The successful completion of this Unit will provide candidates with the underpinning knowledge and skills relating to the preparation and coating of metal surfaces.

Candidates should be able to identify both ferrous and non-ferrous metal as well as describe their physical properties (thermal conductivity, electrical conductivity, malleability, tensile strength and compressive strength) as well as forms of corrosion (protective and destructive).

Candidates should also be able to select and carry out the most suitable method of preparation for both ferrous and non-ferrous metals from the following options (solvent paint remover, electric/air operated hand sanders/rotary wire brush, hand tools). On completion of satisfactory removal of the coatings the candidate should then select and apply a suitable universal primer followed by a suitable finishing system (eggshell, u/c and gloss).

Candidates will be required to demonstrate their knowledge of terminology relating to types of corrosion (destructive and protective), mill-scale, the preparation processes for galvanised steel and copper including defects during storage, Control of Lead at Work Regulations, identification of suitable areas for the application of MIO. (Micaceous Iron Oxides)

Candidates should also be able to identify a series of primers including Red Oxide, Epoxy, Etch and Zinc Phosphate, their properties and uses, the preparation processes for one and two pack primers, potential application defects and their required storage conditions.

Candidate should be observed to show that they can achieve the following throughout the delivery of the Unit.

- ◆ Remove corrosion from ferrous metals (by hand tools).
- ◆ Remove corrosion from ferrous metals (by air power tools).
- ◆ Remove corrosion from ferrous metals (by electric/air power tools).
- ◆ Remove previous paint systems from non-ferrous metals (by liquid paint remover).
- ◆ Apply suitable universal primer to ferrous metal panel (by brush).
- ◆ Apply suitable universal primer to non-ferrous metal panel (by brush).
- ◆ Prepare ferrous metal panel (minimum size 1,500 mm x 500 mm) by hand, electric /air operated sander, wire brush and needle gun, select and apply suitable primer, undercoat and finishing system (eggshell or gloss). Masking off each process. Carry out a risk assessment and prepare a method statement that covers all the activities to be carried out.

National Unit specification: support notes (cont)

Unit title: Painting and Decorating: Applying Coatings to Metal Surfaces (SCQF level 6)

- ◆ Prepare a non-ferrous metal panel (1,500 mm x 500 mm) by hand, liquid paint remover and abrasives, select and apply suitable universal primer, apply undercoat, apply finish (eggshell or gloss) Masking off each process. Carry out a risk assessment and prepare a method statement that covers all the activities to be carried out.

Health and safety and sustainability are integral and key to the construction industry therefore throughout the Unit emphasis will be placed where appropriate on the application of health and safety and sustainability. Safety working practices should be looked at in accordance with current safety codes of practice and regulation. These practices will be further reinforced by the completion of risk assessments and method statements carried out during the practical test. Sustainability should include reference to the criteria affecting sustainability, the impact of not implementing sustainability on the environment and the legislation promoting sustainability.

Guidance on learning and teaching approaches for this Unit

Candidates should be given the opportunity to develop the skill of removing surface corrosion/coating by the methods named previously. Emphasis should be placed on the need for all surface corrosion/coating to be completely removed with minimal damage to the metal surface prior to the application of a suitable primer.

Candidates should be supplied with a previously painted aluminium panel measuring a minimum of 1500 mm x 500 mm to carry out the removal of surface coatings by solvent paint remover and recoating with suitable primer. As well as this candidates will also require sections of non-ferrous metals such as railing sections, gate section, H-beam sections, etc for preparation by hand, electric/air sander/needle gun, mechanical wire brush, mechanical needle gun and recoating with suitable primer.

Opportunities should be taken throughout delivery of this Unit to meet the requirements of the generic Units of the training and assessment programme including:

- ◆ *Conform to General Workplace Health, Safety and Welfare*
- ◆ *Confirm Work Activities and Resources for the Work*
- ◆ *Develop and Maintain Good Working Relationships*
- ◆ *Confirm the Occupational Method of Work*
- ◆ *Conform to Productive Working Practices*
- ◆ *Move, Handle or Store Resources*

Guidance on approaches to assessment for this Unit

Detailed assessment material for this Unit will be found in Section 3 of the Painting and Decorating Training and Assessment Programme (TAP). Centres may use instruments of assessment which they consider to be most appropriate but are advised to use the Painting and Decorating TAP which has been developed centrally by SQA. Any other instruments of assessment used must be comparable to the TAP and have been through prior verification.

National Unit specification: support notes (cont)

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The candidates' knowledge and understanding of processes of corrosion, preparation of ferrous and non-ferrous metals, metal primers, paint coating systems, methods of removal, setting up of preparatory equipment including compressor as well as PPE requirements will be assessed through a question paper and conducted under controlled, supervised conditions.

Candidates should be given as much practice as possible in the removal of surface corrosion from ferrous metals and surface coatings from non-ferrous metals, as well as the identification and practice of application of suitable metal primers and coating systems prior to assessment tasks/tests. Evidence will be gathered for Outcomes 3, 4, 5 and 6 through observation that the candidates have met the given standards and tolerances during the practical tasks /tests. An assessor observation checklist/record can be used to record this evidence. Assessment should be conducted under controlled, supervised conditions.

Opportunities for the use of e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. 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 2005)*.

Opportunities for developing Core Skills

The Core Skill of *Problem Solving* will be developed as candidates undertake this Unit. Candidates will need to take account of a range of factors in order to work efficiently and safely, such as the choice of tools, appropriate materials, safety issues, safety equipment and sustainability. Individual discussions with assessors will enhance the evaluation of efficient working practices.

Opportunities also arise for candidates to develop the Core Skill of *Information and Communication Technology (ICT)* at SCQF level 3 by researching health and safety legislation affecting their area of work.

There will be opportunities for candidates to develop the Core Skill of *Communication* at SCQF level 4. Candidates will have the opportunity to develop written and/or oral communication skills for the knowledge part of the assessment. As candidates complete practical tasks, they should be expected to communicate with others using the correct terminology, tone and style suited to the workplace.

There will be opportunities for candidates to develop the Core Skill of *Working with Others* at SCQF level 4 particularly in Outcomes 4 and 5, as the practical tasks which may be carried out in pairs.

National Unit specification: support notes (cont)

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This Unit has the Critical Thinking component of Problem Solving embedded in it. This means that when candidates achieve the Unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 5.

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

History of changes to Unit

Version	Description of change	Date

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