



National unit specification

General information

Unit title: Dental Cast Production: an Introduction (SCQF level 6)

Unit code: HK6D 46

Superclass: PF

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Version: 01

Unit purpose

This unit has been designed to develop the learner's knowledge, understanding and practical skills in the production of dental casts.

Learners will examine the properties of a range of dental impression materials and techniques, producing dental casts to the specification and quality required whilst ensuring safe working practices are applied throughout.

This is an introductory unit, mandatory within the National Certificate in Dental Technology at SCQF level 6, so is appropriate for trainee Dental Technicians.

Outcomes

On successful completion of the unit the learner will be able to:

- 1 Describe the properties and preparatory procedures for a range of dental impression materials in the production of dental casts.
- 2 Produce dental casts using a range of materials to the specified standard ensuring safe working practices at all times.
- 3 Evaluate the quality of the dental casts produced.

Credit points and level

1 National unit credit at SCQF level 6: (6 SCQF credit points at SCQF level 6)

National unit specification: General information (cont)

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Recommended entry to the unit

Access to this unit is at the discretion of the centre. It would be beneficial if learners had successfully completed or be working towards the unit *Dental Care Professionals: Fitness to Practice*.

Core Skills

Opportunities to develop aspects of Core Skills are highlighted in the support notes for this unit specification.

There is no automatic certification of Core Skills or Core Skill components in this unit.

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.

Equality and inclusion

This unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

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 SQA.

Outcome 1

Describe the properties and preparatory procedures for a range of dental impression materials in the production of dental casts.

Performance criteria

- (a) Describe the properties and preparatory procedures for Plaster of Paris
- (b) Describe the properties and preparatory procedures of Dental Stone
- (c) Describe the properties and preparatory procedures of Type 3 Dental Stone
- (d) Outline the production techniques for a range of dental impression materials
- (e) Describe the process and purpose of scanning and 3D printing in dental cast production

Outcome 2

Produce dental casts using a range of materials to the specified standard ensuring safe working practices at all times.

Performance criteria

- (a) Produce two Plaster of Paris casts to the specified standard and ensuring safe working practices
- (b) Produce two Dental Stone casts to the specified standard and ensuring safe working practices
- (c) Produce one Type 3 Stone cast to the specified standards and ensuring safe working practices

Outcome 3

Evaluate the quality of the dental casts produced.

Performance criteria

- (a) Accurately assess the quality of two Plaster of Paris casts
- (b) Accurately assess the quality of two Dental Stone casts
- (c) Accurately assess the quality of one Type 3 Stone cast

National unit specification: Statement of standards (cont)

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Evidence requirements for this unit

Evidence is required to demonstrate that learners have achieved all outcomes and performance criteria.

Learners should be presented with real or simulated projects and will be given a clear brief to ensure that they have the opportunity to achieve all the performance criteria.

Evidence must be provided to show that learners can demonstrate their understanding of information, materials, terminology, practices and techniques related to the production of dental casts. Evidence must also be provided to show that learners can apply relevant knowledge and skills in a practical context.

Learners will be required to demonstrate safe working practices, including infection prevention and control during the practical aspects of delivery and assessment of this unit.

For Outcome 1, learners must provide evidence of the following in closed-book conditions:

Description of preparatory procedures required for the following materials used to produce/manufacture dental casts:

- ◆ Plaster of Paris
- ◆ Dental Stone
- ◆ Type 3 Dental Stone

The description should include reference to:

- ◆ Identification of patient details
- ◆ Appropriate consideration for cross infection procedures
- ◆ Storage and carriage of materials
- ◆ Identification marking of materials
- ◆ Appropriate knowledge of materials being used

Learners must correctly identify two of the properties relating to specific Materials used to produce/manufacture dental casts:

- ◆ Plaster of Paris
- ◆ Dental Stone
- ◆ Type 3 Dental Stone

Learners must correctly outline one of the production techniques for a specific material used in the production/manufacture of dental casts:

- ◆ Plaster of Paris
- ◆ Dental Stone
- ◆ Type 3 Dental Stone

National unit specification: Statement of standards (cont)

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Learners must correctly outline the process and purpose of scanning and 3D printing in dental cast production.

Outcome 2

Product Evidence must be produced under supervised conditions to show that learners can produce two Plaster of Paris Casts, two Dental Stone Casts and one Type 3 Stone Cast ensuring:

- 1 Correct consideration for Gypsum/Water ratio
- 2 Appropriate Mixing equipment
- 3 Correct spatulation considering setting time and expansion
- 4 Addition of chemicals to influence setting time and expansion
- 5 Consideration of Cross infection Policies
- 6 Consideration of anatomical detail
- 7 Consideration of density of Cast, surface hardness and reproduction of detail
- 8 Correct trimming of Casts considering function required
- 9 Safe use of equipment, use of appropriate Personal Protective Equipment (PPE), cleanliness and tidiness.

Outcome 3

Product Evidence must be produced to show that learners can accurately assess the quality of the five dental casts produced in Outcome 2 in terms of their:

- 1 Density
- 2 Surface Hardness
- 3 Reproduction of Impression detail
- 4 Size, shape and finish
- 5 Accuracy of 3D printing



National unit support notes

Unit title: Dental Cast Production: an Introduction (SCQF level 6)

Unit support notes are offered as guidance and 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 introductory unit forms part of the NC in Dental Technology at SCQF level 6. It will develop learner's knowledge, understanding and practical skills in the production of dental casts. Where this unit is delivered as part of a national course it would be beneficial if learners had completed or are working towards the unit *Dental Materials: an Introduction*. The importance of safe use of all equipment including electrical and personal protective equipment (PPE), cleanliness and tidiness should be highlighted to learners.

Outcome 1

Outcome 1 provides learners with the underpinning knowledge of the preparatory procedures required when working with impression materials and of the properties of the materials, which include; Imbibition, Synerisis, Bleaching, Adhesion, Polymerisation and the materials used to produce/manufacture dental casts; Plaster of Paris, Dental Stone and Type 3 Dental Stone. Learners will be introduced to production techniques, eg Dowel pin model, study models, casts for metallic prosthesis and cast for removable prosthesis relines.

The characteristics (chemical, physical and mechanical) of the specialised 3D printing materials used in the production/manufacture of dental casts should be explored. This will prepare learners for the practical activities in Outcomes 2 and 3.

Outcome 2

Outcome 2 is practical and provides learners with the opportunity to develop their skills in producing dental casts. The importance of safe working practices and infection prevention and control should be emphasised during this outcome.

Outcome 3

Outcome 3 is practical and provides learners with the opportunity to learn how to assess the accuracy of the casts produced against the quality assurance criteria provided:

Density, surface hardness, reproduction of impression detail, size, shape and finish, accuracy of 3D printing. The importance of safe working practices and infection prevention and control should be emphasised during this outcome.

National unit support notes (cont)

Unit title: Dental Cast Production: An Introduction (SCQF level 6)

Guidance on approaches to delivery of this unit

The learning and teaching of Dental Casts is most effective when concepts, principles and theories are set in a relevant context, eg by making reference to applications of dental casts in real life situations. There is scope for integration with other introductory units, eg *Dental Care Professionals: Fitness to Practice* and *Dental Materials: an Introduction*.

Learning and teaching approaches should include lectures, practical demonstrations, group work and individual exercises. The practical work can be reinforced from, eg moodle and worksheets. Resources used could include impressions casts and audio visual material.

Broader informal discussions may be incorporated to clarify difficulties and it may be beneficial to discuss industry constraints, eg timescales and costs

Guidance on approaches to assessment of this unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

An appropriate assessment method for Outcome 1 would be via a range of short answer or restricted response questions — this could be via paper based assessment or e-assessment and would allow for integration of assessment from other relevant units.

Outcome 2 may be assessed via observation of practice using an observation checklist (including safe working) and if necessary additional questioning, to establish the learners underpinning knowledge and understanding.

Outcome 3 can be assessed through five quality assurance checklists, completed by the learner, either under observation conditions or submitted for consideration with the five final products of Outcome 2.

Use of observation will allow centre staff to verify that products produced are the learners own work and authenticate evidence.

Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this unit, particularly Outcome 1. 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 learner evidence and that conditions of assessment as specified in the evidence requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

National unit support notes (cont)

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Opportunities for developing Core and other essential skills

There will be opportunities to develop aspects of the Core Skills in *Communication* (Oral and Written skills) and *Information and Communication Technology (ICT)* (Accessing Information), *Numeracy* (Graphical Information, Using Number — Measuring and Calculation), *Working with Others* (Working Co-operatively with Others) and *Problem Solving* (Critical Thinking) throughout this unit.

There may also be opportunities to develop broader transferable skills which contribute to employability:

- ◆ Time management and organisational skills — through working to deadlines, punctuality, record keeping
- ◆ Sustainability — through consideration of the use of resources, recycling and waste
- ◆ Specific technical skills — through preparing, handling, producing and assessing dental casts
- ◆ Interpersonal skills such as listening, teamwork and study skills
- ◆ Personal development, eg self-confidence and self-motivation

History of changes to unit

Version	Description of change	Date

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General information for learners

Unit title: Dental Cast Production: an Introduction (SCQF level 6)

This section will help you decide whether this is the unit for you by explaining what the unit is about, what you should know or be able to do before you start, what you will need to do during the unit and opportunities for further learning and employment.

This unit has been designed to develop knowledge, understanding and practical skills in the production of dental casts and is suitable for trainee Dental Technicians.

It is an introductory unit which forms part of the NC in Dental Technology at SCQF level 6.

If you undertake this unit, you will learn about the properties and preparatory procedures for a range of dental impression materials and also production techniques, producing dental casts to the specification and quality required whilst ensuring safe working practices are applied throughout. It would be beneficial if you had already successfully completed the unit, *Dental Materials: An Introduction*.

There are three outcomes to complete:

- 1 Describe the properties and preparatory procedures for a range of dental impression materials in the production of dental casts.
- 2 Produce dental casts using a range of materials to the specified standard ensuring safe working practices at all times.
- 3 Evaluate the quality of the dental casts produced.

Assessment methods are varied and may include set question papers and observation of your practice.

There will be opportunities to develop aspects of the Core Skills in *Communication* (Oral and Written skills) and *Information and Communication Technology (ICT)* (Accessing Information), *Numeracy* (Graphical Information, Using Number — Measuring and Calculation), *Working with Others* (Working Co-operatively with Others) and *Problem Solving* (Critical Thinking) throughout this unit.

There may also be opportunities to develop your broader transferable skills which contribute to employability:

- ◆ Time management and organisational skills — through working to deadlines, punctuality, record keeping
- ◆ Sustainability — through consideration of the use of resources, recycling and waste
- ◆ Specific technical skills — through preparing, handling, producing and assessing dental casts
- ◆ Interpersonal skills such as listening, teamwork and study skills
- ◆ Personal development, eg self-confidence and self-motivation