

Higher National Unit specification

General information for centres

Unit title: Glass: Flameworking Techniques

Unit code: F1RR 34

Unit purpose: This Unit is designed to enable candidates to develop skills and knowledge related to lampworking techniques. It is suitable for candidates wishing to focus at a higher level of study or work in the hot glass field.

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

- 1 Assemble flame producing equipment.
- 2 Select and prepare materials and equipment.
- 3 Manufacture stringers, beads and latticino.
- 4 Follow health and safety procedures.

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: While access to this Unit is at the discretion of the centre, candidates would benefit from having prior knowledge of kiln operation and practical experience of annealing procedures at SCQF level 5 or 6.

Core Skills: There are opportunities to develop the Core Skills of Problem Solving and Working with Others at SCQF level 5 in this Unit, 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.

Assessment: This Unit is assessed by practical activities. The assessment of Outcome 1 must be complete prior to candidates undertaking Outcomes 2 and 3. The assessment of Outcome 4 should be combined with the assessment for Outcome 1 and Outcomes 2 and 3.

Higher National Unit specification: statement of standards

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The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Outcome 1

Assemble flame producing equipment

Knowledge and/or Skills

- ◆ Combustible and non-combustible gases
- ◆ Leak detection equipment
- ◆ Gas pressures
- ◆ Types of flame producing equipment
- ◆ Purging procedures

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can assemble **two** different types of flame producing equipment. Each assembly should meet the following requirements:

- ◆ All connections to be tightened so there are no leaks
- ◆ Regulators and flashback arrestors to be fitted where appropriate
- ◆ Correct gas pressures to be visually checked
- ◆ All health and safety requirements to be met
- ◆ Purging procedures should be carried out before and after use
- ◆ Equipment should be tested using leak detection equipment

Each assembly must be observed and candidate performance should be recorded on an observation schedule.

Assessment Guidelines

Due to the high safety factor the assessment for this Outcome is a pre-requisite to the candidate proceeding to Outcomes 2 and 3. All Outcomes are linked and should be jointly assessed with Outcome 4.

Higher National Unit specification: statement of standards (cont)

Unit title: Glass: Flameworking Techniques

Outcome 2

Select and prepare materials and equipment

Knowledge and/or Skills

- ◆ Glass rods
 - types
 - properties
- ◆ Cutting techniques
- ◆ Types of tools and equipment
- ◆ Materials

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can, with reference to a given brief:

- ◆ Select appropriate materials and tools
- ◆ Cut glass rods to manageable lengths
- ◆ Prepare mandrels
- ◆ Prepare annealing equipment

Candidate performance should be recorded on an observation schedule.

Assessment Guidelines

The assessment of this Outcome can be combined with Outcomes 3 and 4, as part of a single assessment, details of which are given under Outcome 4.

Outcome 3

Manufacture stringers, beads and latticino

Knowledge and/or Skills

- ◆ Cane manipulation techniques
- ◆ Mandrel manipulation
- ◆ Joining techniques
- ◆ Heating and cooling techniques
- ◆ Annealing techniques

Higher National Unit specification: statement of standards (cont)

Unit title: Glass: Flameworking Techniques

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can manufacture:

- ◆ **nine** stringers which must include **three** thin, **three** medium and **three** thick stringers — each group must include **one** latticino
- ◆ **six** beads which should demonstrate the use of:
 - a variety of materials
 - different coloured rods
 - multicolours and varying shapes and sizes

All beads should be removed from mandrel and should be devoid of cracks and bead sludge residue.

An observational schedule should be completed for each manufacturing process carried out and this should include evidence of the candidate:

- ◆ using correct heating and cooling techniques
- ◆ using annealing techniques
- ◆ using joining techniques
- ◆ following health and safety procedures as outlined in Outcome 4

Assessment Guidelines

The assessment of this Outcome can be combined with Outcomes 2 and 4, as part of a single assessment, details of which are given under Outcome 4.

Outcome 4

Follow health and safety procedures

Knowledge and/or Skills

- ◆ Manufacturers' instructions
- ◆ Protective clothing and eyewear
- ◆ Health and Safety at Work Act (HASWA)
- ◆ Control of Substances Hazardous to Health (COSHH)
- ◆ Workshop protocol

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and/or skills by showing that they can adhere to health and safety requirements in the workplace situation. Evidence should be recorded in observation schedules completed for each process followed in Outcomes 1, 2 and 3. The schedules should include:

Higher National Unit specification: statement of standards (cont)

Unit title: Glass: Flameworking Techniques

- ◆ workplace tidiness
- ◆ consideration for colleagues
- ◆ following specific requirements for equipment used
- ◆ dealing safely with wastage
- ◆ care of appliances and ancillary equipment
- ◆ use of correct protective clothing and eyewear

Assessment Guidelines

The assessment of this Outcome can be combined with Outcomes 1, 2 and 3. Outcome 1 should be assessed before Outcomes 2 and 3. Outcomes 2 and 3 could be assessed by giving candidates a brief that requires them to produce beads, stringers and latticino. This could involve the candidate in the selection of appropriate materials and tools, preparing equipment, producing the beads, stringers and latticino to meet the brief, ensuring health and safety procedures are followed throughout.

A centre devised checklist should be devised for each activity.

Administrative Information

Unit code: F1RR 34
Unit title: Glass: Flameworking Techniques
Superclass category: JR
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Version	Description of change	Date

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Higher National Unit specification: support notes

Unit title: Glass: Flameworking Techniques

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 is an optional Unit in the HNC/HND Art Glass Production Group Awards frameworks. Its purpose is to introduce candidates to lampworking techniques using a variety of materials, tools and equipment.

The kind of equipment which will be used in this Unit will include different types, such as torches, volcano, and oxy-fuel burners. Candidates should use a variety of equipment during the course of the Unit including different types of annealing equipment like kilns and vermiculite boxes.

The use of the following tools should be covered in the Unit — glass cutting tools, manipulating tools, forming tools, graphite tools and moulds, diamond files and bead reamers. The importance of cleanliness and tidiness in the work area should be stressed throughout the Unit.

Candidates should be encouraged not only to follow health and safety requirements in the workplace but to research any specific manufacturer's instructions supplied with equipment. Manufacturers' catalogues and websites could be used as a source of reference for materials and equipment.

Guidance on the delivery and assessment of this Unit

The bulk of the work in this Unit is in Outcomes 1 and 3 and candidates will need to practise their techniques prior to assessment until they have achieved a level of competence where they can produce a variety of beads and stringers and latticino of varying types, size and design. However, it must be stressed to the candidates that due to the nature of the Unit content, they must achieve Outcome 1 before attempting other Outcomes within this Unit.

Outcome 1 must be satisfied before the candidate moves on to the remaining Outcomes.

Outcomes 2, 3 and 4 could be assessed by the production of no less than 9 examples of good quality stringers of varying thickness and length. At least 3 should be of latticino in appearance. Three beads of varying sizes or to meet different specifications, eg one for jewellery purposes and the others for swapping or sale, should also be manufactured.

Opportunities for developing Core Skills

Candidates develop their Problem Solving skills by determining the materials, tools and equipment which should be used to meet the specification given. This would be developed throughout the Unit by presenting candidates with mini-briefs to work to so that they make decisions, plan their work and organise the resources needed to carry out tasks.

Higher National Unit specification: support notes (cont)

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Candidates would also develop the skill of Working with Others in this Unit. They would be required to negotiate use of equipment at certain times and would need to show evidence of consideration for others in the workshop as well as ensuring that they did not compromise the health and safety of those they work with. To minimise wastage within the workshop, candidates should be encouraged to discuss with others what materials they require and to estimate the quantities needed.

Open learning

This Unit is not suitable for Open learning due to the equipment used. It also requires candidates to be observed by a qualified practitioner to meet health and safety requirements.

For further information and advice, please refer to the SQA guide *Assessment and Quality Assurance for Open and Distance Learning* www.sqa.org.uk.

Candidates with disabilities and/or additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering alternative Outcomes for Units. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (www.sqa.org.uk).

General information for candidates

Unit title: Glass: Flameworking Techniques

In this Unit you will learn how to make glass beads; long pieces of glass like spaghetti — these are known as stringers; and short lengths of twisted glass with multicolours called latticino. You will learn how to use different types of hot glass equipment and some of these will use gases which are flammable and non-flammable — you will be required to use the gases on their own or together. This means that you will have to learn about health and safety in the workplace and follow manufacturer's instructions in the use of equipment. When using the flame producing equipment it is essential that you maintain a high level of concentration for your own safety and that of your colleagues. The equipment you will use is very hot and can reach temperatures in excess of 2,000°C.

You will practise making different types of beads, stringers and latticino. The beads presented for assessment should be of a quality that could be sold in a shop or swapped through one of the many bead societies that exist. The stringers and latticino should be of a quality that could be used for making jewellery or to be incorporated in other hot glass processes.

The assessment for the Unit will involve practical tasks which will be assessed and recorded by your tutor. In Outcome 1 you will be assessed assembling and making safe some flame producing equipment. The assessment for Outcomes 2 and 3 is combined and involves the selection of materials and equipment to manufacture stringers, beads and latticino. Outcome 4, which relates to health and safety, will be assessed throughout the Unit.

You will be given the opportunity to develop the Core Skills of Problem Solving and Working with Others in this Unit. It may be necessary for you to consult with your colleagues when working out rotas for use of the equipment, tools etc. Problem solving skills will be applied in the way you plan, develop and evaluate what you do — not all processes will work out exactly the way you planned them and you may need to experiment or correct errors as you work.