



QCF Unit and Assessment Specification

| | |
|-------------------------|--|
| Unit title | Produce Advanced Jewellery and Silverware Components using Wax Casting |
| Ofqual Unit code | J/506/2423 |
| SQA Unit code | H75F 80 |
| SSC Ref | J4.10 |

History of changes

Publication date: August 2014

Version: 01

| Version number | Date | Description | Authorised by |
|-----------------------|-------------|--------------------|----------------------|
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |
| | | | |

© Scottish Qualifications Authority 2015

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.

QCF Unit specification

| | | |
|---|---|--|
| Title | Produce Advanced Jewellery and Silverware Components using Wax Casting | |
| Level | 4 | |
| Credit value | 14 | |
| Learning Outcomes | Assessment Criteria | |
| The learner will: | The learner can: | |
| 1 Understand the theoretical concepts that are applied in wax casting procedures. | 1.1 Justify the reasons for using releasing agents. | |
| | 1.2 Describe the significance of a range of techniques in wax casting including: <ul style="list-style-type: none"> ◆ re-crystallisation ◆ sprue replacement ◆ use of reservoirs | |
| | 1.3 Explain the importance of assembling wax trees, and the calculations and formulae associated with them. | |
| | 1.4 Critically evaluate the methods used to determine the amount of metal required. | |
| | 1.5 Describe the importance of ensuring the correct duration and temperatures for burnout. | |
| | 1.6 Compare alternative methods for casting. | |
| 2 Understand how to implement advanced wax casting procedures. | 2.1 Describe the specific safety practices and procedures to be observed when casting. | |
| | 2.2 Describe the specific characteristics of items associated with wax casting including: <ul style="list-style-type: none"> ◆ materials to be used ◆ quantities to be used ◆ mixing ratios to be applied ◆ working life of materials and mixes | |
| | 2.3 Describe how to mix investment by manual and automated methods. | |

| Learning Outcomes | Assessment Criteria |
|---|--|
| The learner will: | The learner can: |
| | <p>2.4 Describe the investment proportions that should be used.</p> <p>2.5 Explain the impact of air bubble removal.</p> <p>2.6 Describe the methods of achieving a bubble free state.</p> <p>2.7 Describe methods for removing wax prior to casting.</p> <p>2.8 Describe the methods for the removal of work from investment.</p> <p>2.9 Describe how to recognise faulty castings.</p> <p>2.10 Describe how to rectify faults when identified.</p> |
| <p>3 Understand how to maintain casting equipment.</p> | <p>3.1 Describe how wax injection equipment should be cleaned and maintained.</p> <p>3.2 Describe how vacuum processing equipment should be cleaned and maintained.</p> <p>3.3 Describe how casting equipment should be cleaned and maintained.</p> <p>3.4 Describe how to apply cleaning and finishing techniques.</p> |
| <p>4 Be able to produce advanced jewellery and silverware components using wax casting.</p> | <p>4.1 Implement the correct preparatory work prior to waxing and casting.</p> <p>4.2 Calculate the correct quantities of materials to implement the work.</p> <p>4.3 Use the correct techniques and procedures for wax injection.</p> <p>4.4 Produce a range of complex castings including:</p> <ul style="list-style-type: none"> ◆ castings of varying size ◆ components including colour combinations of the same alloy |

| Learning Outcomes | Assessment Criteria |
|--|--|
| The learner will: | The learner can: |
| | <p>4.5 Assemble multiple wax components using the correct technique.</p> <p>4.6 Implement the correct techniques and procedures for investing.</p> <p>4.7 Apply the correct burnout times.</p> <p>4.8 Implement work activities according to defined working procedures.</p> <p>4.9 Implement work in a manner that avoids damage to components and equipment.</p> <p>4.10 Maintain equipment in line with procedures.</p> |
| <p>5 Be able to evaluate own activity to improve future performance.</p> | <p>5.1 Assess the relative success of the methods used to identify areas for improvement.</p> <p>5.2 Evaluate industry research and information to identify where new methods can be used.</p> <p>5.3 Develop conclusions as to how new methods can be improved.</p> <p>5.4 Make recommendations as to how new methods might effectively be implemented.</p> |

| |
|---|
| Additional information about the Unit |
| Unit purpose and aim(s) |
| This Unit covers the skills and knowledge involved in lost wax casting to produce advanced jewellery and silverware components. |
| Unit expiry date |
| 31 December 2015 |
| Details of the relationship between the Unit and relevant National Occupational Standards (if appropriate) |
| This Unit is based on National Occupational Standards for Level 4 Diploma in Jewellery Manufacture. |
| Details of the relationship between the Unit and other standards or curricula (if appropriate) |
| N/A |
| Assessment requirements specified by a sector or regulatory body (if appropriate) |
| Culture and Creative Skills |
| Endorsement of the Unit by a sector or other appropriate body (if required) |
| N/A |
| Location of the Unit within the subject/sector classification system |
| 9.2 Crafts, Creative Art and Design |
| Name of the organisation submitting the Unit |
| Scottish Qualifications Authority |
| Availability for use |
| Shared |
| Availability for delivery |
| August 2014 |
| Guided Learning Hours |
| 105 |

QCF Assessment specification

Assessment (evidence) Requirements

The learner should submit a technical journal/workbook, describing the following.

Learning Outcome 1

The significance of a range of techniques in wax casting including: re-crystallisation, sprue placement and use of reservoirs. The importance of ensuring the correct duration and temperatures for burnout. Comparison of alternative methods for casting. The learner should also explain the importance of assembling wax trees and the calculations and formulae associated with them. Critically evaluate the methods used to determine the correct amount of metal required and justify the reasons for using releasing agents.

Learning Outcome 2

Describe the following:

- ◆ The specific safety practices and procedures to be observed when casting the specific characteristics of items associated with wax casting including:
 - the specific safety practices
 - the specific characteristics
 - materials to be used
 - quantities to be used
 - mixing ratios to be used
 - working life of materials and mixes

How to mix investment, both manually and by automated methods. The investment proportions to be used. The methods of achieving a bubble free state and the impact of air bubble removal. Methods for removing wax prior to casting. The methods for the removal of work from investment. How to recognise and rectify faults in casting.

Learning Outcome 3

Describe the following:

- ◆ How to clean and maintain the following:
 - wax injection equipment
 - vacuum processing equipment
 - casting equipment
- ◆ How to apply cleaning and finishing techniques to castings.

Learning Outcome 4

The learner should demonstrate the ability to implement the correct preparatory work prior to waxing and casting. Calculate the correct quantities of materials to implement the work. Use the correct techniques and procedures for wax injection. Produce a range of complex castings including:

- ◆ castings of varying size
- ◆ components including colour combinations of the same alloy

Assessment (evidence) Requirements (cont)

Assemble multiple wax components using the correct techniques. Use the correct techniques and procedures for investing. Apply the correct burnout times. Implement work activities according to defined working procedures. Work in a manner that avoids damage to components and equipment and maintain equipment in line with procedures.

Learning Outcome 5

Logbook/workbook showing that the learner has assessed the relative success of the methods used and identify areas for improvement. Evaluate industry research and information to identify where new methods can be used. Develop conclusions as to how new methods can be improved and make recommendations as to how new methods might be effectively implemented.

Guidance on Instruments of Assessment

Outcome 1

Checklist for all the Evidence Requirements above.

Outcome 2

Checklist for all the Evidence Requirements above.

Outcome 3

Observation checklist for all the Evidence Requirements above.

Outcome 4

Observation checklist for all the Evidence Requirements above and product evidence checklist.

Outcome 5

Checklist for all the Evidence Requirements above.