J3.4 Demonstrate and apply an understanding of metallurgy to your jewellery or silversmithing work SQA Unit Code H9V7 04

Unit Summary

This unit covers the skills and knowledge required to demonstrate and apply a good knowledge of metallurgy to the work that you are undertaking. You will be expected to select and prepare the materials and apply specialist techniques to your work.

Performance Indicators

You will be able to:

a) Describe the microstructural changes during solidification, cold working and annealing

b) Carry out identification of precious metal alloys

c) Calculate the amounts of precious metal alloys to make a specific alloy composition

d) Describe the theory and demonstrate the practice of rolling, hammering, fluxing, soldering and polishing

e) Identify porosity and take preventative action

f) Identify common faults associated with lost wax investment casting

Knowledge and Understanding

You will know and understand:

1) Terminology used by the industry

2) The process of re-crystallization after melting and annealing

3) The physical and mechanical properties of cast and cold worked metal.

4) The theory and of rolling, hammering, fluxing, soldering and polishing

5) The physical and mechanical properties of a range of metals.

6) The differences in the physical properties of precious metals compared to their alloys

7) The differences in the mechanical properties of precious metals compared to their alloys

8) How to calculate precious metal alloys.

9) Re-crystallization after melting and annealing.

10) The absorption and expulsion of gasses during the melting and annealing processes

11) The causes of contamination when melting and annealing metal

12) The expansion and contraction of metal during the annealing and quenching process

13) The theory and practice of rolling, hammering, fluxing, soldering and polishing.

14) The theory and practice of carrying out pickling safely and effectively

15) The causes and prevention of porosity particularly in lost wax investment casting

16) The consequences of not initiating corrective action when porosity is identified

17) Hazards and risks pertaining to the metallurgical process as it impacts on the jewellery manufacture

18) How precious metal alloys are stamped according to assay requirements.

19) The consequences of incorrect identification and calculation of precious metal alloys