

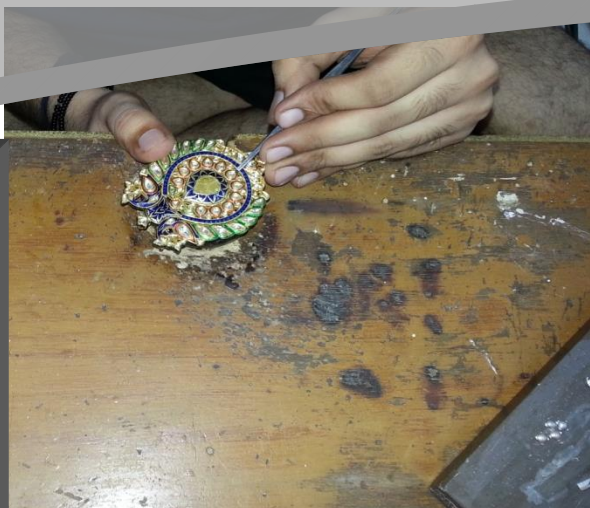
QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR GEMS & JEWELLERY INDUSTRY

What are Occupational Standards(OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack-Kundan-Jadau Goldsmith

SECTOR: GEMS & JEWELLERY

SUB-SECTOR: Handmade gold and gems-set jewellery

OCCUPATION: Gold smithy (Specialised)

REFERENCE ID: G&J/Q0901

ALIGNED TO: NCO-2004/ 7313.30

Kundan-Jadau Goldsmith: Also known as 'Kundan Goldsmith', the Kundan-Jadau Goldsmith makes specialised gold jewellery using, gold alloy, 24 karat gold, silver and gemstones set in closed setting or Jadau style.

Brief Job Description: The individual at work works with hand and machine tools to create specialised jewellery of gold using wax, pure silver and gold foil, enamel paint, gemstones and flat diamonds. It is a highly creative job role.

Personal Attributes: The job requires the individual to have: aptitude for design; attention to details; good eyesight; steady hands; ability to work for long hours in sitting position; and a lot of patience. The individual must also be able to use reflective skills in order to develop improved designs and work processes, and analytical skills to avoid errors and hazards.

Job Details

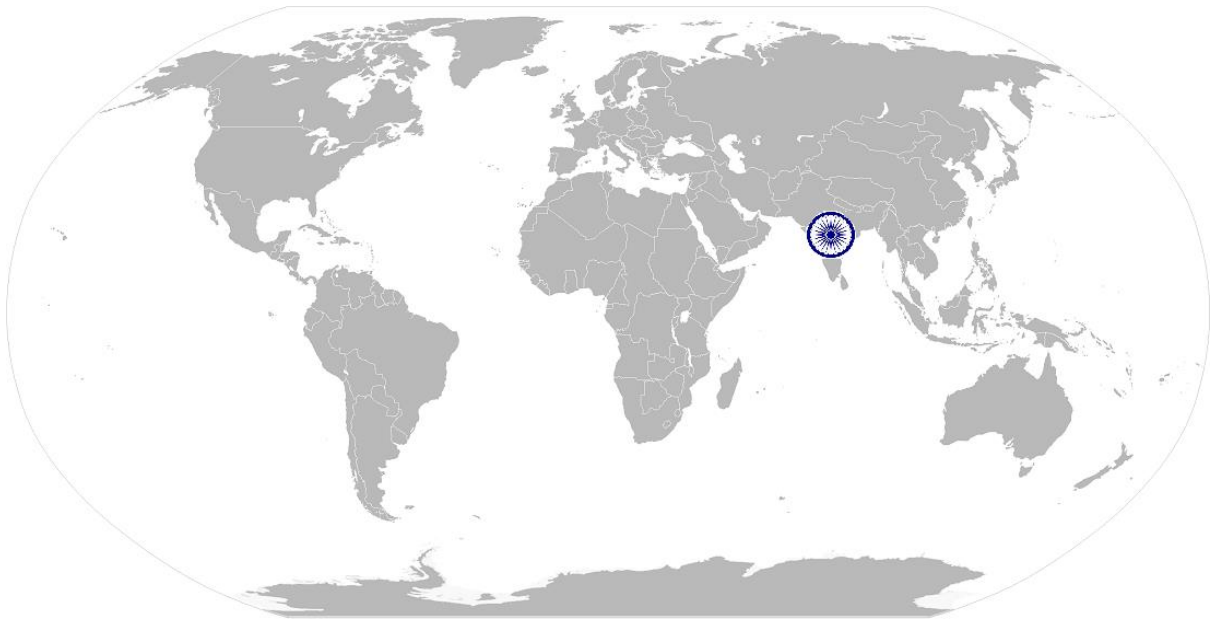
Qualifications Pack Code	G&J/Q0901		
Job Role	Goldsmith – Kundan-Jadau		
Credits(NSQF)	TBD	Version number	1.0
Sector	Gems & Jewellery	Drafted on	24/08/13
Sub-sector	Handmade and Gems-set Jewellery	Last reviewed on	13/08/14
Occupation	Gold smithy (Specialised)	Next review date	12/08/15

Job Role	Goldsmith - Kundan-Jadau Also known as 'Kundan Goldsmith'
Role Description	Making traditional Rajasthani jewellery using gold alloy, enamel paint and gemstones, and setting flat diamond or glass (polki) using kundan (24K gold) foil and silver foil
NVEQF/NVQF level	4
Minimum Educational Qualifications	Preferably 10 th standard passed
Maximum Educational Qualifications	
Training	Not Applicable
Experience	Preferably 3 years as components maker, i.e., Goldsmith (basic)
Applicable National Occupational Standards (NOS)	Compulsory: <ol style="list-style-type: none"> G&J/N0904 Make components, frame, Kundan (24K gold) and Silver foils G&J/N0905 Engrave pattern and apply enamel G&J/N0803 Set gemstones using Jadau technique and string G&J/N9910 Maintain IPR and respect copyright G&J/N9912 Coordinate with co-workers G&J/N9914 Maintain safe work environment Optional: Not applicable
Performance Criteria	As described in the relevant OS units

G&J/N0904

Make components, frame, Kundan (24K gold) and Silver foils

National Occupational Standard



Overview

This unit is about making the different jewellery components by hand and linking them to form the jewellery frame. It is also about making thin pure gold and silver foils for use in the closed (*Jadau*) setting of gemstones or flat diamonds.

G&J/N0904

Make components, frame, Kundan (24K gold) and Silver foils

Unit Code	G&J/N0904
Unit Title (Task)	Make components, frame, Kundan (24K gold) foil and Silver foil
Description	This OS unit is about making <i>Kundan</i> jewellery along with enamelling and <i>Jadau</i> (closed) setting using components and gemstones
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Order precious metal or alloy for making components • Draw wire, strip or sheet • Make Kundan (24K gold) foil or Silver foil • Anneal the wire or strip or sheet for malleability while drawing or rolling • Make components • Make the frame • File the frame components for finishing • Control precious metal loss • Detect product defects and return completed wire to supervisor • Report problems in time
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Preparing for making Kundan-Jadau jewellery	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. understand specifications in terms of required components, e.g., wires or chains, sheets, balls, collets</p> <p>PC2. understand dimensions required such as thickness of wire, size and shape of ball, and depth and shape of collet</p> <p>PC3. assess quantity of precious metal or alloy required for making the components</p> <p>PC4. roll metal bars/ingots to the appropriate thickness using wire drawing or rolling machine</p> <p>PC5. sharpen one end of the metal bar / rolled wire to ease the insertion of metal bar / rolled wire into draw-plate cavity / hole</p> <p>PC6. push the metal through the draw-plate and then draw it out using force, so as to thin the wire step by step</p> <p>PC7. repeat the process through consecutive small holes to get the required thickness of wire</p> <p>PC8. pass metal through roller machine or mill to make into strips or sheet of appropriate thickness</p>
Making Kundan	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC9. roll 24 karat gold metal into thin leaf by repeatedly using rolling machine and hammering</p> <p>PC10. roll silver metal into thin leaf using rolling machine</p> <p>PC11. heat treat / anneal the sheets / wire and pickle it (pickling is boiling in approximately 10% sulphuric acid solution, awareness of hazard notes is must), after pickling, rinse it in plain or mild alkaline water</p>

G&J/N0904

Make components, frame, Kundan (24K gold) and Silver foils

	<p>PC12. make rolls of thin leaf of gold and silver</p> <p>PC13. assess whether the wire or strip type (e.g., spring) requires annealing</p> <p>PC14. treat the wire or strip with heat using gas torch or furnace</p> <p>PC15. set temperature according to the thickness of the wire or strip</p> <p>PC16. remove the wire or strip from heat and quench in water to cool immediately</p> <p>PC17. repeat the heating and cooling process after every drawing or rolling</p>
Making components and frame	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC18. solder the ends to shape as a ring</p> <p>PC19. connect pieces of wire together to make the chain as per design using the weaving or soldering method as specified</p> <p>PC20. to make ball, cut the sheet or strip as per the diameter of the ball</p> <p>PC21. create two hemispheres of the ball and lock and join them by heating</p> <p>PC22. or use hollow ball making machine to make gold balls from sheets</p> <p>PC23. or fire small wire pieces on glass cotton to make small sized balls</p> <p>PC24. connect the ends of sheet to make collet, give shape as per design and solder</p> <p>PC25. check symmetry of design</p> <p>PC26. lay the components and frame pieces on wax or lac and set in Plaster of Paris (PoP) mixture or customised jigs</p> <p>PC27. solder components to link to form frame as per design on both sides</p> <p>PC28. remove PoP, level and strengthen joints in wax or lac</p> <p>PC29. send completed frame for cleaning with brush and water or chemical solution</p> <p>PC30. make components of required dimensions such as size and thickness</p> <p>PC31. make components of required finish and evenness</p> <p>PC32. draw or roll metal without overdrawing or splitting or cracking</p> <p>PC33. anneal the wire, strips and sheets for required malleability for the thickness required</p> <p>PC34. limit precious-metal loss of damaged metal rod or wire</p> <p>PC35. cut any sharp edges as per design</p> <p>PC36. file for smooth finish of joined periphery as per the design requirement</p> <p>PC37. file or grind outer surface for smoothness and required finish</p> <p>PC38. file for correct dimensions, e.g., length, bend, flexibility, colour, evenness, size and embellishments to be fitted</p> <p>PC39. accurately link the ends to form even rings, collets or chains of required dimensions</p> <p>PC40. link, solder and file the components into frame of required finish and utility</p> <p>PC41. achieve required flexibility, utility and symmetry of frame as per design</p> <p>PC42. meet productivity target</p> <p>PC43. complete work with minimum hazards and accidents</p>
Controlling precious metal loss and checking quality	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC44. collect precious metal dust or fragments dispersed during the day</p> <p>PC45. tally account as per allowed standards for wire making</p> <p>PC46. conduct regular cleaning for collection of gold as per company policy</p> <p>PC47. identify the type of defect, e.g., damaged beyond repair</p> <p>PC48. handover defective components to supervisor for melting or use elsewhere</p>

G&J/N0904

Make components, frame, Kundan (24K gold) and Silver foils

	<p>PC49. rework on any quality check feedback and return</p> <p>PC50. ensure timely delivery</p>
Reporting problems	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC51. report equipment/machine failure</p> <p>PC52. inform about tools shortage and their maintenance related issues</p> <p>PC53. report reasons for anticipated delays that may adversely affect delivery</p> <p>PC54. report malfunction of annealing torch or furnace deliver complete frames in time by reporting well in advance, any problems faced or anticipated</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The individual on the job needs to know and understand:</p> <p>KA1. company's policies on: Acceptable limits of precious metal loss per product type; delivery timelines; safety and hazards; security; and personnel management</p> <p>KA2. work flow involved in company's jewellery manufacturing process, i.e., from one goldsmith to another</p> <p>KA3. importance of the individual's role in the workflow</p> <p>KA4. reporting structure</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. uses of different types of tools used in wire drawing and rolling such as ruler, draw plates, pliers, hammer, bench block, cup bur, cutter, roller machine</p> <p>KB2. gold and silver foil packing</p> <p>KB3. properties of gold and silver leafs</p> <p>KB4. different types of wax or lac and their use</p> <p>KB5. precious-metal or gold alloy properties such as strength and malleability</p> <p>KB6. heat treatments and intensity effect with respect to different types of gold alloys, e.g., 18K gold requires less annealing than 10K or springs need different treatment than annealing</p> <p>KB7. potential work hazards, particularly, when using hand and machine tools</p>
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Basic reading and writing skills
	<p>The user/individual on the job needs to know and understand how:</p> <p>SA1. to read notes and put notes on design</p>
	Measuring skills
	<p>The user/individual on the job needs to know and understand how:</p> <p>SA2. to assess the material requirement for making wires of specified length and thickness</p> <p>SA3. to use gauge check the thickness of wire</p> <p>SA4. to check symmetry of component made</p>
B. Professional Skills	Using tools and machines
	<p>The user/individual on the job needs to know and understand how:</p> <p>SB1. to use roller machine for drawing wire or strip</p> <p>SB2. to use tools for drawing wire such as: Gas torch or furnace for annealing wire or strip; drawing tongs and draw plate for thinning diameter of wire and</p>

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Make components, frame, Kundan (24K gold) and Silver foils

	<p>required shape; wax or oil for lubrication</p> <p>SB3. to use tools such as files and pliers</p> <p>SB4. to use the right hole in draw plate and at correct angle for achieving the finish as per design</p> <p>SB5. to maintain tools and machines used</p> <p>SB6. to use technology such as computer for visual aid and efficient working</p>
	Reducing precious metal loss
	<p>The user/individual on the job needs to know and understand:</p> <p>SB7. prescribed precious-metal loss for the entire jewellery piece</p> <p>SB8. Precious-metal loss applicable for the component</p> <p>SB9. how to reduce precious metal loss below the prescribed standards</p> <p>SB10. how to collect broken or over rolled pieces, account in job sheet and return</p> <p>SB11. how to follow company's policies on collecting gold dust and fragments</p> <p>SB12. how to suggest improvements in order to reduce precious metal loss limits</p>
	Reflective thinking
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB13. work in sitting or standing for long hours position with correct posture</p> <p>SB14. maintain clean work environment and organise tools for ease of use</p>
	Critical thinking
	<p>The user/individual on the job needs to know and understand how:</p> <p>SB15. to spot process disruptions and delays</p> <p>SB16. to avoid hazards when using roller machine or draw plate or during annealing</p>

G&J/N0904

Make components, frame, Kundan (24K gold) and Silver foils

NOS Version Control

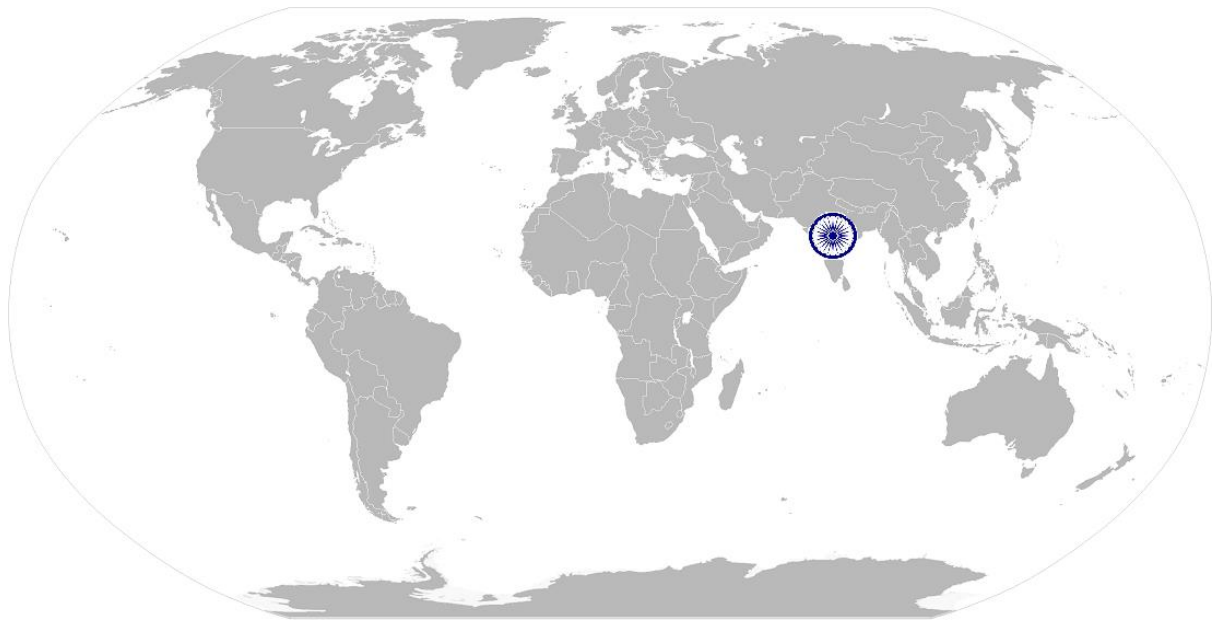
NOS Code	G&J/N0904		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	14/04/13
Industry Sub-sector	Handmade Gold and Gems-set Jewellery	Last reviewed on	13/08/14
		Next review date	12/08/15



G&J/N0905

Engrave pattern and apply enamel

National Occupational Standard



Overview

This unit is about painting vibrant colour patterns on jewellery frame using enamel paints. It is also about drawing the design on to the gold sheet and engraving or etching it out for applying the enamel paint.

G&J/N0905

Engrave pattern and apply enamel paint

Unit Code	G&J/N0905
Unit Title (Task)	Engrave pattern and apply enamel paint
Description	This OS unit is about applying enamel paint on the back and front sides of the jewellery frame as per design
Scope	<p>This unit/ task covers the following:</p> <ul style="list-style-type: none"> • Receive work from supervisor • Prepare gold jewellery surface for enamel paint application • Prepare the enamel • Apply enamel paint on gold jewellery surface • Fire, retouch and finish • Detect product defects • Check quality and return
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Engraving and enamel painting	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. receive the design from supervisor and understand the enamelling requirement, i.e., colour combinations, type of surface to be prepared, areas for enamel painting, delivery schedule and methodology to use</p> <p>PC2. order consumables such as enamel lumps, acids and chemicals, brush, handling tools, safety gear and take stock of equipment such as kiln or furnace or oven or gas torch</p> <p>PC3. receive the jewellery to be enamelled</p> <p>PC4. prepare jewellery surface for adhesion, uniform firing and even colour distribution</p> <p>PC5. stick gold sheet on hot wax; draw the design on wax using a pointed needle; and engrave or scoop out metal from the sheet; remove wax</p> <p>PC6. chisel the surface to be painted using chisel or graver for sparkling finish of large base area or buff the surface for glossy finish or cut motifs</p> <p>PC7. prepare enamelling area of even thickness in order to achieve even spread of enamel while firing</p> <p>PC8. prepare surface of optimum thickness for the enamel to hold an not chip or crack at a later stage, taking care to protect the surface from being pierced or punctured</p> <p>PC9. apply enamel to a hollow surface after removing all moisture to avoid enamel-splitting at the time of firing because of moisture tapped in the hollow or depressed area</p> <p>PC10. remove from the surface any grease, oil grime and dust</p> <p>PC11. clean or degrease using solvents or acid or cleaning solutions after preparing the surface while avoiding any hand contact with the chemical used</p>

G&J/N0905

Engrave pattern and apply enamel paint

	<p>PC12. crush the required quantities and colours of enamel lumps and grind with mortar into fine powder using mortar and pestel (joy & ewly) and add demineralised (DM) water to the lumps to avoid small particles, ground enamel and debris from being dispersed in air</p> <p>PC13. protect eyes and skin from injuries from dispersing debris which may contain glass and other sharp dust particles; Use protective eyewear</p> <p>PC14. repeatedly rinse fine powder and grind, adding Nitric acid to water in order to remove impurities</p> <p>PC15. take extreme care while rinsing the ground enamel using Nitric acid drops to avoid skin burns or adverse acid reaction</p> <p>PC16. transfer finely ground paste to a small dish or container with water at a level slightly higher than the paste</p> <p>PC17. check the paste solution for any impurities and water for any floating particles</p> <p>PC18. add a few drops of vegetable glue as bonding agent for the paste</p> <p>PC19. paint and apply colour on prepared surface using brushes with soft bristles</p> <p>PC20. use jigs to hold the jewellery piece securely while painting</p> <p>PC21. do not spill over paint during application on different sides of the jewel</p> <p>PC22. apply separate colours in separate strokes, i.e., one after another and not all together</p> <p>PC23. ensure use of separate brushes and containers for different colours</p> <p>PC24. leave the painted surface for a few minutes to dry</p> <p>PC25. take care not to drop the jewellery piece after painting</p> <p>PC26. place the painted jewellery piece in the kiln or oven or furnace using stainless steel mesh for firing or use gas torch at recommended temperature for the enamel</p> <p>PC27. remove the jewellery from the kiln or oven or furnace or gas torch as soon as the colour melts and flows</p> <p>PC28. leave it to cool to room temperature</p> <p>PC29. check the jewel for excess enamel and remove using Hydrofluoric acid</p> <p>PC30. take extreme precaution while sing Hydrofluoric acid against inhalation, skin burns or skin contact;</p> <p>PC31. always keep soda-ash-water solution ready in the work area, to be used upon contact with Hydrofluoric acid</p> <p>PC32. re-fire the jewel for finish as per design, repeat if necessary</p> <p>PC33. remove jewel from kiln, oven, furnace or gas torch and leave to cool</p> <p>PC34. finish the surface with grinder and cutter to remove uneven enamel and gold</p> <p>PC35. rinse with Hydrofluoric acid for uniform spread of enamel applied</p> <p>PC36. re-fire for glossy finish</p> <p>PC37. dry after every rinsing cycle and cool after each firing</p> <p>PC38. use resin colours for non-traditional, i.e., non-Jaipuri or non-Bikaneri, style of enamelling</p> <p>PC39. achieve symmetry of design to be engraved or etched for applying enamel</p> <p>PC40. achieve smooth finish of enamel paint as per design</p> <p>PC41. ensure no overflow or excess enamel at the edges of the painted area</p> <p>PC42. ensure that enamel prepared with no impurities</p> <p>PC43. ensure no chipping or cracking enamel</p> <p>PC44. prepare surface of thickness and evenness for long term enamel adhesion</p>
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G&J/N0905

Engrave pattern and apply enamel paint

	<p>PC45. fire at right temperature for the enamel to flow and set</p> <p>PC46. achieve colour, vibrancy and gloss as per design</p> <p>PC47. achieve hazard-free output after using acids and chemicals</p>
Checking quality	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC48. inform supervisor if product has arrived with polishing, cleaning, filing or linking defect from previous processes</p> <p>PC49. understand the type of defect and send to relevant goldsmith</p> <p>PC50. report impractical design</p> <p>PC51. use needle to check for chipped or cracked enamel after final firing</p> <p>PC52. in case it is chipped or cracked, leave the jewel in Hydrofluoric acid for 24-72 hour in order to remove the enamel completely and repeat the process</p> <p>PC53. check weight and dimensions of jewellery as per design</p> <p>PC54. return the completed enamelled jewel to supervisor or senior</p> <p>PC55. deliver enamelled frame on time by reporting problems faced or anticipated well in advance</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The individual on the job needs to know and understand:</p> <p>KA1. company's policies on: Acceptable limits of gold loss per product type; delivery timelines; safety and hazards; security; and personnel management</p> <p>KA2. work flow involved in company's jewellery manufacturing process, i.e., from one goldsmith to another</p> <p>KA3. importance of the individual's role in the workflow</p> <p>KA4. reporting structure</p>
B. Technical Knowledge	<p>The individual on the job needs to know and understand:</p> <p>KB1. drawing designs and engraving</p> <p>KB2. jewellery making process and types of jewellery (product, styles, regional, traditional, making technique)</p> <p>KB3. types of enamel, such as transparent, opaque and opal or translucent and their properties: Transparent and opaque easier to apply than opal</p> <p>KB4. hard (firing at 750°C), medium (600-750°C) and soft (<650°C) enamels</p> <p>KB5. enamel available in lumps (longer shelf life), powder and paste forms</p> <p>KB6. choice of mortar and Prestel for grinding powder such as hardened steel, agate, stone that do not leave residue while grinding</p> <p>KB7. expansion and shrinkage rates of gold alloy used and that of the enamels used</p> <p>KB8. adverse effect of very thin base surface, poorly prepared surface or moisture on enamelling outcome</p> <p>KB9. adverse effect of dust and impurities in enamel or on base surface on the outcome</p> <p>KB10. recommended temperatures for different categories of enamel</p> <p>KB11. use of highly hazardous acids and chemicals such as Nitric acid or Hydrofluoric acids and safeguards</p> <p>KB12. filing and soldering</p>

G&J/N0905

Engrave pattern and apply enamel paint

Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Basic reading and writing skills
	The individual on the job needs to know and understand how: SA1. to read notes and put notes on design SA2. to read company policy documents SA3. to read about enamelling and jewellery making techniques
	Calculation and Geometry skills
	The individual on the job needs to know and understand how: SA4. to assess gold loss at each step of jewellery making so as to deliver product of correct weight and size SA5. to translate design into enamel painted jewellery
	Teamwork and multitasking
	The individual on the job needs to know and understand how: SA6. to share work load with other setters as per capability and work load SA7. to deliver the enamelled jewellery on time
B. Professional Skills	Painting
	The individual on the job needs to know and understand how: SB1. to use creativity while painting layers of different colours of enamel SB2. to enamel keeping in mind the requirements of finish, longevity of colour and utility of the design
	Using tools and consumables
	The individual on the job needs to know and understand how: SB3. to use demineralised water for grinding, washing and rinsing enamel SB4. to use vegetable glue such as pomegranate seeds for bonding the enamel paste SB5. to use Nitric acid to rinse ground enamel through drop bottles SB6. to use Hydrofluoric acid to wash and remove excess enamel and achieve smooth finish SB7. to use polypropylene steel containers to handle acids SB8. to use mortar and pestel to break and grind enamel lumps into fine powder and grinding stones SB9. to use porcelain and steel dishes for holding enamel paste during application SB10. to use fine bristled brushes for painting SB11. to use chisels and graves for preparing the base gold surface SB12. to use temperature controlled kilns, ovens or furnaces for firing and steel wire mesh for putting the jewel for firing SB13. to use tongs, holders, spatula, plates, ceramic blocks and asbestos boards SB14. to understand hazards involved with chemicals, furnaces and tools used
	Reducing precious-metal loss
	The user/individual on the job needs to know and understand: SB15. how to reduce precious metal loss below the prescribed standards SB16. how to collect broken pieces, account in job sheet and return

G&J/N0905

Engrave pattern and apply enamel paint

	SB17. how to follow company's policies on collecting gold dust and fragments SB18. how to suggest improvements in order to reduce precious metal loss limits
	Reflective thinking
	The individual on the job needs to know and understand how: SB19. to improve work processes SB20. use correct posture for performing the job without injuring body parts SB21. to reduce gold loss and rework because of chipped or cracked enamel
	Critical thinking
	The individual on the job needs to know and understand how: SB22. to spot process disruptions and delays

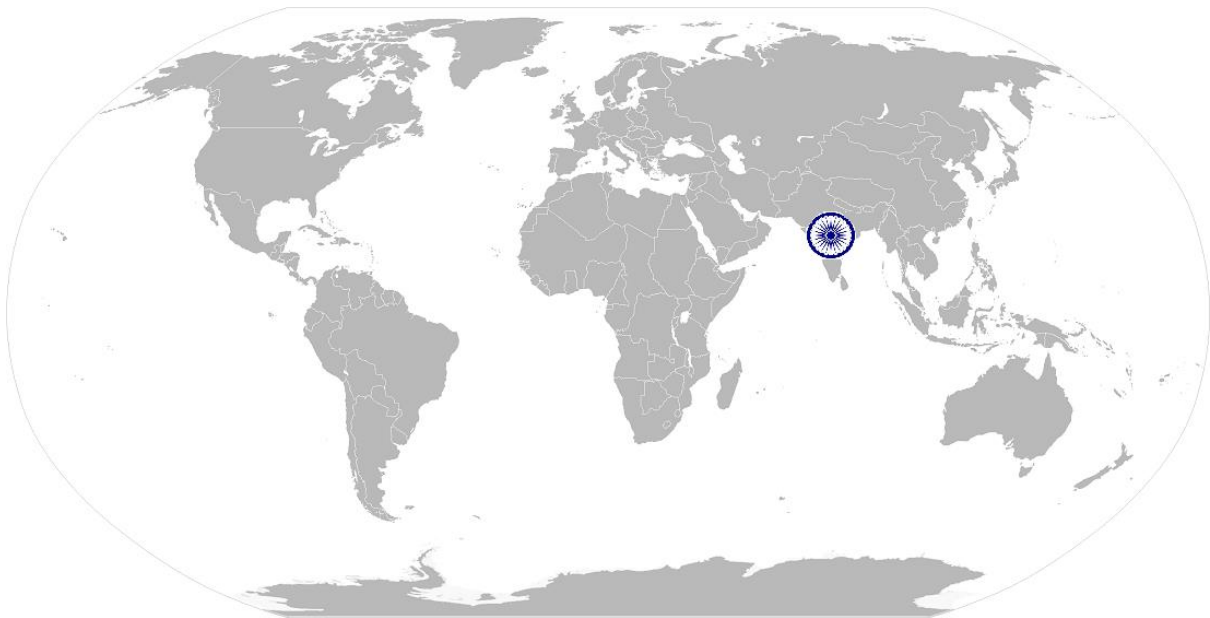
G&J/N0905

Engrave pattern and apply enamel paint

NOS Version Control

NOS Code	G&J/N0905		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	24/08/13
Industry Sub-sector	Handmade Gold and Gems-set Jewellery	Last reviewed on	13/08/14
		Next review date	12/08/15

National Occupational Standard



Overview

This unit is about setting gemstones, mainly, flat diamonds (or polki diamonds) in the jewellery frame using silver foil and *kundan* (24K gold) foil; it is also about stringing gemstones on to the jewellery frame.

G&J/N0803

Set gemstones using Jadau technique and string gemstones

National Occupational Standard

Unit Code	G&J/N0803
Unit Title (Task)	Set flat diamonds or gemstones using Jadau technique and string gemstones to jewellery frame
Description	This OS unit is about using the Jadau setting technique for setting gemstones, mainly, flat diamonds (or polki diamonds) in the jewellery frame using silver foil and kundan (24K gold) foil; it is also about stringing gemstones on to the jewellery frame
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> • Receive sorted polki-diamonds or glass, gemstones and jewellery frame for setting • Set polki and other gemstone stones • String gemstones beads on along the lower periphery of the frame • File excess gold around gemstone setting • Detect product defects • Check quality and report problems
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Jadau setting	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. understand different shapes, sizes and colour of stones</p> <p>PC2. match stones in the bag with design</p> <p>PC3. understand the closed setting requirement, i.e., with enamel on back side or without</p> <p>PC4. for polki-jadau setting, fill the empty collet on frame with molten wax</p> <p>PC5. polish silver foil with Agate and apply on the back side of the polki stone with hot wax; cut off excess foil from the side</p> <p>PC6. place the polki-silver assembly on the hot wax and press with solder so that the stone is set in place</p> <p>PC7. use layers of 24K gold foil to press around the polki-silver assembly for secure setting</p> <p>PC8. for other gemstone setting, set the jewellery frame on lac or wax coated wooden plate</p> <p>PC9. set stones in the collet or channel or ring as per design</p> <p>PC10. boil in hot water to remove lac and achieve clean surface</p> <p>PC11. receive the bag of beads to be used for lining the jewellery</p> <p>PC12. fit and secure the gemstone using the wire drawn and joined together</p> <p>PC13. string the set gemstones using thin gold wire</p> <p>PC14. link the assembled gemstone to the jewellery frame by soldering</p> <p>PC15. understand design requirements such as correct length of jadau, prong, bend, colour, evenness</p> <p>PC16. file or cut sharp edges of prongs</p> <p>PC17. grind for smooth surface</p> <p>PC18. avoid over filing</p> <p>PC19. achieve required shine for polki setting</p>

G&J/N0803

Set gemstones using Jadau technique and string gemstones

	<p>PC20. achieve flawless setting as per design requirement</p> <p>PC21. achieve even colour of stones set, i.e., no discolouration or breakage during setting</p> <p>PC22. set stones securely</p> <p>PC23. stringing is even and secure</p> <p>PC24. avoid damage to the rest of the frame during the process of setting</p> <p>PC25. achieve productivity as per target</p> <p>PC26. complete work with minimum hazards and accidents</p>
Quality checking	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC27. inform supervisor if product has arrived with polishing, cleaning, filing or linking defect from previous processes</p> <p>PC28. understand the type of defect and send to relevant goldsmith</p> <p>PC29. check visually in for any defects such as loose stone, tilted setting, marks, blank spaces</p> <p>PC30. check weight and dimensions of jewellery as per design</p> <p>PC31. remove and re-set stone again if returned from QC</p> <p>PC32. report tools shortage and their maintenance related issues</p> <p>PC33. identify an report reasons for anticipated delays that may adversely affect delivery</p> <p>PC34. deliver stones set jewellery in time by reporting problems faced or anticipated well in advance</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The individual on the job needs to know and understand:</p> <p>KA1. company's policies on: Acceptable limits of gold loss per product type; delivery timelines; safety and hazards; security; and personnel management</p> <p>KA2. work flow involved in company's jewellery manufacturing process (from one goldsmith to another)</p> <p>KA3. importance of the individual's role in the workflow</p> <p>KA4. reporting structure</p>
B. Technical Knowledge	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. sorting similar shapes and size of stones as per design</p> <p>KB2. 4Cs, i.e., colour, cut, clarity and carat</p> <p>KB3. handmade jewellery making process</p> <p>KB4. types of close set jewellery and jadau styles such as Jaipuri/ Bikaneri, Amritsari, Delhi</p> <p>KB5. uses of different types of tools and techniques for gemstone setting</p> <p>KB6. different types of polki or flat diamonds and glass</p> <p>KB7. different types of wax and their use in jewellery making</p> <p>KB8. basic properties of gemstones and effect of reaction to pressure, heat and chemicals</p> <p>KB9. gold alloy properties for securing and rework, i.e., which alloy allows rework</p> <p>KB10. filing and soldering</p>

G&J/N0803

Set gemstones using Jadau technique and string gemstones

Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Basic reading and writing skills
	The individual on the job needs to know and understand how: SA1. to read notes and put notes on design SA2. to use technology such as computer for visual aid or improving efficiency
	Measuring and Geometry skills
	The individual on the job needs to know and understand how: SA3. to assess precious metal loss at each step of jewellery making so as to deliver product of correct weight and size SA4. to translate design into gems-set jewellery SA5. to set the stone into collet at correct angle for secure and tilt-free placing
	Teamwork and multitasking
	The individual on the job needs to know and understand how: SA6. to share work load with other setters as per capability and work load SA7. to deliver frame to next work process on time
B. Professional Skills	Reading design
	The individual on the job needs to know and understand how: SB1. to set stones as per design SB2. to spot difficulties with respect to practicality of design
	Using tools
	The individual on the job needs to know and understand how: SB3. to use the right hand tools for achieving secure setting as per design SB4. to use tools so that they do not damage jewellery frame or gemstones SB5. to use tools such as: hammer, tweezers, graver, scoop, wooden plates with lac, gas torches, table light, needles, burrs, files and soldering system SB6. to understand safety and hazards involved in using tools
	Reducing precious metal loss
	The user/individual on the job needs to know and understand: SB7. prescribed precious metal loss for the entire jewellery piece SB8. precious-metal loss applicable for setting SB9. how to reduce precious metal loss below the prescribed standards SB10. how to follow company's policies on collecting gold dust and fragments SB11. how to account in job sheet and return SB12. how to suggest improvements in order to reduce precious metal loss limits
	Reflective thinking
	The individual on the job needs to know and understand how: SB13. to improve work processes SB14. to work with good posture in a sitting position SB15. maintain clean work environment and organise tools for ease of use
	Critical thinking
	The individual on the job needs to know and understand how: SB16. to spot process disruptions and delays

G&J/N0803

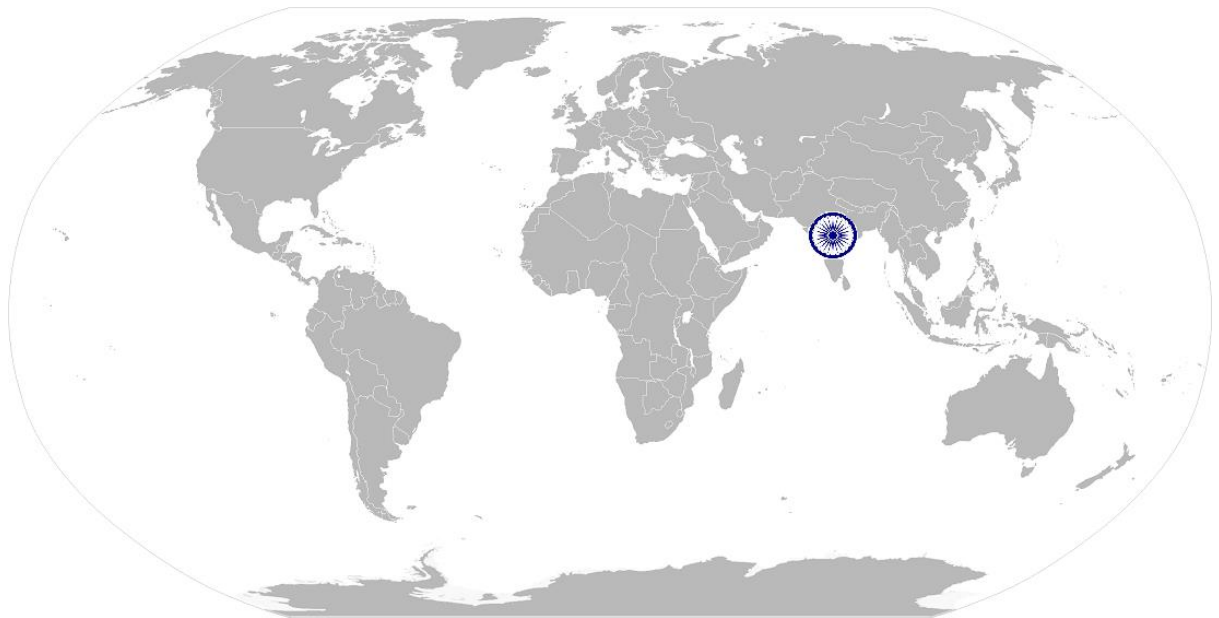
Set gemstones using Jadau technique and string gemstones

NOS Version Control

NOS Code	G&J/N0803		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	24/08/13
Industry Sub-sector	Handmade Gold and Gems-set Jewellery	Last reviewed on	13/08/14
		Next review date	12/08/15



National Occupational Standard



Overview

This unit is about and respecting intellectual property rights (IPR) of the company's products and designs and avoiding infringement on copyrights of others.

G&J/N9910

Maintain IPR and respect copyright

National Occupational Standard

Unit Code	G&J/N9910
Unit Title (Task)	Respect IPR of company as well as competitors
Description	This OS unit is about maintaining company's IPR and avoiding infringement on copyright of others
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Protect company's Intellectual Property Rights (IPR) Avoid infringement to copyright of other companies
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Respecting IPR	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. prevent leak of new designs to competitors by reporting on time</p> <p>PC2. spot any infringement of company's product or design patents</p> <p>PC3. report IPR violations observed in the market, to supervisor or company heads</p> <p>PC4. read copyright clause of the material published on the internet and any other printed material</p> <p>PC5. consult supervisor or senior management when in doubt about using publicly available information</p> <p>PC6. report any infringement observed in the company</p> <p>PC7. spot plagiarism and report</p> <p>PC8. understand rationale of patents and IPR</p> <p>PC9. avoid being involved in IPR violations</p>
Knowledge and Understanding (K)	
A. Organizational Context	<p>The individual on the job needs to know and understand:</p> <p>KA1. company's policies on IPR, plagiarism and order leaks</p> <p>KA2. company's patented products</p> <p>KA3. market trends and company's unique product range</p> <p>KA4. reporting structure</p>
B. Technical Knowledge	<p>The individual on the job needs to know and understand:</p> <p>KB1. basics of patents and IPR laws</p> <p>KB2. how IPR protection is important for competitiveness of a company</p>
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Communication skills
	<p>The user/individual on the job needs to know and understand how:</p> <p>SA1. to effectively communicate any observed IPR violations or design leaks</p>
B. Professional Skills	Decision making
	<p>The user/individual on the job needs to know and understand when and how:</p> <p>SB1. to report sources of IPR violations</p>

G&J/N9910

Maintain IPR and respect copyright

	Reflective thinking
	The user/individual on the job needs to know and understand how: SB2. to learn from past mistakes and report IPR violations on time
	Critical thinking
	The user/individual on the job needs to know and understand how: SB3. to spot signs of violations and alert authorities in time

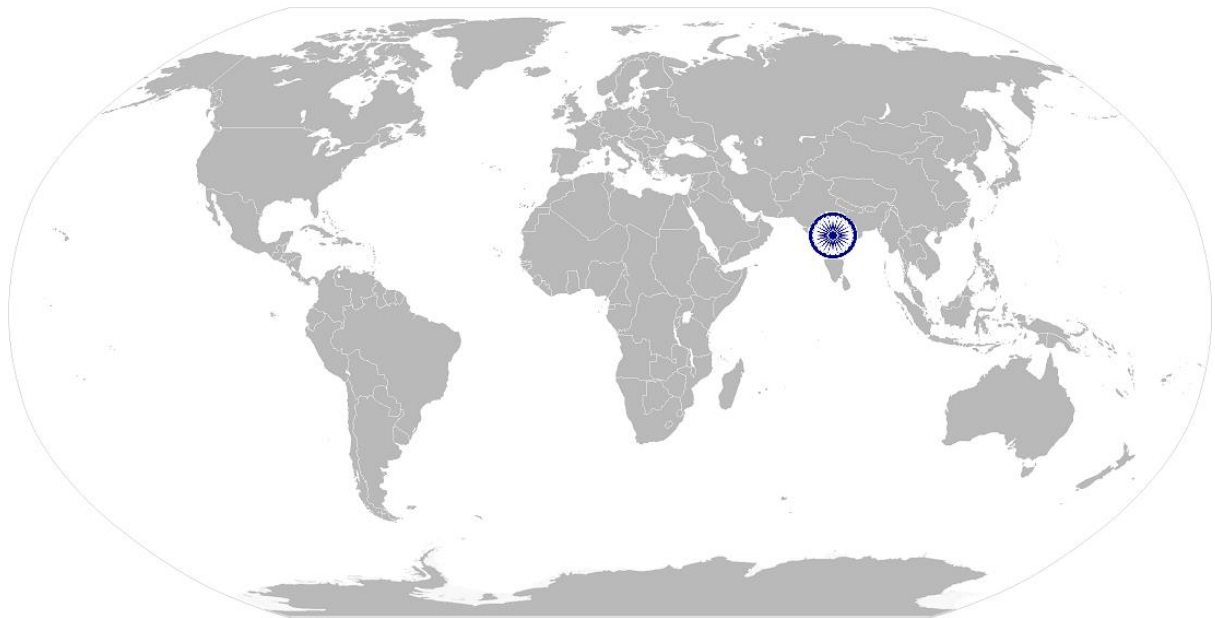
G&J/N9910

Maintain IPR and respect copyright

NOS Version Control

NOS Code	G&J/N9910		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	24/08/13
Industry Sub-sector	Handmade Gold and Gems-set Jewellery	Last reviewed on	13/08/14
		Next review date	12/08/15

National Occupational Standard



Overview

This unit is about the artisan or bench worker's level of communication with colleagues or clients. It determines the goldsmith's ability to work as a team member, share work and multi-task in order to achieve the required deliverables on schedule.

G&J/N9912

Coordinate with co-workers

Unit Code	G&J/N9912
Unit Title (Task)	Interact with colleagues and seniors
Description	This OS unit is about communicating with colleagues and seniors in order to maintain smooth and hazards free work flow
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Interact with supervisor Interact with colleagues within and outside the department
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Interaction with supervisor	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. receive and understand work instructions from reporting superior</p> <p>PC2. communicate to reporting supervisor about process flow improvements, product defects received from previous process, repairs and maintenance of tools and machinery as required</p> <p>PC3. communicate any potential hazards or expected process disruptions</p> <p>PC4. handover completed work to supervisor</p> <p>PC5. understand the work output requirements</p> <p>PC6. comply with company policy and rule</p> <p>PC7. deliver quality work on time as required by reporting any anticipated reasons for delays</p>
Interactions with colleagues and other departments	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC8. work as a team with colleagues and share work as per their or own work load and skills</p> <p>PC9. work with colleagues of other departments such as frame making or component making or polishing or setting or stores</p> <p>PC10. communicate and discuss work flow related difficulties in order to find solutions with mutual agreement</p> <p>PC11. receive feedback from QC and rework in order to complete work on time</p> <p>PC12. put team over individual goals</p> <p>PC13. resolve conflicts and multi-task</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The individual on the job needs to know and understand:</p> <p>KA1. company's policies on personnel management</p> <p>KA2. work flow involved in company's jewellery manufacturing process</p> <p>KA3. importance of the individual's role in the workflow</p> <p>KA4. reporting structure</p>

G&J/N9912

Coordinate with co-workers

B. Technical Knowledge	<p>The individual on the job needs to know and understand:</p> <p>KB1. how to communicate effectively</p> <p>KB2. how to build team coordination</p>
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	<p>Teamwork and some multitasking</p> <p>The individual on the job needs to know and understand how:</p> <p>SA1. to share work load as required</p> <p>SA2. to deliver product to next work process on time</p>
B. Professional Skills	<p>Decision making</p> <p>The individual on the job needs to know and understand:</p> <p>SB1. how to report potential areas of disruptions to work process</p> <p>SB2. when to report to supervisor and when to deal with a colleague depending on the type of concern</p> <p>Reflective thinking</p> <p>The individual on the job needs to know and understand:</p> <p>SB5. how to improve work process</p> <p>Critical thinking</p> <p>The individual on the job needs to know and understand:</p> <p>SB6. how to spot process disruptions and delays</p>

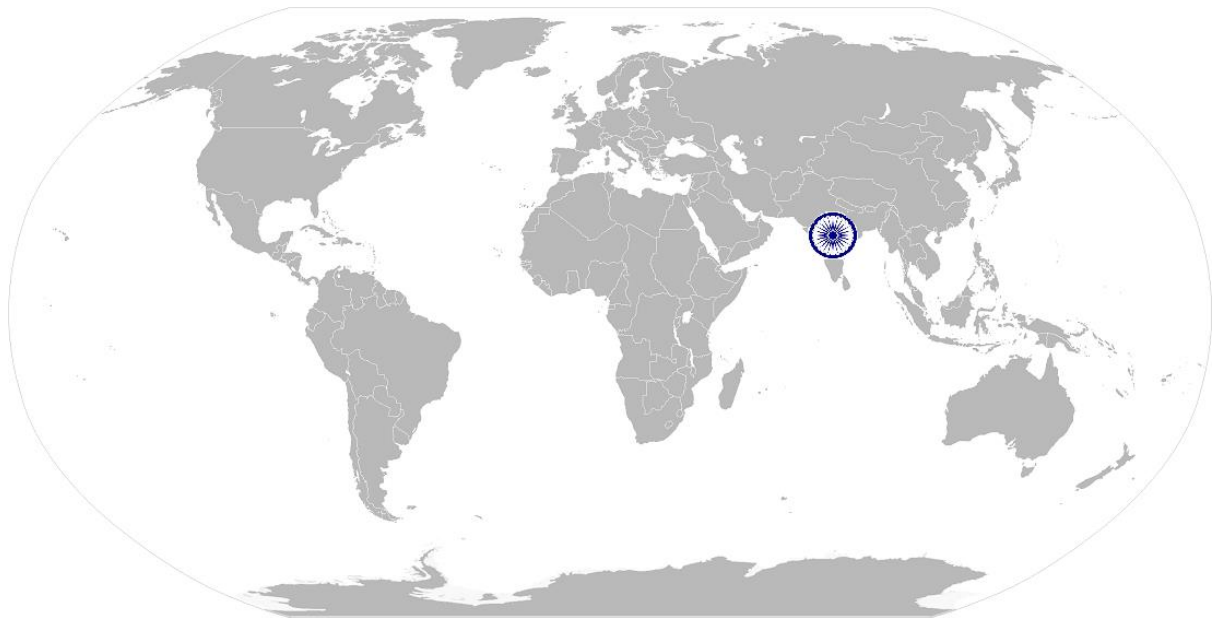
G&J/N9912

Coordinate with co-workers

NOS Version Control

NOS Code	G&J/N9912		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	24/08/13
Industry Sub-sector	Handmade Gold and Gems-set Jewellery	Last reviewed on	13/08/14
		Next review date	12/08/15

National Occupational Standard



Overview

This unit is about the artisan or bench worker's commitment towards reporting potential hazards and containing accidents in order to make the work environment safe for self and colleagues.

G&J/N9914

Maintain safe work environment

National Occupational Standard

Unit Code	G&J/N9914
Unit Title (Task)	Work towards having a safe work environment
Description	This OS unit is about being aware of and communicating potential hazards and dangers of accidents on the job
Scope	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> Understand potential sources of accidents Communicate to reporting supervisor about hazards in time
Performance Criteria(PC) w.r.t. the Scope	
Element	Performance Criteria
Understanding of potential sources of accidents and communicating	<p>To be competent, the user/individual on the job must be able to:</p> <p>PC1. avoid accidents related to use of potentially dangerous chemicals, gas torches, sharp tools and hazards from machines</p> <p>PC2. suggest process flow improvements to reduce anticipated or repetitive hazards</p> <p>PC3. report mishandling of tools, machines or hazardous materials</p> <p>PC4. identify electrical problems that could result in accident</p> <p>PC5. spot and report potential hazards on time</p> <p>PC6. follow company policy and rules regarding hazardous materials</p> <p>PC7. deliver quality work on time as required by reporting any anticipated reasons for delays</p>
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	<p>The individual on the job needs to know and understand:</p> <p>KA1. company's policies on handling: harmful chemicals and sharp tools, safety and hazards of machines, fire safety and, disposal of harmful chemicals and materials</p> <p>KA2. work flow involved in company's jewellery manufacturing process</p> <p>KA3. importance of the individual's role in the workflow</p> <p>KA4. reporting structure</p>
B. Technical Knowledge	<p>The individual on the job needs to know and understand:</p> <p>KB1. how different chemicals react and what could be the danger from them</p> <p>KB2. how to use machines and tools without causing bodily harm</p> <p>KB3. fire safety education</p> <p>KB4. disposal of hazardous chemicals, tools and materials by following prescribed environmental norms or as per company policy</p>
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	Communication skills
	<p>The individual on the job needs to know and understand how:</p> <p>SA1. to effectively communicate the danger</p>

G&J/N9914

Maintain safe work environment

B. Professional Skills	Decision making
	The individual on the job needs to know and understand: SB1. importance of reporting potential sources of danger SB2. appropriate actions to be taken in the event of an accident SB3. process for disposing of hazardous materials, safely and following environmental guidelines
	Reflective thinking
	The individual on the job needs to know and understand how: SB4. to learn from past mistakes regarding use of hazardous machines or chemicals or gas torches
	Critical thinking
	The individual on the job needs to know and understand: SB5. how to spot danger SB6. procedures to follow in the event of a fire or other hazard

G&J/N9914

Maintain safe work environment

NOS Version Control

NOS Code	G&J/N9914		
Credits(NSQF) [OPTIONAL]	TBD	Version number	1.0
Industry	Gems & Jewellery	Drafted on	24/08/13
Industry Sub-sector	Handmade Gold and Gems-set Jewellery	Last reviewed on	13/08/14
		Next review date	12/08/15

Definitions

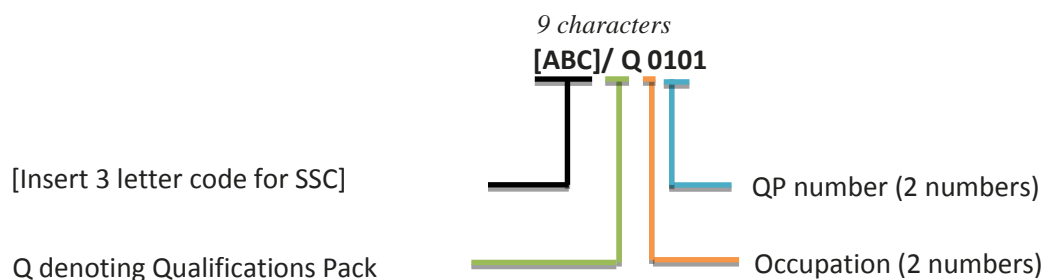
Keywords /Terms	Description
Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or an area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Sub-function	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the knowledge and understanding they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria	Performance criteria are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (OS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding	Knowledge and understanding are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish

	specific designated responsibilities.
Core Skills/ Generic Skills	Core skills or generic skills are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Keywords /Terms	Description
IPR	Intellectual Property Rights
NOS	National Occupational Standard(s)
NVQF	National Vocational Qualifications Framework
NSQF	National Qualifications Framework
NVEQF	National Vocational Education Qualifications Framework
QP	Qualifications Pack

Annexure

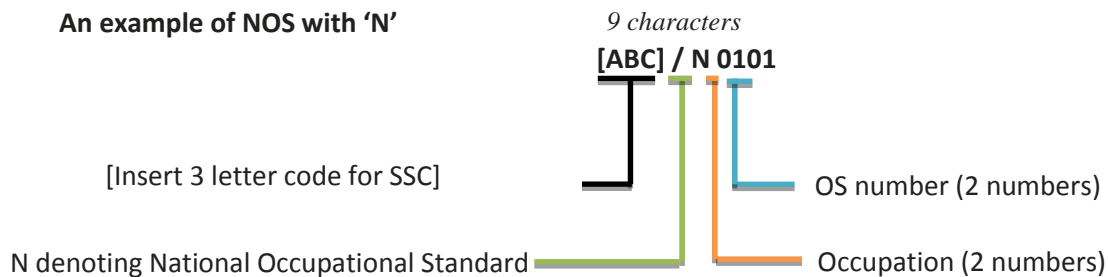
Nomenclature for QP and NOS

Qualifications Pack



Occupational Standard

An example of NOS with 'N'



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The following acronyms/codes have been used in the nomenclature above:

Sub-sector	Range of Occupation numbers
Handmade gold and gems-set jewellery	01-20
Cast and diamond-set jewellery	21-40
Diamond processing	41-60
Gemstone processing	61-80
Jewellery retailing	81-98

Sequence	Description	Example
Three letters	Industry name	G&J
Slash	/	/
Next letter	Whether QP or NOS	Q
Next two numbers	Occupation code	07
Next two numbers	OS number	02

CRITERIA FOR ASSESSMENT OF TRAINEES				
Job Role		Goldsmith_Kundan-Jadau Jewellery		
Qualification Pack		Goldsmith_Kundan-Jadau Jewellery		
Sector Skill Council		GEMS & JEWELLERY		
To pass the Assessment, a candidate needs to score 50% in Theory and 70% in Practical				
Assessment Strategy			Marks Allocation	
NOS	Elements	Performance Criteria	Theory	Practical
1. G&J/N0904 Make components, frame, Kundan (24K gold) and Silver foils	Making components and frame	PC1.make components of required dimensions such as size and thickness	1	8
		PC2.make components of required finish and evenness	1	8
		PC3.draw or roll metal without overdrawing or splitting or cracking	0	7
		PC4.anneal the wire, strips and sheets for required malleability for the thickness required	1	7
		PC5.limit precious-metal loss of damaged metal rod or wire	1	7
		PC6.accurately link the ends to form even rings, collets or chains of required dimensions	1	7
		PC7.link, solder and file the components into frame of required finish and utility	0	5
		PC8.achieve required flexibility, utility and symmetry of frame as per design	1	4
		PC9.meet productivity target	1	4
		PC10.work with minimum hazards and accidents	1	4
	Handling problems	PC11.deliver complete frames in time by reporting well in advance, any problems faced or anticipated	0	2
2. G&J/N0905 Engrave pattern and apply enamel	Engraving and enamel painting	PC1.achieve symmetry of design to be engraved or etched for applying enamel	0	2
		PC2.achieve smooth finish of enamel paint as per design	0	1
		PC3.ensure no overflow or excess enamel at the edges of the painted area	0	1
		PC4.ensure that enamel prepared with no impurities	0	1
		PC5.ensure no chipping or cracking enamel	1	0
		PC6.prepare surface of thickness and evenness for long term enamel adhesion	1	0
		PC7.fire at right temperature for the enamel to flow and set	1	0
		PC8.achieve colour, vibrancy and gloss as per design	1	0
		PC9.achieve hazard-free output after using acids and chemicals	0	1

CRITERIA FOR ASSESSMENT OF TRAINEES				
	Handling problems	PC10.deliver enamelled frame on time by reporting problems faced or anticipated well in advance	0	1
		Sub Total	12	70
3. G&J/N0803 Set gemstones using Jadau technique and string	Jadau setting	PC1.achieve required shine for polki setting	1	0
		PC2.achieve flawless setting as per design requirement	1	0
		PC3.achieve even colour of stones set, i.e., no discolouration or breakage during setting	1	0
		PC4.set stones securely	1	0
		PC5.stringing is even and secure	1	0
		PC6.avoid damage to the rest of the frame during the process of setting	1	0
		PC7.achieve productivity as per target	0	0
		PC8.complete work with minimum hazards and accidents	0	0
	Problems handling	PC9.deliver stones set jewellery in time by reporting problems faced or anticipated well in advance	0	0
		Sub Total	6	0
4. G&J/N9910 Maintain IPR and respect copyright	Respecting IPR	PC1.spot plagiarism and report	1	0
		PC2.understand rationale of patents and IPR	0	0
		PC3.avoid being involved in IPR violations	0	0
		Sub Total	1	0
5. G&J/N9912 Coordinate with others	Interaction with supervisor	PC1. Understand the work output requirements	0	2
		PC2. Understand company policy and rule	0	2
		PC3. Deliver quality work on time as required by reporting any anticipated reasons for delays	1	1
	Interactions with colleagues and other departments	PC4. Put team over individual goals	0	1
		PC5. Conflicts resolution and multi-tasking	0	0
		Sub Total	1	6
6. G&J/N9914 Maintain safe work environment	Understanding of potential sources of accidents and communicating	PC1. Spot and report potential hazards on time	0	2
		PC2. Follow company policy and rules regarding use of hazardous materials	0	1
		PC3. Deliver quality work on time as required by reporting any anticipated reasons for delays	0	1
		Sub Total	0	4
		Total	20	80

