

# QUALIFICATIONS PACK - OCCUPATIONAL STANDARDS FOR CAPITAL GOODS INDUSTRY

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### 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: Stud Welding Operator

**SECTOR:** CAPITAL GOODS

**SUB-SECTOR:**

- |                                  |                                 |
|----------------------------------|---------------------------------|
| Machine Tools,                   | Process Plant Machinery,        |
| Plastic Manufacturing Machinery, | Electrical and Power Machinery, |
| Textile Manufacturing Machinery, | Light Engineering Goods         |

**OCCUPATION:** Welding and Cutting

**REFERENCE ID:** CSC/ Q 0210

**ALIGNED TO:** NCO-2004/NIL

**Stud Welding Operator:** Perform stud welding and independently carry out stud weld operations for welding joints as per welding procedure specification (WPS).

**Brief Job Description:** Perform stud welding to secure studs and pins to metal surfaces to attach materials such as boilers surfaces, insulation and refractories. This can be done through manual processes or with machines in downward position. Set-up and prepare for operations interpreting the right information from the specification documents.

**Personal Attributes:** Basic communication, numerical and computational abilities. Openness to learning, ability to plan and organize own work and identify and solve problems in the course of working. Understanding the need to take initiative and manage self and work to improve efficiency and effectiveness.

<b>Job Details</b>	<b>Qualifications Pack Code</b>	<b>CSC/ Q 0210</b>		
	<b>Job Role</b>	<b>Stud Welding Operator</b>		
	<b>Credits (NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
	<b>Sector</b>	<b>CAPITAL GOODS</b>	<b>Drafted on</b>	<b>10/04/14</b>
	<b>Sub-sector</b>	<ol style="list-style-type: none"> <li>1. Machine Tools</li> <li>2. Plastic Manufacturing Machinery</li> <li>3. Textile Manufacturing Machinery</li> <li>4. Process Plant Machinery</li> <li>5. Electrical and Power Machinery</li> <li>6. Light Engineering Goods</li> </ol>	<b>Last reviewed on</b>	<b>18/03/15</b>
	<b>Occupation</b>	<b>WELDING AND CUTTING</b>	<b>Next review date</b>	<b>30/08/16</b>
	<b>NSQC Clearance on</b>	<b>19/05/2015</b>		

Job Role	Stud Welding Operator
Role Description	Perform operations of stud welding and independently carry out stud weld operations for welding joints as per welding procedure specification (WPS).
NSQF level	4
Minimum Educational Qualifications	10 <sup>th</sup> standard
Maximum Educational Qualifications	N.A.
Training (Suggested but not mandatory)	No Previous Training Required
Minimum Job Entry Age	18 Years Old
Experience	No Previous Experience Required
Applicable National Occupational Standards (NOS)	<p><b>Compulsory:</b></p> <ol style="list-style-type: none"> <li><a href="#">CSC/ N 0210 (Welding stud joints using stud welding equipment/machines)</a></li> <li><a href="#">CSC/ N 1335 (Use basic health and safety practices at the workplace)</a></li> <li><a href="#">CSC/ N 1336 (Work effectively with others)</a></li> </ol> <p><b>Optional:</b> N.A.</p>
Performance Criteria	As described in the relevant OS units

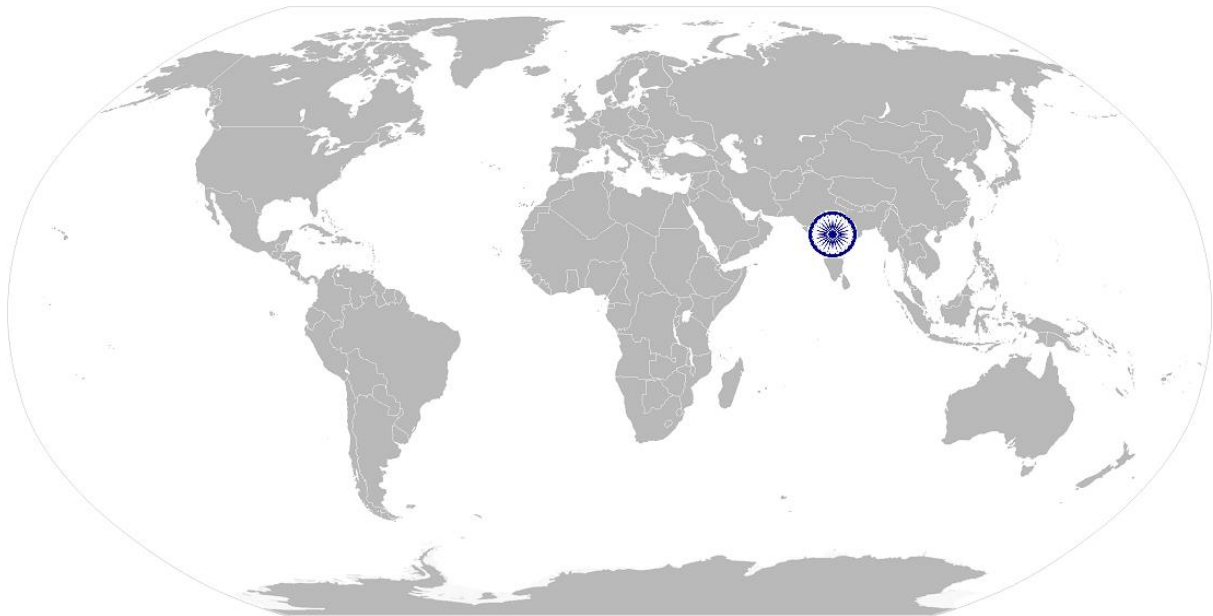
Definitions	Keywords /Terms	Description
	Core Skills/Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the NOS, these include communication related skills that are applicable to most job roles.
	Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or 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 NOS.
	Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
	Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
	National Occupational Standards (NOS)	NOS are Occupational Standards which apply uniquely in the Indian context
	Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
	Organisational Context	Organisational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
	Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
	Qualifications Pack(QP)	Qualifications Pack comprises the set of NOS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
	Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
	Scope	Scope is the 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 the quality of performance required.
	Sector	Sector is a conglomeration of different business operations having similar businesses 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.
	Sub-functions	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
	Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
	Unit Code	Unit Code is a unique identifier for a NOS unit, which can be denoted with an 'N'
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.	
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.	

Acronyms	Keywords /Terms	Description
	NDT	Non-Destructive Testing
	DT	Destructive Testing
	CO2	Carbon dioxide
	CPR	Cardiac Pulmonary Resuscitation
	WPS	Welding Procedure Speciation
	PPE	Personal Protective Equipment
	CC	Constant Current

CSC/ N 0210: Welding stud joints using stud welding equipment/machines

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# National Occupational Standard



## Overview

This unit covers operations for performing stud welding to secure studs and pins to metal surfaces to attach materials such as boilers surfaces, insulation and refractories. The person would be able to independently carry out stud weld operations for welding studs and pins as per welding procedure specifications (WPS).

## CSC/ N 0210: Welding stud joints using stud welding equipment/machines

National Occupational Standard	<b>Unit Code</b>	CSC/ N 0210
	<b>Unit Title (Task)</b>	Welding stud joints using stud welding equipment/machines
	<b>Description</b>	<p>This unit is about performing stud welding to secure studs and pins to metal surfaces to attach materials such as boilers, surfaces, insulation and refractories. This can be done through manual processes or with machines in downward position.</p> <p>The candidate will be expected to work with a minimum of supervision, taking personal responsibility for own actions, quality and accuracy of the work.</p>
	<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Working safely</li> <li>• Preparing for welding operations</li> <li>• Carrying out welding operations</li> <li>• Testing of output</li> <li>• Dealing with contingencies</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>		
<b>Element</b>	<b>Performance Criteria</b>	
<b>Working safely</b>	<p>The user/individual on the job should be able to:</p> <p>PC1. work safely at all times, complying with health and safety and other relevant regulations and guidelines</p> <p>PC2. stop machine/equipment in case of emergencies and start when safe using correct procedure</p> <p>PC3. operate machine/equipment safety devices in line with set procedures</p> <p>PC4. stop the machine/equipment in a timely and safe manner during an emergency</p>	
<b>Preparing for welding operations</b>	<p>The user/individual on the job should be able to:</p> <p>PC5. interpret stud welding information from welding procedure data sheets specifications</p> <p>PC6. set up stud welding machine/equipment for operations as per requirement</p> <p>PC7. ensure portable equipment power leads are undamaged and securely connected</p> <p>PC8. check if all machinery and equipment is calibrated and approved for use</p> <p>PC9. check if base metal plates are approved for stud welding process</p> <p>PC10. check if all equipment mechanical and electrical systems operate correctly</p> <p>PC11. identify maintenance requirements for various equipment/machine parts</p> <p>PC12. ensure welding material surface is appropriately prepared with required surface pre-treatment</p> <p><b>Preparation of surface:</b> clean; rust free; free from paint, oil, grease, moisture and other contaminants; use abrasives for surface preparation (abrasive wheel, wire brush or wheel, drill burr or end mill)</p> <p>PC13. match consumables to welding process</p> <p>PC14. identify different types and sizes of common fasteners and ferrules</p> <p>PC15. remove damaged and defective materials, equipment and consumables from operations</p>	

### CSC/ N 0210: Welding stud joints using stud welding equipment/machines

	<p>PC16. select required amount of materials  PC17. set up, check, adjust and operate stud welding machines  PC18. set up the equipment parameters in accordance with instructions and the welding procedure specifications  <b>Equipment parameters:</b> cable length size to be equal and return clamp as close to weld point as possible; gun capacity (stud diameter); polarity; stud extension; amperage; time setting; plunge; lift  PC19. check supplies of components and consumables are adequate and correctly prepared  PC20. check that the parent material, components, consumables and joint preparation comply with specifications  PC21. produce test specimen by welding stud to approved specimen plates  PC22. weld position, nature of base metal and stud surfaces, current, and time shall be recorded during specimen testing  PC23. test specimen through approved tests and record results  PC24. adjust parameters as per test results to achieve desired output including plunge, lift, time and current  PC25. confirm that the machine is set up and operating correctly, ready for the joining operations to be carried out</p>
<p><b>Carrying out welding operations</b></p>	<p>The user/individual on the job should be able to:  PC26. follow the relevant joining procedure and work instructions  PC27. carry out and monitor the machine/equipment operations in accordance with specifications and job instructions  PC28. select positions of stud placement by looking at specifications, marked layout, drawing layout or provided templates  PC29. monitor the process operation and make adjustments to parameters, in order to produce welded components covering different components and different material thicknesses  PC30. level and square gun to base metal before starting the weld  PC31. stud weld threaded and unthreaded fasteners accurately  PC32. stud weld fasteners of different diameters in downward position</p>
<p><b>Testing of output</b></p>	<p>The user/individual on the job should be able to:  PC33. produce welded components which meet all the required quality parameters  PC34. ensure stud welds are correctly pitched out and located  PC35. meet the required dimensional accuracy within specified tolerances  PC36. achieve the rate of output as specified  PC37. support carrying out of destructive and non-destructive tests  <b>Non-destructive tests (NDT):</b> visual inspection; fillet formation, fillet height, flow or bend of fillet into base material; after-weld length; 'wetting' – flash around the stud with no undercut  <b>Destructive tests (DT):</b> Mechanical (tensile test, bend test, torque test)</p>



## CSC/ N 0210: Welding stud joints using stud welding equipment/machines

<p><b>Dealing with contingencies</b></p>	<p>The user/individual on the job should be able to:</p> <p>PC38. detect equipment malfunctions and deal with them appropriately</p> <p>PC39. deal promptly and effectively with problems within own control and seek timely and appropriate assistance from relevant personnel as per organizational procedure</p> <p>PC40. shut down the equipment to a safe condition on conclusion of welding activities</p>
<p><b>Knowledge and Understanding (K)</b></p>	
<p><b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. relevant legislation, standards, policies, and procedures followed in the company</p> <p>KA2. key purpose of the organization</p> <p>KA3. department structure and hierarchy protocols</p> <p>KA4. work flow and own role in the workflow</p> <p>KA5. dependencies and interdependencies in the workflow</p> <p>KA6. support functions and types of support available for incumbents in this role</p>
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. safe working practices, precautions and procedures to be observed when operating stud welding equipment <b>Safety precautions:</b> protection from live and other electrical components, including insulation, proper earthing, proper loading, etc., using machine guards and safety devices, safety from sparks, adequate lighting, appropriate personal protective equipment (PPE): suitable aprons, welding gloves (hole free, dry and insulating), safety boots (hole free), correctly fitting overalls, suitable eye shields/goggles; protection of self and others from the effects of the welding arc; fume extraction/control measures; safety measures for elevated and trench working</p> <p>KB2. hazards associated with stud welding equipment and how they can be minimized</p> <p>KB3. basic principles of stud welding <b>Basic principles:</b> types of machines; heat and pressure to form a weld; heating effect of welding current; welding and pressure cycles; machine functions; principal features of the welded joint</p> <p>KB4. terminology used in welding</p> <p>KB5. key components and features of the equipment used <b>Key components:</b> constant current (CC) power source, stud welding gun, weld cable with stud gun control card, control cable, controls for adjusting to diameter, work/ground cable with “c” clamp type connector</p> <p>KB6. types and thicknesses of base metals for welding purposes</p> <p>KB7. power sources, types and implications for welding</p> <p>KB8. types and sizes of studs and pins used in stud welding</p> <p>KB9. types, components and operation of stud guns for welding <b>Types of guns:</b> portable, hand-held pistol grip configuration; fixed, production gun, mounted within an automatic fastener loading system <b>Components of gun:</b> leg screw, chuck adaptor, set screw, ferrule, ferrule grip, foot screws, foot, legs, chuck, plunge</p>

### CSC/ N 0210: Welding stud joints using stud welding equipment/machines

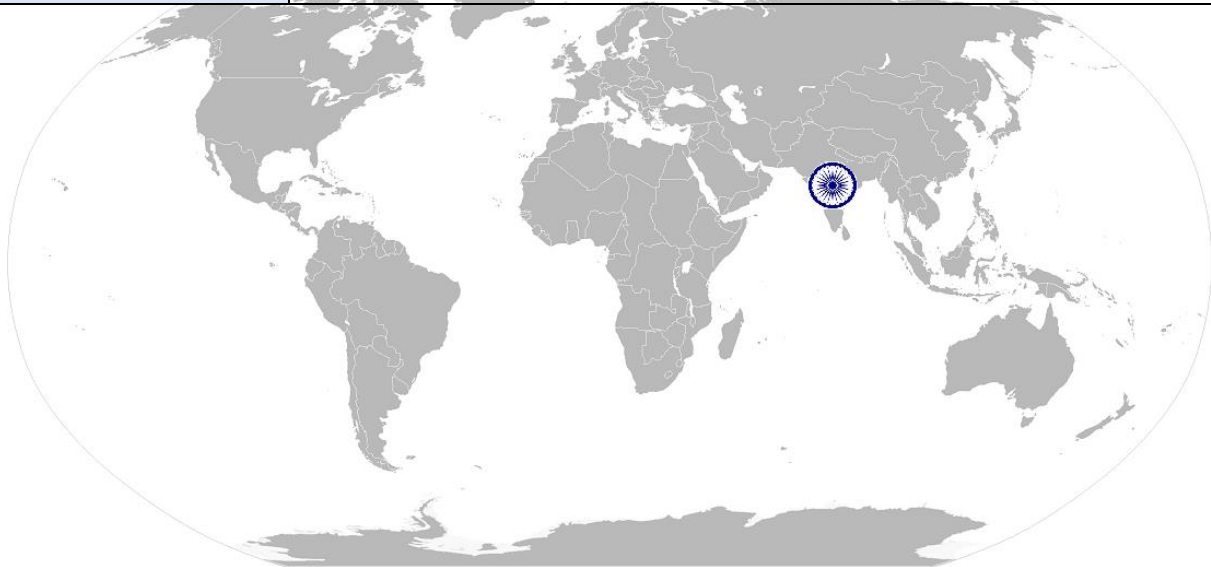
	<p>KB10. types and sizes of ferrules used in stud welding</p> <p>KB11. applications of stud welding such as duct work, boilers and bridges</p> <p>KB12. how to test stud welding equipment set up for readiness</p> <p>KB13. how to adjust stud welding machine as required for achieving specified output</p> <p>KB14. importance of levelling and squaring gun to base metal while stud welding</p> <p>KB15. ability to detect stud welding equipment malfunction</p> <p>KB16. importance of holding the gun steady during the weld</p> <p>KB17. importance of not actuating the trigger twice during a stud weld</p> <p>KB18. importance of correct plunge and lift in stud welding</p> <p>KB19. show variation in the parameters influence weld features, quality and output</p> <p>KB20. how to extract the information required from the drawings and welding procedure specifications</p> <p>KB21. operation of the stud welding machine controls and their function</p> <p>KB22. fine tuning parameters in stud welding operations to maintain quality; recognition of problems and action to be taken</p> <p>KB23. problems that can occur with the welding activities; materials and weld defects and how to rectify them or deal with them appropriately <b>Problems:</b> misaligned weld, poor weld (missing in large measure), uneven weld, after weld height of the stud not as per requirement, hot weld, cold weld, hang up weld</p> <p>KB24. importance of self-inspection of completed weld work</p> <p>KB25. organizational quality systems (standards to be achieved; production records to be kept) used as applicable to the job requirements</p> <p>KB26. extent of their own authority and whom to seek help from for problems that cannot be resolved by self</p> <p>KB27. reporting lines and procedures, line supervision and technical experts</p> <p>KB28. types of fire extinguishers and their suitable uses in case of welding related fires</p>
<b>Skills (S) [Optional]</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Communication</b>
	The user/ individual on the job needs to know and understand how to: <ul style="list-style-type: none"> <li>SA1. read and interpret information correctly from various job specification documents, manuals, health and safety instructions, memos, etc. applicable to the job in English and/or local language</li> <li>SA2. fill up appropriate technical forms, process charts, activity logs as per organizational format in English and/or local language</li> <li>SA3. convey and share technical information clearly using appropriate language</li> <li>SA4. check and clarify task-related information</li> <li>SA5. liaise with appropriate authorities using correct protocol</li> <li>SA6. communicate with people in respectful form and manner in line with organizational protocol</li> </ul>
	<b>Numerical and computational skills</b>
	The user/individual on the job needs to know and understand how to: <ul style="list-style-type: none"> <li>SA7. undertake numerical operations, geometry and calculations/ formulae (including addition, subtraction, multiplication, division, fractions and</li> </ul>

**CSC/ N 0210: Welding stud joints using stud welding equipment/machines**

	<p>decimals, percentages and proportions, simple ratios and averages)</p> <p>SA8. use appropriate measuring techniques</p> <p>SA9. use and convert British and metric systems of measurements</p> <p>SA10. apply appropriate degree of accuracy to express numbers</p> <p>SA11. calculate tolerance in terms of limits of size</p> <p>SA12. check measurements, angles, orientation and slopes</p> <p>SA13. types of reference lines such as tangent lines, datum lines, centre lines and work points</p> <p>SA14. check square of material using corner-to-corner dimensions and triangulation (3-4-5) method</p> <p>SA15. select and use tools and equipment such as measuring tapes, levels, squares, protractors and dividers</p> <p>SA16. ability to check dimensions of components-</p> <p>SA17. calculate the value of angles in a triangle</p> <p>SA18. interpret straight line graphs using given data</p>
	<p><b>Learning</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SA19. participate in on-the-job and other learning, training and development interventions and assessments</p> <p>SA20. clarify task related information with appropriate personnel or technical adviser</p> <p>SA21. seek to improve and modify own work practices</p> <p>SA22. maintain current knowledge of application standards, legislation, codes of practice and product/process developments</p>
<p><b>B. Professional Skills</b></p>	<p><b>Problem Solving</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB1. identify problems with work planning, procedures, output and behavior and their implications</p> <p>SB2. prioritize and plan for problem solving</p> <p>SB3. communicate problems appropriately to others</p> <p>SB4. identify sources of information and support for problem solving</p> <p>SB5. seek assistance and support from other sources to solve problems</p> <p>SB6. identify effective resolution techniques</p> <p>SB7. select and apply resolution techniques</p> <p>SB8. seek evidence for problem resolution</p> <p><b>Plan and Organize</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB9. plan, prioritize and sequence work operations as per job requirements</p> <p>SB10. organize and analyze information relevant to work</p> <p>SB11. basic concepts of shop-floor work productivity including waste reduction, efficient material usage and optimization of time</p> <p><b>Initiative and Enterprise</b></p> <p>The user/individual on the job needs to know and understand how to:</p> <p>SB12. undertake and express new ideas and initiatives to others</p> <p>SB13. modify work plan to overcome unforeseen difficulties or developments that</p>

### CSC/ N 0210: Welding stud joints using stud welding equipment/machines

	<p>occur as work progresses</p> <p>SB14. participate in improvement procedures including process, quality and internal/external customer/supplier relationships</p> <p>SB15. one's competencies in new and different situations and contexts to achieve more</p>
	<p><b>Self-Management</b></p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB16. exercise restraint while expressing dissent and during conflict situations</p> <p>SB17. avoid and manage distractions to be disciplined at work</p> <p>SB18. manage own time for achieving better results</p>
	<p><b>Teamwork</b></p>
	<p>The user/individual on the job needs to know and understand how to:</p> <p>SB19. work in a team in order to achieve better results</p> <p>SB20. identify and clarify work roles within a team</p> <p>SB21. communicate and cooperate with others in the team for better results</p> <p>SB22. seek assistance from fellow team members</p>



## CSC/ N 0210: Welding stud joints using stud welding equipment/machines

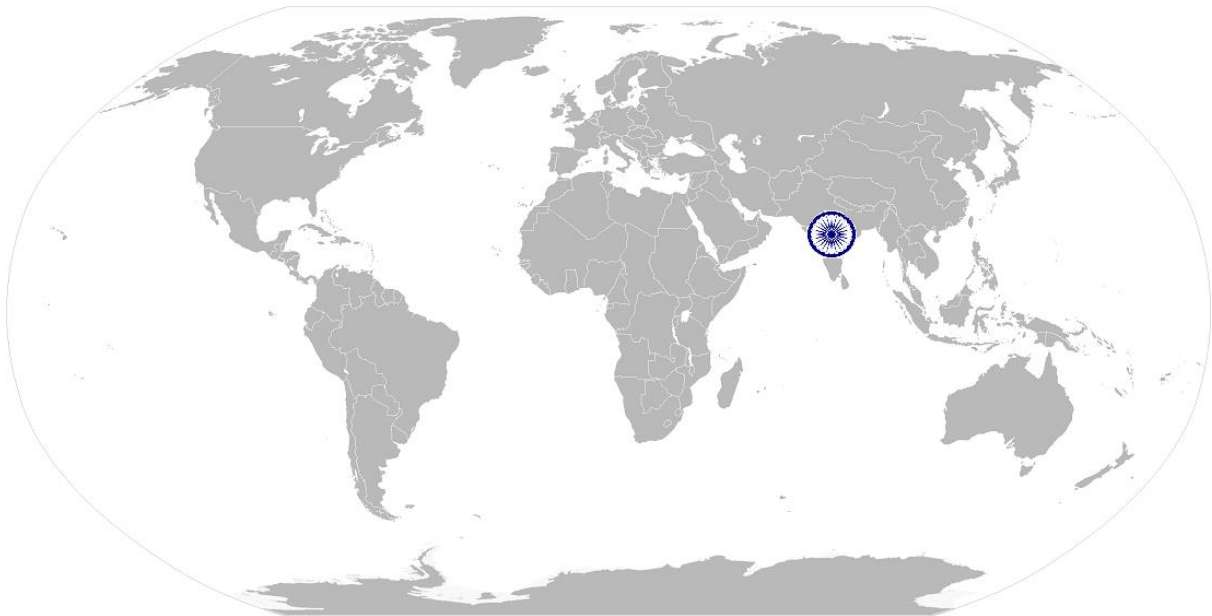
### NOS Version Control

<b>NOS Code</b>	<b>CSC/ N 0210</b>		
<b>Credits(NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Industry</b>	<b>Capital Goods</b>	<b>Drafted on</b>	<b>10/04/14</b>
<b>Industry Sub-sector</b>	<ol style="list-style-type: none"> <li>1. Machine Tools</li> <li>2. Plastic Manufacturing Machinery</li> <li>3. Textile Manufacturing Machinery</li> <li>4. Process Plant Machinery</li> <li>5. Electrical and Power Machinery</li> <li>6. Light Engineering Goods</li> </ol>	<b>Last reviewed on</b>	<b>18/03/15</b>
<b>Occupation</b>	<b>Welding and Cutting</b>	<b>Next review date</b>	<b>30/08/16</b>

**CSC/ N 1335: Use basic health and safety practices at the workplace**

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# National Occupational Standard



## Overview

**This unit covers health, safety and security at the workplace. This includes procedures and practices that candidates need to follow to help maintain a healthy, safe and secure work environment.**

**CSC/ N 1335: Use basic health and safety practices at the workplace**

National Occupational Standard	<b>Unit Code</b>	<b>CSC / N 1335</b>
	<b>Unit Title (Task)</b>	<b>Use basic health and safety practices at the workplace</b>
	<b>Description</b>	<p>This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace. It covers responsibilities towards self, others, assets and the environment.</p> <p>It includes understanding of risks and hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies, etc.</p> <p>It covers knowledge of fire safety, common first aid applications, safe practices and emergency procedures.</p>
	<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>• Health and safety</li> <li>• Fire safety</li> <li>• Emergencies, rescue and first-aid procedures</li> </ul>
<b>Performance Criteria(PC) w.r.t. the Scope</b>		
<b>Element</b>	<b>Performance Criteria</b>	
<b>Health and safety</b>	<p>The user/individual on the job should be able to:</p> <p>PC1. use protective clothing/equipment for specific tasks and work conditions</p> <p><b>Protective clothing:</b> leather or asbestos gloves, flame proof aprons, flame proof overalls buttoned to neck, cuffless (without folds), trousers, reinforced footwear, helmets/hard hats, cap and shoulder covers, ear defenders/plugs, safety boots, knee pads, particle masks, glasses/goggles/visors</p> <p><b>Equipment:</b> hand shields, machine guards, residual current devices, shields, dust sheets, respirator</p> <p>PC2. state the name and location of people responsible for health and safety in the workplace</p> <p>PC3. state the names and location of documents that refer to health and safety in the workplace</p> <p>PC4. identify job-site hazardous work and state possible causes of risk or accident in the workplace</p> <p><b>Hazards:</b> sharp edged and heavy tools; heated metals; oxyfuel and gas cylinders; welding radiation; hazardous surfaces(sharp, slippery, uneven, chipped, broken, etc.); hazardous substances(chemicals, gas, oxy-fuel, fumes, dust, etc.); physical hazards(working at heights, large and heavy objects and machines, sharp and piercing objects, tolls and machines, intense light, load noise, obstructions in corridors, by doors, blind turns, noise, over stacked shelves and packages, etc.) electrical hazards (power supply and points, loose and naked cables and wires, electrical machines and appliances, etc.)</p>	

**CSC/ N 1335: Use basic health and safety practices at the workplace**

	<p><b>Possible causes of risk and accident:</b> physical actions; reading; listening to and giving instructions; inattention; sickness and incapacity (such as drunkenness); health hazards (such as untreated injuries and contagious illness)</p> <p>PC5. carry out safe working practices while dealing with hazards to ensure the safety of self and others</p> <p><b>Safe working practices:</b> using protective clothing and equipment; putting up and reading safety signs; handle tools in the correct manner and store and maintain them properly; keep work area clear of clutter, spillage and unsafe object lying casually; while working with electricity take all electrical precautions like insulated clothing, adequate equipment insulation, use of control equipment, dry work area, switch off the power supply when not required, etc.; safe lifting and carrying practices; use equipment that is working properly and is well maintained; take due measures for safety while working in confined places, trenches or at heights, etc. including safety harness, fall arrestors, etc.</p> <p>PC6. state methods of accident prevention in the work environment of the job role</p> <p><b>Methods of accident prevention:</b> training in health and safety procedures; using health and safety procedures; use of equipment and working practices (such as safe carrying procedures); safety notices, advice; instruction from colleagues and supervisors</p> <p>PC7. state location of general health and safety equipment in the workplace</p> <p><b>General health and safety equipment:</b> fire extinguishers; first aid equipment; safety instruments and clothing; safety installations(eg fire exits, exhaust fans)</p> <p>PC8. inspect for faults, set up and safely use steps and ladders in general use</p> <p><b>Ladder faults:</b> corrosion of metal components, deterioration, splits and cracks timber components, imbalance, loose rungs, missing/unfixed nuts or bolts, etc.</p> <p><b>Ladders set up:</b> firm/level base, clip/lash down, leaning at the correct angle, etc.</p> <p>PC9. work safely in and around trenches, elevated places and confined areas</p> <p>PC10. lift heavy objects safely using correct procedures</p> <p>PC11. apply good housekeeping practices at all times</p> <p><b>Good housekeeping practices:</b> clean/tidy work areas, removal/disposal of waste products, protect surfaces</p> <p>PC12. identify common hazard signs displayed in various areas</p> <p><b>Various areas:</b> on chemical containers; equipment; packages; inside buildings; in open areas and public spaces, etc.</p> <p>PC13. retrieve and/or point out documents that refer to health and safety in the workplace</p>
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**CSC/ N 1335: Use basic health and safety practices at the workplace**

	<p><b>Documents:</b> fire notices, accident reports, safety instructions for equipment and procedures, company notices and documents, legal documents (eg government notices)</p>
<p><b>Fire safety</b></p>	<p>The user/individual on the job should be able to:</p> <p>PC14. use the various appropriate fire extinguishers on different types of fires correctly</p> <p><b>Types of fires:</b> Class A: eg. ordinary solid combustibles, such as wood, paper, cloth, plastic, charcoal, etc.; Class B: flammable liquids and gases, such as gasoline, propane, diesel fuel, tar, cooking oil, and similar substances; Class C: eg. electrical equipment such as appliances, wiring, breaker panels, etc. (These categories of fires become Class A, B, and D fires when the electrical equipment that initiated the fire is no longer receiving electricity); Class D: combustible metals such as magnesium, titanium, and sodium (These fires burn at extremely high temperatures and require special suppression agents)</p> <p>PC15. demonstrate rescue techniques applied during fire hazard</p> <p>PC16. demonstrate good housekeeping in order to prevent fire hazards</p> <p>PC17. demonstrate the correct use of a fire extinguisher</p>
<p><b>Emergencies, rescue and first-aid procedures</b></p>	<p>The user/individual on the job should be able to:</p> <p>PC18. demonstrate how to free a person from electrocution</p> <p>PC19. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.</p> <p>PC20. demonstrate basic techniques of bandaging</p> <p>PC21. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments</p> <p>PC22. perform and organize loss minimization or rescue activity during an accident in real or simulated environments</p> <p>PC23. administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases</p> <p>PC24. demonstrate the artificial respiration and the CPR Process</p> <p>PC25. participate in emergency procedures</p> <p><b>Emergency procedures:</b> raising alarm, safe/efficient, evacuation, correct means of escape, correct assembly point, roll call, correct return to work</p> <p>PC26. complete a written accident/incident report or dictate a report to another person, and send report to person responsible</p> <p><b>Incident Report includes details of:</b> name, date/time of incident, date/time of report, location, environment conditions, persons involved, sequence of events, injuries sustained, damage sustained, actions taken, witnesses, supervisor/manager notified</p> <p>PC27. demonstrate correct method to move injured people and others during an emergency</p>
<p><b>Knowledge and Understanding (K)</b></p>	

**CSC/ N 1335: Use basic health and safety practices at the workplace**

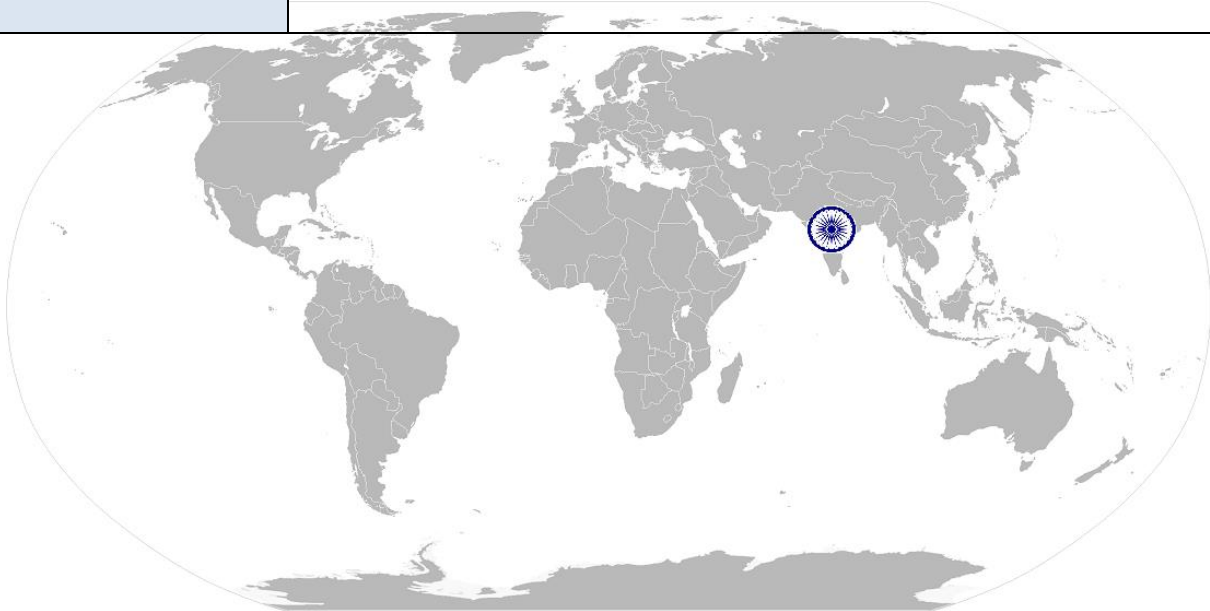
<p><b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)</p>	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. names (and job titles if applicable), and where to find, all the people responsible for health and safety in a workplace.</p> <p>KA2. names and location of documents that refer to health and safety in the workplace.</p>
<p><b>B. Technical Knowledge</b></p>	<p>The user/individual on the job needs to know and understand:</p> <p>KB1. meaning of “hazards” and “risks”</p> <p>KB2. health and safety hazards commonly present in the work environment and related precautions</p> <p>KB3. possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible</p> <p>KB4. possible causes of risk and accident <b>Possible causes of risk and accident:</b> physical actions; reading; listening to and giving instructions; inattention; sickness and incapacity (such as drunkenness); health hazards (such as untreated injuries and contagious illness)</p> <p>KB5. methods of accident prevention <b>Methods of accident prevention:</b> training in health and safety procedures; using health and safety procedures; use of equipment and working practices (such as safe carrying procedures); safety notices, advice; instruction from colleagues and supervisors</p> <p>KB6. safe working practices when working with tools and machines</p> <p>KB7. safe working practices while working at various hazardous sites</p> <p>KB8. where to find all the general health and safety equipment in the workplace</p> <p>KB9. various dangers associated with the use of electrical equipment</p> <p>KB10. preventative and remedial actions to be taken in the case of exposure to toxic materials <b>Exposure:</b> ingested, contact with skin, inhaled <b>Preventative action:</b> ventilation, masks, protective clothing/ equipment); <b>Remedial action:</b> immediate first aid, report to supervisor <b>Toxic materials:</b> solvents, flux, lead</p> <p>KB11. importance of using protective clothing/equipment while working</p> <p>KB12. precautionary activities to prevent the fire accident</p> <p>KB13. various causes of fire <b>Causes of fires:</b> heating of metal; spontaneous ignition; sparking; electrical heating; loose fires (smoking, welding, etc.); chemical fires; etc.</p> <p>KB14. techniques of using the different fire extinguishers</p> <p>KB15. different methods of extinguishing fire</p> <p>KB16. different materials used for extinguishing fire <b>Materials:</b> sand, water, foam, CO<sub>2</sub>, dry powder</p> <p>KB17. rescue techniques applied during a fire hazard</p> <p>KB18. various types of safety signs and what they mean</p>

**CSC/ N 1335: Use basic health and safety practices at the workplace**

	<p>KB19. appropriate basic first aid treatment relevant to the condition eg. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries</p> <p>KB20. content of written accident report</p> <p>KB21. potential injuries and ill health associated with incorrect manual handling</p> <p>KB22. safe lifting and carrying practices</p> <p>KB23. personal safety, health and dignity issues relating to the movement of a person by others</p> <p>KB24. potential impact to a person who is moved incorrectly</p>
<b>Skills (S) [Optional]</b>	
<b>A. Core Skills/ Generic Skills</b>	<b>Reading and Writing Skills</b>
	The user/individual on the job needs to know and understand how to:
	SA1. read and comprehend basic content to read labels, charts, signages
	SA2. read and comprehend basic English to read manuals of operations
	SA3. read and write an accident/incident report in local language or English
	<b>Oral Communication (Listening and Speaking skills)</b>
The user/individual on the job needs to know and understand how to:	
SA4. question coworkers appropriately in order to clarify instructions and other issues	
SA5. give clear instructions to coworkers, subordinates others	
<b>Decision Making</b>	
The user/individual on the job needs to know and understand how to:	
SA6. make appropriate decisions pertaining to the concerned area of work with respect to intended work objective, span of authority, responsibility, laid down procedure and guidelines	
<b>B. Professional Skills</b>	<b>Plan and Organize</b>
	The user/individual on the job needs to know and understand how to:
	SB1. plan and organize their own work schedule, work area, tools, equipment and materials to maintain decorum and for improved productivity
	<b>Working with others</b>
The user/individual on the job needs to know and understand how to:	
SB2. remain congenial while discussing and debating issues with co-workers	
SB3. follow appropriate protocols for communication based on situation, hierarchy, organizational culture and practice	
SB4. ask for, provide and receive required assistance where possible to ensure achievement of work related objectives	
SB5. thank coworkers for any assistance received	
SB6. offer appropriate respect based on mutuality and respect for fellow workmanship and authority	

## CSC/ N 1335: Use basic health and safety practices at the workplace

	<b>Problem Solving</b>
	The user/individual on the job needs to know and understand how to: SB7. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s) SB8. identify immediate or temporary solutions to resolve delays SB9. identify sources of support that can be availed of for problem solving for various kind of problems SB10. seek appropriate assistance from other sources to resolve problems SB11. report problems that you cannot resolve to appropriate authority
	<b>Analytical Thinking</b>
	The user/individual on the job needs to know and understand how to: SB12. identify cause and effect relations in their area of work SB13. use cause and effect relations to anticipate potential problems and their solution



**CSC/ N 1335: Use basic health and safety practices at the workplace**

## NOS Version Control

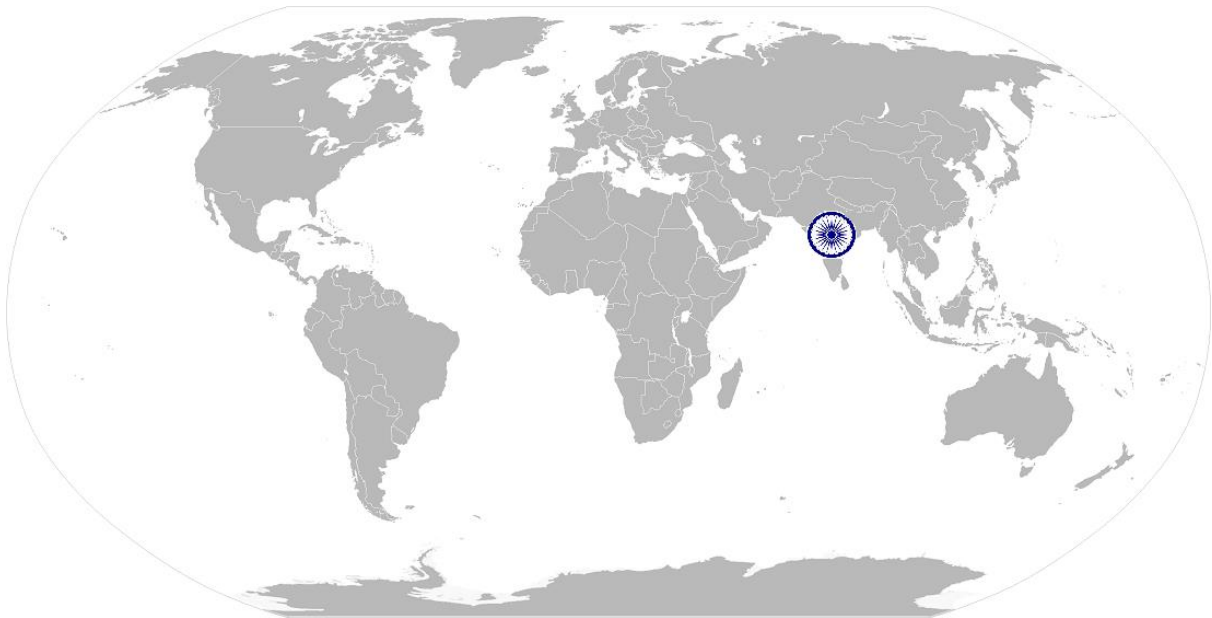
NOS Code	CSC / N 1335		
Credits (NSQF)	TBD	Version number	1.0
Industry	Capital Goods	Drafted on	10/04/14
Industry Sub-sector	<ol style="list-style-type: none"> <li>1. Machine Tools</li> <li>2. Dies, Moulds And Press Tools</li> <li>3. Plastics Manufacturing Machinery</li> <li>4. Textile Manufacturing Machinery</li> <li>5. Process Plant Machinery</li> <li>6. Electrical and Power Generation Machinery</li> <li>7. Light Engineering Goods</li> </ol>	Last reviewed on	18/03/15
Occupation	Welding and Cutting	Next review date	30/08/16

CSC/ N 1336:

Work effectively with others

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# National Occupational Standard



## Overview

This unit covers basic practices that improve effectiveness of working with others in an organizational set-up.

CSC/ N 1336:

Work effectively with others

<b>Unit Code</b>	<b>CSC / N 1336</b>
<b>Unit Title (Task)</b>	<b>Work effectively with others</b>
<b>Description</b>	<p>This unit covers basic etiquette and competencies that a candidate is required to possess and demonstrate in their behavior and interactions with others at the workplace.</p> <p>These cover areas such as communication etiquette, discipline, listening, handling conflict and grievances.</p>
<b>Scope</b>	<p>This unit/task covers the following:</p> <ul style="list-style-type: none"> <li>Working with others</li> </ul>
<b>Performance Criteria (PC) w.r.t. the Scope</b>	
<b>Element</b>	<b>Performance Criteria</b>
<b>Working with others</b>	<p>The user/individual on the job should be able to:</p> <p>PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required</p> <p>PC2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt</p> <p>PC3. give information to others clearly, at a pace and in a manner that helps them to understand</p> <p>PC4. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible</p> <p>PC5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks</p> <p>PC6. display appropriate communication etiquette while working</p> <p><b>Communication etiquette:</b> do not use abusive language; use appropriate titles and terms of respect; do not eat or chew while talking (vice versa)etc.</p> <p>PC7. display active listening skills while interacting with others at work</p> <p>PC8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism</p> <p>PC9. demonstrate responsible and disciplined behaviors at the workplace</p> <p><b>Disciplined behaviors:</b> e.g. punctuality; completing tasks as per given time and standards; not gossiping and idling time; eliminating waste, honesty, etc.</p> <p>PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict</p>
<b>Knowledge and Understanding (K)</b>	
<b>A. Organizational Context</b> (Knowledge of the company / organization and its processes)	<p>The user/individual on the job needs to know and understand:</p> <p>KA1. legislation, standards, policies, and procedures followed in the company relevant to own employment and performance conditions</p> <p>KA2. reporting structure, inter-dependent functions, lines and procedures in the work area</p> <p>KA3. relevant people and their responsibilities within the work area</p> <p>KA4. escalation matrix and procedures for reporting work and employment related issues</p>

**CSC/ N 1336:**

**Work effectively with others**

**B. Technical Knowledge**

The user/individual on the job needs to know and understand:

- KB1. various categories of people that one is required to communicate and co-ordinate with in the organization
- KB2. importance of effective communication in the workplace
- KB3. importance of teamwork in organizational and individual success
- KB4. various components of effective communication
- KB5. key elements of active listening
- KB6. value and importance of active listening and assertive communication
- KB7. barriers to effective communication
- KB8. importance of tone and pitch in effective communication
- KB9. importance of avoiding casual expletives and unpleasant terms while communicating professional circles
- KB10. how poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer
- KB11. importance of ethics for professional success
- KB12. importance of discipline for professional success
- KB13. what constitutes disciplined behavior for a working professional
- KB14. common reasons for interpersonal conflict
- KB15. importance of developing effective working relationships for professional success
- KB16. expressing and addressing grievances appropriately and effectively
- KB17. importance and ways of managing interpersonal conflict effectively

**Skills (S) [Optional]**





CSC/ N 1336:

Work effectively with others

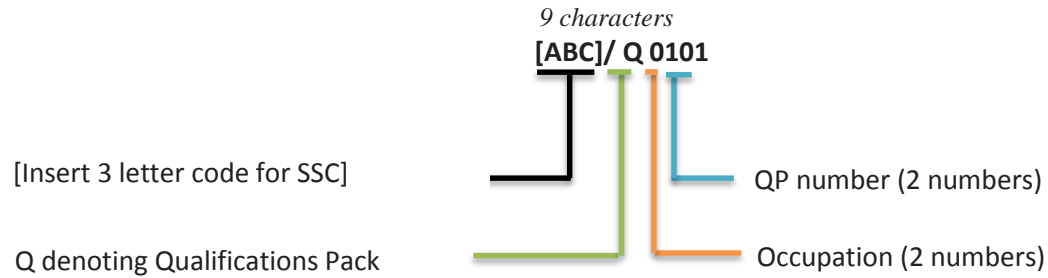
## NOS Version Control

<b>NOS Code</b>	<b>CSC / N 1336</b>		
<b>Credits(NSQF)</b>	<b>TBD</b>	<b>Version number</b>	<b>1.0</b>
<b>Industry</b>	<b>Capital Goods</b>	<b>Drafted on</b>	<b>10/04/14</b>
<b>Industry Sub-sector</b>	<ol style="list-style-type: none"> <li>1. Machine Tools</li> <li>2. Dies, Moulds And Press Tools</li> <li>3. Plastics Manufacturing Machinery</li> <li>4. Textile Manufacturing Machinery</li> <li>5. Process Plant Machinery</li> <li>6. Electrical and Power Machinery</li> <li>7. Light Engineering Goods</li> </ol>	<b>Last reviewed on</b>	<b>18/03/15</b>
<b>Occupation</b>	<b>Welding and Cutting</b>	<b>Next review date</b>	<b>30/08/16</b>

## Annexure

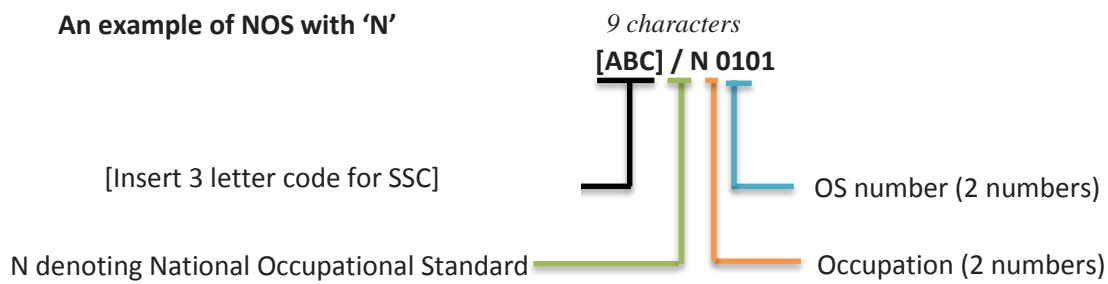
### Nomenclature for QP and NOS

#### Qualifications Pack



#### Occupational Standard

##### An example of NOS with 'N'



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

Sub-sector	Range of Occupation numbers
Machine Tools	01-13
Plastic Manufacturing Machinery	01-13
Textile Manufacturing Machinery	01-13
Process Plant Machinery	01-13
Electrical and Power Machinery	01-13
Light Engineering Goods	01-13

Sequence	Description	Example
Three letters	Capital Goods	CSC
Slash	/	/
Next letter	Whether <b>QP</b> or <b>NOS</b>	N
Next two numbers	Occupation code	01
Next two numbers	OS number	01

**CRITERIA FOR ASSESSMENT OF TRAINEES**

**Job Role : Stud Welding Operator**

**Qualification Pack : CSC/ Q 0210**

**Sector Skill Council : Capital Goods sector skill Council**

**Guidelines for Assessment:**

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below)
4. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criteria
5. To pass the Qualification Pack , every trainee should score a minimum of 70% in every NOS
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessable Outcomes	Assessment Criteria	Total Marks (300)	Out of	Theory	Skills Practical
<b>CSC/ N 0210 : Weld stud joints using stud welding equipment /machines</b>	PC1. work safely at all times, complying with health and safety and other relevant regulations and guidelines	<b>100</b>	3	1	2
	PC2. stop machine/equipment in case of emergencies and start when safe using correct procedure		3	1	2
	PC3. operate machine/equipment safety devices in line with set procedures		3	1	2
	PC4. stop the machine/equipment in a timely and safe manner during an emergency		2	0	2
	PC5. interpret stud welding information from welding procedure data sheets specifications		2	1	1
	PC6. set up stud welding machine/equipment for operations as per requirement		3	1	2
	PC7. ensure portable equipment power leads are undamaged and securely connected		2	0	2
	PC8. check if all machinery and equipment is calibrated and approved for use		2	0	2

PC9. check if base metal plates are approved for stud welding process	2	0	2
PC10. check if all equipment mechanical and electrical systems operate correctly	2	0	2
PC11. identify maintenance requirements for various equipment/machine parts	1	0	1
PC12. ensure welding material surface is appropriately prepared with required surface pre-treatment	2	0	2
PC13. match consumables to welding process	1	0	1
PC14. identify different types and sizes of common fasteners and ferrules	1	0	1
PC15. remove damaged and defective materials, equipment and consumables from operations	2	0	2
PC16. select required amount of materials	1	0	1
PC17. set up, check, adjust and operate stud welding machines	3	0	3
PC18. set up the equipment parameters in accordance with instructions and the welding procedure specifications	4	1	3
PC19. check supplies of components and consumables are adequate and correctly prepared	2	0	2
PC20. check that the parent material, components, consumables and joint preparation comply with specifications	4	1	3
PC21. produce test specimen by welding stud to approved specimen plates	3	0	3
PC22. weld position, nature of base metal and stud surfaces, current, and time shall be recorded during specimen testing	2	0	2
PC23. test specimen through approved tests and record results	3	0	3
PC24. adjust parameters as per test results to achieve desired output including plunge, lift, time and current	3	0	3
PC25. confirm that the machine is set up and operating correctly, ready for the joining operations to be carried out	2	0	2
PC26. follow the relevant joining procedure and work instructions	3	1	2

	PC27. carry out and monitor the machine/equipment operations in accordance with specifications and job instructions		4	1	3
	PC28. select positions of stud placement by looking at specifications, marked layout, drawing layout or provided templates		3	0	3
	PC29. monitor the process operation and make adjustments to parameters, in order to produce welded components covering different components and different material thicknesses		3	0	3
	PC30. level and square gun to base metal before starting the weld		3	0	3
	PC31. stud weld threaded and unthreaded fasteners accurately		3	0	3
	PC32. stud weld fasteners of different diameters in downward position		3	0	3
	PC33. produce welded components which meet all the required quality parameters		4	1	3
	PC34. ensure stud welds are correctly pitched out and located		2	0	2
	PC35. meet the required dimensional accuracy within specified tolerances		4	1	3
	PC36. achieve the rate of output as specified		2	0	2
	PC37. support carrying out of destructive and non-destructive tests		2	0	2
	PC38. detect equipment malfunctions and deal with them appropriately		2	0	2
	PC39. deal promptly and effectively with problems within own control and seek timely and appropriate assistance from relevant personnel as per organizational procedure		3	0	3
	PC40. shut down the equipment to a safe condition on conclusion of welding activities		1	0	1
		<b>Total</b>	<b>100</b>	<b>11</b>	<b>89</b>
<b>CSC/ N 1335 : Use basic health and safety practices at the workplace</b>	PC1. use protective clothing/equipment for specific tasks and work conditions	<b>100</b>	5	2	3
	PC2. state the name and location of people responsible for health and safety in the workplace		3	1	2
	PC3. state the names and location of documents that refer to health and safety in the workplace		3	1	2

PC4. identify job-site hazardous work and state possible causes of risk or accident in the workplace	5	2	3
PC5. carry out safe working practices while dealing with hazards to ensure the safety of self and others state methods of accident prevention in the work environment of the job role	4	2	2
PC6. state location of general health and safety equipment in the workplace	3	2	1
PC7. inspect for faults, set up and safely use steps and ladders in general use	5	2	3
PC8. work safely in and around trenches, elevated places and confined areas	5	2	3
PC9. lift heavy objects safely using correct procedures	5	2	3
PC10. apply good housekeeping practices at all times	4	2	2
PC11. identify common hazard signs displayed in various areas	5	2	3
PC12. retrieve and/or point out documents that refer to health and safety in the workplace	3	1	2
PC13. use the various appropriate fire extinguishers on different types of fires correctly	4	1	3
PC14. demonstrate rescue techniques applied during fire hazard	4	1	3
PC15. demonstrate good housekeeping in order to prevent fire hazards	3	1	2
PC16. demonstrate the correct use of a fire extinguisher	4	1	3
PC17. demonstrate how to free a person from electrocution	4	1	3
PC18. administer appropriate first aid to victims where required eg. in case of bleeding, burns, choking, electric shock, poisoning etc.	4	1	3
PC19. demonstrate basic techniques of bandaging	3	1	2
PC20. respond promptly and appropriately to an accident situation or medical emergency in real or simulated environments	4	1	3

	PC21. perform and organize loss minimization or rescue activity during an accident in real or simulated environments		3	1	2
	PC22. administer first aid to victims in case of a heart attack or cardiac arrest due to electric shock, before the arrival of emergency services in real or simulated cases		3	1	2
	PC23. demonstrate the artificial respiration and the CPR Process		3	1	2
	PC24. participate in emergency procedures		3	2	1
	PC25. complete a written accident/incident report or dictate a report to another person, and send report to person responsible		4	1	3
	PC26. demonstrate correct method to move injured people and others during an emergency		4	1	3
		<b>Total</b>	<b>100</b>	<b>36</b>	<b>64</b>
<b>CSC/ N 1336 : Work effectively with others</b>	PC1. accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	<b>100</b>	10	3	7
	PC2. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt		10	3	7
	PC3. give information to others clearly, at a pace and in a manner that helps them to understand		10	3	7
	PC4. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible		10	3	7
	PC5. consult with and assist others to maximize effectiveness and efficiency in carrying out tasks		10	3	7
	PC6. display appropriate communication etiquette while working		10	3	7
	PC7. display active listening skills while interacting with others at work		10	3	7
	PC8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism		10	3	7
	PC9. demonstrate responsible and disciplined behaviors at the workplace		10	3	7



	PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict		10	3	7
		<b>Total</b>	<b>100</b>	<b>30</b>	<b>70</b>