

**Competency Standards**

**for**

**Fabricator & Welder**

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**Title A: Follow Safety Rules at Workplace**

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**Overview:** This Competency Standard identifies the competencies required to follow safety rules at workplace by Fabricator & Welder in accordance with the organization’s approved guidelines and procedures. You will be expected to apply personal, workplace, tools & equipment and job/work piece safety measures at all times. Your underpinning knowledge regarding safety rules will be sufficient enough to provide you the basis for your work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>A1. Apply personal safety measures</b>	<p><i>You will be able to:</i></p> <p>P1. Select personal protective equipment in terms of type and quantity according to work permit.</p> <p>P2. Wear and adjust personal protective equipment to ensure correct fit and optimum protection in compliance with company procedures.</p> <p>P3. Ensure personal protective equipment is cleaned and stored in proper place.</p>	<p><i>You will be able to:</i></p> <p>K1. Explain Importance of using Personal Protective Equipment (PPE)</p> <p>K2. Define Types of PPEs.</p> <p>K3. Identify Protective clothing and equipment (PPE) to be worn and from where it can be obtained.</p> <p>K4. Explain the Safe maintenance of PPE.</p>	<p>Leather apron, safety gloves, safety goggles, welding helmet, safety shoes, ear plug, safety belt, fume mask, dungaree</p>
<b>A2. Apply workplace safety measures</b>	<p><i>You will be able to:</i></p> <p>P1. Apply safety measures to the followings at workplace:</p> <ul style="list-style-type: none"> <li>• Ensure Ventilation</li> <li>• No Inflammable material nearby</li> <li>• Secure gas cylinders</li> <li>• Availability of Fire extinguishers</li> <li>• Secure Electrical connections</li> <li>• Ensure Earthling</li> <li>• No light reflection</li> <li>• Ensure availability of welding booths (where necessary)</li> </ul>	<p><i>You will be able to:</i></p> <p>K1. Explain Importance of safety at workplace and its implications.</p> <p>K2. Describe Workplace safety guidelines.</p> <p>K3. Explain Specific company procedures regarding workplace safety.</p> <p>K4. Explain procedure for cleaning and storing of tools and equipment at workplace.</p>	<p>Fire extinguisher, fire blankets, face shield, gas detectors, Tool box/bins, Safety covers, First aid box, work table, fume extractor, lighting system, PPE</p>

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<ul style="list-style-type: none"> <li>• Emergency exit</li> </ul> <p>P2. Exhibit housekeeping at workplace according to organizational guidelines</p> <p>P3. Ensure the availability of first aid box at the workplace</p> <p>P4. Display a list of emergency contact numbers at workplace</p>		
<b>A3. Follow Work Permit</b>	<p>You should be able to:</p> <p>P1. Acquire valid W.P from supervisor/foreman duly signed by issuer</p> <p>P2. Participate in Tool Box Talk for orientation about Job</p> <p>P3. Follow Instructions related to safety of W.P</p>	<p>You should be able to:</p> <p>K1. Describe types of work permit and their purpose</p> <p>K2. Describe validity and authenticity of W.P.</p>	Work permit document
<b>A4. Apply tools &amp; equipment safety measures</b>	<p><i>You will be able to:</i></p> <p>P1. Apply safety measures to the following tools and equipment</p> <ul style="list-style-type: none"> <li>• Arc Welding machine/plant and equipment</li> <li>• Gas welding and cutting equipment</li> <li>• Mechanical cutting and beveling equipment</li> <li>• Grinding machines</li> <li>• Hand tools (e.g: scrappers, files, measuring tape, hammers, stacks, Hatches, Anvils etc)</li> </ul>	<p><i>You will be able to:</i></p> <p>K1. Explain Importance of tools and equipment safety and its implications.</p> <p>K2. Describe use of cleaning tools and equipment</p> <p>K3. Describe the importance of safe handling and placement of measuring and cutting tools</p> <p>K4. Read and apply the safety manual instructions</p>	Safety manuals, safety instruction sheets, cleaning tools and equipment

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>P2. Clean tools and equipment before and after the job</p> <p>P3. Ensure safe placement of measuring and cutting tools</p> <p>P4. Follow tools and equipment safety instruction manuals</p>	<p>K5. Explain Specific company procedures regarding tools and equipment safety.</p> <p>K6. Explain procedure for cleaning and storing of tools and equipment at workplace.</p>	
<p><b>A5. Apply job/work piece safety measures</b></p>	<p><i>You will be able to:</i></p> <p>P1. Follow the work permit for the job/work piece safety</p> <p>P2. Apply the following safety measures for the job/work piece safety</p> <ul style="list-style-type: none"> <li>• Job/Work piece is free from dust, oil, grease, paint and moisture</li> <li>• Safely cover the job/work piece after the duty</li> <li>• Safely place the job/work piece after the duty</li> </ul> <p>P3. Apply safe handling of job/work piece during</p> <ol style="list-style-type: none"> <li>i. Fabrication</li> <li>ii. Welding</li> <li>iii. Loading/unloading</li> <li>iv. Transportation</li> </ol> <p>P4. Follow specific job/work piece safety instructions</p>	<p><i>You will be able to:</i></p> <p>K1. Read and implement work permit according to the nature of job</p> <p>K2. Describe the importance of job/work piece safety</p> <p>K3. Explain the importance of safe handling and transportation of job/ work piece</p> <p>K4. Explain specific job/ work piece safety instructions</p>	<p>Work permit, safety instructions, cleaning tools and equipment, cranes, lifters, hand trolleys</p>

**Title B: Perform Bench Work****Overview:** This Competency Standard is about:

Use of bench work tools and their use

Compulsory for

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>B1. Take measurement of job</b>	<p><i>You will be able to:</i></p> <p>P1. Arrange measuring tools required for cutting</p> <p>P2. Check measurements of parts of job as per drawing</p> <p>P3. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain the usage of different measuring tools for assembling</p> <p>K2. Explain different conversion systems used for measurement</p> <p>K3. Explain specific safety measures associated with the workplace</p>	<p>Measuring tape, steel rule, tri square, vernier caliper, outside inside caliper, vernier height gauge, radius gauge, filler gauge, bevel gauge, PPE</p>
<b>B2. Perform Saw cutting on the job</b>	<p><i>You will be able to:</i></p> <p>P1. Select tools required for saw cutting method as per material</p> <p>P2. Prepare workplace for saw cutting as per requirement</p> <p>P3. Perform clamping of job for saw cutting</p> <p>P4. Perform saw cutting operations as per specifications</p> <p>P5. Perform finishing (remove burr/ sharp edges etc) as per SOPs</p> <p>P6. Inspect the job, as per specifications, after completion of saw cutting</p>	<p><i>You will be able to:</i></p> <p>K1. Explain the usage of saw cutting tools</p> <p>K2. Describe the types of saw blades according to material and teeth</p> <p>K3. Explain the saw cutting process</p> <p>K4. Explain the usage of finishing tools</p> <p>K5. Explain specific safety precautions related to saw cutting method</p>	<p>Hacksaw, power hacksaw, blades, vices, coolants, measuring tape, right angle, PPE</p>

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	P7. Follow safety precautions at workplace		
<b>B3. Perform grinding/ filing of job</b>	<p><i>You will be able to:</i></p> <p>P1. Select grinding / filing process as per material/requirement</p> <p>P2. Arrange grinding machines and different types of files as per requirement</p> <p>P3. Select machines required for grinding/ filing method</p> <p>P4. Prepare workplace for grinding/filing as per requirement</p> <p>P5. Perform grinding/filing operations as per SOPs</p> <p>P6. Perform finishing (remove burr/ sharp edges etc) as per SOPs</p> <p>P7. Inspect the job after completion of grinding/filing as per specifications</p> <p>P8. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain different types of grinding and filing processes</p> <p>K2. Explain the usage of grinding machines and files</p> <p>K2. Describe the types of bevels</p> <p>K3. Explain the grinding/filing process</p> <p>K4. Explain the usage of finishing tools</p> <p>K5. Explain specific safety precautions related to grinding/filing process</p>	<p>Angle grinder, pedestal grinder, pencil grinder, grinding discs, grinding stones, grinder key, power cable, flat file, round file, half round file, square file, triangle file, knife file, smooth cut file, needle file set, PPE</p>
<b>B4. Perform Drilling/Threading on work piece</b>	<p><i>You must be able to:</i></p> <p><b>P1.</b> Set up drilling machine for producing holes according to job requirement.</p> <p><b>P2.</b> Manipulate the machine tool controls</p>	<p><i>You must know and understand:</i></p> <p><b>K1.</b> Types of drilling machines.</p>	<p>Bench, Bench vice, Drilling Machines, Drill chuck with Key, Machine Vice, Marking Tools, Measuring Tools, Drill Sleeve and Socket, Tap set, Tap handle,</p>

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Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>safely and correctly in line with operational procedures.</p> <p><b>P3.</b> Carry out drilling as per job requirement</p> <p><b>P1.</b> Select tap and die for threading according to job requirement.</p> <p><b>P2.</b> Clamp work-piece in the vice properly.</p> <p><b>P3.</b> Ensure alignment of tap and die.</p> <p><b>P4.</b> Use lubricants during threading for smooth cutting.</p> <p><b>P5.</b> Ensure the threads are accurate and dimensionally correct</p> <p><b>P6.</b> Observe personal and workplace safety at all times.</p>	<p><b>K2.</b> Describe Procedure of setting up of drilling machine with safe procedure.</p> <p><b>K3.</b> Selecting and adjusting speed and feed of drilling machine.</p> <p>Define types of taps and dies.</p> <p><b>K2.</b> Use of tap set according to safe process.</p> <p><b>K4.</b> Importance of using lubricants and coolants during threading.</p> <p><b>K7.</b> Safety precautions.</p>	<p>Coolants/Lubricants PPEs,</p>

## Title C: Perform Cutting of Material

**Overview:** This Competency Standard identifies the competencies required to perform cutting of material at workplace by Fabricator & Welder in accordance with the organization's approved guidelines and procedures. You will be expected to arrange the required material for cutting, perform gas cutting method, perform disc cutting method, perform Saw cutting method and perform shear cutting method on job, at workplace. Your underpinning knowledge regarding cutting of material will be sufficient enough to provide you the basis for your work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>C1. Arrange the required material for cutting</b>	<p><i>You will be able to:</i></p> <p>P1. Interpret the following types of drawings</p> <ul style="list-style-type: none"> <li>● 2D drawing</li> <li>● 3D drawing</li> <li>● Isometric</li> <li>● Diametric</li> <li>● Oblique</li> <li>● Piping and instrument diagram (P&amp;ID)</li> </ul> <p>P2. Take measurements and calculations as per drawing</p> <p>P3. Identify required material as per specifications of drawing</p> <p>P4. Follow the standard operating procedures (SOPs) for the arrangement of required material</p> <p>P5. Arrange the marking tools required, as per job</p> <p>P6. Clean the material surface for marking area</p>	<p><i>You will be able to:</i></p> <p>K1. Define types of lines</p> <p>K2. Read and Interpret symbols and abbreviations of drawings</p> <p>K3. Explain different types of drawing views</p> <p>K4. Explain types of conversion methods (e.g: imperial and metric system)</p> <p>K5. Explain the types of measuring tools</p> <p>K6. Solve basic arithmetic problems</p> <p>K7.-Solve basic geometric relations</p> <p>K8. Solve basic trigonometric relations</p> <p>K9. Explain the international standards for material selection</p> <p>K10. Explain types of fittings</p>	<p>Drawing instruments, measuring tools, symbol and abbreviation sheets, calculator, stationary items, Standard operating procedures (SOPs), Measuring tape, divider, grinder with power brush, line scribe, hammer, center punch, prick punch, combination set, set square, inside and outside caliper, files and scrapers, wire brush, cotton waste, tong, emery paper, marking stone, straight bar, surface plate/marketing table, anvil, V block, wrap around, bench and pipe vices, chemicals for cleaning, Personal Protective Equipment (PPE)</p>

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Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>P7. Mark the job area as per requirement</p> <p>P8. Punch the cutting area as per requirement</p> <p>P9. Apply specific safety precautions associated with the material handling</p>	<p>K11. Explain the importance of standard operating procedures (SOPs)</p> <p>K12. Explain types and usage of marking tools</p> <p>K13. Describe various cleaning methods for base metal specifications</p> <p>K14. Explain different types of tolerances and allowances</p> <p>K15. Identify different colours used for highlighting the marking surface</p> <p>K16. Describe specific safety precautions associated with material handling</p>	
<p><b>C2. Perform gas cutting method on job</b></p>	<p><i>You will be able to:</i></p> <p>P1. Arrange gas cutting set as per requirement</p> <p>P2. Inspect the equipment and connections as per SOPs</p> <p>P3. Place the job for cutting as per requirement</p> <p>P4. Perform gas cutting operation as per specifications</p> <p>P5. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain - different type of gases used for cutting</p> <p>K2. Describe usage of gas cutting torch and nozzles</p> <p>K3. Explain usage of the following:</p> <ul style="list-style-type: none"> <li>• Hose pipes</li> <li>• Regulators</li> <li>• Nozzles</li> <li>• Flash back arrester</li> <li>• Gas cylinders</li> </ul> <p>K4. Explain the startup and shutdown</p>	<p>Gas cylinders (oxygen, fuel gases), gas cutter, hose pipes, nozzles, regulator, flash back arresters, spark lighter, tip cleaner, cylinder/spindle key, cylinder trolley with chain, adjustable spanner set, gas working table, hose protector, SOPs, gas pressure setting chart as per nozzle, PPE</p>

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
		<p>procedure of gas cutter</p> <p>K5. Describe pressure setting as per material thickness and nozzle sizes (e.g. nozzle selection chart)</p> <p>K6. Explain the safety hazards related to gas cutting process (e.g: flashback, back fire etc)</p>	
<p><b>C3. Perform disc cutting method on job</b></p>	<p><i>You will be able to:</i></p> <p>P1. Select tools required for disc cutting method</p> <p>P2. Prepare workplace for disc cutting as per requirement</p> <p>P3. Perform disc cutting operations as per specifications</p> <p>P4. Perform finishing (remove burr/ sharp edges etc.) as per SOPs</p> <p>P5. Inspect the job, as per specifications, after completion of cutting</p> <p>P6. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain the usage of disc cutting tools</p> <p>K2. Describe the types of grinders &amp; cutting discs and their sizes</p> <p>K3. Explain the disc cutting process</p> <p>K4. Explain the usage of finishing tools</p> <p>K5. Explain specific safety precautions related to disc cutting method</p>	<p>Grinder, cutting discs, grinding discs, files, emery paper, conical- stone, straight stone, emery flower, grinder key, power supply, extension board, PPE</p>
<p><b>C4. Perform Saw cutting method on job</b></p>	<p><i>You will be able to:</i></p> <p>P1. Select tools required for saw cutting method as per material</p> <p>P2. Prepare workplace for saw cutting as per requirement</p>	<p><i>You will be able to:</i></p> <p>K1. Explain the usage of saw cutting tools</p> <p>K2. Describe the types of saw blades according to material and teeth</p>	<p>Hacksaw, power hacksaw, blades, vices, coolants, measuring tape, right angle, PPE</p>

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Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>P3. Perform clamping of job for saw cutting</p> <p>P4. Perform saw cutting operations as per specifications</p> <p>P5. Perform finishing (remove burr/ sharp edges etc) as per SOPs</p> <p>P6. Inspect the job, as per specifications, after completion of saw cutting</p> <p>P7. Follow safety precautions at workplace</p>	<p>K3. Explain the saw cutting process</p> <p>K4. Explain the usage of finishing tools</p> <p>K5. Explain specific safety precautions related to saw cutting method</p>	
<p><b>C5. Perform shear cutting method on job</b></p>	<p><i>You will be able to:</i></p> <p>P1. Select machine and tools required for shear cutting method</p> <p>P2. Prepare workplace for shear cutting as per requirement</p> <p>P3. Perform holding of job for shear cutting</p> <p>P4. Perform shear cutting operations as per specifications</p> <p>P5. Perform finishing (remove burr/ sharp edges etc) as per SOPs</p> <p>P6. Inspect the job after completion of shear cutting as per specification</p> <p>P7. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain the usage of shear cutting machine and tools</p> <p>K2. Explain the shear cutting process</p> <p>K3. Explain the usage of finishing tools</p> <p>K4. Explain specific safety precautions related to shear cutting methods</p>	<p>Shearing machines, lever shear, hand shear, measuring tape, right angle, files, emery paper, waste cotton, lubricants, PPE</p>



## Title D: Perform Assembling of Job

**Overview:** This Competency Standard identifies the competencies required to perform Assembling of Job at workplace by Fabricator & Welder in accordance with the organization's approved guidelines and procedures. You will be expected to perform grinding/ filing of job , take measurement of job parts for assembling, perform alignment of job pieces, perform tacking of job, at workplace. Your underpinning knowledge regarding assembling of job will be sufficient enough to provide you the basis for your work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>D1. Perform grinding/ filing of job</b>	<p><i>You will be able to:</i></p> <p>P1. Select grinding / filing process as per material/requirement</p> <p>P2. Arrange grinding machines and different types of files as per requirement</p> <p>P3. Select machines required for grinding/ filing method</p> <p>P4. Prepare workplace for grinding/filing as per requirement</p> <p>P5. Perform grinding/filing operations as per SOPs</p> <p>P6. Perform finishing (remove burr/ sharp edges etc) as per SOPs</p> <p>P7. Inspect the job after completion of grinding/filing as per specifications</p> <p>P8. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain different types of grinding and filing processes</p> <p>K2. Explain the usage of grinding machines and files</p> <p>K2. Describe the types of bevels</p> <p>K3. Explain the grinding/filing process</p> <p>K4. Explain the usage of finishing tools</p> <p>K5. Explain specific safety precautions related to grinding/filing process</p>	<p>Angle grinder, pedestal grinder, pencil grinder, grinding discs, grinding stones, grinder key, power cable, flat file, round file, half round file, square file, triangle file, knife file, smooth cut file, needle file set, PPE</p>
<b>D2. Take measurement of job</b>	<p><i>You will be able to:</i></p>	<p><i>You will be able to:</i></p>	<p>Measuring tape, steel rule, tri square, vernier caliper,</p>

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>parts for assembling</b>	<p>P1. Arrange measuring tools required for assembling</p> <p>P2. Check measurements of parts as per drawing</p> <p>P3. Follow safety precautions at workplace</p>	<p>K1. Explain the usage of different measuring tools for assembling</p> <p>K2. Explain different conversion systems used for measurement</p> <p>K3. Explain specific safety measures associated with the workplace</p>	<p>outside inside caliper, vernier height gauge, radius gauge, filler gauge, bevel gauge, PPE</p>
<b>D3. Perform alignment of job pieces</b>	<p><i>You will be able to:</i></p> <p>P1. Arrange alignment tools required for alignment of job</p> <p>P2. Arrange workplace according to the job requirement (temporary support)</p> <p>P3. Check alignment of parts as per drawing</p> <p>P4. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain the usage of different tools for alignment</p> <p>K2. Explain the usage of different tools for measurement</p> <p>K3. Read and interpret drawing for alignment</p> <p>K4. Solve basic arithmetic problems and trigonometric relations</p> <p>K4. Explain specific safety measures associated with the workplace</p>	<p>Measuring tape, steel rule, tri square, vernier caliper, outside inside caliper, vernier height gauge, radius gauge, filler gauge, bevel gauge, combination set, water level, spirit level, plumbob, fishing line, hammer, straight bar, PPE</p>
<b>D4. Perform tacking of job</b>	<p><i>You will be able to:</i></p> <p>P1. Arrange tacking tools and equipment required for tacking of job</p> <p>P2. verify alignment of parts before tacking, as per drawing</p> <p>P3. Check the gaps between two parts as per welding procedure specifications (WPS)</p>	<p><i>You will be able to:</i></p> <p>K1. Explain usage of tools and equipment for tacking</p> <p>K2. Read and interpret drawing/WPS for tacking</p> <p>K3. Describe the effects of temperature on tacking of job i.e. expansion and contraction</p>	<p>Welding equipment, hammer, tri square, filler gauge, chipping hammer, taper gauge, high-low gauge, tacking cleeds, gap rod, temporary support, tacking clamp, jigs and fixtures, chain block, hydraulic jack, come along, lifting and shifting</p>

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Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>P4. Perform tacking of job as per requirement</p> <p>P5. Verify alignment of parts after tacking as per drawing</p> <p>P6. Cover the job, as per requirement, after tacking</p> <p>P7. Follow safety precautions at workplace</p>	<p>K4. Explain the process of tacking as per WPS</p> <p>K5. Explain the methods of protection of job</p> <p>K6. Explain specific safety precautions associated with tacking of job</p>	<p>equipment, C- clamp, adjustable wrench, screw driver, pre heating torch, grinder, cutting disc, PPE</p>

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## Title E: Perform Soldering of job

**Overview:** This Competency Standard identifies the competencies required to perform soldering of Job at workplace by Fabricator & Welder in accordance with the organization's approved guidelines and procedures. You will be expected to prepare job for soldering , Perform soldering operation on job , Perform post soldering inspection, at workplace. Your underpinning knowledge regarding soldering of job will be sufficient enough to provide you the basis for your work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>E1. Prepare job for soldering</b>	<p><i>You will be able to:</i></p> <p>P1. Select the soldering method as per job requirement i.e. electronic and gas</p> <p>P2. Arrange the workplace according the soldering requirement</p> <p>P3. Arrange tools required for soldering method</p> <p>P4. Arrange filler material and flux as per requirement</p> <p>P5. Clean the soldering area as per requirement i.e. chemically and mechanically</p> <p>P6. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain different soldering methods</p> <p>K2. Explain the properties of metals</p> <p>K3. Explain the usage of soldering tools</p> <p>K4. Explain the usage of filler material and flux</p> <p>K5. Explain different types of cleaning materials and techniques</p> <p>K6. Explain the hazards related to soldering e.g. heat and fumes etc</p>	<p>Different soldering irons, sucker, wire brush, gas welding set, soldering tips, filler materials, flux, holding clamp, tip cleaner, emery paper, cotton waste, cleaning agents, PPE</p>
<b>E2. Perform soldering on job</b>	<p><i>You will be able to:</i></p> <p>P1. Prepare soldering by:</p> <ul style="list-style-type: none"> <li>● Connecting soldering iron with electric supply</li> <li>● Lit up the gas torch and make flame as</li> </ul>	<p><i>You will be able to:</i></p> <p>K1. Explain the usage of tools for soldering</p> <p>K2. Explain the usage of consumables for soldering</p>	<p>Different soldering irons, sucker, wire brush, gas welding set, soldering tips, filler materials, flux, holding clamp, tip cleaner, emery paper, cotton waste, cleaning agents, PPE</p>

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Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>per requirement</p> <p>P2. Apply flux to job surface as per SOPs                      P3. Perform soldering of job as per SOPs                      P4. Perform post cleaning of soldered area as per requirement</p> <p>P5. Follow safety precautions at workplace</p>	<p>K3. Describe the post cleaning methods of soldered area                      K4. Explain the specific safety precautions associated with soldering</p>	
<p><b>E3. Perform post soldering inspection</b></p>	<p><i>You will be able to:</i></p> <p>P1. Perform visual inspection for locating soldering defects</p> <p>P2. Perform Pneumatic and Hydro pressure tests for inspection of quality                      P3. Remove defects of soldering as per requirement</p> <p>P4. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain different type of soldering defects                      K2. Describe different types of testing applied on soldered job                      K3. Describe the method of removal of soldering defects                      K4. Explain specific safety measures associated with workplace e.g. hazards related to removal of fluxshutdown of heating source</p>	<p>Magnifying glass, different soldering irons, sucker, wire brush, gas welding set, soldering tips, filler materials, flux, holding clamp, copper tube, emery paper, cotton waste, cleaning agents, soap testing material, PPE</p>

## Title F: Perform Brazing of Job

**Overview:** This Competency Standard identifies the competencies required to perform brazing of Job at workplace by Fabricator & Welder in accordance with the organization's approved guidelines and procedures. You will be expected to prepare job for brazing , Perform brazing operation on job , Perform post brazing inspection, at workplace. Your underpinning knowledge regarding brazing of job will be sufficient enough to provide you the basis for your work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>F1. Prepare job for Brazing</b>	<p><i>You will be able to:</i></p> <p>P1. Select the brazing technique as per job requirement</p> <p>P2. Arrange the workplace according the brazing requirement</p> <p>P3. Arrange tools required for brazing method</p> <p>P4. Arrange filler material and flux as per requirement</p> <p>P5. Clean the brazing chemically and mechanically area as per requirement</p> <p>P6. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain different brazing techniques</p> <p>K2. Explain the properties of metals</p> <p>K3. Explain the usage of brazing tools</p> <p>K4. Explain the usage of filler material and flux</p> <p>K5. Explain different types of cleaning materials and techniques</p> <p>K6. Explain the hazards related to brazing</p>	<p>Steel wire brush, gas welding set, welding tips, filler materials, holding clamp, flux, emery paper, cotton waste, cleaning agents, spark lighter, tip cleaner, spanners, cylinder keys, SOPs, PPE</p>
<b>F2. Perform brazing operation on job</b>	<p>P1. Lit up the gas torch and make flame as per requirement</p> <p>P2. Apply flux to job surface as per SOPs</p> <p>P3. Perform brazing of job as per SOPs</p>	<p>K1. Explain usage of tools for brazing</p> <p>K2. Explain usage of consumables for brazing</p> <p>K3. Describe the post cleaning methods of brazed area</p>	<p>Steel wire brush, gas welding set, welding tips, filler materials, holding clamp, emery paper, flux, cotton waste, cleaning agents, spark lighter, tip cleaner, spanners, cylinder keys, SOPs, PPE</p>

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Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>P4. Perform post cleaning of brazed area as per requirement</p> <p>P5. Follow safety precautions at workplace</p>	<p>K4. Explain the specific safety precautions associated with brazing</p>	
<p><b>F3. Perform post brazing inspection</b></p>	<p><i>You will be able to:</i></p> <p>P1. Perform visual inspection for locating brazing defects</p> <p>P2. Perform Pneumatic and hydro pressure tests for inspection of quality</p> <p>P3. Remove defects of brazing as per requirement</p> <p>P4. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain different type of brazing defects</p> <p>K2. Describe different types of testing applied on brazing job</p> <p>K3. Describe the method of removal of brazing defects</p> <p>K4. Explain specific safety measures associated with workplace (e.g. hazards related to removal of flux, shutdown of gas welding set)</p>	<p>Magnifying glass, Steel wire brush, gas welding set, welding tips, flux, filler materials, holding clamp, emery paper, cotton waste, cleaning agents, spark lighter, tip cleaner, spanners, cylinder keys, SOPs, PPE</p>

## Title G: Perform Oxy-Acetylene Welding

**Overview:** This Competency Standard identifies the competencies required to perform Oxy-Acetylene Welding, at workplace by Fabricator & Welder in accordance with the organization's approved guidelines and procedures. You will be expected to prepare job for oxy-acetylene welding , perform operations related to oxy-acetylene welding, perform post oxy-acetylene welding inspection , at workplace. Your underpinning knowledge regarding oxy-acetylene welding will be sufficient enough to provide you the basis for your work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>G1. Prepare job for oxy-acetylene welding</b>	<p><i>You will be able to:</i></p> <p>P1. Select the oxy-acetylene welding technique as per job requirement</p> <p>P2. Arrange the workplace according the oxy-acetylene welding requirement</p> <p>P3. Arrange tools required for oxy-acetylene welding method</p> <p>P4. Arrange filler material as per requirement</p> <p>P5. Clean the oxy-acetylene welding area, chemically and mechanically as per requirement</p> <p>P6. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain oxy-acetylene gas welding techniques</p> <p>K2. Explain the properties of metals</p> <p>K3. Explain the usage of tools for oxy-acetylene welding</p> <p>K4. Explain the usage of filler material</p> <p>K5. Explain different types of cleaning agents and techniques</p> <p>K6. Explain the hazards related to oxy-acetylene welding</p>	<p>Steel wire brush, gas welding set, welding tips, filler materials, holding clamp, emery paper, cotton waste, cleaning agents, spark lighter, tip cleaner, spanners, cylinder keys, SOPs, PPE</p>
<b>G2. Perform operations related to oxy-acetylene welding</b>	<p>P1. Lit up the gas torch and make flame as per requirement</p> <p>P2. Perform cleaning of job surface before</p>	<p>K1. Explain the usage of tools for oxy-acetylene welding</p> <p>K2. Explain the usage of consumables for oxy-</p>	<p>Steel wire brush, gas welding set, welding tips, filler materials, holding clamp, emery paper, cotton waste, cleaning agents,</p>

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Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>welding as per requirement</p> <p>P3. Perform oxy-acetylene welding on job as per SOPs</p> <p>P4. Perform cleaning of welded area after welding, as per requirement</p> <p>P5. Follow safety precautions at workplace</p>	<p>acetylene welding</p> <p>K3. Describe the post cleaning methods of oxy-acetylene welded area</p> <p>K4. Explain the specific safety precautions associated with oxy-acetylene welding</p>	<p>spark lighter, tip cleaner, spanners, cylinder keys, SOPs, PPE</p>
<p><b>G3. Perform post oxy-acetylene welding inspection</b></p>	<p><i>You will be able to:</i></p> <p>P1. Perform visual inspection for locating oxy-acetylene welding defects</p> <p>P2. Remove defects of oxy-acetylene welding as per requirement</p> <p>P3. Perform Pneumatic and hydro pressure tests on job for inspection</p> <p>P4. Follow safety precautions at workplace</p>	<p><i>You will be able to:</i></p> <p>K1. Explain different type of oxy-acetylene welding defects</p> <p>K2. Describe different types of testing applied on oxy-acetylene welded job</p> <p>K3. Describe the method of removal of oxy-acetylene defects</p> <p>K4. Explain specific safety measures associated with workplace (e.g. hazards related to removal of flux, shutdown of gas welding set)</p>	<p>Magnifying glass, wire brush, gas welding set, welding tips, filler materials, flux, holding clamp, jigs and fixtures, emery paper, cotton waste, cleaning agents, instructions manuals, SOPs, PPE</p>

## Title H: Perform Welding [SMAW (MMA) /GTAW (TIG) /GMAW (MIG/MAG)/SAW]

**Overview:** This Competency Standard identifies the competencies required to perform Welding, at workplace by Fabricator & Welder in accordance with the organization's approved guidelines and procedures. You will be expected to prepare workplace for SMAW MMA/GTAW (TIG) /GMAW (MIG/MAG) /SAW welding \, Perform operations related to SMAW (MMA)/GTAW (TIG) /GMAW (MIG/MAG) /SAW welding and Perform post welding operations, at workplace. Your underpinning knowledge welding will be sufficient enough to provide you the basis for your work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>H1. Prepare job for welding</b>	<p>You will be able to:</p> <p>P1. Arrange tools and cleaning chemicals required for the job</p> <p>P2. Prepare joint as per drawing</p> <p>P3. Clean joint as per requirement</p> <p>P3. Follow the welding procedure specification (WPS) / instruction sheet for welding</p> <p>P4. Follow specific safety precautions associated with welding job</p>	<p>You will be able to:</p> <p>K1. Describe the usage of tools required for the job</p> <p>K2. Describe the importance of joint preparation, cleaning and tacking</p> <p>K3. Define welding procedure specification (WPS) / instruction sheet</p> <p>K4. Apply specific safety precautions associated with welding job</p>	<p>Grinders, cutters, beveling machine, file, measuring tools, WPS/ instruction sheet, PPE</p>
<b>H2. Prepare workplace for SMAW(MMA) welding</b>	<p><i>You will be able to:</i></p> <p>P1. Arrange the workplace according to the requirement of the job</p> <ul style="list-style-type: none"> <li>• Welding booth/fire blanket</li> <li>• Welding Plant/machine and accessories</li> <li>• Power supply</li> <li>• Scaffolding</li> <li>• Jigs and fixtures</li> <li>• Lighting</li> </ul> <p>P2. apply the safety measures at workplace as per work permit e.g.</p>	<p><i>You will be able to:</i></p> <p>K1. Describe the requirements of a workplace for welding specific job</p> <p>K2. Describe the organizational safety rules and guidelines</p> <p>K3. Describe the preparation of welding machine including</p> <ul style="list-style-type: none"> <li>• Type of current (AC/DC)</li> <li>• Current polarity</li> </ul> <p>K4. Explain uses of Lower Explosive Limits (LEL)</p>	<p>Welding machine, grinder, chipping hammer, wire brush, electrode oven, desiccators, jigs and fixtures, lights, exhaust fans, fire blankets, fire extinguishers, first aid box, PPE</p>

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<ul style="list-style-type: none"> <li>• Ventilation</li> <li>• Fire extinguishers</li> <li>• First Aid box</li> <li>• Emergency alarm/light</li> <li>• List of Emergency Numbers</li> <li>• Personal protective equipment</li> </ul> <p>P3. Prepare the required welding plant/machine as per job requirement</p> <ul style="list-style-type: none"> <li>• Type of current (AC/DC)</li> <li>• Current polarity</li> </ul>	Tester, Oxygen Analyzer	
<b>H3. Perform operations related to SMAW(MMA) welding</b>	<p>You will be able to:</p> <p>P1. Arrange the electrode as per welding procedure specification (WPS) / instruction sheet</p> <p>P2. Arrange pre-heating equipment as per welding procedure specification (WPS) / instruction sheet</p> <p>P3. Adjust electrical parameters as per welding procedure specification (WPS) / instruction sheet</p> <p>P4. Perform following as per WPS / instruction sheet:</p> <ul style="list-style-type: none"> <li>• Pre heat the job, if required</li> <li>• Perform welding operation</li> <li>• Inter-pass cleaning</li> <li>• Inter-pass inspection</li> <li>• Maintain inter-pass temperature</li> </ul> <p>P5. Apply specific safety precautions associated with welding job/process</p>	<p>You will be able to:</p> <p>K1. Determine the specifications/ classification of electrode required for the job</p> <p>K2. Interpret instructions of WPS related to job</p> <p>K3. State the importance of pre heating</p> <p>K4. Describe how to adjust welding current parameters and their effects on welded joint</p> <p>K5. Explain the process of SMAW (MMA) welding</p> <p>K6. Apply specific safety precautions associated with welding job/process</p>	<p>Welding plant/machine, electrodes, pre-heating equipment, grinders, wire brush, chipping hammer, temperature gun, temple sticks, desiccators, PPE, WPS/ instruction sheet</p>

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>H4. Prepare workplace for GTAW (TIG) welding</b>	<p>You will be able to:</p> <p>P1. Arrange the workplace according to the requirement of the job</p> <ul style="list-style-type: none"> <li>• Welding booth/fire blanket</li> <li>• Welding machine and accessories</li> <li>• Gas cylinders ( Argon) with accessories</li> <li>• Power supply</li> <li>• Scaffolding</li> <li>• Jigs and fixtures</li> <li>• Lighting</li> </ul> <p>P2. apply the safety measures as per work permit</p> <ul style="list-style-type: none"> <li>• Ventilation</li> <li>• Fire extinguishers</li> <li>• First Aid box</li> <li>• Emergency alarm/light</li> <li>• List of Emergency Numbers Personal protective equipment</li> </ul> <p>P3. Prepare the required welding machine as per job requirement</p> <ul style="list-style-type: none"> <li>• Type of current (AC/DC)</li> <li>• Current polarity</li> <li>• Gas flow rate</li> </ul>	<p>You will be able to:</p> <p>K1. Describe the requirements of a workplace for welding the specific job</p> <p>K2. Describe the organizational safety rules and guidelines</p> <p>K3. Describe the preparation of welding plant/machine including</p> <ul style="list-style-type: none"> <li>• Type of current (AC/DC)</li> <li>• Current polarity</li> <li>• Gas flow rate</li> </ul> <p>K4. Explain uses of Lower Explosive Limits (LEL) Tester, Oxygen Analyzer</p>	<p>Welding machine and gas cylinders (Argon) with accessories, tungsten electrode, filler rod/ wire, grinder, wire brush, jigs and fixtures, lights, exhaust fans, fire blankets, fire extinguishers, first aid box, welding helmet, PPE</p>

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Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<p><b>H5. Perform operations related to GTAW (TIG) welding</b></p>	<p>You will be able to:</p> <p>P1. Arrange the filler wire/rod as per welding procedure specification (WPS) / instruction sheet</p> <p>P2. Arrange pre-heating equipment as per welding procedure specification (WPS) / instruction sheet</p> <p>P3. Adjust following welding parameters as per welding procedure specification (WPS) / instruction sheet</p> <ul style="list-style-type: none"> <li>• Amperes</li> <li>• Gas flow rate</li> <li>• Back purging, if required</li> </ul> <p>P4. Perform following as per WPS / instruction sheet</p> <ul style="list-style-type: none"> <li>• Pre heat the job, if required</li> <li>• Perform welding operation</li> <li>• Inter-pass cleaning</li> <li>• Inter-pass inspection</li> <li>• Maintain inter-pass temperature</li> </ul> <p>P5. Apply specific safety precautions associated with welding job/process</p>	<p>You will be able to:</p> <p>K1. Describe the specifications/ classification of filler wire/rod required for the job</p> <p>K2. Read and interpret instructions of WPS/ instruction sheet</p> <p>K3. State the importance of pre heating</p> <p>K4. Describe how to adjust welding parameters and their effects on welded joint</p> <p>K5. Explain the process of GTAW (TIG) welding</p> <p>K6. Apply specific safety precautions associated with welding job/process</p>	<p>Welding plant/machine and gas cylinders (Argon) with accessories, tungsten electrode, grinder, wire brush, filler wire/rod, jigs and fixtures, temperature gun, dissolving paper (as required), temple stick, masking tape (as required), lights, exhaust fans, fire blankets, fire extinguishers, first aid box, welding helmet, PPE, WPS/ instruction sheet</p>
<p><b>H6. Prepare workplace for GMAW (MIG/MAG) welding</b></p>	<p>You will be able to:</p> <p>P1. Arrange the workplace according to the requirement of the job</p> <ul style="list-style-type: none"> <li>• Welding booth/fire blanket</li> <li>• Welding plant/machine and accessories</li> <li>• Gas cylinders (CO<sub>2</sub>, Argon) with</li> </ul>	<p>You will be able to:</p> <p>K1. Describe the requirements of a workplace for welding the specific job</p> <p>K2. Describe the organizational safety rules</p>	<p>Welding machine and gas cylinders (CO<sub>2</sub>, Argon) with accessories, grinder, chipping hammer, wire brush, wire cutter, anti spatter spray, consumable wire, jigs and fixtures,</p>

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>accessories</p> <ul style="list-style-type: none"> <li>• Power supply</li> <li>• Scaffolding</li> <li>• Jigs and fixtures</li> <li>• Lighting</li> </ul> <p>P2. apply the safety measures as per work permit</p> <ul style="list-style-type: none"> <li>• Ventilation</li> <li>• Fire extinguishers</li> <li>• First Aid box</li> <li>• Emergency alarm/light</li> <li>• List of Emergency Numbers</li> <li>• Personal protective equipment</li> </ul> <p>P3. Prepare the required welding plant/machine as per job requirement</p> <ul style="list-style-type: none"> <li>• Type of current (AC/DC)</li> <li>• Current polarity</li> <li>• Gas flow rate</li> </ul>	<p>and guidelines</p> <p>K3. Describe the preparation of welding machine including</p> <ul style="list-style-type: none"> <li>• Type of current</li> <li>• Current polarity</li> <li>• Gas flow rate</li> </ul> <p>K4. Explain uses of Lower Explosive Limits (LEL) Tester, Oxygen Analyzer</p>	<p>lights, exhaust fans, fire blankets, fire extinguishers, first aid box, PPE</p>
<p><b>H7. Perform operations related to GMAW (MIG/MAG) welding</b></p>	<p>You will be able to:</p> <p>P1. Arrange the consumable wire spool as per welding procedure specification (WPS) / instruction sheet</p> <p>P2. Arrange pre-heating equipment as per welding procedure specification (WPS) / instruction sheet</p> <p>P3. Adjust following welding parameters as per welding procedure specification (WPS) /</p>	<p>You will be able to:</p> <p>K1. Describe the specifications/ classification of consumable wire required for the job</p> <p>K2. Read and interpret instructions of WPS/ instruction sheets</p> <p>K3. State the importance of pre heating</p> <p>K4. Describe how to adjust welding parameters and their effects on welded joint</p>	<p>Welding plant/machine and gas cylinders (CO<sub>2</sub>, Argon) with accessories, grinder, chipping hammer, wire brush, wire cutter, anti spatter spray, consumable wire spool, jigs and fixtures, lights, exhaust fans, fire blankets, fire extinguishers, first aid box, PPE, WPS/ instruction sheet</p>

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Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>instruction sheet</p> <ul style="list-style-type: none"> <li>• Voltage</li> <li>• Amperes</li> <li>• Wire feed speed</li> <li>• Gas flow rate</li> <li>• Stick out</li> </ul> <p>P4. Perform following as per WPS / instruction sheet</p> <ul style="list-style-type: none"> <li>• Pre heat the job, if required</li> <li>• Perform welding operation</li> <li>• Inter-pass cleaning</li> <li>• Inter-pass inspection</li> <li>• Maintain inter-pass temperature</li> </ul> <p>P5. Apply specific safety precautions associated with welding job/process</p>	<p>K5. Explain the process of GMAW (MIG/MAG) welding</p> <p>K6. Explain specific safety precautions associated with welding job/process</p>	
<p><b>H8. Prepare workplace for Submerged Arc Welding (SAW) welding</b></p>	<p>You will be able to:</p> <p>P1. Arrange the workplace according to the requirement of the job</p> <ul style="list-style-type: none"> <li>• Welding machine and accessories</li> <li>• Power supply</li> <li>• Jigs and fixtures</li> <li>• Lighting</li> </ul> <p>P2. Apply the safety measures as per work permit</p> <ul style="list-style-type: none"> <li>• Ventilation</li> <li>• Fire extinguishers</li> <li>• First Aid box</li> <li>• Emergency alarm/light</li> </ul>	<p>You will be able to:</p> <p>K1. Describe the requirements of a workplace for welding the specific job</p> <p>K2. Describe the organizational safety rules and guidelines</p> <p>K3. Describe the preparation of welding machine including</p> <ul style="list-style-type: none"> <li>• Type of current (AC/DC)</li> <li>• Current polarity</li> <li>• Travel speed</li> </ul>	<p>Welding machine with accessories, flux drying oven, grinder, chipping hammer, wire brush, jigs and fixtures, lights, exhaust fans, fire extinguishers, first aid box, PPE</p>

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<ul style="list-style-type: none"> <li>• List of Emergency contact numbers</li> <li>• Personal protective equipment</li> </ul> <p>P3. Prepare the required welding machine as per job requirement</p> <ul style="list-style-type: none"> <li>• Type of current (AC/DC)</li> <li>• Current polarity</li> <li>• Travel speed</li> </ul>		
<p><b>H9. Perform operations related to Submerged Arc Welding (SAW) welding</b></p>	<p>You will be able to:</p> <p>P1. Arrange consumable wire spool and flux as per welding procedure specification (WPS) / instruction sheet</p> <p>P2. Arrange pre-heating equipment, if required, as per welding procedure specification (WPS) / instruction sheet</p> <p>P3. Adjust following welding parameters as per welding procedure specification (WPS) / instruction sheet</p> <ul style="list-style-type: none"> <li>• Voltage</li> <li>• Amperes</li> <li>• Travel speed</li> <li>• Type of Polarity</li> <li>• Stick out</li> <li>• Wire speed</li> </ul> <p>P4. Perform following as per welding procedure specification (WPS) / instruction sheet</p> <ul style="list-style-type: none"> <li>• Pre heat the job, if required</li> <li>• Perform welding operation</li> <li>• Inter-pass cleaning</li> </ul>	<p>You will be able to:</p> <p>K1. Describe the specifications/ classification of wire and flux combination required for the job</p> <p>K2. Read and interpret instructions of WPS/ instruction sheet</p> <p>K3. State the importance of pre heating</p> <p>K4. Describe how to adjust welding parameters and their effects on welded joint</p> <p>K5. Explain the process of SAW welding operation</p> <p>K6. Apply specific safety precautions associated with welding job/process</p>	<p>Welding equipment with accessories, wire spool, flux, pre-heating equipment, grinders, wire brush, wire cutter, chipping hammer, temple sticks, flux drying oven, PPE, WPS/ instruction sheet</p>

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Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<ul style="list-style-type: none"> <li>• Inter-pass inspection</li> <li>• Maintain inter-pass temperature</li> </ul> <p>P5. Apply specific safety precautions associated with welding job/process</p>		
<p><b>H10. Perform post welding operations</b></p>	<p>You will be able to:</p> <p>P1. Apply post weld cleaning of the job with following process</p> <ul style="list-style-type: none"> <li>• Removal/collection of un-fused flux (for SAW process)</li> <li>• Removal of slag</li> <li>• Removal of jigs and fixtures</li> </ul> <p>P2. Perform visual inspection of welded area and rectify defects as per requirement</p> <p>P3. Perform post-heating of the job as per WPS/ instruction sheet, if required</p> <p>P4. Apply specific safety precautions associated with welding job/process</p>	<p>You will be able to:</p> <p>K1. State the importance of post weld cleaning of the job</p> <p>K2. Identify, imperfections of welded area visually</p> <p>K3. Describe the purpose of post-heating</p> <p>K4. Explain specific safety precautions associated with welding job/process</p>	<p>post-heating equipment, welding machine, consumables as per WPS, grinders, wire brush, chipping hammer, PPE, WPS/ instruction sheet</p>
<p><b>H11. Repair defected areas of job/work piece</b></p>	<p><i>You will be able to:</i></p> <p>P1. Follow the instructions of supervisor and inspector's report to identify defected point (s)</p> <p>P2. Arrange the tools and equipment required</p>	<p><i>You will be able to:</i></p> <p>K1. Read and interpret inspection report regarding defects</p> <p>K2. Enlist the non destructive tests (NDT) for</p>	<p>Grinder, cutter, gouging equipment, welding equipment with accessories, electrodes/filler wires, gas cylinder, desiccators,</p>

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
	<p>for repairing defected area(s)</p> <p>P3. Apply the following repair procedure as per inspection report</p> <ul style="list-style-type: none"> <li>• Grinding</li> <li>• Cutting</li> <li>• Gouging</li> </ul> <p>P4. Apply repair welding to specific defected area(s) as per WPS/ instruction sheet</p> <p>P5. Apply specific safety precautions associated with welding equipment</p>	<p>welding inspection</p> <ul style="list-style-type: none"> <li>• Visual testing (VT)</li> <li>• Magnetic particle test (MT)</li> <li>• Radiographic test (RT)</li> <li>• Ultrasonic test (UT)</li> <li>• Dye penetration test (PT)</li> <li>• Positive Material Identification (PMI)</li> </ul> <p>K3. Describe the usage of tools and equipment required for the job</p> <p>K4. Describe the process and selection of defect removal methods</p> <p>K5. State the need for repair welding</p> <p>K6. Describe specific safety precautions associated with welding equipment usage</p>	<p>electrode drying oven, (argon),WPS/ instruction sheet, PPE</p>

## TITLE I . Develop Professionalism

**Overview:** This Competency Standard identifies the competencies required to Develop Professionalism by Fabricator & Welder in accordance with the organization's approved guidelines and procedures. You will be expected to perform communication with others, upgrade professional skills and work in a team. Your underpinning knowledge regarding development of professionalism will be sufficient to provide you the basis for your work.

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>I1. Perform Communication with others</b>	You will be able to: <b>P1.</b> Communicate with supervisor following communication procedure <b>P2.</b> Communicate with colleagues following communication procedure <b>P3.</b> Use media to communicate effectively (e.g: email, telephone, laptop etc)	You will be able to: <b>K1.</b> Identify factors required to communicate effectively and precisely within organisation. <b>K2.</b> Justify the appropriate use of electronic and relative media as per need <b>K3.</b> Knowledge of technical English	Computer/ laptop, internet, telephone
<b>I2. Upgrade professional skills</b>	You will be able to: <b>P1.</b> Participate in Skill test for professional development <b>P2.</b> Attend seminars/ training workshops for professional development <b>P3.</b> Adopt upcoming market trends in welding field <b>P4.</b> follow organizational policies (SOPs) for professional development	You will be able to: <b>K1.</b> Describe the benefits of latest welding techniques and developments <b>K2.</b> Identify the need of skill sets by getting involved in seminars, workshops and competitions.	Computer, internet facility, magazines, books, codes and standards

Unit of Competency	Performance Criteria	Knowledge	Tools & Equipment
<b>I3. Work in a team</b>	<p>You will be able to:</p> <p><b>P1.</b> Demonstrate good team skills including</p> <ul style="list-style-type: none"> <li>• Cooperation/coordination</li> <li>• Work ethics</li> <li>• Etiquettes/manners</li> </ul> <p><b>P2.</b> Adopt dress code as per SOPs.</p> <p><b>P3.</b> Show comfort and tolerance.</p>	<p>You will be able to:</p> <p><b>K1.</b> Describe the importance of being a good team player .including</p> <ul style="list-style-type: none"> <li>• Cooperation/coordination</li> <li>• Work ethics</li> <li>• Etiquettes/manners</li> </ul>	<p>Computer, internet facility, lectures</p>

**List of Tools, Equipment and Consumables**

<b>Tools and Equipment</b>	<b>Consumables</b>
<ul style="list-style-type: none"> <li>• Calculator</li> <li>• Bevel Machine</li> <li>• Pedestal Grinder</li> <li>• Angle grinder</li> <li>• Pencil Grinder</li> <li>• Bench vice</li> <li>• Electric Hand drill machine</li> <li>• Sprit level metallic</li> <li>• Pipe vice</li> <li>• Pipe cutter</li> <li>• Tin cutter</li> <li>• Hammer ball pien</li> <li>• Hammer Straight</li> <li>• Hammer Cross pien</li> <li>• Prick Punch</li> <li>• Center Punch</li> <li>• Ms. Chisel Flat</li> <li>• Pipe Wrench</li> <li>• Adjustable Wrench</li> <li>• Hack Saw Frame</li> <li>• Hack saw Blade</li> <li>• Tri-square</li> <li>• Micrometer</li> <li>• Vernier Calipers</li> <li>• Tap and Die</li> <li>• File (e.g: round, half round, flat, triangle)</li> <li>• Jigs and fixtures</li> <li>• Combination set</li> <li>• Spanners</li> <li>• Socket set</li> <li>• Screw driver</li> <li>• Steel scale</li> <li>• Inside calipers</li> <li>• Outside calipers</li> </ul>	<ul style="list-style-type: none"> <li>• Stationary items</li> <li>• Marking Stone</li> <li>• Wrap around</li> <li>• Emery Paper</li> <li>• CO<sub>2</sub> cylinder</li> <li>• Acetylene cylinder</li> <li>• Power brush</li> <li>• Wire brush</li> <li>• Safety goggles</li> <li>• Safety gloves</li> <li>• Overall</li> <li>• Face Shield</li> <li>• Dust Mask</li> <li>• Ear Plugs</li> <li>• Ear Muffs</li> <li>• Welding Helmet</li> <li>• Safety Helmet</li> <li>• Safety shoes</li> <li>• Black Glass for Welding Helmet (shade 10,11,12)</li> <li>• Clear Glass for Welding Helmet</li> <li>• Cutting Disc (4", 5", 7" 9" &amp; 14")</li> <li>• Grinding Disc</li> <li>• Fire Extinguisher (DCP, CO<sub>2</sub>, Foam, Water)</li> <li>• Gases (O<sub>2</sub>, D/A, Argon, LPG, CO<sub>2</sub>)</li> <li>• Sand Buckets</li> <li>• Lubricants</li> <li>• Soldering Wire</li> <li>• Filler Wire for Brazing</li> <li>• Filler wire bras</li> <li>• Copper Coated Mild Steel (CCMS) for gas welding</li> <li>• Electrode for SMAW (MMA) Welding (AWS 7018)</li> </ul>

<ul style="list-style-type: none"> <li>• Divider</li> <li>• Tool Box</li> <li>• Anvil steel</li> <li>• Clamp</li> <li>• Letter punch</li> <li>• Number punch</li> <li>• Chipping hammer</li> <li>• Gas cutting torch set</li> <li>• Argon cylinders</li> <li>• Welding rectifier for electric welding</li> <li>• Welding machine for Argon welding</li> <li>• Welding machine for CO2 welding</li> <li>• Welding Machine for SAW</li> <li>• Electrode holder</li> <li>• Welding cable</li> <li>• Hose pipe</li> <li>• Welding torch for GTAW</li> <li>• Welding torch for Brazing</li> <li>• Torch Head</li> <li>• Baking oven</li> <li>• Power cutter</li> <li>• flash back Arrestor</li> <li>• Welding booth</li> <li>• Exhaust fans</li> <li>• Welding Procedure Specification (WPS)</li> <li>• Standard Operating Procedures (SOPs)</li> </ul>	<ul style="list-style-type: none"> <li>• Electrode for SMAW (MMA) Welding (E6013)</li> <li>• Consumable Wire Spool for GMAW/MIG MAG Process (AWS 70S-6)</li> <li>• Consumable Wire for GTAW/TIG Process</li> <li>• AWS ER 70S -3</li> <li>• Consumable Wire Spool for SAW process</li> <li>• Wire [AWS EM 12K/ Flux EH14]</li> <li>• Consumable Flux for SAW process</li> <li>• Masking Tape</li>   <li>• Hacksaw Blade</li> <li>• Conical Stone</li> <li>• Milling Cutter</li> <li>•</li> </ul>
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