

## OCCUPATIONAL PROFILE FOR WELDER

Workers Behaviour	General Knowledge and Skills	
<ul style="list-style-type: none"> <li>• Care for cleanliness</li> <li>• Care for company's property</li> <li>• Care for human relations</li> <li>• Careful / hones / polite</li> <li>• Disciplined / patient</li> <li>• Hardworking</li> <li>• Integrity</li> <li>• Meticulous</li> <li>• Open to innovation</li> <li>• Organized</li> <li>• Quality conscious</li> <li>• Respect for company's regulation</li> <li>• Responsible and self initiative</li> <li>• Safety conscious</li> <li>• Punctuality</li> <li>• Energetic</li> <li>• Flexible</li> <li>• Efficient use of materials</li> <li>• Consistency</li> </ul>	<ol style="list-style-type: none"> <li>1. Knowledge of technological development</li> <li>2. Knowledge of tools and equipment</li> <li>3. Knowledge of work and work safety</li> <li>4. Knowledge of technical drawing</li> <li>5. Knowledge of materials (ferrous &amp; non-ferrous)</li> <li>6. Basic mathematics</li> <li>7. Knowledge of quality standard</li> <li>8. Basic electrical knowledge</li> <li>9. Knowledge about company's rules &amp; regulation</li> <li>10. Knowledge of first aid</li> <li>11. Knowledge of product</li> <li>12. Knowledge of measuring tools</li> <li>13. Maintenance of tools and equipment</li> <li>14. Computer knowledge</li> <li>15. Environmental regulations</li> <li>16. Human psychology</li> <li>17. Mechanics and standard measurement</li> <li>18. Occupational health and safety (OHS)</li> <li>19. Quality control principles</li> <li>20. Knowledge of welding equipment type</li> <li>21. Fire extinguisher operation</li> </ol>	
TOOLS AND EQUIPMENT	CONCERNS AND FUTURE TRENDS	
<ul style="list-style-type: none"> <li>• Try square</li> <li>• Screw driver</li> <li>• Measuring tape</li> <li>• Hammer</li> <li>• Plier</li> <li>• Chisel</li> <li>• Compass / divider</li> <li>• Center punch</li> <li>• Spanner</li> <li>• Snips</li> <li>• Lighter</li> <li>• Denting set</li> <li>• File</li> <li>• Drilling machine</li> <li>• Hacksaw</li> <li>• First aid box</li> <li>• Gas cutting set</li> <li>• Snipper</li> </ul>	<ul style="list-style-type: none"> <li>• Grinding machine</li> <li>• Bending machine</li> <li>• Gas cylinder</li> <li>• Nozzle</li> <li>• Hose pipe</li> <li>• Safety gear</li> <li>• Clamps</li> <li>• Work bench</li> <li>• Vice</li> <li>• Tongs</li> <li>• Welding holder</li> <li>• Wire brush</li> <li>• Welding transformer and accessories</li> <li>• Shearing machine</li> <li>• Steel ruler</li> </ul>	<ul style="list-style-type: none"> <li>• Need improved working facilities</li> <li>• Need educated welders</li> <li>• Need increased salary</li> <li>• Need further training</li> <li>• Need better safety system</li> <li>• Technical development</li> <li>• More competition</li> <li>• Women participation</li> <li>• Professional welders</li> <li>• Participate in regional skills competition</li> <li>• More employers and more job seekers</li> <li>• More fabrication contactors</li> <li>• Adopt latest technologies</li> <li>• Improved status / dignity</li> <li>• More automation</li> <li>• Computer skills</li> <li>• Training on other types of welding method (IG, TIG, X-ray, mig and spot welding etc)</li> <li>• Training on non-destructive test</li> </ul>

Endorsed by Technical Advisory Committee (TAC) for Manufacturing sector (TAC - MS) on 9<sup>th</sup> June 2007  
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### Occupational Profile for **WELDER**

Level 2

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**Royal Government of Bhutan**

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**Training Providers, Employers, Employees,  
Trainees and Interested General Public.**

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# WELDER : Duties & Tasks

19 October 2006

Duties		Tasks												
<b>A</b>	<b>Ensure work safety</b>	<b>A1</b> Wear safety gear	<b>A2</b> Display safety signs	<b>A3</b> Keep work place dry	<b>A4</b> Follow safety signs / notice	<b>A5</b> Remove obstacles from work place	<b>A6</b> Ensure ventilation in work place	<b>A7</b> Insulate welding accessories	<b>A8</b> Fit standard electrical accessories	<b>A9</b> Fasten electrical connections	<b>A10</b> Keep gas cylinder on stand	<b>A11</b> Check leakage of gas	<b>A12</b> Place key on gas cylinder	<b>A13</b> Place gas cylinder at safe distance from fire / heat
<b>B</b>	<b>Prepare for work</b>	<b>B1</b> Obtain instructions	<b>B2</b> Refer drawing	<b>B3</b> Estimate materials quantity	<b>B4</b> Prepare list of materials required	<b>B5</b> Collect materials	<b>B6</b> Check working conditions of tools and equipment	<b>B7</b> Arrange tools and equipment	<b>B8</b> Clean work place	<b>B9</b> Monitor work done by subordinates	<b>B10</b> Assign work to subordinates	<b>A16</b> Provide first aid	<b>A15</b> Put nozzle in water to avoid over heating	<b>A14</b> Close oxygen torch valve in case of back fire
<b>C</b>	<b>Prepare work piece</b>	<b>C1</b> Clean work piece surface*	<b>C2</b> Measure materials*	<b>C3</b> Mark on work piece*	<b>C4</b> Cut work piece to size*	<b>C5</b> Form work piece to shape*	<b>C6</b> Drill holes on work piece*	<b>C7</b> Prepare surface for welding(dry)*	<b>C8</b> File uneven surface*	<b>C9</b> Straighten work piece*	<b>C10</b> Check surface /straightness/ smoothness*			
<b>D</b>	<b>Carry out pre-welding preparation</b>	<b>D1</b> Check for power supply	<b>D2</b> Connect power plug to socket	<b>D3</b> Connect earth cable to work	<b>D4</b> Select electrode	<b>D5</b> Dry electrode	<b>D6</b> Check gas cylinder	<b>D7</b> Fix work piece in place	<b>D8</b> Adjust welding gap	<b>D9</b> Align work piece				
<b>E</b>	<b>Weld work piece</b>	<b>E1</b> Adjust ampere	<b>E2</b> Set-up work piece	<b>E3</b> Pre-heat work piece	<b>E4</b> Place electrode in holder	<b>E5</b> Tack work piece	<b>E6</b> Carry out running weld (continuous)	<b>E7</b> Chip-off slag bolts	<b>E8</b> Refill blow holes	<b>E9</b> Peen welder portion				
<b>F</b>	<b>Preform gas cutting / welding</b>	<b>F1</b> Prepare templates for marking irregular shapes	<b>F2</b> Select cutting nozzle	<b>F3</b> Change cutting nozzle	<b>F4</b> Check gas pressure	<b>F5</b> Release gas	<b>F6</b> Adjust working pressure	<b>F7</b> Fix guards for cutting	<b>F8</b> Select correct filler materials	<b>F9</b> Light gas	<b>F10</b> Set flame	<b>F11</b> Set carburizing flame	<b>F12</b> Set neutral flame	<b>F13</b> Set oxidizing flame
<b>G</b>	<b>Perform denting work</b>	<b>G1</b> Inspect surface for denting	<b>G2</b> Remove components in case of minor denting work	<b>G3</b> Cut components in case of major denting	<b>G4</b> Level surface to shape	<b>G5</b> Dent surface to shape	<b>G6</b> Assemble components							<b>F14</b> Weld cut portion
<b>H</b>	<b>Carry out finishing</b>	<b>H1</b> Clean weld bead	<b>H2</b> Check weld bead visually	<b>H3</b> Grind uneven surface	<b>H4</b> Grind deep cracks	<b>H5</b> Carry out non-destructive test (DP,X-ray,UT)	<b>H6</b> Carry out destructive test	<b>H7</b> Re-check measurements	<b>H8</b> Check for cleanliness of finished job					
<b>I</b>	<b>Maintain tools and equipment</b>	<b>I1</b> Implement maintenance schedule	<b>I2</b> Clean tools and equipment	<b>I3</b> Check transformer oil level	<b>I4</b> Fill oil to level	<b>I5</b> Fasten loose nuts and bolts	<b>I6</b> Repair faulty tools and equipment	<b>I7</b> Clean blockages	<b>I8</b> Clean nozzle	<b>I9</b> Check gas pressure (DA and oxygen)				
<b>J</b>	<b>Upgrade knowledge and skills</b>	<b>J1</b> Read instruction manuals,journals and books	<b>J2</b> Exchange information with co-worker and seniors	<b>J3</b> Practice skills regularly	<b>J4</b> Identify training needs	<b>J5</b> Participate in skills competition	<b>J6</b> Participate in training course and seminars	<b>J7</b> Train subordinate in cooperation with training centre	<b>J8</b> Visit other similar organization	<b>J9</b> Collect feedback for further improvement				

\*Tasks applicable to small scale fabrication industries

DP - Dye Penetrant Test UT - Ultrasonic Test

DA - Dissolved Acetylene