

# Assessment Evidence Guide

## For

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Level-5

**Module name**  
(Formative Assessment)

*8<sup>th</sup> -12<sup>th</sup> March 2021*



**National Vocational & Technical  
Training Commission**

<b>Title of Qualification:</b> Surface Coating Technician-II	CS Code:	Level: 5	Version: 01
<b>Competency Standard Title:</b>  Perform Thermal Spray Coatings (Plasma)	<b>Assessment Date (DD/MM/YY):</b>  <b>Assessment Time:</b>		

Candidate Details	Name: .....  Registration/Roll Number: .....
Guidance for Candidate	<p><b>To meet this standard, you are required to complete the following within the given time frame (for practical demonstration &amp; assessment):</b></p> <p><b>Assessment Task 1:</b> Candidate is required to: Perform Ultrasonic Cleaning and Grit Blasting Operation</p> <p><b>Assessment Task 2:</b> Candidate is required to: Perform Masking and Set up Jigs &amp; Fixture operation</p> <p><b>Assessment Task 3:</b> Candidate is required to: Perform Set up Plasma coating system and Coating Operation</p> <p><b>And complete:</b></p> <ol style="list-style-type: none"> <li><b>1. Knowledge assessment test (Written or Oral)</b></li> <li><b>2. Portfolios at the time of assessment (if any)</b></li> </ol>
Minimum Evidence Required	<p><b>During a practical assessment, under observation by an assessor, you will complete:</b></p> <p><b>Assessment Task 1</b></p> <p><b>P1.</b> Perform proper documentation of the initial conditions of Specimen and recognize its identity.</p> <p><b>P2.</b> Adopt standard safety practice and procedure for handling.</p> <p><b>P3.</b> Prepare job layout according to process requirements.</p> <p><b>P4.</b> Identify the Cleaning process as per requirement of standards.</p> <p><b>P5.</b> Prepare degreasing cleaning solution where steel is treated with CCL4 solution which removes common dirt and oils.</p> <p><b>P6.</b> Place specimen in the solution for specific time in ultrasonic bath then remove and rinsing with water.</p> <p><b>P7.</b> Prepare chemical cleaning solution where the surface rust and scales are removed by using acetone solution.</p> <p><b>P8.</b> Place specimen in the solution for specific time in ultrasonic bath then</p>

	<p>remove and rinsing with water.</p> <p><b>P9.</b> Prepare cleaning solution where the surface oxides are removed by using cleano gel.</p> <p><b>P10.</b> Place specimen in the solution for specific time in ultrasonic bath with agitation then rising with water.</p> <p><b>P11.</b> Remove the specimen from bath and ready for next step.</p> <p><b>P12.</b> Add grit of required mesh size in the blasting machine.</p> <p><b>P13.</b> Adopt standard safety practice and procedure for handling.</p> <p><b>P14.</b> Place the sample in chamber.</p> <p><b>P15.</b> Set angle 90 or 45 degree for blasting depends upon type of materials.</p> <p><b>P16.</b> Blast according to standard time. Remove specimen from chamber.</p> <p><b>P17.</b> Clean the specimen with compress air. Also use alcohol for cleaning.</p>
	<p><b>Assessment Task 2</b></p> <p><b>P1.</b> Place specimen in the tray.</p> <p><b>P2.</b> Apply masking solution with help of brush on the safe from coating.</p> <p><b>P3.</b> Let it dry or use compress air for drying.</p> <p><b>P4.</b> Masking may also be use.</p> <p><b>P5.</b> Remove specimen after specific time for drying.</p> <p><b>P6.</b> <b>Adjust holder according to specimen height, width.</b></p> <p><b>P7.</b> <b>Adopt standard safety practice and procedure for handling process.</b></p> <p><b>P8.</b> <b>Use standard holder or fixture for specimen.</b></p> <p><b>P9.</b> <b>Grip the specimen in holders.</b></p> <p><b>P10.</b> <b>Clean the Fixtures with cold compress air.</b></p> <p><b>P11.</b> <b>Clamping and tightening the holders.</b></p>
	<p><b>Assessment Task 3</b></p> <p><b>P1.</b> Connect primary (Ar) and secondary (H2) gases and set required pressure.</p> <p><b>P2.</b> Set the temperature max 18C of chiller and connect hoses to gun and system.</p> <p><b>P3.</b> Set air pressure of compressor and connect to gun and system.</p> <p><b>P4.</b> Pre heat coating powder in oven then mix in mixing machine.</p> <p><b>P5.</b> Put powder in system hopper and set it flow rate.</p> <p><b>P6.</b> Set coating current from 500-700 amps.</p> <p><b>P7.</b> <b>Perform ignition test to check parameters of plasma system.</b></p>

	<p><b>P8. Switch on holding machine to rotate the specimen.</b></p> <p><b>P9. Fix in holder and Set distance from specimen of plasma coating gun.</b></p> <p><b>P10. Open primary gas and adjust current as per coating standards.</b></p> <p><b>P11. Pre heat the specimen around 120C.</b></p> <p><b>P12. Open secondary gas to achieve required temperature.</b></p> <p><b>P13. Switch on powder feeder for coating.</b></p> <p><b>P14. Remove specimen from holder and cool with compress air.</b></p>
	<p><b>Portfolios required at the time of assessment (if any) for</b></p>

*Continued on following page*

**Assessors Judgment Guide** (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

Candidate Details	Name: ..... Registration/Roll Number: ..... Candidate Signature:.....
Assessment Outcome	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: ..... Assessor's code: ..... Signature of the Assessor:.....

Assessment Summary (to be filled by the assessor)							
Activity	Method					Result	
Nature of Activity	Written	Oral	Observation	Portfolio	Role Play	Competent	Not Yet Competent
Practical Skill Demonstration			✓				
Knowledge Assessment	✓	✓					
Other Requirement							

Each Assessment Task (with performance criteria)				
Assessment Task 1		Description of assessment task 1		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
	Perform proper documentation of the initial conditions of Specimen and recognize its identity.			
	Adopt standard safety practice and procedure for handling.			
	Prepare job layout according to process requirements.			
	Identify the Cleaning process as per requirement of standards.			
	Prepare degreasing cleaning solution where steel is treated with CCL4 solution which removes common dirt and oils.			
	Place specimen in the solution for specific time in ultrasonic bath then remove and rinsing with water.			
	Prepare chemical cleaning solution where the surface rust and scales are removed by using acetone solution.			
	Place specimen in the solution for specific time in ultrasonic bath then remove and rinsing with water.			
	Prepare cleaning solution where the surface oxides are removed by using cleano gel.			
	Place specimen in the solution for specific time in ultrasonic bath with agitation then rising with water.			
	Remove the specimen from bath and ready for next step.			
	Add grit of required mesh size in the blasting			

	machine.			
	Adopt standard safety practice and procedure for handling.			
	Place the sample in chamber.			
	Set angle 90 or 45 degree for blasting depends upon type of materials.			
	Blast according to standard time. Remove specimen from chamber.			
	Clean the specimen with compress air. Also, use alcohol for cleaning.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Assessment Task 2		Description of assessment task 2		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
	Place specimen in the tray.			
	Apply masking solution with help of brush on the safe from coating.			
	Let it dry or use compress air for drying.			
	Masking may also be use.			
	Remove specimen after specific time for drying.			
	Adjust holder according to specimen height, width.			
	Adopt standard safety practice and procedure for handling process.			
	Use standard holder or fixture for specimen.			
	Grip the specimen in holders.			
	Clean the Fixtures with cold compress air.			
	Clamping and tightening the holders.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		

Each Assessment Task (with performance criteria)				
Assessment Task 3		Description of assessment task 3		
During the practical assessment, candidate demonstrated the following:		Yes	No	Remarks
	Connect primary (Ar) and secondary (H2) gases and set required pressure.			
	Set the temperature max 18C of chiller and connect hoses to gun and system.			
	Set air pressure of compressor and connect to gun and system.			
	Pre heat coating powder in oven then mix in mixing machine.			
	Put powder in system hopper and set it flow rate.			
	Set coating current from 500-700 amps.			
	Perform ignition test to check parameters of plasma system.			
	Switch on holding machine to rotate the specimen.			
	Fix in holder and Set distance from specimen of plasma coating gun.			
	Open primary gas and adjust current as per coating standards.			
	Pre heat the specimen around 120C.			
	Open secondary gas to achieve required temperature.			
	Switch on powder feeder for coating.			
	Remove specimen from holder and cool with compress air.			
Competent <input type="checkbox"/>		Not Yet Competent <input type="checkbox"/>		



<b>Title of Qualification:</b> Surface Coating Technician-II	<b>CS Code:</b>	<b>Level:</b>	<b>Version:</b> 01
<b>Competency Standard Title:</b>  <b>Perform Thermal Spray Coatings (Plasma)</b>	<b>Assessment Date (DD/MM/YY):</b>  <b>Assessment Time:</b> 30 min		

<b>Guidance for Candidate</b>	<b>To complete your assessment for this Competency Standard, you need to answer the questions on the following pages successfully.</b>
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**Assessors Guide** (to be completed by the Assessor and signed both by the assessor and the candidate after the assessment)

<b>Candidate Details</b>	Name: ..... Registration/Roll Number: ..... Candidate Signature:.....
<b>Written Assessment Outcome</b>	COMPETENT <input type="checkbox"/> NOT YET COMPETENT <input type="checkbox"/> Name of the Assessor: ..... Assessor's code: ..... Signature of the Assessor:.....

<b>Title of Qualification:</b> Surface Coating Technician-II	CS Code:	Level:4	Version: 01
<b>Competency Standard Title:</b> Perform Thermal Spray Coatings (Plasma)	<b>Assessment Date (DD/MM/YY):</b> <b>Assessment Time:</b> 30 min		

#### WRITTEN ASSESSMENT

Question	Candidate's answer
Define purpose of Plasma coating.	<ul style="list-style-type: none"> <li>• Surface Protection</li> <li>• Corrosion protection</li> <li>• Long life</li> <li>• Wear resistance</li> </ul>
Define General coating thickness ranges	<ul style="list-style-type: none"> <li>• 1mm-1inch</li> </ul>
Define cleaning and Blasting types.	<ul style="list-style-type: none"> <li>• Chemical</li> <li>• Mechanical</li> </ul>
Define Plasma coating materials.	<ul style="list-style-type: none"> <li>• Cathodes</li> <li>• Anodes</li> <li>• Gases</li> <li>• Metallic Powders</li> </ul>
Explain Plasma coating time and temperatures.	<ul style="list-style-type: none"> <li>• Depends upon Coating Area</li> <li>• 5000-9000C°</li> </ul>