APPRENTICESHIP CURRICULUM (OPTIONAL TRADE)

Rubber

Rubber_Product Quality Assurance Supervisor

Course Code: CO082200001

☒NAPS ☐Non-NAPS

NSQF Level: 5

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Course Details

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<tr><td>2.</td><td>Course Code</td><td>CO082200001</td></tr>
<tr><td rowspan="2">3.</td><td>Apprenticeship Training Duration:
(2 to 4 weeks of BT is embedded in this duration as per the requirement of the establishment)</td><td>Months: 12 months</td></tr>
<tr><td>Remarks</td><td></td></tr>
<tr><td>4.</td><td>Credit</td><td>TBD</td></tr>
<tr><td>5.</td><td>NSQF Level (Mandatory for NAPS)</td><td>5 NSQC Approval Date: 31/03/2022</td></tr>
<tr><td>6.</td><td>Related NSQF aligned qualification details</td><td>
<table>
<tr><th>S. No.</th><th>QP/ Qualification/ NOS Name (As applicable)</th><th>QP/ NOS Code & Version</th><th>NQR Code</th></tr>
<tr><td>1.</td><td>Rubber Product - Quality Assurance Supervisor</td><td>RSC/Q2401 _V2</td><td>2022/RUB/RSDC/05746</td></tr>
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</td></tr>
<tr><td>7.</td><td>Brief Job Role Description</td><td>6</td></tr>
<tr><td>8.</td><td>NCO-2015 Code & Occupation (Access the NCO 2015 volumes from: https://labour.gov.in/organizationsofmole/directorate-general-employment-training-dget)</td><td>NCO-2015/2113.0901</td></tr>
<tr><td>9.</td><td>Minimum Eligibility Criteria
(Educational and/ or Technical Qualification)</td><td>12th Class (4 years of relevant experience)
OR
10th Class + I.T.I ((after 10th Class)in the relevant field with 2 years of relevant experience)</td></tr>
<tr><td>10.</td><td>Entry Age for Apprenticeship</td><td>18 years</td></tr>
<tr><td>11.</td><td>Any Licensing Requirements (wherever applicable)</td><td>NA</td></tr>
</table>

12.	**Is the Job Role amenable to Persons with Disability**	☐ **Yes** ☒ **No** **If yes, check the applicable type of Disability** ☐ **Locomotor Disability** ☐ **Leprosy Cured Person** ☐ **Cerebral Palsy** ☐ **Dwarfism** ☐ **Muscular Dystrophy** ☐ **Acid Attack Victims** ☐ **Blindness** ☐ **Low Vision** ☐ **Deaf** ☐ **Hard of Hearing** ☐ **Speech and Language Disability** ☐ **Intellectual Disability** ☐ **Specific Learning Disabilities** ☐ **Autism Spectrum Disorder** ☐ **Mental Illness** ☐ **Multiple Sclerosis** ☐ **Parkinson's Disease** ☐ **Haemophilia** ☐ **Thalassemia** ☐ **Sickle Cell Disease** ☐ **Multiple Disabilities**
		Remarks:
13.	**Submitting Body Details**	**Name:** Rubber, Chemical & Petrochemical Skill Development Council **E-mail ID:** ceo@rcpsdc.in **Contact Number:** 011-41009347- 48
14.	**Certifying Body**	Rubber, Chemical & Petrochemical Skill development Council
15.	**Employment Avenues/Opportunities**	**Self-Employment**: Trainees can also start their own business and also provide jobs to otherpeople. **Washing of the vehicles**

		Jobs Opportunities in private companies: The trainees can get a job in a relevant Industry.
16.	**Career Progression**	QA Supervisor role leads to Senior Quality supervisor level Occupation in tyre & non-tyre under rubber manufacturing process
17.	**Trainer's Qualification & Experience:**	Diploma /Graduate in any engineering or science stream
18.	**Curriculum Creation Date**	07/07/2022
19.	**Curriculum Valid up to Date**	March 31, 2025

Module Details

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
1.	Rubber Incoming Quality Assurance RSC/N2402	• Interpret the inspection methodology given in the incoming inspection standards. • List the measurement instruments required for incoming material inspection. • Outline the importance of instrument calibration in measurement accuracy. • Describe the process of sample selection from incoming material lots, as per the sampling plan. • Define the importance of inspection data recording and record keeping. • State the actions to take in case of any abnormality observed during incoming inspection process. • Describe the safety measures to be followed during incoming inspection process. • Identify the measurement instruments required for incoming inspection of material as per given inspection standard. • Demonstrate the calibration status check process of the given measurement instruments. • Demonstrate the sample identification process of the selected samples from the given material lot. • Demonstrate the sample testing of the given raw material and rubber products (semi or finished). • Demonstrate the visual inspection of given rubber products. • Create material inspection report based on the given inspection data. • Compare the test results with inspection standard to release the given incoming material lot. • Interpret the inspection methodology given in the in-process inspection standards. • List the measurement instruments required for rubber product in-process inspection. • Outline the importance of keeping process parameters as per specification for ensuring quality of rubber parts. • Explain importance of SPC (Statistical Process Control) in assuring quality of rubber product. • Interpret the machine signals indicating any variation in produced product specification during rubber parts production.	40	60	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		• Explain the actions to take in case of any abnormality observed during rubber products manufacturing. • Describe the safety measures to be followed during in-process quality inspection. • Identify the measurement instruments required for in-process inspection of the given rubber product as per relevant inspection standard. • Demonstrate the first piece approval for the given rubber product. • Demonstrate the in-process parameter inspection for the given rubber product as per the relevant check sheet. • Demonstrate the SPC data collection and plotting in the SPC graph for the given rubber product. • Compute the parameters of process control (Cp and Cpk) from the given set of data. • Interpret the inspection methodology given in the finished rubber product inspection standards. • List the measurement instruments required for finished rubber product inspection. • Describe the common defects occurring during rubber product manufacturing. • Explain the actions to take to resolve quality defects of rubber products. • Outline the importance of material identification. • Describe the safety measures to be followed during finished rubber product quality inspection. • Define the process of disposing rejected rubber products. • Identify the measurement instruments required for inspection of the given finished rubber product as per relevant inspection standard. • Demonstrate the lot approval process for the given rubber product lot. • Demonstrate the pre-dispatch inspection process for the given rubber product as per the relevant quality standard. • Create PDI (Pre-dispatch inspection) report for the customer. • Demonstrate the control of non-conforming lot of finished rubber product.				

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
2.	Rubber Latex Products Quality Assurance RSC/N2403 **Optional: 1 Latex products**	• Identify the inspection equipment used for carrying out in-process inspection during rubber latex products manufacturing. • Describe the process of verification of the calibration status of a testing equipment. • Explain the basic concept of AQL (Acceptable Quality Level) for sample drawing process for product testing. • Identify the defects getting generated during latex products manufacturing, such as: - Thickness variation - Holes in the product - Stickiness on the product mould • Explain the method for checking in-process quality during rubber latex products manufacturing process. • List the causes of defects in a rubber latex product and their probable corrective actions. • Select the inspection equipment for carrying out given in-process quality parameters during rubber latex products manufacturing. • Demonstrate the verification of the calibration status of the given testing equipment. • Draw sample of the material from the given lot to be tested as per the specified AQL. • Demonstrate labelling/ numbering on the given testing samples as per the given specifications. • Conduct visual inspection of the given rubber product, as per the given visual inspection check sheet.	60	40	70%	70%
3.	Housekeeping RSC/N5001	• Describe what is housekeeping. • Explain the importance of housekeeping in rubber industry. • List the cleaning equipment and chemicals used for cleaning process. • Describe what is '5S.' • Define each 'S' and its meaning • Identify the cleaning equipment from the given set of equipment.	40	60	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		• Demonstrate the cleaning process of a given work area with the specified cleaning aid and chemicals. • Demonstrate the segregation of unwanted material as per 1S principal in the assigned work area.				
4.	Reporting and Documentation for Quality RSC/N5002	• Outline the importance of reporting quality related data for a rubber product quality assurance supervisor. • List the information given in a standard quality status report for a section of a rubber manufacturing plant. • Recall the documents used during rubber product quality assurance process. • Describe the purpose of using work instructions for rubber product quality assurance. • Explain the ways of overcoming general problems encountered in communication at workplace. • Describe the traits of active listening. • Demonstrate the quality status report filling for a given rubber product manufacturing area in a given format. • Demonstrate the filling up of equipment maintenance request slip for the given quality equipment maintenance issue.	40	60	70%	70%
5.	Improving Effectiveness of Quality Assurance RSC/N5003	• List the common quality management systems used in industry. • Describe the 7-QC (Quality Control) tools. • Interpret the rubber quality standards. • Explain the basic concept of AQL (Acceptable Quality Level) for sample drawing process for product testing. • Identify the defects getting generated during rubber product manufacturing. • Explain the method for checking in-process quality during rubber product manufacturing. • List the causes of defects in a rubber product and their probable corrective actions. • Describe the implications of quality system failure. • List the general documentation for quality functions. • Explain the implication of defective product supply on customer. • Prepare check sheets as per given quality standard.	35	65	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		• Demonstrate the calibration process of the given testing equipment. • Demonstrate the MSA (Measuring system analysis) for the given measuring instrument. • Prepare fish-bone diagram for the given rubber product quality problem. • Prepare why-why diagram for the given rubber product quality problem.				
6.	Problem Identification and Escalation during Rubber Product Quality Assurance RSC/N5004	• Describe regular problems encountered during rubber quality assurance process, such as: - Inspection equipment maintenance issue - Test material non-availability - Manpower non-availability - Quality issue in tested raw material - Quality issue in tested finished product • Recall the root cause analysis methods available to analyse the problem. • List the wrong practices which may lead to quality issue in produced material. • List the wrong practices which may lead to wrong test results. • Explain how to deal with common problems during rubber product quality assurance. • Explain the process of escalating problem during rubber product quality assurance. • Create a 8D (8 Steps) report for solving a given rubber product quality problem. • Illustrate the hierarchy for escalating problem of rubber quality issues.	45	55	70%	70%
7.	Maintaining Health and Safety during Rubber Product Quality Assurance RSC/N5007	• Explain the health and safety requirements for rubber product quality assurance process. • Describe the ill-effects of ingredients used in a rubber product manufacturing process. • List the safety arrangement available in a rubber industry to prevent accidents. • Outline the requirements of Personal Protective Equipment (PPE) during rubber product quality assurance process. • State details of common injuries which can occur while working in a rubber industry. • Recall the constituents of a first aid box used in a rubber industry. • Demonstrate the use of the given Personal Protective Equipment (PPE). • Demonstrate how to handle fire emergencies through a role play. • Demonstrate how to use a multi-purpose fire extinguisher on simulated fire. • Select the fire extinguisher from the given fire extinguishers, for the specified fire type and class.	30	70	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		• Demonstrate first aid procedure for a given injury.				
8.	Develop entrepreneurship skills RSC/N5013	• Discuss motivation with the help of maslow's hierarchy of needs • List the different factors that motivate an entrepreneur. • Discuss the benefits of time management. • Recall basic computer terminology. • Discuss the main applications of MS office. • Discuss the main types of bank accounts. • Differentiate between fixed and variable costs. • Describe different type of business entities used for doing business. • Describe the different types of taxes. • Discuss basic workplace terminology. • Describe the entrepreneurship ecosystem. • Identify the basic parts of a computer. • Prepare a business plan with basic financial information. • Tell the answers for questions related to rubber product quality assurace in a mock job interview.	30	70	70%	70%
	Total Marking		**320**	**480**		

Glossary

Term	Description
Sector	Sector is a conglomeration of different business operations
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.

Acronyms

Acronym	Description
NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Annexure 1: Tools and Equipment

List of Tools and Equipment

The tools and equipment required are:

Sno	Tool / Equipment Name	Specification (per batch of 30 trainees)
1.	Rubber product specific Testing Equipment, like – Rubber Hardness Tester, Tensile Tester, Rebound Tester, Ozone Tester, Oven, Furnace, Melting Point tester, Ash Content testing equipment, Mooney Viscometer, Rheometer	3

Classroom Aids

The aids required to conduct sessions in the classroom are:

1 Projector
2 Computer/laptops
3 Internet connectivity
4 Whiteboard

Annexure 2: Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the learner on the required competencies of the program.

Assessment System Overview:

- Batches assigned to the assessment agencies for conducting the assessment on SDSM/SIP or email
- Assessment agencies send the assessment confirmation to VTP/TC looping SSC
- Assessment agency deploys the ToA certified Assessor for executing the assessment
- SSC monitors the assessment process & records
- If the batch size is more than 30, then there should be 2 Assessors.

Testing Environment: Assessor must:

- Confirm that the centre is available at the same address as mentioned on SDMS or SIP
- Check the duration of the training.
- Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
- Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
- Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
- Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
- Check the availability of the Lab Equipment for the particular Job Role.

Assessment Quality Assurance levels / Framework:

- Question papers created by the Subject Matter Experts (SME)
- Question papers created by the SME should be verified by the other subject Matter Experts along with the approval required from SSC
- Questions are mapped with NOS and PC

- Question papers are prepared considering that level 1 to 3 is for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management Apprenticeship Curriculum: NAPS Jr. Machine Operator – CNC Milling of Plastic Page 20 of 14
- Assessor must be ToA certified
- Assessment agency must follow the assessment guidelines to conduct the assessment

Types of evidence or evidence-gathering protocol:

- Time-stamped & geotagged reporting of the assessor from assessment location
- Centre photographs with signboards and scheme specific branding
- Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
- Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos.

Method of verification or validation:

- Surprise visit to the assessment location
- Random audit of the batch
- Random audit of any candidate

Method for assessment documentation, archiving, and access

- Hard copies of the documents are stored
- Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage and are stored in the Hard Drive

On the Job:

1. Assessment for on the job training to be conducted by the industry partner on the practical competency output defined in the NOS/QP and the assessment criteria.
2. The candidate must score 70% in each module to complete the OJT.
3. Tools of Assessment that can be used are:
   a. Videos of Trainees during OJT should be shared by employer to RCPSDC.
4. Assessment will ensure that the apprentice will be able to:
   a. Work effectively and efficiently as per schedules and timelines while complying with the health and hygiene norms.
   b. Implement safety practices.
   c. Optimize the use of resources to ensure less wastage and maximum conservation.
   d. Communicate effectively and develop interpersonal skills.