APPRENTICESHIP CURRICULUM (OPTIONAL TRADE)

Rubber

Rubber_Compression Moulding Operator

Course Code:

☒NAPS ☐Non-NAPS

NSQF Level: 4

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Course Details

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<tr><td>2.</td><td>Course Code</td><td>CO072200154</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>NSQC Approval Date: 25/06/2020</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 Compression Moulding Operator</td><td>RSC/Q0205_V2</td><td>2020/RUB /RSDC/03780</td></tr>
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</td></tr>
<tr><td>7.</td><td>Brief Job Role Description</td><td>The Rubber Compression Moulding Operator is responsible for operating the curing/press machine. The individual is responsible for preparing the green compound in case of simple moulding and loading to correct weight/volume in the press.</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-2004/8231.67</td></tr>
<tr><td>9.</td><td>Minimum Eligibility Criteria
(Educational and/ or Technical Qualification)</td><td>8th Passed</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**	**Rubber moulded parts manufacturing units in India**: The apprentice may be employed with the biggest player of the trades and be a part of their manufacturing set and deliver quality work. **Rubber Parts manufacturing set up**: The apprentice may be encouraged to set up their own manufacturing unit. **Education and Training:** They may also take up the role of the

		instructor in this field, where they can impart their manufacturing knowledge to the aspiring students.
16.	**Career Progression**	Rubber Compression Moulding Operator level role which lead supervisory level in moulding/curing occupation of rubber product manufacturing Process
17.	**Trainer's Qualification & Experience:**	Any Graduate preferably in rubber or polymer
18.	**Curriculum Creation Date**	25/July/2022
19.	**Curriculum Valid up to Date**	17/Oct/2024

Module Details

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
1.	Introduction	• Describe various stages of rubber developmental history. • Explain current industrial scenario of rubber and its prospects in future. • Identify different types of rubber. • Describe usage of rubber for making different products. • Recognise major industrial associations and their functions. • Identify equipment used for the rubber compression moulding operation. • Describe role and responsibilities of a rubber compression moulding operator	0	0	0	0
2.	Prepare compression moulding machine RSC/N0501_V2	• Describe the details required for a production plan, such as: - Material to be produced - Quantity to be produced - Time required for production • Evaluate the rubber compression moulding production plan with product sequence details. • Describe the functions and use of tools and equipment required for rubber compression moulding such as: - Compression moulding press - Mould/ dye - Mould release agent spraying gun - Compressor • Identify the tools and equipment required for rubber compression moulding. • Perform cleaning of tools and equipment used for rubber compression moulding operation. • Describe how to operate the compression moulding press. • Perform the functionality checks of the rubber compression moulding press. • Describe the material requirement for a compression moulding operation, such as:	40	60	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		- Compound - Mould release agent - Material insert (as per product design) • Describe the quality check points for the raw material, such as: - Compound batch number - Compound identification details - Compound Expiry date - Quality approval status • Describe the importance of different process parameters of compression moulding press, such as: - Temperature - Pressure - Duration of moulding • Perform the setting to parameters of compression moulding press. • Describe the process of quality approval status checks of the required material. • Perform the quality approval status check of the required materials • Identify the correct mould as per production plan with the help of product part number. • Describe the process of mould setting on the compression moulding press as per production plan • Perform the mould setting on compression moulding press as per production plan.				
3.	Perform compression moulding operation RSC/N0502_V2	• Describe the use and importance of mould release agent. • Explain the process of releasing the mould release agent appropriately as per SOP. • Describe the implication of contamination during compression moulding process. • Perform the compound loading in the mould as per the SOP to minimize material overflow/ wastage/ excess flash. • Describe the steps of rubber compression moulding, such as: - Compound loading in the mould cavity. - Compression moulding cycle running. - Unloading the finished parts from the mould. • Demonstrate rubber compression moulding process as per the standard operating procedures (SOP) of organisation.	40	60	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		• Adhere to the safety norms, such as – wearing shoes, hand gloves, safety glasses. • Explain the significance of storage of all balance unused left-over ingredients properly to avoid any contamination.				
4.	Undertake post compression moulding activities RSC/N0503_V2	• Describe the process of removal of cured product from the mould cavity after the moulding cycle completion. • Describe the implication of mould compound flash in product quality. • Explain the importance of removal of the compound flash from the mould to ensure clean mould for next cycle as per the SOP. • Demonstrate the trimming of the moulded piece to remove flash safely or the product as per SOP • Describe various surface treatment, such as: - Phosphating - Plating – Zinc, nickel, etc. • Perform surface treatment of the cured product wherever required as per the SOP. • Describe the FIFO (First In First Out) principle and its importance in rubber processing. • Describe the selection process of the sample as per the organisation's SOP. • Select and submit samples of compression moulded parts in a specified form to the lab for testing and approval. • Explain the significance of cleaning of the tools and equipment at shift end. • Describe the process of handover of the equipment to the next shift operator with complete details, such as: - Production plan for the day and plan completed in the previous shift - Any problem observed in the machine or other equipment - Material under work in process - Production plan for the day and plan completed in the previous shift - Any problem observed in the machine or other equipment - Material under work in process	40	60	70%	70%
5.	Carry out housekeeping	• Explain the importance and purpose of housekeeping. • Describe the meaning of '5S.'	40	60	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
	RSC/N5001_V2	• Demonstrate the methodology of each 'S' in 5S philosophy of housekeeping. • Identify housekeeping equipment. • Demonstrate the housekeeping of machines, tools, equipment and work area with the specified equipment and material. • Prepare the machines and work area for 5S audit as per the organisation's Standard Operating Procedure (SOP).				
6.	Carry out reporting and documentation RSC/N5002_V2	• Explain the importance of documentation. • Explain the importance of reporting. • Create reports of operations related issues. • Describe policies and guidelines of the organization. • Describe the purpose of procedures in an organization. • Explain organisation's work instructions related to finishing and packaging operations. • Describe the principles of effective communication at workplace. • Explain the ways of overcoming general problems encountered in communication at workplace. • Describe active listening skills and their components • Describe the best practices to be followed for effective writing. • Describe the ways of resolving conflict within a team. • Determine priority of work from the pending work list as per the work management principles.	40	60	70%	70%
7.	Carry Out Quality Checks RSC/N5003_V2	• Describe the need of quality control in the rubber compression moulding operation. • Identify appropriate measuring and inspection instrument for the inspection of a compression moulded part. • Perform regular calibration status check of the measuring equipment with the standard equipment. • Describe the compression moulding part's defects and their causes, such as: - Blistering - Short moulding - Chips - Contamination - Dull finish - Rough and uneven patches - Thick flashes	35	65	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		• Identify defects generated during a rubber compression moulding operation. • Describe the implication of process parameter on product quality. • Demonstrate in-process inspection during a rubber compression moulding operation. • Describe implications of the quality issues generated during a rubber compression moulding operation.				
8.	Carry out problem identification and escalation RSC/N5004_V2	• Describe regular problems encountered during a rubber compression moulding operation, such as: - Machine maintenance issue - Raw material non-availability - Manpower non-availability - Quality issue in raw material - Quality issue in material produced • Explain how to deal with various problems during a rubber compression moulding operation. • Describe the purpose of hierarchy in a rubber manufacturing organisation. • Describe the process of escalating problem during a rubber compression moulding operation.	45	55	70%	70%
9.	Carry out health and safety RSC/N5007_V1	• Identify various hazards in a rubber industry. • Explain the health and safety requirements for a rubber industry. • Discuss requirement of Personal Protective Equipment (PPE) in rubber industry. • Identify different types of Personal Protective Equipment (PPE) used in the rubber industry. • Demonstrate the use of different Personal Protective Equipment (PPE). • Describe various emergency situations in the rubber industry. • List the common injuries in the rubber industry. • List the constituents of a first-aid box. • Demonstrate how to handle fire emergencies. • Select suitable fire extinguisher as per fire type and class. • Demonstrate how to use a multipurpose fire extinguisher.	30	70	70%	70%
	Total Marks		**310**	**490**		

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	Asbestos gloves, Brass screw drivers with flat head	10
2	Elctric /steam heaten platen press with platen size of minimum 12 inches and Molds	1

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.