





APPRENTICESHIP CURRICULUM (OPTIONAL TRADE)

Rubber

Rubber_Extruder Operator

Course Code: CO082200017

 \boxtimes NAPS \square Non-NAPS

NSQF Level: 4



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Course Details

1.	Course Name	Rubbe	r_Extruder Operator					
2.	Course Code	CO082	C0082200017					
3.	Apprenticeship Training Duration:	Month	Months: 12 months					
	(2 to 4 weeks of BT is embedded in this duration as per the requirement							
	of the establishment)							
	Remarks							
4.	Credit	TBD						
5.	NSQF Level (Mandatory for NAPS)	4	NSQC A	pproval Date: 31/0	03/2022			
6.	Related NSQF aligned qualification details							
		S.no	QP/ Qualification/ NOS Name (As applicable)	QP/ NOS Code & Version	NQR Code			
		1	Rubber Extruder Operator	RSC/Q2601_V2	2022/RUB/RSDC/05743			
7.	Brief Job Role Description	1.	The Rubber Extruder Opera compound to the extruder, extruder and perform post	carry out the extru	sion operation using the			
	NCO-2015 Code & Occupation (Access the NCO 2015 volumes from: <u>https://labour.gov.in/organizationsofmole/directorate-general-employment-training-dget</u>)	NCO-2	015/NIL					
	Minimum Eligibility Criteria		10th Class (2 yea	ars of relevant expe	rience)			
	(Educational and/ or Technical Qualification)			OR				
		12th Class (6 months of relevant experience)						
				OR				
		Ce	ertificate (of Level 3- Junior R	ubber Technician w	ith 2 years of relevant			
			e	experience)				

Entry Age for Apprenticeship	18 years						
Any Licensing Requirements (wherever applicable)	NA						
Is the Job Role amenable to Persons with Disability	☐ Yes ⊠ No If yes, check the applicable type of Disability						
	□ □ Leprosy □ Cerebral □ Dwarfism □ Locomotor Cured Palsy Muscula Disability Person Dystroph						
	 □ Acid □ Blindness □ Low Vision □ Deaf □ Hard □						
	□ Speech □ □ Specific □ Autism □ Ment and Intellectual Learning Spectrum Illness Language Disability Disabilities Disorder Disability						
	Multiple Image: Constraint of the sector						
	☐ Multiple Disabilities						
	Remarks:						
Submitting Body Details	Name: Rubber, Chemical & Petrochemical Skill Development Council E-mail ID: ceo@rcpsdc.in Contact Number: 011-41009347- 48						
Certifying Body	Rubber, Chemical & Petrochemical Skill development Council						
Employment Avenues/Opportunities	Self-Employment:						

Career Progression	Trainees can also start their own business and also provide jobs to other people. Rubber Product Finishing Jobs Opportunities in private companies: The trainees can get a job in a relevant corporate Rubber Extrusion Supervisor level role which will leads to Supervisor Extrusion(including braiding) under Tyre and Non-Tyre rubber manufacturing
	process
Trainer's Qualification & Experience:	Any Graduate preferably in rubber or polymer.
Curriculum Creation Date	01/08/2022
Curriculum Valid up to Date	31/03/2025

Module Details

S. No	Module/NOS Name,	Outcomes	Assess	ment	Passin	g
	Code, Version		Marks Th. Pr.		Percer	ntage
			Th.	Pr.	Th.	Pr.
1.	Perform Pre Rubber Extrusion Activities RSC/N2612	 Explain different types of extruders and their operation as well as control panel Discuss about different types of feeding systems and their control Throw light on the implications of poorly prepared equipment, power failure etc. Explain the importance of identifying non-conforming material and storage of the same Discuss about the risk and impact of not following defined procedures/work instructions Illustrate the escalation matrix for reporting identified problems Discuss about the types of documentation in organization and importance of the same Throw light on the records to be maintained and implications of non-maintenance of the same Discuss the importance of housekeeping & good shop floor practices (eg. 3s & 5s) Throw light on the health, safety and environment guidelines, legislation and regulations asapplicable Discuss about personal protection (which protective equipment to be used and how) Illustrate the usage of different types of fire extinguishers Explain the impact of poor practices on health, safety and environment Discuss about the potential hazards and actions to minimize the same Illustrate the usage of FIFO Discuss the importance of FIFO 	60	40	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes		Assessment Marks Th. Pr.	Passin Perce	-
			Th.	Pr.	Th.	Pr.
		 Discuss about handover/ takeover the equipment/ work area as per company's sop Discuss about the knowledge of different extruders and their operations (equipment working,possible setting levels, typical process followed for different products) Throw light on the cleanliness and safety requirements for commencing a extruding batchoperation Discuss about proper feeding rate (to avoid under/ over feeding) during the operation andmaintaining constant back pressure Throw light on the health hazards of process and compounding ingredients Cite the effects of continuous direct exposure of the extrudate to the skin Explain the implications of delays in preparation process Illustrate the types of defects leading to rejections, reasons and possible solutions Describe the units of measurement Illustrate the response to emergencies e.g. power failures, fire and system failures and manualintervention to avoid disaster Summarize the knowledge of appropriate batch size with respect to appropriate machinery 				
2.	Perform Rubber Extrusion Operation RSC/N2613	 Explain different types of extruders and their operation as well as control panel. Elucidate the implications of poorly prepared equipment, power failure etc. Illustrate the material disposal procedure, importance of appropriate disposal of material and implications of not following the material disposal procedure Explain the quality and damage checks to be done and importance of the same Discuss about the importance of identifying non-conforming products and storage of thesame Cite the risk and impact of not following defined procedures/work instructions Illustrate the escalation matrix for reporting identified issues Recognise the types of documentation in organization and importance of the same 	50	50	70%	70%

S. No	No Module/NOS Name, Outcomes Code, Version	Outcomes	Assess Ma		nt Passing Percenta	
			Th.	Pr.	Th.	Pr.
		 Discuss about the records to be maintained and implications of non-maintenance of the same Explain the importance of housekeeping & good shop floor practices (eg. 3s & 5s) Throw light on the health, safety and environment guidelines, legislation and regulations asapplicable Discuss about personal protection (which protective equipment to be used and how) Elucidate the impact of poor practices on health, safety and environment Discuss about the potential hazards and actions to minimize the same. Illustrate the escalation matrix and escalation procedure for reporting hazards. Discuss about the importance of FIFO Explain the impact of various practices on cost, quality, productivity, delivery and safety Discuss about the cleanliness and safety requirements for commencing a extruding batchoperation Cite the tolerance levels for various parameters (temperature, pressure, rpm and weight) Define proper feeding rate (to avoid under/ over feeding) during the operation andmintaining constant back pressure Illuminate on the health hazards of process and compounding ingredients Discuss about the easurement techniques using gauges and balance (for thickness, widthand weight) Explain the effects of continuous direct exposure of the extrudate to the skin 				

S. No	Module/NOS Name, Code, Version		Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		 Identify the types of defects leading to rejections, reasons and possible solutions Describe the units of measurement Explain how to response to emergencies e.g. power failures, fire and system failures andmanual intervention to avoid disaster Discuss about the knowledge of appropriate batch size with respect to appropriate machinery 				
3.	Undertake post rubber extrusion activities RSC/N2614	 Discuss about the implications of poorly prepared equipment, power failure etc. Illustrate the material disposal procedure, importance of appropriate disposal of material andimplications of not following the material disposal procedure Explain the significance of batch marking (individual extrudate identification marking) Explain the importance of identifying non-conforming product and storage of the same Elucidate the risk and impact of not following defined procedures/work instructions Illustrate the escalation matrix and procedure for reporting identified problems Identify different types of documentation in organization and importance of the same Discuss about the records to be maintained and implications of non-maintenance of the same Explain the importance of housekeeping & good shop floor practices (eg. 3s & 5s) Discuss about the health, safety and environment guidelines, legislation and regulations asapplicable Discuss about the personal protection (which protective equipment to be used and how) Identify potential hazards and actions to minimize the same 	50	50	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assess Ma		Passir Perce	-
			Th.	Pr.	Th.	Pr.
		 Illuminate the impact of poor practices on health, safety and environment Illustrate the escalation matrix and procedure for reporting hazards Tell how to handover/ takeover the equipment/ work area as per organisational sop Explain the emergency stops procedures for the extruding machine. Discuss about the effect of improper extrusion on properties of product. Explain the effects of continuous direct exposure of the extrudate to the skin Describe the working of the online marking systems Explain the batch marking /identification techniques Explain the implications of incorrect batch marking Discuss about the units of measurement Throw light on the coding systems for identification and traceability Summarize the knowledge of weighing scales Throw light on the storage life of the compound, knowledge of ambient temperature andeffect on compound Explain on line marking system Describe the usage of different types of fire extinguishers 				
4.	Carry out healthand safety RSC/N5007	 Discuss about the policies on incentives, delivery standards, and personnelmanagement. Illustrate the occupational safety and health policy followed Discuss about the emergency evacuation procedure Discuss about the medical policy Throw light on the company laws and acts Explain the risks to health and safety and the measures to be taken to control those risks in the area of work Discuss about workplace procedures and requirements for the handling of 	30	70	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes		Assessment Marks Th. Pr.	Passir Perce	-
			Th.	Pr.	Th.	Pr.
		 workplaceinjuries/illnesses. Elucidate basic emergency first aid procedure Discuss about local emergency services Explain how to conduct reporting on accidents, incidents and problems toappropriate authorities. Discuss how to use machines as per standard operating procedure Tell how to maintain work area safe and secure Cite the use of hazardous materials, tools and equipment Discuss about personal hygiene and fitness requirements Cite the general duties under the relevant health and safety legislation Tell what personal protective equipment and clothing should be worn and how it iscared for Discuss about the correct and safe way to use materials and equipment required forwork Explain the importance of good housekeeping in the workplace Describe safe disposal methods for waste Summarize the methods for minimizing environmental damage during work 				
5.	Carry out housekeeping in rubber product manufactuing RSC/N5001	 Discuss the importance of learning proper procedures and techniques Explain the implications of not following the organizational requirement for approval for undertaking the specific task Tell the importance of completing the activities as per the schedule Explain the implications of not following the defined procedures/work instructions Discuss the importance of team work Illustrate the health, safety and environment guidelines, legislation and regulationsas applicable 	40	60	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		t Passing Percentag	
			Th.	Pr.	Th.	Pr.
		 Elucidate the actions to be taken in case of non-conformity to behavioral standardsof the organization Explain the impact of poor practices on the individual's and organization's performance Summarize the importance of optimal utilization of resources Describe the importance of providing feedback for improvement Cite the importance of indigenous knowledge for evolving/adopting operation specificpractices Discuss about the rectification/solution of problems/conflicts for the smoothfunctioning of the organization Cite the importance of documentation/reporting as per guidelines and procedures Discuss about the do's and don'ts (company's hr instructions) Cite the importance of subject learning/ training Tel the importance of product and its application Discuss the levels of hygiene required by workplace and why it is important tomaintain them during your work Explain how to inspect a work area to decide what cleaning it needs Identify the methods and materials that used for cleaning variety of surfaces Tell the types of cleansing agents that are not to be mixed together Cite the correct method for cleaning equipment and/or machinery used during yourwork Illuminate the importance of personal protective equipment Discuss about the appropriate personal protective equipment for the work area, cleaning equipment, tools, materials and chemicals used Tell the correct sequence for cleaning the work area 				

S. No	Module/NOS Name, Code, Version	Outcomes	Assess Ma		Passin Perce	-
			Th.	Pr.	Th.	Pr.
		 Estimate the time taken by the treatment to work Explain the importance of following manufacturer's instructions on cleaning agents Discuss about the most appropriate place to carry out test cleans and why thisshould be done before applying treatments Discuss about the importance of applying treatments evenly and the effect of notdoing this Illustrate the process of cleaning the surfaces without causing injury or damage Tell the method to check the treated surface and equipment on completion of cleaning Cite the procedures for reporting any unidentified soiling Explain the procedures for disposing off waste Describe the procedures for disposing off or storing personal protective equipment Discuss about the escalation procedures for soils or stains that could not beremoved 				
6.	Carry out reportingand documentation RSC/N5002	 Explain the importance of learning proper procedures and techniques Discuss about the implications of not following the organizational requirement forapproval for undertaking the specific task Discuss about the importance of completing the activities as per the schedule Describe the implications of not following the defined procedures/work instructions importance of team work Summarize the health, safety and environment guidelines, legislation and regulations as applicable Describe the actions to be taken in case of non-conformity to behavioral standards of the organization Explain the impact of poor practices on the individual's and 	40	60	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes	Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		 organization'sperformance Explain the importance of optimal utilization of resources Cite the importance of providing feedback for improvement Explain the importance of indigenous knowledge for evolving/adopting operationspecific practices Identify rectification/solution of problems/conflicts for the smooth functioning of theorganization Explain the importance of documentation/reporting as per guidelines and procedures Discuss about the do's and don'ts (company's hr instructions) Cite the importance of attending troubleshooting Explain the importance of subject learning/ training Explain the importance of product and its application Describe different methods of recording information Identify various documents that need to be maintained Explain the procedures for reporting to the appropriate authority Explain the procedures for recording damage, breakages etc. Discuss about reporting incidents where standard operating procedures are notfollowed Elucidate the importance of complete and accurate documentation Tell how to maintain complete documentation accurately and within agreedtimescales Cite the importance of ensuring that the documents are not correct Describe the actions to be taken if the documents are not correct Cite the importance of maintaining the security and confidentiality of 				

S. No	Module/NOS Name, Code, Version		Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.
		 recordedinformation Explain the procedures to maintain confidentiality of information Tell the appropriate method for responding to requests for information Explain the reporting procedures to followed before disclosing information to any outside party 				
7.	Carry out Problem Identification and escalation RSC/N5004	 Explain the importance of learning proper procedures and techniques Discuss about the implications of not following the organizational requirement forapproval for undertaking the specific task Cite the importance of completing the activities as per the schedule Discuss about the implications of not following the defined procedures/workinstructions Explain the importance of team work Summarize the health, safety and environment guidelines, legislation andregulations as applicable Describe the actions to be taken in case of non-conformity to behavioral standards ofthe organization Discuss about the importance of poor practices on the individual's and organization'sperformance Describe the importance of optimal utilization of resources Explain the importance of indigenous knowledge for evolving/adopting operation specificpractices Discuss about the rectification/solution of problems/conflicts for the smoothfunctioning of the organization Cite the importance of documentation/reporting as per guidelines and procedures Tell the do's and don'ts (company's hr instructions) 	45	55	70%	70%

S. No	Module/NOS Name, Code, Version	Outcomes		Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.	
		 Explain the importance of attending trouble shooting Discuss the importance of subject learning/ training Describe the importance of product and its application Identify the indicators of problems Explain the working of the equipment and accessories(if applicable) Describe the impact of operations on the user and equipment(if applicable) Explain the impact of operations on the final product (if applicable) Describe the effect of not rectifying the problems identified Explain the. the reason for the occurrence of previous problems Describe the measures and steps that have been taken to address the previousproblems Cite the. possible solutions for various problems Explain the correct method for carrying out corrective actions outlined for eachproblem the impact of not carrying out the corrective actions Illustrate the documentation procedure for recording such problems, as per companynorms Illustrate the escalation matrix for reporting problems Discuss about the time frame within which in which each problem needs to be escalated Explain the manner in which each problem needs to be escalated 					
8.	Carry out qualitychecks RSC/N5003	 Explain the importance of learning proper procedures and techniques Cite the implications of not following the organizational requirement for approval forundertaking the specific task Explain the importance of completing the activities as per the schedule Discuss about the implications of not following the defined 	35	65	70%	70%	

S. No	Module/NOS Name, Code, Version	Outcomes		Assessment Marks		Passing Percentage	
			Th.	Pr.	Th.	Pr.	
		 procedures/workinstructions Explain the importance of team work Discuss about the health, safety and environment guidelines, legislation andregulations as applicable Discuss about the actions to be taken in case of non-conformity to behavioralstandards of the organization Describe the impact of poor practices on the individual's and organization'sperformance Explain the importance of optimal utilization of resources Cite the importance of providing feedback for improvement Describe the importance of indigenous knowledge for evolving/adopting operationspecific practices Discuss about the rectification/solution of problems/conflicts for the smoothfunctioning of the organization Explain the importance of documentation/reporting as per guidelines and procedures Discuss about the do's and don'ts (company's hr instructions) Cite the importance of subject learning/ training Explain the importance of subject learning/ training Explain the importance of guilty control procedures Discuss about the relevance and importance of activities and how they contribute tothe achievement of the quality objectives Explain the proper procedure for selecting the material Discuss about the relevance and importance of activities and how they contribute tothe achievement of the quality objectives 					

S. No	Module/NOS Name,	Outcomes	Assess	ment	Passin	g
	Code, Version		Ma	Marks		ntage
			Th.	Pr.	Th.	Pr.
		 Discuss about the characteristics of the product/material Explain the use of suitable equipment Cite the availability and use of monitoring and measuring devices Identify the requirements of records 				
		 Tell the importance of maintaining accurate up-to-date records Explain the need to report within the stipulated time Explain the implications of inaccurate measuring and testing instruments and equipment 				
		 Estimate the cost of non-conformance to quality standards Explain the implications (impact on internal/external customers) of defectiveproducts, materials or components 				
	Total Marking		350	450		

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	NOS are occupational standards which apply uniquely in the Indian context.
Standards (NOS)	

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	Dies	1
2	Die Heater	1
3	Die Holder	1
4	Blower	1
5	Extruder Machine	1
6	Mask	2
7	Safety Shoes	2
8	Tcus	1
9	Gloves	2
10	Cooling Tank	1
11	Skiver	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

Apprenticeship Curriculum: NAPS

• 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.