

# APPRENTICESHIP CURRICULUM

for

**Machine Operator – Plastics  
Processing**

**RUBBER INDUSTRY**

for

**NSQF Level 4**

**National Apprenticeship Promotion  
Scheme**

1	<b>Program Title</b>	Machine Operator – Plastics Processing			
2	<b>Program Code, if any</b>	NA			
3	<b>Any related NSQF approved QP/Course/NOS and code</b>	RSC/Q4801 (CPC/Q0103) & RSC/Q4803 (CPC/Q0104)			
4	<b>Hours for Basic Training(Block I)</b>	540 (3 Months)			
5	<b>Hours for On the Job Training (Block II)</b>	1620 (9 Months)			
6	<b>Certifying body for Basic Training Program</b>	RSDC			
7	<b>Certifying Body for On the Job training</b>	Industry			
8	<b>Any Licensing requirements, wherever applicable</b>	NA			
9	<b>Minimum eligibility criteria (Educational and/or technical Qualification)</b>	Class VIII			
10	<b>Trainer’s Qualification and Experience</b>	Any Graduate preferably in rubber or polymer and 5+ year Experience			
11	<b>NCO code and occupation</b>	Nil			
12	<b>Proposed NSQF level</b>	4			
13	<b>Indicative list of training tools required to deliver this qualification (may be attached)</b>	As per Annexure I & II			
14	<b>Formal structure of the curriculum</b>				
		<b>Modules</b>	<b>Notional hours-Theory</b>	<b>Notional hours-Practical</b>	<b>Total duration</b>
	<b>Basic Training Program</b>	1. Introduction	8	8	16
		2. Preparation for production	16	32	48
		3. Basics of plastics	32	8	40
		4. Carrying out injection moulding machine operations	24	58	82
		5. Post injection moulding operations and trouble shooting	16	34	50
		6. Carrying out extrusion moulding operations	24	58	82
		7. Post extrusion activities and troubleshooting	16	34	50
		8. Carrying out blow moulding operations	24	48	72
		9. Post Blow moulding activities and troubleshooting	16	34	50
		10. Health and safety at the workplace	26	24	50

	<b>On the Job Training Program</b>	<ol style="list-style-type: none"> <li>1. Introduction</li> <li>2. Preparation for production</li> <li>3. Basics of plastics</li> <li>4. Carrying out injection moulding machine operations</li> <li>5. Post injection moulding operations and trouble shooting</li> <li>6. Carrying out extrusion moulding operations</li> <li>7. Post extrusion activities and troubleshooting</li> <li>8. Carrying out blow moulding operations</li> <li>9. Post Blow moulding activities and troubleshooting</li> <li>10. Health and safety at the workplace</li> </ol>	<p style="text-align: center;"><b>24</b></p> <p style="text-align: center;"><b>32</b></p> <p style="text-align: center;"><b>42</b></p> <p style="text-align: center;"><b>24</b></p> <p style="text-align: center;"><b>48</b></p> <p style="text-align: center;"><b>24</b></p> <p style="text-align: center;"><b>48</b></p> <p style="text-align: center;"><b>24</b></p> <p style="text-align: center;"><b>28</b></p> <p style="text-align: center;"><b>28</b></p>	<p style="text-align: center;"><b>18</b></p> <p style="text-align: center;"><b>108</b></p> <p style="text-align: center;"><b>68</b></p> <p style="text-align: center;"><b>160</b></p> <p style="text-align: center;"><b>178</b></p> <p style="text-align: center;"><b>180</b></p> <p style="text-align: center;"><b>178</b></p> <p style="text-align: center;"><b>200</b></p> <p style="text-align: center;"><b>168</b></p> <p style="text-align: center;"><b>40</b></p>	<p style="text-align: center;"><b>42</b></p> <p style="text-align: center;"><b>140</b></p> <p style="text-align: center;"><b>110</b></p> <p style="text-align: center;"><b>184</b></p> <p style="text-align: center;"><b>226</b></p> <p style="text-align: center;"><b>204</b></p> <p style="text-align: center;"><b>226</b></p> <p style="text-align: center;"><b>224</b></p> <p style="text-align: center;"><b>196</b></p> <p style="text-align: center;"><b>68</b></p>									
<b>15</b>	<b>Total Pass marks</b>		<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th data-bbox="407 909 683 982"></th> <th data-bbox="686 909 1003 982" style="text-align: center;"><b>Pass Marks-Theory</b></th> <th data-bbox="1006 909 1312 982" style="text-align: center;"><b>Pass Marks-Practical</b></th> </tr> </thead> <tbody> <tr> <td data-bbox="407 987 683 1060" style="text-align: center;"><b>Basic Training Program</b></td> <td data-bbox="686 987 1003 1060" style="text-align: center;"><b>105 out of 150</b></td> <td data-bbox="1006 987 1312 1060" style="text-align: center;"><b>315 out of 450</b></td> </tr> <tr> <td data-bbox="407 1064 683 1165" style="text-align: center;"><b>On the Job Training Program</b></td> <td data-bbox="686 1064 1003 1165" style="text-align: center;"><b>105 out of 150</b></td> <td data-bbox="1006 1064 1312 1165" style="text-align: center;"><b>315 out of 450</b></td> </tr> </tbody> </table>				<b>Pass Marks-Theory</b>	<b>Pass Marks-Practical</b>	<b>Basic Training Program</b>	<b>105 out of 150</b>	<b>315 out of 450</b>	<b>On the Job Training Program</b>	<b>105 out of 150</b>	<b>315 out of 450</b>
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<b>16</b>	<b>Job description-brief</b>		<p>The Machine operator handles the plastic granules (raw material), machine set up and operate the plastic processing machines, finishes the product &amp; stores in desired place.</p>											
<b>17</b>	<b>Progression from the qualification (Please show Professional and academic progression)</b>		<p>Production Supervisor Plastic Processing machines and Academic progression to Level 5 program</p>											
<b>18</b>	<b>Employment avenues/opportunities</b>		<p>1. Plastic 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.</p>											

		<p>2. 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.</p>
<p><b>19</b></p>	<p><b>Assessment strategy (Basic training and On the Job Training)</b></p>	<p>For Basic Training &amp; On the Job Training:</p> <ol style="list-style-type: none"> <li>1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each</li> <li>2. Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills practical for each PC.</li> <li>3. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.</li> <li>4. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.</li> <li>5. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).</li> <li>6. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training</li> </ol>

		<p>center based on this criterion.</p> <p>7. To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.</p> <p>8. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.</p> <p>9. The assessment of candidates will be conducted at NOS level.</p> <p>10. Assessment criterion has been defined for each NOS and it includes both theoretical and practical skills on which the candidate will be assessed.</p> <p>11. Practical knowledge is tested through assessor driven evaluation, Situational Judgment Tests and Simulations. A mix of the three is used to evaluate the trainee on his practical knowledge of the QP.</p> <p>12. The candidate is assessed on skills, knowledge and behavioural aspects.</p>
<b>20</b>	<b>Curriculum update version and date</b>	02/08/2019
<b>21</b>	<b>Curriculum revision date</b>	24/07/2020

## Curriculum

<b>Module Name with duration</b>	<b>Key Learning outcomes</b>
<b>Theory/Basic Training Program- Block I</b>	
<p><b>Introduction to the job role</b></p> <p><b>Theory Duration</b> (hh:mm) 8:00</p> <p><b>Practical Duration</b> (hh:mm) 8:00</p> <p><b>Corresponding NOS Code</b> Bridge Module</p>	<ul style="list-style-type: none"> <li>• Describe the developmental history of plastic.</li> <li>• Describe current industrial scenario of plastics and prospects.</li> <li>• Identify types of plastic.</li> <li>• List major industrial associations related to plastics processing.</li> <li>• Identify equipment used for plastics processing.</li> <li>• Identify the roles and responsibilities of a machine operator- plastics processing.</li> </ul>
<p><b>Basic concepts, job requirements and related processes</b></p> <p><b>Theory Duration</b> (hh:mm) 16:00</p> <p><b>Practical Duration</b> (hh:mm) 32:00</p> <p><b>Corresponding NOS Code</b> RSC/N4801 (CPC/N0109)</p>	<ul style="list-style-type: none"> <li>• Evaluate the work order (work output) required with the support of supervisor.</li> <li>• Examine all the components/ processes related documents to understand dimensions and properties of the required output.</li> <li>• Comply with the process requirements in terms of temperature of the heater, hydraulic pressure/air pressure/ vacuum pressure, rotating speed of the screw pressure, injection time, refilling time, blowing time etc. as mentioned in the work instruction/ SOP/ control diagrams.</li> <li>• Comply with dos and don'ts of the manufacturing process as defined in SOPs/ work instructions.</li> <li>• Apply the conversion procedure and process to be adopted for completing the work order provided by the supervisor.</li> <li>• Identify the various parameters like temperature of the heaters, hydraulic pressure/air pressure/vacuum pressure, rotating speed of the screw, screw pressure, regulating current, flow of coolant/water etc., before starting the process.</li> <li>• Identify the raw material like plastics granules, bonding additives etc. required for executing the activity.</li> <li>• Assemble the required material before starting the process.</li> <li>• Assess the type of mould/dye required for executing the required conversion operation and ensure that the same is available for moulding operations.</li> <li>• Assemble spare parts for continuous operation of the machine.</li> <li>• Ensure that mould/dye is cleaned properly and no foreign material is entrapped in the parts of the mould/ dye.</li> <li>• Ensure the cleaning of other moulding machine tools, auxiliaries.</li> <li>• Demonstrate the process for cleaning oil, grease, water etc. from the area around the machine.</li> </ul>

<p><b>Escalation of queries and interaction with other departments</b></p> <p><b>Theory Duration</b> (hh:mm) 32:00</p> <p><b>Practical Duration</b> (hh:mm) 8:00</p> <p><b>Corresponding NOS Code</b> RSC/N4801 (CPC/N0109)</p>	<ul style="list-style-type: none"> <li>• Recognise the need for consulting with superiors in case of any doubt/ clarification.</li> <li>• Complete the task post the queries are resolved.</li> <li>• Plan and report to superiors on completion of the task.</li> <li>• Demonstrate good interpersonal relations with superiors and co-workers.</li> <li>• Demonstrate disciplined behaviour at the workplace.</li> <li>• Practice coordination with other departments to gain their support.</li> </ul>
<p><b>Knowledge about different plastic material</b></p> <p><b>Theory Duration</b> (hh:mm) 24:00</p> <p><b>Practical Duration</b> (hh:mm) 58:00</p> <p><b>Corresponding NOS Code</b> RSC/N4802 (CPC/N0110)</p>	<ul style="list-style-type: none"> <li>• Identify the types of raw material being used in the industry.</li> <li>• Analyse the work order required for the process, with the support of the supervisor</li> <li>• Examine the material mentioned in the work order to understand properties of the required work output</li> <li>• Comply with the process required for the plastics material, in terms of temperature of the heater, rotating speed of the screw, pressure, injection as mentioned in the work instruction/ SOP/ control diagrams</li> <li>• Identify the temperature required for melting, processing, etc. for plastic raw material</li> <li>• Identify the processing characteristics of the plastics material in use, for conversion procedure</li> <li>• Demonstrate the process to be adopted for completing the work order from the supervisor by referring to the work instruction document/SOP manual</li> <li>• Check if the required material is available before starting the process</li> <li>• Ensure that the plastics material is blended with requisite additives</li> <li>• Check if the machine/ mould/ dye are cleaned properly and no foreign particle is entrapped.</li> </ul>
<p><b>Pre moulding operation</b></p> <p><b>Theory Duration</b> (hh:mm) 16:00</p> <p><b>Practical Duration</b> (hh:mm) 34:00</p> <p><b>Corresponding NOS Code</b> RSC/N4803 (CPC/N0111)</p>	<ul style="list-style-type: none"> <li>• Plan the work schedule in consultation with the supervisor</li> <li>• Comply with the data sheet, manual, work instructions before operations</li> <li>• Check the power supply, hydraulic oil level, water connections before starting the process</li> <li>• Ensure availability of the tools , materials and ancillary equipment for the work</li> <li>• Setup the equipment and machineries as per the requirement of job</li> <li>• Plan for the availability and readiness of ancillary equipment like chiller, mould temperature controller, hopper loader, cooling towers etc.</li> <li>• Ensure the disposal of the waste as per the SOP of the organisation</li> <li>• Comply with the legal requirements, organizational policies.</li> </ul>

<p><b>Molding operation</b></p> <p><b>Theory Duration</b> (hh:mm) 24:00</p> <p><b>Practical Duration</b> (hh:mm) 58:00</p> <p><b>Corresponding NOS Code</b> RSC/N4803 (CPC/N0111)</p>	<ul style="list-style-type: none"> <li>• Ensure that the mould is ready and does not have any problem before the dry run.</li> <li>• Ensure that material is available for production and arrange for pre drying, if required.</li> <li>• Practice loading the material and pigment (if required) on the hopper.</li> <li>• Examine and set the parameters of the machine i.e. temperature, pressure, speed etc.</li> <li>• Inspect the temperature on the barrel to set the correct temperature.</li> <li>• Setup the machine and conduct a trial run to get a sample piece.</li> <li>• Conduct a visual check of final product in consultation with the operator.</li> </ul>
<p><b>Process requirements for blow molding</b></p> <p><b>Theory Duration</b> (hh:mm) 16:00</p> <p><b>Practical Duration</b> (hh:mm) 34:00</p> <p><b>Corresponding NOS Code</b> RSC/N4803 (CPC/N0111)</p>	<ul style="list-style-type: none"> <li>• Identify the process, its types and the operations involved in blow moulding</li> <li>• Assist the operator in the work as per the requirement mentioned in the process, under the observation of the supervisor</li> <li>• Check all the components/ process related documents to understand dimensions and properties of the required work output</li> <li>• Comply with the process requirements in terms of tools/ mould/ dye required, temperature of the heater according to plastics material being used,</li> <li>• Comply with the process requirements in terms of hydraulic/ pneumatic pressure/rotating speed of the screw, parison formation, parison programming, blowing time etc. as mentioned in the work instruction/ SOP</li> <li>• Identify the do's and don'ts of the blow moulding process as defined in SOPs/ work instructions</li> </ul>
<p><b>Pre-extrusion operation</b></p> <p><b>Theory Duration</b> (hh:mm) 24:00</p> <p><b>Practical Duration</b> (hh:mm) 48:00</p> <p><b>Corresponding NOS Code</b> RSC/N4803 (CPC/N0111)</p>	<ul style="list-style-type: none"> <li>• Plan the work schedule in consultation with the operator</li> <li>• Assist the operator to obtain and check the data mentioned in the job card</li> <li>• Manage functions in line with the responsibilities of the job role</li> <li>• Ensure the availability of data sheet, manual and work instructions</li> <li>• Inspect power supply, oil level in gear box and water connections</li> <li>• Setup the equipment and machinery as per the requirement of the job</li> <li>• Plan for minimum rejection and ensure its safe reuse/disposal</li> <li>• Analyse the safety aspects of machine operation</li> <li>• Comply with the legal requirements, organizational policies and procedures</li> </ul>



<p><b>Extrusion process</b></p> <p><b>Theory Duration</b> (hh:mm) 16:00</p> <p><b>Practical Duration</b> (hh:mm) 34:00</p> <p><b>Corresponding NOS Code</b> RSC/N4803 (CPC/N0111)</p>	<ul style="list-style-type: none"> <li>• Check the availability of the material for production, compounding/ colour blending</li> <li>• Inspect the availability and readiness of ancillary equipment like air compressor, hopper loader, dehumidifier, cooling towers etc.</li> <li>• Practise loading the material on the hopper</li> <li>• Inspect the parameters required for the functioning of the machine i.e. temperatures, speeds etc.</li> <li>• Measure the temperature on the barrel with respect to the set temperature.</li> <li>• Conduct a trial run to get the extruded sample</li> <li>• Set parameters to obtain the final product</li> <li>• Conduct a visual check of the final product</li> <li>• Apply corona treatment and printing, if required</li> <li>• Plan and store the final product in the specified area</li> <li>• Schedule the cleaning of the machine and equipment at regular intervals</li> </ul>
<p><b>Maintain basic health and safety practices at the workplace</b></p> <p><b>Theory Duration</b> (hh:mm) 26:00</p> <p><b>Practical Duration</b> (hh:mm) 24:00</p> <p><b>Corresponding NOS Code</b> RSC/N4101 (CPC/N0411)</p>	<ul style="list-style-type: none"> <li>• Analyse the importance of wearing protective clothing/equipment for specific tasks and work conditions</li> <li>• Demonstrate safe working practices while dealing with hazards to ensure the safety of self and others.</li> <li>• Follow good housekeeping standards at all times</li> <li>• Apply appropriate fire extinguishers for different types of fires</li> <li>• Demonstrate rescue techniques applied during fire hazard</li> <li>• Demonstrate the correct use of a fire extinguisher.</li> <li>• Identify potential injuries through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals, loud noise</li> <li>• Conduct regular checks with support of the maintenance team on machine health to identify potential hazards</li> <li>• Inform the concerned authorities about machine breakdown and damages which can potentially be hazardous to man/ machine, while carrying out operations</li> <li>• Create awareness amongst others by sharing information on the identified risks</li> <li>• Ensure there is no clutter around the workstation and only the tools, fixtures and jigs that are required should be kept</li> <li>• Categorize waste in</li> <li>• hazardous/non-hazardous form as per the instructions</li> <li>• Demonstrate the technique of waste disposal and waste storage in the proper bins as per the SOP</li> <li>• Segregate the items which are labelled as red tag items for the process area and keep them in the correct places</li> <li>• Demonstrate segregating tools/equipment/fasteners/spare parts as per specifications/utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions</li> <li>• Ensure the cleanliness around the area where material is stored</li> <li>• Practise stacking the various types of boxes and containers properly as per the size/utility , to avoid any spillage or breaking of items and also enable to easily locate</li> <li>• Assemble extra material and tools to the designated sections and make sure that no additional material/tool is lying near the work area</li> <li>• Ensure proper demarcation of the various sections in the plant through the floor markings/area markings for the same</li> <li>• Identify and follow the proper labelling mechanism of instruments/ boxes/ containers and maintaining reference files/documents with the codes and the lists</li> </ul>

	<ul style="list-style-type: none"> <li>Comply with the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc.</li> </ul>
<b>On the Job Training Program- Block II</b>	
<p><b>Introduction</b></p> <p><b>Theory Duration</b> (hh:mm) 24:00</p> <p><b>Practical Duration</b> (hh:mm) 18:00</p> <p><b>Corresponding NOS Code</b> Bridge Module</p>	<ul style="list-style-type: none"> <li>Explain the developmental history of plastic.</li> <li>Describe current industrial scenario of plastics and prospects.</li> <li>Identify the types of plastic.</li> <li>List major industrial associations.</li> <li>Identify equipment used for plastic processing.</li> <li>Describe roles and responsibilities of a Machine Operator – Plastics Processing.</li> </ul>
<p><b>Preparation for production</b></p> <p><b>Theory Duration</b> (hh:mm) 32:00</p> <p><b>Practical Duration</b> (hh:mm) 108:00</p> <p><b>Corresponding NOS Code</b> RSC/N4801 (CPC/N0113)</p>	<ul style="list-style-type: none"> <li>Analyse the work order with the supervisor.</li> <li>Determine all components / process related documents required for work output.</li> <li>Determine the process requirements.</li> <li>Apply do's and don'ts of the manufacturing process as defined in work Instructions or defined by supervisors.</li> <li>Perform the process of the machine parameters setting.</li> <li>Identify the raw material required for process.</li> <li>Demonstrate the process of verification of the required material.</li> <li>Identify the type of mould / dye required as per the work order.</li> <li>Demonstrate the process of the mould/ dye cleaning.</li> <li>Perform the cleaning of the moulding machine, tools and auxiliaries equipment.</li> <li>Demonstrate the process of problem escalation to superiors.</li> <li>Create report of work completion for superiors.</li> </ul>
<p><b>Basics of plastics</b></p> <p><b>Theory Duration</b> (hh:mm) 42:00</p> <p><b>Practical Duration</b> (hh:mm) 68:00</p> <p><b>Corresponding NOS Code</b> RSC/N4802 (CPC/N0114)</p>	<ul style="list-style-type: none"> <li>Identify the types of raw material being used in the plastic industry.</li> <li>Describe the properties of different plastic raw materials.</li> <li>Explain the importance of defining process requirements.</li> <li>Determine the melting temperature and processing temperature etc. for plastic raw material.</li> <li>Identify the processing characteristics of the plastics material being used.</li> <li>Determine the requisite additives to blend with plastics material.</li> </ul>

<p><b>Carrying out injection moulding machine operations</b></p> <p><b>Theory Duration</b> (hh:mm) 24:00</p> <p><b>Practical Duration</b> (hh:mm) 160:00</p> <p><b>Corresponding NOS Code</b> RSC/N4807 (CPC/N0115)</p>	<ul style="list-style-type: none"> <li>• Determine the work schedule in concurrence with Superior.</li> <li>• Analyse the information on the job card.</li> <li>• Determine the availability of data sheet, manuals, work instructions required for performing the job.</li> <li>• Evaluate the power supply, hydraulic oil level, water connections.</li> <li>• Determine that the mould is ready and having no problem in dry run.</li> <li>• Perform the trial run to get sample piece before carrying out regular production run.</li> <li>• Perform the parameters adjustment unless getting final product.</li> <li>• Perform the injection moulding process with minimum wastage.</li> <li>• Perform the cleaning process of the machine and equipment at regular intervals.</li> <li>• Describe machine problem to maintenance department for resolving breakdown.</li> </ul>
<p><b>Post injection moulding operations and trouble shooting</b></p> <p><b>Theory Duration</b> (hh:mm) 48:00</p> <p><b>Practical Duration</b> (hh:mm) 178:00</p> <p><b>Corresponding NOS Code</b> RSC/N4807 (CPC/N0115)</p>	<ul style="list-style-type: none"> <li>• Perform the visual check of final product.</li> <li>• Perform the post moulding operation during the cycle time run.</li> <li>• Demonstrate the process of storing the final product in specified area.</li> <li>• Perform the preventive maintenance of machines and ancillary equipment.</li> <li>• Perform the root cause analysis of moulding defects.</li> <li>• Apply the corrective and preventive action.</li> <li>• Create the report of defects in the moulds that do not have the authority to repair.</li> <li>• Apply quality systems in post injection process to get better product.</li> <li>• Apply safety and health guidelines.</li> </ul>
<p><b>Carrying out extrusion moulding operations</b></p> <p><b>Theory Duration</b> (hh:mm) 24:00</p> <p><b>Practical Duration</b> (hh:mm) 180:00</p> <p><b>Corresponding NOS Code</b> RSC/N4808 (CPC/N0116)</p>	<ul style="list-style-type: none"> <li>• Determine the work schedule in concurrence with Superior.</li> <li>• Analyse the information on the job card.</li> <li>• Determine the availability of data sheet, manual, work instructions.</li> <li>• Determine that the material is available for production, compounding/ colour blending.</li> <li>• Perform the in-process inspection.</li> <li>• Perform the trial run to get extruded sample after machine set up.</li> <li>• Perform the machine parameters adjustment for getting final product.</li> <li>• Perform the cleaning process of the machine and equipment at regular interval.</li> <li>• Apply organization's health and safety standards during operations.</li> <li>• Apply quality system to get better product.</li> </ul>

<p><b>Post extrusion activities and troubleshooting</b></p> <p><b>Theory Duration</b> (hh:mm) 48:00</p> <p><b>Practical Duration</b> (hh:mm) 178:00</p> <p><b>Corresponding NOS Code</b> RSC/N4808 (CPC/N0116)</p>	<ul style="list-style-type: none"> <li>• Perform the visual check of final product.</li> <li>• Perform the corona treatment and printing, as per job requirement.</li> <li>• Demonstrate the process of storing the final product in specified area.</li> <li>• Perform the cleaning process of the machine and equipment at regular interval.</li> <li>• Perform the prevent maintenance of machines and ancillary equipment.</li> <li>• Demonstrate the coordination with maintenance department for resolving breakdown maintenance in minimum possible time.</li> <li>• Perform the root cause analysis of extrusion defects</li> <li>• Apply the corrective and preventive action identified during root cause analysis.</li> <li>• Create the report of defects in the moulds that do not have the authority to repair.</li> <li>• Apply safety and health guidelines.</li> </ul>
<p><b>Carrying out blow moulding operations</b></p> <p><b>Theory Duration</b> (hh:mm) 24:00</p> <p><b>Practical Duration</b> (hh:mm) 200:00</p> <p><b>Corresponding NOS Code</b> RSC/N4809 (CPC/N0117)</p>	<ul style="list-style-type: none"> <li>• Determine all components / process related documents to understand dimensions and properties of the required work output.</li> <li>• Determine the process requirements.</li> <li>• Apply do's and don'ts of the blow moulding process as defined in work instructions.</li> <li>• Determine the conversion procedure to be adopted for completing the work order.</li> <li>• Perform the process of setting the process parameters.</li> <li>• Identify the raw material like plastics granules, bonding additives etc. required for production.</li> <li>• Evaluate that sufficient stock of the required material is available before starting the process.</li> <li>• Determine the type of mould / dye required for moulding operations.</li> <li>• Analyse the availability of spare parts for continuous operation of machine</li> </ul>
<p><b>Carrying out blow moulding machine operations</b></p> <p><b>Theory Duration</b> (hh:mm) 28:00</p> <p><b>Practical Duration</b> (hh:mm) 168:00</p> <p><b>Corresponding NOS Code</b> RSC/N4809 (CPC/N0117)</p>	<ul style="list-style-type: none"> <li>• Demonstrate the troubleshooting of the blow moulding process.</li> <li>• Perform the quality defects analysis in blow moulding process.</li> <li>• Perform mould / dye, other moulding machine tools, auxiliaries cleaning.</li> <li>• Perform the cleaning of the area around the machine for any oil, grease, water etc.</li> <li>• Demonstrate the reporting process of the problems caused by machines to superior, when not resolved by operator.</li> <li>• Create the report of defects in the moulds that one does not have the authority to repair.</li> <li>• Apply quality system to get better product.</li> <li>• Apply the safety and health guidelines.</li> </ul>

**Health and safety  
at the workplace**

**Theory Duration**

(hh:mm)

28:00

**Practical Duration**

(hh:mm)

40:00

**Corresponding**

**NOS Code**

RSC/N4101

(CPC/N0411)

- Use protective clothing/ equipment for specific tasks and work conditions.
- Demonstrate safe working practices during work.
- Demonstrate good housekeeping practices at all the times.
- Use the various appropriate fire extinguishers on different types of fires correctly.
- Demonstrate rescue techniques applied during fire hazard.
- Identify activities which can cause potential injury.
- Perform the escalation to the concerned authorities on the potential risks identified during operations.
- Demonstrate segregation of waste as hazardous/ non Hazardous waste.
- Use the technique of waste disposal and waste storage in the proper bins as per standard operating procedure (SOP).
- Use the labelling mechanism of instruments/ boxes/ containers.
- Demonstrate the good practice of storing material and tools as per the 5S instructions.

## List of Assessable outcomes/assessment criteria - Block-I

### Assessment Criteria

<b>Job Role</b>	<b>Machine Operator Assistant - Plastics Processing</b>
<b>Qualification Pack</b>	<b>RSC/ Q4801 (CPC/Q0103)</b>
<b>Sector Skill Council</b>	<b>Rubber Skill Development Council</b>

S. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criterion.
5	To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
6	In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Assessment Outcomes	Assessment Criteria for Outcomes	Total Marks (600)	Out Of	Theory	Skills Practical
<b>RSC/N4801 (CPC/N0109) Familiarization with basic concepts, Job requirements &amp; basic related process</b>	PC1. Discuss the work order ( work output) required from the process and with the supervisor	<b>90</b>	6	2	4
	PC2. Refer all components / process related documents to understand dimensions and properties of the required work output		6	2	4
	PC3. Understand the process requirements in terms of temperature of the heater, hydraulic pressure/ air pressure/ vacuum pressure, rotating speed of the screw pressure, injection time, refilling time, blowing time etc. as mentioned in the Work Instruction/ SOP/ Control Diagrams		6	2	4
	PC4. Clearly understanding the does and don'ts of the manufacturing process as defined in SOPs/ Work Instructions or defined by supervisors		6	2	4
	PC5. Understand the conversion procedure and process to be adopted for completing the work order from the supervisor by referring the Work Instruction document/ SOP manual		6	2	4
	PC6. Set the various parameters like temperature of the heaters, hydraulic pressure/air pressure/ vacuum pressure, rotating speed of the screw, screw pressure, regulating current, flow of coolant/ water etc. before starting the process as per the parameters are mentioned in the Work Instructions/ SOP manual		6	2	4

	PC7. Understand the raw material like plastics granules, bonding additives etc. required for executing the activity		6	2	4
	PC8. Ensure that the required material is available before starting the process		6	2	4
	PC9. Understand the type of Mold /Dye required for executing the required conversion operation and ensure that the same is available for molding operations		6	2	4
	PC10. Ensure the availability of spare parts for continuous operation of machine		6	2	4
	PC11. Ensure that mold / Dye are cleaned properly & no foreign material is entrapped in parts of mold/dye.		6	2	4
	PC12. Ensure cleaning of the other molding machine tools, auxiliaries(if any)		6	2	4
	PC13. Ensure cleaning of the area around the machine for any oil, grease, water etc		6	2	4
	PC14. Consult with superiors in case of any doubt/clarification		2	1	1
	PC15. Self-confidence after resolving the queries to complete the task.		2	1	1
	PC16. Report completion of work to superiors		2	0.5	1.5
	PC17. Good interpersonal relations with superiors & fellow operators.		2	0.5	1.5
	PC18. Disciplined behavior in work place		2	0.5	1.5
	PC19. Good coordination with other department person for getting their support for work.		2	0.5	1.5
	<b>Total</b>		<b>90</b>	<b>30</b>	<b>60</b>
<b>RSC/N4802 (CPC/N0110) Basic Knowledge about different plastic material</b>	PC1. Discuss about the type of raw material being used in the industry & for work Order required for the process and with the supervisor	<b>80</b>	3	1	2
	PC2. Refer all material related documents to understand properties of the required work output and able to identify the material		8	2	6
	PC3. Understand the process requirements for the Plastics material in terms of temperature of the heater, rotating speed of the Screw, pressure, injection as mentioned in the Work Instruction/ SOP / Control Diagrams		10	2	8
	PC4. Understand the melting temperature, processing temperature etc. for plastic raw material		10	2	8
	PC5. Understand the processing characteristics of the plastics material being used for conversion procedure and process to be adopted for completing the work order from the supervisor by referring the Work Instruction document / SOP manual		10	2	8
	PC6. Ensure that the required material is available before starting the process		10	2	8
	PC7. Ensure that the plastics material is blended with requisite additives		9	1	8

	PC8. Ensure that machine / mold / Dye are cleaned properly & no foreign material is entrapped in parts of machine / mold / dye.		9	1	8
	PC9. Ensure cleaning of the materials spilled around the machine		7	1	6
	PC10. Ensure cleaning of the area around the machine for any oil, grease, water etc.		4	1	3
	<b>Total</b>		<b>80</b>	<b>15</b>	<b>65</b>
<b>RSC/N4803 (CPC/N0111) Familiarized with various Plastics processing techniques &amp; to assist the Operator in Injection moulding machine, Extrusion, Blow Moulding etc.</b>	PC1. Assist in Planning work schedule in concurrence with Superior	<b>125</b>	3	1	2
	PC2. Ensure availability of data sheet, manual, work instructions		6	1	5
	PC3. For power supply, hydraulic oil level, water connections		6	2	4
	PC4. Ensure availability of the tools ,materials & ancillary equipment for the work		6	2	4
	PC5. Setup the equipment & machineries as per the job requirement		6	2	4
	PC6. Understand Planning for Minimum wastage & its safe disposal		6	2	4
	PC7. Work in conformance to legal requirements, organizational policies and procedures		6	2	4
	PC8. Ensure that the mold is ready & having no problem in dry run		6	2	4
	PC9. Check material is available for production. If required arrange for pre drying		6	2	4
	PC10. Check the availability & readiness of ancillary equipment like chiller, mold Temperature controller, hopper loader, Cooling towers etc.		6	2	4
	PC11. Load the material and pigment (if required) in the hopper		6	2	4
	PC12. Observe to Set the parameters of the machine i.e. temperature, pressure, speed etc.		6	2	4
	PC13. Check the temperature on the barrel with respect to set temperature		6	1	5
	PC14. Conduct trial run to get sample piece once machine is set with the help of operator		6	1	5
	PC15. Visual check of final product in consultation with operator		6	1	5
	PC16. Carry out post molding operation during the cycle time run such as. trimming, apply protective tapes, putting labels on each product for identification		6	1	5
	PC17. understand the process, their types, operations involved		6	1	5
	PC18. Assist the operator in the work requirements for the process and with the supervisor		6	1	5
	PC19. Refer all components / process related documents to understand dimensions and properties of the required work output		6	1	5



PC20. Understand the process requirements in terms of tools / mold / dye required, temperature of the heater according to plastics material being used, Hydraulic / pneumatic pressure / rotating speed of the screw, Parison formation, Parison Programming, Blowing time etc. as mentioned in the Work Instruction / SOP / Control Diagrams, Clearly understanding the do's and don'ts of the blow molding process as defined in SOPs / Work Instructions or as defined by supervisors	6	1	5
PC21. Planning work schedule in concurrence with Operator	6	1	5
PC22. Assist the operator to Obtain and check the data on the job card and carry out functions in line with the responsibilities of job role	6	1	5
PC23. Ensure availability of data sheet, manual, work instructions	6	1	5
PC24. Check for power supply, oil level in gear box, water connections	6	1	5
PC25. Setup the equipment & machineries as per the job requirement	6	1	5
PC26. Planning for Minimum rejection & its safe reuse/disposal	6	1	5
PC27. Safety aspects of machine operation	6	1	5
PC28. Work in conformance to legal requirements, organizational policies and procedures	6	1	5
PC29. Check material is available for production. Compounding / Color blending	3	1	2
PC30. Check the availability & readiness of ancillary equipment like air compressor, hopper loader, dehumidifier, Cooling towers etc.	2	1	1
PC31. Load the material in the hopper	2	0.5	1.5
PC32. Set the parameters of the machine i.e. temperatures, speeds etc.	2	0.5	1.5
PC33. Check the temperature on the barrel with respect to set temperature	2	0.5	1.5
PC34. Conduct trial run to get extruded sample once machine is set.	2	0.5	1.5
PC35. Adjust parameters unless getting final product.	2	0.5	1.5
PC36. Visual check of final product.	2	0.5	1.5
PC37. Corona treatment & printing, if required.	2	0.5	1.5
PC38. Store the final product in specified area.	2	0.5	1.5
PC39. Clean the machine & equipment at regular interval	2	0.5	1.5
PC40. Work in compliance with specified health and safety standards	2	0.5	1.5
<b>Total</b>	<b>190</b>	<b>45</b>	<b>145</b>

<b>RSC/N4101 (CPC/N0411) Maintain basic health and safety practices at the workplace, 5S</b>	PC1. Use protective clothing/equipment for specific tasks and work conditions	<b>135</b>	2.5	0.5	2
	PC2. Carry out safe working practices while dealing with hazards to ensure the safety of Self and others.		2.5	0.5	2
	PC3. Apply good housekeeping practices at all times		2.5	0.5	2
	PC4. Use the various appropriate fire extinguishers on different types of fires correctly		2.5	0.5	2
	PC5. Demonstrate rescue techniques applied during fire hazard, demonstrate good housekeeping in order to prevent fire hazards, demonstrate the correct use of a fire extinguisher.		2.5	0.5	2
	PC6. Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals, loud noise, and Identify areas in the plant which are potentially hazardous/ unhygienic in nature. Conduct regular checks with support of the maintenance team on machine health to identify potential hazards due to wear and tear of machine.		2.5	0.5	2
	PC7. Inform the concerned authorities on the potential risks identified in the processes, workplace area/ layout, materials used etc., Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations.		2.5	0.5	2
	PC8. Create awareness amongst other by sharing information on the identified risks.		2.5	0.5	2
	PC9. Follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and un- necessary items are not cluttering the workbenches or work surfaces.		2.5	0.5	2
	PC10. Ensure segregation of waste in hazardous/ non Hazardous waste as per the sorting work instructions		2.5	0.5	2
	PC11. Follow the technique of waste disposal and waste storage in the proper bins as per SOP		1.5	0.5	1
	PC12. Segregate the items which are labelled as red tag items for the process area and keep them in the correct places		1.5	0.5	1
	PC13. Sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions		1.5	0.5	1
	PC14. Ensure that areas of material storage areas are not overflowing		1.5	0.5	1
	PC15. Properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required		1.5	0.5	1
	PC16. Return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area		1.5	0.5	1

	PC17. Follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards.		1.5	0.5	1
	PC18. Follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards.		1.5	0.5	1
	PC19. Check that the items in the respective areas have been identified as broken or damaged		1.5	0.5	1
	PC20. Follow the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc. PC21. Make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions		1.5	0.5	1
	<b><u>Total</u></b>		<b>40</b>	<b>10</b>	<b>30</b>
	<b><u>Grand Total</u></b>	<b>400</b>	<b>400</b>	<b>100</b>	<b>300</b>
	<b><u>Percentage Weightage:</u></b>			<b>25%</b>	<b>75%</b>
	<b><u>Minimum Pass% to qualify (aggregate):</u></b>			<b>70%</b>	

## List of Assessable outcomes/assessment criteria - Block-II

### Assessment Criteria

<b>Job Role</b>	<b>Machine Operator – Plastics Processing</b>
<b>Qualification Pack</b>	<b>RSC/ Q4803 (CPC/Q0104)</b>
<b>Sector Skill Council</b>	<b>Rubber Skill Development Council</b>

S. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training centre (as per assessment criteria below).
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training centre based on this criterion.
5	To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
6	In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Assessment Outcomes	Assessment Criteria for Outcomes	Total Marks (600)	Out Of	Theory	Skills Practical
<b>RSC/N4801 (CPC/N0109) Familiarization with basic concepts, job requirements &amp; basic related process</b>	PC1. Discuss the work order (work output) required from the process and with the supervisor.	<b>90</b>	6	2	4
	PC2. Refer all components / process related documents to understand dimensions and properties of the required work output.		6	2	4
	PC3. Ensure the process requirements in terms of temperature of the heater, hydraulic pressure/ air pressure/ vacuum pressure, rotating speed of the screw pressure, injection time, refilling time, blowing time etc. as mentioned in the Work Instruction/ SOP/ Control Diagrams.		6	2	4
	PC4. Follow the do's and don'ts of the manufacturing process as defined in SOPs/ Work Instructions or defined by supervisors.		6	2	4
	PC5. Follow the conversion procedure and process to be adopted for completing the work order from the supervisor by referring the work instruction document / SOP manual.		6	2	4
	PC6. Set the various parameters like temperature of the heaters, hydraulic pressure/air pressure/ vacuum pressure, rotating speed of the screw, screw pressure, regulating current, flow of coolant/ water etc. before starting the process as per the parameters are mentioned in the Work Instructions/ SOP manual.		6	2	4

	PC7. Identify the raw material like plastics granules, bonding additives etc. required for executing the activity.		6	2	4
	PC8. Ensure the required material is available before starting the process.		6	2	4
	PC9. Study the type of mould/dye required for executing the required conversion operation and ensures that the same is available for molding operations.		6	2	4
	PC10. Ensure the availability of spare parts for continuous operation of machine.		6	2	4
	PC11. Ensure that mould / dye are cleaned properly and no foreign material is entrapped in parts of mould/dye.		6	2	4
	PC12. Ensure cleaning of the other molding machine tools, auxiliaries (if any).		6	2	4
	PC13. Ensure cleaning of the area around the machine for any oil, grease, water etc.		6	2	4
	PC14. Consult with superiors in case of any doubt/ clarification.		2	1	1
	PC15. Adhere the Self-confidence study after resolving the queries to complete the task.		2	1	1
	PC16. Report completion of work to superiors.		2	0.5	1.5
	PC17. Maintain good interpersonal relations with superiors and fellow operators.		2	0.5	1.5
	PC18. Maintain Disciplined behavior in work place.		2	0.5	1.5
	PC19. Maintain Good coordination with other department person for getting their support for work.		2	0.5	1.5
	<b>Total</b>		<b>90</b>	<b>30</b>	<b>60</b>
<b>RSC/N4802 (CPC/N0110) Basic knowledge about different plastic material</b>	PC1. Discuss about the type of raw material being used in the industry and for work Order required for the process and with the supervisor.	<b>80</b>	3	1	2
	PC2. Refer all material related documents to understand properties of the required work output and able to identify the material.		8	2	6
	PC3. Follow the process requirements for the Plastics material in terms of temperature of the heater, rotating speed of the Screw, pressure, injection as mentioned in the Work Instruction / SOP / Control Diagrams.		10	2	8
	PC4. Study the melting temperature, processing temperature etc. for plastic raw material.		10	2	8
	PC5. Identify the processing characteristics of the plastics material being used for conversion procedure and process to be adopted for completing the work order from the supervisor by referring the Work Instruction document / SOP manual.		10	2	8
	PC6. Ensure that the required material is available before starting the process.		10	2	8
	PC7. Ensure that the plastics material is blended with requisite additives.		9	1	8

	PC8. Ensure that machine / mould / dye are cleaned properly and no foreign material is entrapped in parts of machine / mould / dye.		9	1	8
	PC9. Ensure cleaning of the materials spilled around the machine.		7	1	6
	PC10. Ensure cleaning of the area around the machine for any oil, grease, water etc.		4	1	3
	<b>Total</b>		<b>80</b>	<b>15</b>	<b>65</b>
<b>RSC/N4807 (CPC/N0115) Operate the injection moulding machine &amp; its trouble shooting</b>	PC1. Plan work schedule in concurrence with Superior.	<b>125</b>	2.5	0.5	2
	PC2. Obtain and check the data on the job card and carry out functions in line with the responsibilities of job role.		2.5	0.5	2
	PC3. Ensure availability of data sheet, manual, work instructions.		3	1	2
	PC4. Ensure power supply, hydraulic oil level, water connections.		3	1	2
	PC5. Ensure availability of the tools, materials and ancillary equipment's for the work.		3	1	2
	PC6. Setup the equipment and machineries as per the job requirement.		3	1	2
	PC7. Update and develop knowledge of the products.		3	1	2
	PC8. Plan for Minimum wastage and its safe disposal.		3	1	2
	PC9. Work in conformance to legal requirements, organizational policies and procedures.		5	1	4
	PC10. Ensure that the mould is ready and having no problem in dry run.		5	1	4
	PC11. Check material is available for production. If required arrange for pre drying.		5	1	4
	PC12. Check the availability and readiness of ancillary equipment's like chiller, mould Temperature controller, hopper loader, Cooling towers etc.		5	1	4
	PC13. Load the material and pigment (if required) in the hopper.		5	1	4
	PC14. Set the parameters of the machine i.e. temperature, pressure, speed etc.		5	1	4
	PC15. Check the temperature on the barrel with respect to set temperature.		5	1	4
	PC16. Conduct trial run to get sample piece once machine is set.		3	1	2
	PC17. Adjust parameters unless getting final product.		3	1	2
	PC18. Ensure the Visual check of final product.		3	1	2
	PC19. Define accepted products and defective products as per approved plan.		3	1	2
	PC20. Carry out post molding operation during the cycle time run such as trimming; apply protective tapes, putting labels on each product for identification.		3	1	2
	PC21. Store the final product in specified area.		3	1	2

	PC22. Clean the machine and equipment at regular interval.		3	1	2
	PC23. Work in compliance with specified health and safety standards.		3	1	2
	PC24. Follow Preventive maintenance of machines and ancillary equipment's.		3	1	2
	PC25. Keep Coordination with maintenance department for resolving breakdown maintenance in minimum possible time.		3	1	2
	PC26. Find the Root cause analysis of molding defects.		3	1	2
	PC27. Analysis of data sheets available in department.		3	1	2
	PC28. Take all corrective and preventive action.		3	1	2
	PC29. Report the problems caused by machines to superior, when not resolved by operator.		3	1	2
	PC30. Report defects in the molds that one does not have the authority to repair.		3	1	2
	PC31. Report major processing defects beyond control of operator.		3	1	2
	PC32. Keep records of machine log book, data sheet of machine parameter.		3	1	2
	PC33. Keep the documents related to incoming and outgoing material.		3	1	2
	PC34. Meet targets and goals for production.		3	1	2
	PC35. Minimize defects in final product.		2.5	0.5	2
	PC36. Follow quality system to get better product.		2.5	0.5	2
	PC37. Keep work area clean and systematic.		2.5	0.5	2
	PC38. Comply with safety and health guidelines.		2.5	0.5	2
	<b>Total</b>		<b>125</b>	<b>135</b>	<b>90</b>
<b>RSC/N4808 (CPC/N0116) Operate the extrusion machine &amp; its trouble shooting</b>	PC1. Plan work schedule in concurrence with superior.	<b>135</b>	2.5	0.5	2
	PC2. Obtain and check the data on the job card and carry out functions in line with the responsibilities of job role.		2.5	0.5	2
	PC3. Ensure availability of data sheet, manual, work instructions.		2.5	0.5	2
	PC4. Check for power supply, oil level in gear box, water connections.		2.5	0.5	2
	PC5. Ensure availability and functioning of the tools, materials and ancillary equipment's like air compressor, cooling tower, and high speed mixer etc. for the work.		2.5	0.5	2
	PC6. Setup the equipment and machineries as per the job requirement.		2.5	0.5	2
	PC7. Update and develop knowledge of the products to be produced.		2.5	0.5	2
	PC8. Plan for Minimum rejection and it's safe reuse/disposal.		2.5	0.5	2
	PC9. Safety aspects of machine operation.		2.5	0.5	2

PC10. Work in conformance to legal requirements, organizational policies and procedures.	3	1	2
PC11. Check material is available for production compounding / color blending.	3	1	2
PC12. Check the availability and readiness of ancillary equipment like air compressor, hopper loader, dehumidifier, cooling towers etc.	5	1	4
PC13. Load the material in the hopper.	5	1	4
PC14. Set the parameters of the machine i.e. temperatures, speeds etc.	5	1	4
PC15. Check the temperature on the barrel with respect to set temperature.	5	1	4
PC16. Conduct trial run to get extruded sample once machine is set.	5	1	4
PC17. Adjust parameters unless getting final product.	5	1	4
PC18. Ensure Visual check of final product.	5	1	4
PC19. Define accepted products and defective products as per approved plan.	5	1	4
PC20. Do the Corona treatment and printing, if required.	5	1	4
PC21. Store the final product in specified area.	5	1	4
PC22. Clean the machine and equipment's at regular interval. PC23Work in compliance with specified health and safety standards.	4.5	0.5	4
PC24. Preventive maintenance of machines and ancillary equipment.	4.5	0.5	4
PC25. Keep coordination with maintenance department for resolving breakdown maintenance in minimum possible time.	4.5	0.5	4
PC26. Find Root cause analysis of extrusion defects.	4.5	0.5	4
PC27. Read Analysis of data sheets available in department.	5	4	1
PC28. Take all corrective and preventive action.	4.5	0.5	4
PC29. Report the problems caused by machines to superior, when not resolved by operator.	4.5	0.5	4
PC30. Report defects in the molds that one does not have the authority to repair.	4.5	0.5	4
PC31. Report major processing defects beyond control of operator.	2.5	0.5	2
PC32. Keep records of machine log book, data sheet of machine parameter.	2.5	0.5	2
PC33. Keep the Documents related to incoming and outgoing material.	2.5	0.5	2
PC34. Meet targets and goals for production.	2.5	0.5	2
PC35. Minimize defects in final product.	2.5	0.5	2
PC36. Follow quality system to get better product.	2.5	0.5	2
PC37. Keep work area clean and systematic.	2.5	0.5	2



	PC38. Comply with safety and health guidelines.		2.5	0.5	2
	<b>Total</b>		<b>135</b>	<b>25</b>	<b>110</b>
<b>RSC/N4809 (CPC/N0117) Operate the blow moulding machine &amp; its trouble shooting</b>	PC1. Learn the process, their types, operations involved.	<b>135</b>	6	2	4
	PC2. Discuss the work requirements for the process and with the supervisor.		6	2	4
	PC3. Refer all components / process related documents to understand dimensions and properties of the required work output.		6	2	4
	PC4. Learn the process requirements in terms of tools /mould/ dye required, temperature of the heater according to plastics material being used, hydraulic / pneumatic pressure /rotating speed of the screw, parison formation, parison programming, blowing time etc. as mentioned in the work instruction / SOP/ control diagrams clearly understanding the do's and don'ts of the blow molding process as defined in SOPs / Work Instructions or as defined by supervisors.		6	2	4
	PC5. Follow the conversion procedure and process to be adopted for completing the work order from the supervisor by referring the Work Instruction document / SOP manual.		6	2	4
	PC6. Follow the conversion procedure and process to be adopted for completing the work order from the supervisor by referring the work instruction document / SOP manual.		6	2	4
	PC7. Ensure the raw material like plastics granules, bonding additives etc. required for production.		6	2	4
	PC8. Ensure that the required material with enough stock is available before starting the process.		6	2	4
	PC9. Ensure the type of mould / dye required to complete the conversion operation and ensure that the same is available for molding operations.		6	2	4
	PC10. Ensure the availability of spare parts for continuous operation of machine.		6	2	4
	PC11. Learn the troubleshooting of the blow molding process. Knows the quality defects observed in blow molding, their causes and remedies.		5	1	4
	PC12. Set the parameters to ensure manufacturing of good product.		5	1	4
	PC13. Ensure that mould / dye are cleaned properly and no foreign material is trapped in parts of mould/dye.		5	1	4
	PC14. Ensure cleaning of the other molding machine tools, auxiliaries (if any).		5	1	4
	PC15. Ensure cleaning of the area around the machine for any oil, grease, water etc.		5	1	4
	PC16. Ensure cleaning of the area around the machine for any oil, grease, water etc.		5	1	4
	PC17. Ensure cleaning of the area around the machine for any oil, grease, water etc.		5	1	4

	PC18 Report major processing defects beyond control of operator.		5	1	4
	PC19. Keep records of machine log book, data sheet of machine parameter.		5	1	4
	PC20.Keep the Documents related to incoming & outgoing material.		5	1	4
	PC21. Meet targets and goals for production.		5	1	4
	PC22. Minimize defects in final product.		5	1	4
	PC23. Follow quality system to get better product.		4	1	3
	PC24. Keep work area clean and systematic.		3	1	2
	PC25. Comply with safety and health guidelines and rules.		3	1	2
			<b>135</b>	<b>25</b>	<b>110</b>
<b>RSC/N4101 (CPC/N0411) Maintain basic health and safety practices at the workplace, 5S</b>	PC1. Wear protective clothing/equipment for specific tasks and work conditions.	<b>40</b>	2.5	0.5	2
	PC2. Carry out safe working practices while dealing with hazards to ensure the safety of self and others.		2.5	0.5	2
	PC3. Keep good housekeeping practices at all times.		2.5	0.5	2
	PC4. Use the various appropriate fire extinguishers on different types of fires correctly.		2.5	0.5	2
	PC5. Demonstrate rescue techniques applied during fire hazard, demonstrate good housekeeping in order to prevent fire hazards, demonstrate the correct use of a fire extinguisher.		2.5	0.5	2
	PC6. Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals, loud noise, and Identify areas in the plant which are potentially hazardous/ unhygienic in nature. Conduct regular checks with support of the maintenance team on machine health to identify potential hazards due to wear and tear of machine.		2.5	0.5	2
	PC7. Inform the concerned authorities on the potential risks identified in the processes, workplace area/ layout, materials used etc., Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations.		2.5	0.5	2
	PC8. Create awareness amongst other by sharing information on the identified risks.		2.5	0.5	2
	PC9. Follow the sorting process and check that the tools, fixtures and jigs that are lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches or work surfaces.		2.5	0.5	2
	PC10. Ensure segregation of waste in hazardous/ non Hazardous waste as per the sorting work instructions.		2.5	0.5	2
	PC11. Follow the technique of waste disposal and waste storage in the proper bins as per SOP.		1.5	0.5	1

	PC12. Segregate the items which are labeled as red tag items for the process area and keep them in the correct places.		1.5	0.5	1
	PC13. Sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions.		1.5	0.5	1
	PC14. Ensure that areas of material storage areas are not overflowing.		1.5	0.5	1
	PC15. Properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required.		1.5	0.5	1
	PC16. Return the extra material and tools to the designated sections and make sure that no additional material/ tool are lying near the work area.		1.5	0.5	1
	PC17. Follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards.		1.5	0.5	1
	PC18. Follow the proper labeling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists.		1.5	0.5	1
	PC19. Check that the items in the respective areas have been identified as broken or damaged.		1.5	0.5	1
	PC20. Follow the given instructions and check for leveling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc.		1.5	0.5	1
	PC21. Make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions.		1.5	0.5	1
	<b><u>Total</u></b>		<b>40</b>	<b>10</b>	<b>30</b>
	<b><u>Grand Total</u></b>	<b>600</b>	<b>600</b>	<b>150</b>	<b>450</b>
	<b><u>Percentage Weightage:</u></b>			<b>25%</b>	<b>75%</b>
	<b><u>Minimum Pass% to qualify (aggregate):</u></b>			<b>70%</b>	

## Annexure I: Tools and Equipment for Basic Training (Block I)

**Sector:** Rubber Industry

**Block I QP Code with Version No. or Course Code:** RSC/Q4801 (CPC/Q0103), V1.0

**Block I QP Name or Course Name:** Machine Operator – Plastics Processing

**Block I NSQF Level:** 3

S. No.	Equipment Name	Minimum number of Equipment required (per batch of 30 trainees)	Unit Type	Is this a mandatory Equipment to be available at the Training Center (Yes/No)	Dimension/ Specification / Description of the equipment/ ANY OTHER REMARK
1	Laptop/ PC	1		Yes	
2	Projector	1		Yes	
3	Steel ruler	5		Yes	12"
6	Micrometer	5		Yes	0-25 mm
7	Vernier caliper	5		Yes	0-300 mm
8	Radius gauge	5		Yes	0.5-50 mm
9	Feeler gage	5		Yes	0.05-1.0 mm
10	Steel measuring tape	5		Yes	0-5 m
11	Weighing balance	1		Yes	0-500 kg
12	Hammer	5		Yes	
13	Screwdriver set with multiple heads	5		Yes	
14	Allen key hexagonal	5		Yes	
15	File triangular	5		Yes	
16	Hacksaw	5		Yes	
17	Adjustable spanner set double side	5		Yes	

18	Adjustable spanner	5		Yes	
19	Hand mould	1		Yes	
20	Two plate mould	1		Yes	
21	Plastic injection moulding machine	1		Yes	
22	Automatic hopper loader	1		No	
23	Hot air oven	1		No	
24	Dryer	1		No	
25	Dehumidifier	1		No	
26	Mould temperature controller	1		Yes	
27	Scrap grinder	1		No	
28	Crane	1		No	
29	Air compressor	1		Yes	
30	Hot air blow gun	1		No	
31	Cooling tower	1		Yes	Required based on machine requirement
32	Hand operated injection moulding machine	1		Yes	
33	Semi-automatic horizontal / vertical injection moulding machine	1		No	
34	Fully automatic horizontal injection moulding machine	1		No	
35	Microprocessor based injection moulding machine	1		No	
36	Hand operated blow moulding machine	1		Yes	
37	Semi-automatic blow moulding machine	1		No	
38	Fully automatic single stage blow moulding machine	1		No	

39	Full automatic double stage blow moulding machine	1		No	
40	Injection stretch blow moulding machine	1		No	
41	Single screw pipe extrusion plant (hdpe) with accessories	1		Yes	
42	Twin screw pipe extrusion plant (pvc) with accessories	1		No	
43	Safety goggles	30		Yes	
44	Rubber gloves	30		Yes	
45	Asbestos gloves	30		Yes	
46	Fire extinguisher	2		Yes	For extinguishing A, B, C, D type fires
47	Apron	30		Yes	
48	Helmet	30		Yes	
49	First aid box	1		Yes	

## Annexure II: Tools and Equipment for Basic Training (Block II)

**Sector:** Rubber Industry

**Block II QP Code with Version No. or Course Code:** RSC/Q4803 (CPC/Q0104), V1.0

**Block II QP Name or Course Name:** Machine Operator – Plastics Processing

**Block II NSQF Level:** 4

S. No.	Equipment Name	Minimum number of Equipment required (per batch of 30 trainees)	Unit Type	Is this a mandatory Equipment to be available at the Training Center (Yes/No)	Dimension/ Specification / Description of the equipment/ ANY OTHER REMARK
1	Laptop/ PC	1		Yes	
2	Projector	1		Yes	
3	Steel ruler	5		Yes	12"
6	Micrometer	5		Yes	0-25 mm
7	Vernier caliper	5		Yes	0-300 mm
8	Radius gauge	5		Yes	0.5-50 mm
9	Feeler gage	5		Yes	0.05-1.0 mm
10	Steel measuring tape	5		Yes	0-5 m
11	Weighing balance	1		Yes	0-500 kg
12	Hammer	5		Yes	
13	Screwdriver set with multiple heads	5		Yes	
14	Allen key hexagonal	5		Yes	
15	File triangular	5		Yes	
16	Hacksaw	5		Yes	
17	Adjustable spanner set double side	5		Yes	

18	Adjustable spanner	5		Yes	
19	Hand mould	1		Yes	
20	Two plate mould	1		Yes	
21	Plastic injection moulding machine	1		Yes	
22	Automatic hopper loader	1		Yes	
23	Hot air oven	1		Yes	
24	Dryer	1		Yes	
25	Dehumidifier	1		Yes	
26	Mould temperature controller	1		Yes	
27	Scrap grinder	1		Yes	
28	Crane	1		Yes	
29	Air compressor	1		Yes	
30	Hot air blow gun	1		Yes	
31	Cooling tower	1		Yes	Required based on machine requirement
32	Hand operated injection moulding machine	1		Yes	
33	Semi automatic horizontal / vertical injection moulding machine	1		Yes	
34	Fully automatic horizontal injection moulding machine	1		No	
35	Micro processor based injection moulding machine	1		No	
36	Hand operated blow moulding machine	1		Yes	
37	Semi-automatic blow moulding machine	1		Yes	
38	Fully automatic single stage blow moulding machine	1		No	



39	Full automatic double stage blow moulding machine	1		No	
40	Injection stretch blow moulding machine	1		No	
41	Single screw pipe extrusion plant (hdpe) with accessories	1		Yes	
42	Twin screw pipe extrusion plant (pvc) with accessories	1		No	
43	Safety goggles	30		Yes	
44	Rubber gloves	30		Yes	
45	Asbestos gloves	30		Yes	
46	Fire extinguisher	2		Yes	For extinguishing A, B, C, D type fires
47	Apron	30		Yes	
48	Helmet	30		Yes	
49	First aid box	1		Yes	