

Model Curriculum

Machine Operator – Plastics Extrusion

SECTOR: RUBBER
SUB-SECTOR: PLASTICS PROCESSING
OCCUPATION: PLASTICS EXTRUSION
REF ID: RSC/Q4602 (CPC/Q0304), V 1.0
NSQF LEVEL: 4



**CURRICULUM COMPLIANCE TO
QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS**

is hereby issued by the

RUBBER SKILL DEVELOPMENT COUNCIL

for the

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: 'Machine Operator – Plastics Extrusion'
QP No. 'RSC/Q4602 (CPC/Q0304), V1.0, NSQF Level 4'

Date of Issuance: **December 26th, 2016**

Valid up to: **December 25th, 2021**

* Valid up to the next review date of the Qualification Pack



Authorised Signatory
(Rubber Skill Development Council)

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Machine Operator- Plastics Extrusion

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Machine Operator- Plastics Extrusion”, in the “Rubber Skill Development Council” Sector/Industry and aims at building the following key competencies amongst the learners.

Program Name	Machine Operator- Plastics Extrusion		
Qualification Pack Name & Reference ID	RSC/Q4602 (CPC/Q0304), V 1.0		
Version No.	1.0	Version Update Date	29/05/2019
Pre-requisites to Training	VIII th Standard		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Identify the process requirements of different types of plastics • Describe the role and responsibilities of a machine operator plastics extrusion • Analyze the extrusion concept and raw materials required for the same • Demonstrate the process of plastics compounding / mixing • Operate the HDPE /PVC pipe extruder machine • Operate the plastic film extruder machine • Practice reporting and documentation • Perform quality checks • Demonstrate proper house keeping • Maintain basic health and safety practices at the workplace 		

This course encompasses 8 out of 8 National Occupational Standards (NOS) of “Machine Operator-Plastics Extrusion” Qualification Pack issued by “Rubber Skill Development Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1.	Introduction to the job role Theory Duration (hh:mm) 20:00 Practical Duration (hh:mm) 10:00 Corresponding NOS Code Bridge Module	<ul style="list-style-type: none"> Evaluate the history of development of plastic products Describe current industrial scenario of plastics Identify types of plastic List major industrial associations related to plastics sacks Identify equipment used for plastics sacks Describe the roles and responsibilities of a machine operator - plastics extrusion. 	Class Room equipment: LCD Projector/Screen, Computer, charts, Black / White board & Duster.
2.	Concept of plastics raw materials and extrusion Theory Duration (hh:mm) 25:00 Practical Duration (hh:mm) 60:00 Corresponding NOS Code RSC/N4606 (CPC/N0319)	<ul style="list-style-type: none"> Describe the types and properties of plastics used in extrusion Identify the different plastics raw materials based on the items produced Demonstrate ways to handle the raw materials Identify the types of extruders used in the extrusion process Identify types of dyes used for different extruded products Analyze haul-off units Demonstrate storage and handling of finished products Evaluate the types of additives, master batches Evaluate the types of mixing and compounding Ensure proper measurement of additives Practise storage and handling of raw materials in compounding area Identify the Do's and Don'ts in area of operation Comply with safety precautions before operations. 	Class Room equipment: LCD Projector/Screen, Computer, charts, Black / White board & Duster. Measuring equipment: Steel Ruler, Micrometer, Vernier Caliper, Radius gauge, Feeler gage, Steel measuring tape, Weighing Balance (1 No). Hand Tools: Hammer, screw driver set with Multiple heads, Allen key hexagonal, File triangular, Hacksaw, adjustable, Spanner set double side, Adjustable spanner. Personal Protective equipment: Safety Goggles, Rubber Gloves, Asbestos gloves, Fire Extinguisher, Apron, Helmet, First Aid Box with Medicines Plastics raw material: PP, HDPE, Injection grade.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
			Mould: Hand mould, Two plate mould, Three Plate mould
3.	<p>Process of plastics compounding / mixing</p> <p>Theory Duration (hh:mm) 30:00</p> <p>Practical Duration (hh:mm) 65:00</p> <p>Corresponding NOS Code RSC/N4607 (CPC/N0321)</p>	<ul style="list-style-type: none"> Analyze the types of chemicals, additives and colorants Evaluate the properties of chemicals, additives, colorants and pigments used Analyze the changes in plastic properties by adding chemicals, additives and pigments Analyse the formulation defined for different products Analyze the types of blenders, mixers and their parts Prepare batches as per the formulations Demonstrate loading and unloading of batches Setup the temperature, pressure and speed involved in blenders and mixers Analyze the importance of each and every extrusion parameter Identify the precautions to be taken during the batch preparation Demonstrate ways to store the batches after preparation 	<p>Measuring equipment: Steel Ruler, Micrometer, Vernier Caliper, Radius gauge, Feeler gauge, Hight gauge, Thread gauge, Steel measuring tape, Weighing Balance (1 No.)</p> <p>Raw material: Mild Steel, Stainless Steel, Aluminium, Brass, Wood CNC Lathe Machine Lathe Machine CNC Simulator 3-Jaw and 4-Jaw Chuck, Cutting Tools (Single Point) Both HSS and Carbide Inserts types CAM software, CNC controller, CNC simulator, Milling machine, CNC Milling machine CAM software, CNC controller, different type CNC Controller Like HASS, FANUC, Heidenhain, CNC HASS Simulators</p>
4.	<p>Perform HDPE /PVC pipe extruder machine operation</p> <p>Theory Duration (hh:mm) 15:00</p> <p>Practical Duration (hh:mm) 85:00</p> <p>Corresponding NOS Code RSC/N4608 (CPC/N0322)</p>	<ul style="list-style-type: none"> Identify the types of HDPE / PVC extruders Analyse the extruder parts and their functions Analyse the pressure and vacuum sizing units Evaluate the types of dyes used for different extruded pipes Perform operations for Haul-Off units Perform dismantling and assembling extruder parts Demonstrate safety precaution during assembling and disassembling of extruder machine Adjust parameters like 	<p>Class Room equipment: LCD Projector/Screen, Computer, charts, Black / White board and Duster.</p> <p>Measuring equipment: Steel Ruler, Micrometer, Vernier Caliper, Radius gauge, Feeler gauge, Hight gauge, Thread gauge, Steel measuring tape, Weighing Balance (1 No.)</p> <p>Hand Tools: Hammer, screw driver set with Multiple heads, Allen key hexagonal, Twist drills bit, File triangular,</p>

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		temperature, pressure and speed controls <ul style="list-style-type: none"> • Analyze the effect of process parameters on the product • Setup trial production and check product stabilization • Ensure control of parameters for actual production • Comply with post production and storing procedure • Identify common faults for trouble shooting • Perform disposal of faulty products as per the procedure laid down under SOP • Identify safety equipment and their use 	Hacksaw adjustable, Spanner set double side, Adjustable spanner, Crimping tools, Calculator, wrenches, pliers, cutters, striking tools, struck or hammered tools, vices, clamps, snips, saws, drills and knives Raw material: Mild Steel, Stainless Steel, Aluminium, Brass, Wood CNC Lathe Machine Lathe Machine CNC Simulator 3-Jaw and 4-Jaw Chuck, Cutting Tools (Single Point) Both HSS and Carbide Inserts types CAM software, CNC controller, CNC simulator, Milling machine, CNC Milling machine CAM software, CNC controller, different type CNC Controller Like HASS, FANUC, Heidenhain, CNC HASS Simulators
5.	Perform plastic film extruder machine operation Theory Duration (hh:mm) 30:00 Practical Duration (hh:mm) 70:00 Corresponding NOS Code RSC/N4609 (CPC/N0323)	<ul style="list-style-type: none"> • Evaluate the types of film extruders • Identify extruder parts and their functions • Demonstrate ways to handle air compressor pressure • Identify types of dyes used for different extruded films • Practise operating the Haul Off Units • Perform dismantling and assembling of extruder parts • Adjust the process parameter like temperature, pressure and speed controls as per the requirement • Discuss the effect of parameters set for the process on the properties of the product 	Personal Protective equipment: Safety Goggles, Rubber Gloves, Asbestos gloves, Fire Extinguisher, Apron, Helmet, First Aid Box with Medicines Raw material: Mild Steel, Stainless Steel, Aluminium, Brass, Wood CNC Lathe Machine Lathe Machine CNC Simulator 3-Jaw and 4-Jaw Chuck, Cutting Tools (Single Point) Both HSS and Carbide Inserts types CAM software, CNC

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<ul style="list-style-type: none"> Perform a trial production and check product stabilization Assess actual production and parameter / process control Perform quality check Perform post production and storage of material Identify common faults for trouble shooting Segregate the faulty product Demonstrate ways of disposal of faulty products as per the procedure laid down by the company 	controller, CNC simulator, milling machine, CNC Milling machine CAM software, CNC controller, different type CNC Controller Like HASS, FANUC, Heidenhain, CNC HASS Simulators
6.	Perform quality checks Theory Duration (hh:mm) 30:00 Practical Duration (hh:mm) 70:00 Corresponding NOS Code RSC/N4605 (CPC/N0316)	<ul style="list-style-type: none"> Perform total range of checks as per the prescribed standards Apply appropriate measuring instruments, equipment, tools, accessories etc, as prescribed / required Identify non-conformities to quality assurance standards. Identify potential causes of non-conformities to quality assurance standards Identify impact on final product due to non-conformance to prescribed standards Evaluate the need for action to ensure that problems do not reoccur Apply corrective action to address a problem Review effectiveness of the corrective action Interpret the results of the quality check Analyse results of the findings with QC in charge/appropriate authority Practise recording the results of the action taken Identify the adjustments not covered, for future reference Perform correct reporting procedure where the cause of 	Class Room equipment: LCD Projector/Screen, Computer, charts, Black / White board and Duster. Measuring equipment: Steel Ruler, Micrometer, Vernier Caliper, Radius gauge, Feeler gauge, Hight gauge, Thread gauge, Steel measuring tape, Weighing Balance (1 No.) Hand Tools: Hammer, screw driver set with Multiple heads, Allen key hexagonal ,Twist drills bit, File triangular, Hacksaw adjustable, Spanner set double side, Adjustable spanner, Crimping tools, Calculator, wrenches, pliers, cutters, striking tools, struck or hammered tools, vices, clamps, snips, saws, drills and knives.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		defect cannot be identified.	
7.	Perform housekeeping Theory Duration (hh:mm) 30:00 Practical Duration (hh:mm) 70:00 Corresponding NOS Code RSC/N4610 (CPC/N0324)	<ul style="list-style-type: none"> Identify the area that comes under housekeeping Apply appropriate signage immediately if oily substance / water spills on the floor Plan housekeeping activities required to be performed Identify the material / equipment required for cleaning the areas Plan the sequence for cleaning the area to avoid re-soiling the cleaned areas and surfaces Ensure that there is adequate ventilation for the work being carried out 	Class Room equipment: LCD Projector/Screen, Computer, charts, Black / White board and Duster. Personal Protective equipment: Safety Goggles, Rubber Gloves, Asbestos gloves, Fire Extinguisher, Apron, Helmet, First Aid Box with Medicines
8.	Analyze the importance of housekeeping Theory Duration (hh:mm) 30:00 Practical Duration (hh:mm) 70:00 Corresponding NOS Code RSC/N4610 (CPC/N0324)	<ul style="list-style-type: none"> Demonstrate the use of personal protective equipment required for the cleaning method Perform cleaning activities without disturbing others Inform the appropriate person about the difficulties in carrying out your work Comply with workplace procedures related to accidental damage caused during the cleaning process Ensure that, on completion of the work, the area is left clean and dry and free from any leftover Ensure the storage of the equipment, materials and personal protective equipment in appropriate places Maintain inventory records Demonstrate ways to dispose the waste garnered from the activity Maintain schedules and records for housekeeping duty. 	Class Room equipment: LCD Projector/Screen, Computer, charts, Black / White board and Duster. Personal Protective equipment: Safety Goggles, Rubber Gloves, Asbestos gloves, Fire Extinguisher, Apron, Helmet, First Aid Box with Medicines
9.	Identify pre-requisites to documentation Theory Duration (hh:mm)	<ul style="list-style-type: none"> Identify data/problems/incidents as per the laid down Inform the appropriate authority as laid down by the company procedure Identify documentation to be 	Class Room equipment: LCD Projector/Screen, Computer, charts, Black / White board and Duster.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	20:00 Practical Duration (hh:mm) 55:00 Corresponding NOS Code RSC/N4604 (CPC/N0315)	completed relating to the job profile <ul style="list-style-type: none"> Ensure detailed record is kept in an appropriate format 	
10.	Carry out documentation Theory Duration (hh:mm) 20:00 Practical Duration (hh:mm) 55:00 Corresponding NOS Code RSC/N4604 (CPC/N0315)	<ul style="list-style-type: none"> Perform all documentation within stipulated time according to company procedure Ensure that documents are available to all appropriate authorities for inspection purposes Furnish detailed response to any requests for information Inform the appropriate authority about the requests received for the information to be provided. 	Class Room equipment: LCD Projector/Screen, Computer, charts, Black / White board and Duster.
11.	Maintain basic health and safety at the workplace Theory Duration (hh:mm) 20:00 Practical Duration (hh:mm) 80:00 Corresponding NOS Code RSC/N4101 (CPC/N0411)	<ul style="list-style-type: none"> Comply with environmental and safety policies of organisation Identify personal safety, job safety and machine safety procedures Coordinate with other resources at the workplace to achieve the healthy, safe and secure environment for all Identify hazards like illness, accidents, fires Demonstrate safe working practices while dealing with hazards Practise good housekeeping standards at all times Demonstrate rescue techniques applied during fire hazard Demonstrate the correct use of a fire extinguishers Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous 	Class Room equipment: LCD Projector/Screen, Computer, charts, Black / White board and Duster. Measuring equipment: Steel Ruler, Micrometer, Vernier Caliper, Radius gauge, Feeler gauge, Height gauge, Thread gauge, Steel measuring tape, Weighing Balance (1 No.) Hand Tools: Hammer, screw driver set with Multiple heads, Allen key hexagonal, Twist drills bit, File triangular, Hacksaw adjustable, Spanner set double side, Adjustable spanner, Crimping tools, Calculator, wrenches, pliers, cutters, striking tools, struck or

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		<p>fumes, chemicals, loud noise</p> <ul style="list-style-type: none"> • Conduct regular checks with support of the maintenance team on machine health • Maintain awareness amongst others by sharing information on the identified risks. • Ensure that the tools, fixtures and jigs are in use and unnecessary items are not cluttering the workbenches • Categorize the types of wastes • Demonstrate the technique of waste disposal and waste storage in proper bins • Segregate the items which are labelled as red tag items for the process area and keep them in the appropriate places • Assemble the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers • Practise proper stacking of various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage • Identify the floor markings/ area markings used for demarcating the various sections in the plant • Maintain reference files/ documents with the codes and the lists • Comply with the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. • Organize all material and tools in the designated places as indicated in the 5S instructions 	<p>hammered tools, vices, clamps, snips, saws, drills and knives</p> <p>Personal Protective equipment: Safety Goggles, Rubber Gloves, Asbestos gloves, Fire Extinguisher, Apron, Helmet, First Aid Box with Medicines</p> <p>Raw material: Mild Steel, Stainless Steel, Aluminium, Brass, Wood CNC Lathe Machine Lathe Machine CNC Simulator 3-Jaw and 4-Jaw Chuck, Cutting Tools (Single Point) Both HSS and Carbide Inserts types CAM software, CNC controller, CNC simulator, milling machine, CNC Milling machine CAM software, CNC controller, different type CNC Controller Like HASS, FANUC, Heidenhain, CNC HASS Simulators</p>
	<p>Total Duration</p> <p>Theory Duration 270:00</p> <p>Practical Duration</p>	<p>Unique Equipment Required:</p> <ol style="list-style-type: none"> 1. Class Room equipment: LCD Projector/Screen, Computer, charts, Black / White board & Duster. 2. Measuring equipment: Steel Ruler, Micrometer, Vernier Caliper, Radius gauge, Feeler gage, Steel measuring tape, Weighing Balance (1 No.) 	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	690:00	<p>3. Hand Tools: Hammer, screw driver set with Multiple heads, Allen key hexagonal, File triangular, Hacksaw, adjustable, Spanner set double side, Adjustable spanner</p> <p>4. Personal Protective equipment: Safety Goggles, Rubber Gloves, Asbestos gloves, Fire Extinguisher, Apron, Helmet, First Aid Box with Medicines</p> <p>5. Plastics Raw Material: PP, HDPE, PVC Extrusion Grade.</p> <p>6. Mould & Dye: Dye head for HDPE Pipe 25mm, PVC pipe 40mm,30mm Dye Blown Film</p> <p>7. Auxiliaries equipment: Automatic Hopper Loader, Hot air oven and Dryer, Dehumidifier, Mould Temperature Controller, Scrap Grinder, Crane, Air Compressor, Hot air blow Gun, Water cooling Tower</p> <p>8. Single Screw Pipe Extrusion plant (HDPE) with accessories.</p> <p>9. Blown Film Extruder Single Layer</p> <p>10. PVC compound Mixer</p>	

Grand Total Course Duration: **960 Hours 0 Minutes**

(This syllabus/ curriculum has been approved by [Rubber Skill Development Council](#))

**Trainer Prerequisites for Job role: “Machine Operator- Plastics Extrusion” mapped to Qualification Pack: “RSC/Q4602 (CPC/Q0304)”
Version 1.0**

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “ <u>RSC/Q4602 (CPC/Q0304), V 1.0</u> ”.
2	Personal Attributes	A Trainer should be free from socio-economic preferences and prejudice. He/ she should be safety conscious and proficient in handling and use security/ safety equipment. Besides being knowledgeable, he/ she should be energetic, motivating, innovative and good at communication. The trainer should be able to establish rapport with the trainees and employ innovative methods to impart instructions.
3	Minimum Educational Qualification	VIII th Standard
4a	Domain Certification	Certified for Job Role “ <u>Machine Operator- Plastics Extrusion</u> ” mapped to the Qualification Pack “ <u>RSC/Q4602 (CPC/Q0304), V 1.0</u> ” issued by RSDC
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “ <u>Trainer</u> ”, mapped to the Qualification Pack: “ <u>MEP/Q2601</u> ” with scoring of minimum 80%.
5	Experience	As per the standards set by relevant SSC to practice in different industry sectors.

Annexure: Assessment Criteria

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: Machine Operator- Plastics Extrusion
Qualification Pack Code: RSC/Q4602 (CPC/Q0304), V1.0
Sector Skill Council: Rubber Skill Development Council

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 laydown 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 these criteria.
5. To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS.
6. In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

Assessable outcome		Marks allocation		
Assessable Outcome	Assessment Criteria	Out of	Theory	Practical
RSC/N4606 (CPC/N0319) Basics Plastics Raw Material & Extrusion Concept.	PC1. Understanding Types of Plastics used in Extrusion and Its Properties	6	2	4
	PC2. Selection Plastics Raw Materials based on the Items Produced.	6	2	4
	PC3. Storing and Handling of Raw Materials and House Keeping	6	2	4
	PC4. Types of Extruders Used in the Extrusion Process and their Parts	6	2	4
	PC5. Types of Dyes Used for different Extruded Products.	6	2	4
	PC6. Haul Off Units	9	3	6
	PC7. Storing and Handling of Finished Products and House Keeping.	8	2	6
	PC8. Types of Additives, Master Batches	8	2	6
	PC9. Types of Mixing and Compounding	8	2	6
	PC10. Measurement of Additives and Materials and Maintaining Formulations.	6	2	4
	PC11. Storing, Handling of Raw Materials in Compounding Area and House Keeping	5	1	4
	PC12. Understanding Safety Equipment and Its Use.	5	1	4
	PC13. Do's and Don'ts in Area of Operation	3	1	2
	PC14. Safety Precaution Majors before Operations.	3	1	2
	Subtotal	85	25	60
RSC/N4101 (CPC/N0411) Maintain basic health and safety practices at the workplace, 5S.	PC1. Wear protective clothing/equipment for specific tasks and work conditions	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	2.5	0.5	2

Assessable outcome		Marks allocation		
Assessable Outcome	Assessment Criteria	Out of	Theory	Practical
	hazards, demonstrate the correct use of a fire extinguisher.			
	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	1.5	0.5	1

Assessable outcome		Marks allocation		
Assessable Outcome	Assessment Criteria	Out of	Theory	Practical
	areas are not overflowing 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			
	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 proper labelling 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 levelling 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
	Subtotal	40	10	30
RSC/N4607 (CPC/N0321) Plastics Compounding / Mixing.	PC1. Understanding Types of Chemicals, Additives and Colorants.	9	3	6
	PC2. Properties and Importance of Chemicals, Additives and Colorants and Pigments.	9	3	6
	PC3. Properties changes by adding Chemicals, additives and pigments in Plastics.	6	2	4
	PC4. Formulation laid down for different Products.	6	2	4
	PC5. Types of Blenders , Mixers and their	6	2	4

Assessable outcome		Marks allocation		
Assessable Outcome	Assessment Criteria	Out of	Theory	Practical
	Parts			
	PC6. Preparation Batches as per the formulations.	6	2	4
	PC7. Loading and unloading of Batches.	6	2	4
	PC8. Temperature, Pressure and Speed involved in Blenders and Mixers.	6	2	4
	PC9. Importance of each and every Parameters	6	2	4
	PC10. Precaution to be taken care during the batch preparation.	5	1	4
	PC11. Storing of batches after preparation.	5	1	4
	PC12. Understanding Safety Equipment and Its Use.	5	1	4
	PC13. Do's and Don'ts in Area of Operation	5	1	4
	PC14. Safety Precaution Majors before Operations.	5	1	4
	Subtotal	85	25	60
RSC/N4608 (CPC/N0322) Perform the HDPE /PVC Pipe Extruder Machine Operation.	PC1. Types of HDPE / PVC Extruders.	4	1	3
	PC2. Extruder Parts and Their Functions.	5	1	4
	PC3. Pressure and Vacuum Sizing Units	5	1	4
	PC4. Types of Dyes Used for different Extruded Pipes.	5	1	4
	PC5. Operations of Haul Off Units	5	1	4
	PC6. Dismantling and assembling Extruder Parts.	5	1	4
	PC7. Safety Precaution taken during assembling and disassembling.	5	1	4
	PC8. Common Process Parameter like Temperature, Pressure and Speed and its controls.	5	1	4
	PC9. Effect of process parameters on Product Properties	6	2	4
	PC10. Trial Production and checking product stabilization.	5	1	4
	PC11. Actual Production and Parameter / Process Control.	5	1	4
	PC12. Quality Check and Continuous Production.	5	1	4
	PC13. Post production and storing.	5	1	4
	PC14. Common faults found and trouble	5	1	4

Assessable outcome		Marks allocation		
Assessable Outcome	Assessment Criteria	Out of	Theory	Practical
	shooting.			
	PC15. Segregation of faulty product and action taken.	5	1	4
	PC16. Disposal of faulty products as per laid down procedure.	5	1	4
	PC17. Understanding Safety Equipment and Its Use.	5	1	4
	PC18. Do's and Don'ts in Area of Operation	5	1	4
	PC19. Safety Precaution Majors before Operations.	5	1	4
	Subtotal	95	20	75
RSC/N4609 (CPC/N0323) Perform the Plastic Film Extruder Machine Operation.	PC1. Types of Film Extruders.	3	1	2
	PC2. Extruder Parts and Their Functions.	3	1	2
	PC3. Air Compressor Pressure Sizing Units	5	1	4
	PC4. Types of Dyes Used for different Extruded Films.	5	1	4
	PC5. Operations of Haul Off Units	5	1	4
	PC6. Dismantling and assembling Extruder Parts.	5	1	4
	PC7. Safety Precaution taken during assembling and disassembling.	7	1	6
	PC8. Common Process Parameter like Temperature, Pressure and Speed and its controls.	8	2	6
	PC9. Effect of process parameters on Product Properties	8	2	6
	PC1. Trial Production and checking product stabilization.	7	1	6
	PC2. Actual Production and Parameter / Process Control.	7	1	6
	PC3. Quality Check and Continuous Production. Post production and storing.	7	1	6
	PC14. Common faults found and trouble shooting.	5	1	4
	PC15. Segregation of faulty product and action taken.	5	1	4
PC16. Disposal of faulty products as per laid down procedure.	5	1	4	
PC17. Understanding Safety Equipment and Its Use.	5	1	4	

Assessable outcome		Marks allocation		
Assessable Outcome	Assessment Criteria	Out of	Theory	Practical
	PC18. Do's and Don'ts in Area of Operation	3	1	2
	PC19. Safety Precaution Majors before Operations.	2	1	1
	Subtotal	95	20	75
RSC/N4610 (CPC/N0324) To Carryout House Keeping.	PC1. Take an overlook of the Area under House Keeping.	2.5	0.5	2
	PC2. Put appropriate Signage immediately if oily substance / Water spills on the floor to avoid accident	2.5	0.5	2
	PC3. If certain housekeeping activities require to be performed by housekeeping staffs, the Inform them.	2.5	0.5	2
	PC4. If it has to be carried out by self then, Identify the material / equipment required for cleaning the areas.	2.5	0.5	2
	PC5. Plan the sequence for cleaning the area to avoid re-soiling the cleaned areas and surfaces.	2.5	0.5	2
	PC6. Display the appropriate signage for the work being conducted.	2.5	0.5	2
	PC7. Ensure that there is adequate ventilation for the work being carried out.	3	1	2
	PC8. Wear the personal protective equipment required for the cleaning method and materials being used.	5	1	4
	PC9. With right cleaning process carry out cleaning activities without disturbing others.	5	1	4
	PC10. Report to the appropriate person if any difficulties in carrying out your work.	5	1	4
	PC11. Ensure that there is no oily substance / Water spill on the floor, If found the put the Signage immediately to avoid accident.	4.5	0.5	4
	PC12. Follow workplace procedures to deal with any accidental damage caused during the cleaning process.	2.5	0.5	2
	PC13. Ensure that, on completion of the work, the area is left clean and dry and free from any leftover or scrap.	2.5	0.5	2
	PC14. Return the equipment, materials and personal protective equipment that	2.5	0.5	2

Assessable outcome		Marks allocation		
Assessable Outcome	Assessment Criteria	Out of	Theory	Practical
	were used to the right places and check the inventory for the next cycle.			
	PC15. Dispose the waste garnered from the activity in an appropriate manner.	2.5	0.5	2
	PC16. Maintain schedules and records for housekeeping duty.	2.5	0.5	2
	Subtotal	50	10	40
RSC/N4604 (CPC/N0315) Reporting & Documentation.	PC1. Report data/problems/incidents as per the laid down procedure in the prescribed format and registers.	4	2	2
	PC2. Report to the appropriate authority as laid down by the company procedure.	6	2	4
	PC3. Identify documentation to be completed relating to the job profile.	6	2	4
	PC4. Record details accurately in an appropriate format.	6	2	4
	PC5. Complete all documentation within stipulated time according to company procedure.	8	4	4
	PC6. Make sure documents are available to all appropriate authorities to inspect	8	4	4
	PC7. Respond to requests for information in an appropriate manner whilst following organizational procedures.	6	2	4
	PC8. Inform the appropriate authority of requests for information received.	6	2	4
	Subtotal	50	20	30
RSC/N4605 (CPC/N0316) To Carry Out Quality Checks.	PC1. Ensure that total range of checks as per the prescribed national and International standards on regular intervals throughout the shifts.	5	1	4
	PC2. Use appropriate measuring instruments, equipment, tools, accessories etc, as prescribed / required	5	1	4
	PC3. Identify non-conformities to quality assurance standards.	5	1	4
	PC4. Identify potential causes of non-conformities to quality assurance standards	6	2	4
	PC5. Identify impact on final product due to non-conformance to prescribed Standards.	8	2	6

Assessable outcome		Marks allocation		
Assessable Outcome	Assessment Criteria	Out of	Theory	Practical
	PC6. Evaluating the need for action to ensure that problems do not reoccur.	8	2	6
	PC7. Suggest corrective action to address problem.	8	2	6
	PC8. Review effectiveness of corrective action.	8	2	6
	PC9. Interpret the results of the quality check correctly	7	1	6
	PC10. Take up results of the findings with QC in charge/appropriate authority.	7	1	6
	PC11. Take up the results of the findings within stipulated time	7	1	6
	PC12. Record of results of action taken.	7	1	6
	PC13. Record adjustments not covered by established procedures for future reference.	7	1	6
	PC14. Review effectiveness of action taken.	7	1	6
	PC15. Follow reporting procedures where the cause of defect cannot be identified.	5	1	4
	Subtotal	100	20	80
	Total	600	150	450