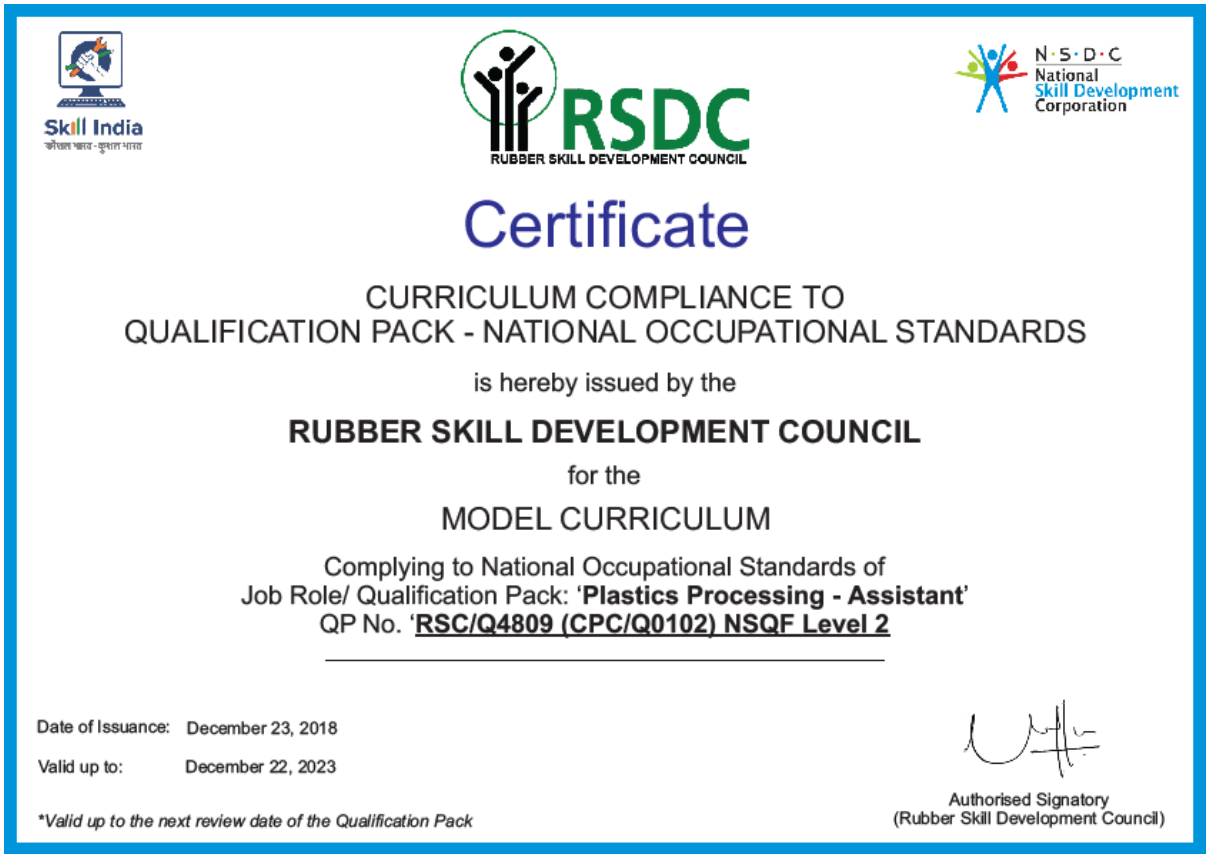
Model Curriculum

Plastics Processing - Assistant

SECTOR: Rubber
SUB-SECTOR: Plastics Processing
OCCUPATION: Plastics Processing
REF ID: RSC/Q4809 (CPC/Q0102), V1.0
NSQF LEVEL: 2



Certificate

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: '**Plastics Processing - Assistant**'
QP No. '**RSC/Q4809 (CPC/Q0102) NSQF Level 2**'

Date of Issuance: December 23, 2018

Valid up to: December 22, 2023

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

Authorised Signatory
(Rubber Skill Development Council)

TABLE OF CONTENTS

Plastics Processing – Assistant

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Plastics Processing - Assistant", in the "Rubber" Sector/Industry and aims at building the following key competencies amongst the learner.

Program Name	**Plastics Processing - Assistant**		
Qualification Pack Name & Reference ID	RSC/Q4809 (CPC/Q0102), v1.0		
Version No.	1.0	**Version Update Date**	29/05/2019
Pre-requisites to Training	Vth Standard		
Training Outcomes	**After completing this programme, participants will be able to:** • Perform various pre-moulding operations in the plastic processing shop floor under supervision of operator. • Demonstrate safe handling of the raw material & management of rejected products/ other waste generated during process. • Perform various post-moulding operations in the plastic processing shop floor under supervision of operator. • Comply with the health, safety and security procedures stated by the organisation.		

This course encompasses 4 out of 4 NOS (National Occupational Standards) of "Plastics Processing - Assistant" Qualification Pack issued by "Rubber Skill Development Council".

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	**Introduction** **Theory Duration** (hh:mm) 16:00 **Practical Duration** (hh:mm) 16:00 **Corresponding NOS Code** Bridge Module	• List the major milestones in the developmental history of plastic. • State the current industrial scenario of plastics and prospects. • Identify types of plastic. • List major industrial associations. • Identify equipment used for plastic processing. • Describe the roles and responsibilities of a Plastics Processing - Assistant.	White board, marker duster, laptop/PC, projector, flipcharts, samples – plastic injection moulded products, plastic extruded products, plastic blow moulded products
2	**Assistance in pre-moulding operations** **Theory Duration** (hh:mm) 16:00 **Practical Duration** (hh:mm) 64:00 **Corresponding NOS Code** RSC/N4829 (CPC/N0105)	• Identify the different plastic processing machineries like injection, blow, extrusion moulding machine. • List the names & functions of important parts of machines. • Describe the working procedure of plastic processing machineries. • Use the safety features of machines. • Identify the different plastic ancillary units like hopper dryer, hopper, loader, mould temperature controller, chiller, cooling tower, mould/ dye lifting devices, mixers etc. • Describe the basic functions of ancillary equipment and its uses. • Perform assistance for connecting ancillary units to machine/ mould. • Perform escalation to operator in case of abnormalities observed in ancillary equipment. • Perform functionality check of electrical supply system, air connection & water connection. • Identify and use different types of tools like spanner, hammer, allen keys, pipe wrench, pliers, screw drivers etc. • Perform leakage check of water connections made to machineries with supervision of operator. • Use safety features of machines like emergency stop, limit switches etc. in case of an emergency.	White board, marker duster, laptop/PC, projector, weighing balance, hand mould, two plate mould, blow mould, extrusion dye, plastic injection moulding machine, plastic extrusion machine, plastic blow moulding machine, hopper dryer, hopper, loader, mould temperature controller, chiller, cooling tower, mould/ die lifting devices, mixers, safety goggles, safety gloves, safety shoes, apron, helmet, fire extinguisher, first aid box

Sr. No.	Module	Key Learning Outcomes	Equipment Required
3	**Plastic raw material & recyclable waste** **Theory Duration** (hh:mm) 24:00 **Practical Duration** (hh:mm) 56:00 **Corresponding NOS Code** RSC/N4830 (CPC/N0106)	• Discuss the process of loading mould/dye in the machine • List the mould/dyes required as per production plan • Identify the raw material used for the process by visual inspection. • Demonstrate use of material handling devices like trolley, cranes etc. • Perform loading of the raw material to hopper of the machine with all the safety precautions. • Identify the moulds/ dyes required as per production plan. • Assist in loading the mould/ dye in the machine. • Apply grease/ oil in mould/ dye to keep them safe from rust. • Perform collection of the rejected products & production waste like sprue, runner, parison, lumps etc. • Demonstrate storage process of recyclable waste at allocated space. • Perform shifting of the recyclable waste to grinding area with the help of material handling devices. • Perform grinding of the recyclable waste with assistance of grinder operator. • Demonstrate good interpersonal relationship with supervisor and fellow helpers. • Demonstrate disciplined behaviour at the work place.	White board, marker, duster, laptop/PC, projector, different samples of plastic raw material, different samples of plastic finished products, safety goggles, safety gloves, safety shoes, apron, helmet, fire extinguisher, first aid box
4	**Assistance in post-moulding operations** **Theory Duration** (hh:mm) 16:00 **Practical Duration** (hh:mm) 64:00 **Corresponding NOS Code** RSC/N4831 (CPC/N0107)	• Describe various plastic post-production processes. • Demonstrate machine shut down process. • Perform assistance to operator for purging the material from barrel. • Perform heaters, motors etc. shut down process with the assistance of operator. • Perform cleaning of the machines and its surrounding. • Select & use different finishing tools like cutter, knife etc. • Use automated tools for de-flashing, chamfering etc. • Perform the flash cutting, runner removal in injection moulded parts.	White board, marker, duster, laptop/PC, projector, weighing balance, cutter, knife, finishing tool, hand mould, two plate mould, plastic injection moulding machine, automatic hopper loader, hot air oven, dryer, mould temperature controller, crane, air compressor, cooling tower, hand operated injection moulding machine, semi-automatic horizontal/

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		• Perform cutting of the pinch-off section & finishing of neck area in blow moulded parts. • Demonstrate the use of chamfer pipe to finish the sheets, profiles in extrusion process. • Comply with the safety features of machines. • Demonstrate arrangement for packing materials with the assistance of superiors. • Perform assistance to operator for quality check of products by visual inspection. • Perform packing of the products as per production plan. • Perform storage and stacking the product as per organisation's standard operating procedure (SOP).	vertical injection moulding machine, fully automatic horizontal injection moulding machine, microprocessor based injection moulding machine, hopper dryer, hopper, loader, mould temperature controller, chiller, cooling tower, mould/ dye lifting devices, mixers, cleaning equipment, safety goggles, safety gloves, safety shoes, apron, helmet, fire extinguisher, first aid box
5	**Health & safety at the work place** **Theory Duration** (hh:mm) 08:00 **Practical Duration** (hh:mm) 40:00 **Corresponding NOS Code** RSC/N4101 (CPC/N0411)	• Discuss the significance of safe working practices • List the types of fires and the appropriate fire extinguisher • Describe the process of waste disposal • Apply safe working practices while dealing with hazards to ensure the safety of self and others. • Use the various appropriate fire extinguishers on different types of fires. • Demonstrate rescue techniques applied during fire hazard. • Apply good housekeeping in order to prevent fire hazards. • Identify activities which can cause potential injury. • Inform the concerned authorities on the potential risks identified. • Perform the sorting process for the tools, fixtures and jigs. • Perform segregation of waste in hazardous/non-hazardous waste categories. • Demonstrate the technique of waste disposal and waste storage as per standard operating procedure (SOP). • Demonstrate the proper labeling mechanism of instruments/ boxes/	White board, marker, duster, laptop/PC, projector, safety goggles, safety gloves, safety shoes, apron, helmet, fire extinguisher, first aid box

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		containers.	
	Total Duration: **Theory Duration 80:00** **Practical Duration 240:00**	**Unique Equipment Required:** White board, marker, duster, laptop/PC, projector, weighing balance, hand mould, two plate mould, plastic injection moulding machine, automatic hopper loader, hot air oven, dryer, dehumidifier, mould temperature controller, scrap grinder, crane, air compressor, hot air blow gun, cooling tower, hand operated injection moulding machine, semi-automatic horizontal / vertical injection moulding machine, fully automatic horizontal injection moulding machine, microprocessor based injection moulding machine, hand operated blow moulding machine, semi-automatic blow moulding machine, fully automatic single stage blow moulding machine, full automatic double stage blow moulding machine, injection stretch blow moulding machine, single screw pipe extrusion plant (HDPE) with accessories, twin screw pipe extrusion plant (PVC) with accessories, safety goggles, rubber gloves, asbestos gloves, fire extinguisher, apron, helmet, first aid box.	

Grand Total Course Duration: 320 Hours, 0 Minutes.

*(This syllabus/ curriculum has been approved by **Rubber Skill Development Council)***

Trainer Prerequisites for Job role: "Plastics Processing - Assistant" mapped to Qualification Pack: "RSC/Q4809 (CPC/Q0102), v1.0"

Sr. No.	Area	Details
1	**Description**	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack "RSC/Q4809 (CPC/Q0102) Version 1.0".
2	**Personal Attributes**	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well- organised and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	**Minimum Educational Qualifications**	Any Graduate preferably in plastics technology.
4a	**Domain Certification**	Certified for Job Role: "Plastics Processing - Assistant" mapped to QP: "RSC/Q4809 (CPC/Q0102)". Minimum accepted score as per SSC guidelines is 80%.
4b	**Platform Certification**	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/ Q2601". Minimum accepted score as per SSC guidelines is 80%.
5	**Experience**	5+ years of relevant work-experience, above supervisor level.

Annexure: Assessment Criteria

Assessment Criteria	
Job Role:	**Plastics Processing – Assistant**
Qualification Pack Code:	**RSC/Q4809 (CPC/Q0102)**
Sector Skill Council:	**Rubber Skill Development Council**

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 criteria.
5	To pass the Qualification Pack, every trainee should score a minimum of 70% in every NOS. 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.
6	In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Assessable Outcome	Assessment Criteria	Total Mark (200)	Out Of	Marks Allocation	
				Theory	Skills Practical
RSC/N4829 (CPC/N 0105) Performing pre-moulding operations	PC1. Identify the different plastic processing machineries like injection, blow, extrusion etc.	**56**	3	1	2
	PC2. Keep preliminary knowledge about working of machineries concern to shop floor.		3	1	2
	PC3. Remember the names & functions of important parts of machines.		3	1	2
	PC4. Follow the safety features of machines.		5	1	4
	PC5. Keep preliminary knowledge about moulds & dies.		5	1	4
	PC6. Identify the different plastic ancillary units like hopper dryer, hopper loader, mould temperature controller, chiller, cooling tower, mould/die lifting devices, mixers etc.		5	1	4
	PC7. Study the basic functions of ancillary equipment & its uses.		5	1	4
	PC8. Assisting operator for connections of ancillary units to machine/ mould, whenever required.		3	1	2
	PC9. Communicate to operator in case of abnormalities observed in ancillary equipment.		3	1	2
	PC10. Ensure electrical supply system, air connection & water connection.		3	1	2
	PC11. Identify & use of different types of tools like spanner, hammer, alien keys, pipe wrench, pliers, screw drivers etc.		3	1	2
	PC12. Assist technicians for checking/ changing electrical connections to machines & ancillary units.		3	1	2
	PC13. Give air connections to machineries& Checking it periodically with supervision of operator.		3	1	2
	PC14. Give water connections to machineries & monitoring leakages etc. with supervision of operator.		3	1	2
	PC15. Aware alarming system of the machines & communicate to operator in case of alarm is activated.		3	1	2
	PC16. Follow safety features of machine like emergency stop, limit switches etc.		3	1	2
	Total		**56**	**16**	**40**
RSC/N 4830 (CPC/N 0106) Handling of raw material & recyclable waste	PC1. Ensure raw materials used in company.	**60**	2.5	0.5	2
	PC2. Identify the raw material used in company by visual inspection.		2.5	0.5	2
	PC3. Make arrangement & operation of material handling devices like trolley, cranes etc.		2.5	0.5	2
	PC4. Follow precautions in handling the raw material from shop floor / work area to machine.		2.5	0.5	2

Assessable Outcome	Assessment Criteria	Total Mark (200)	Out Of	Marks Allocation	
				Theory	Skills Practical
	PC5. Assure the safe upkeep of raw material in shop floor.		2.5	0.5	2
	PC6. Load the material to hopper of the machine.		2.5	0.5	2
	PC7. Keep precautions to during loading the materials to machine.		2.5	0.5	2
	PC8. Ensure the moulds/ dies available in shop floor with locations.		2.5	0.5	2
	PC9. Assisting operator in loading the mould/ die in the machine.		2.5	0.5	2
	PC10. Assist the operator in unloading the mould/ die from the machine.		2.5	0.5	2
	PC11. Keep it safe storage of moulds/ dies.		5	1	4
	PC12. Apply grease/oil in mould/die.		5	1	4
	PC13. Collect the rejected products & production waste like sprue, runner, parison, lumps etc.		5	1	4
	PC14. Identify of place for storing of recyclable waste.		5	1	4
	PC15. Shift this recyclable waste to grinding area with assistance of helpers.		5	1	4
	PC16. Grind the recyclable waste with assistance of grinder operator.		2.5	0.5	2
	PC17. Follow good interpersonal relation with supervisor and fellow helpers.		2.5	0.5	2
	PC18. Follow disciplined behavior in work place.		2.5	0.5	2
	PC19. Follow good interdepartmental relations.		2.5	0.5	2
	Total		**60**	**12**	**48**
RSC/N 4831 (CPC/N 0107) Assist operator in post-moulding operation	PC1. Keep preliminary knowledge about production process.	**44**	1.5	0.5	1
	PC2. Select & use of different finishing tools like cutter, knife etc.		1.5	0.5	1
	PC3. Use of automated tools for deflating, chamfering etc.		1.5	0.5	1
	PC4. Cut the flash, removing of runner system in injection moulding		1.5	0.5	1
	PC5. Cut the pinch-off section & finishing of neck area in blow moulding.		1.5	0.5	1
	PC6. Use the chamfer pipe, finishing the sheets, profiles in extrusion process.		1.5	0.5	1
	PC7. Carry out finishing operation as per need of other processing techniques.		2.5	0.5	2
	PC8. Keep preliminary knowledge about moulds/ dies.		2.5	0.5	2
	PC9. Follow safety features of machines.		2.5	0.5	2

Assessable Outcome	Assessment Criteria	Total Mark (200)	Out Of	Marks Allocation	
				Theory	Skills Practical
	PC10. Make arrangement of packing materials with assistance of superiors.		2.5	0.5	2
	PC11. Assist to operator for quality check of products by visual inspection.		2.5	0.5	2
	PC12. Pack the product as per company's requirement.		2.5	0.5	2
	PC13. Stack the product properly.		3	1	2
	PC14. Assist to dispatch team for arranging delivery as per company's policy.		3	1	2
	PC15. Ensure machine shut down procedure.		2.5	0.5	2
	PC16. Assist operator for purging the material from Barrel.		2.5	0.5	2
	PC17. Put off heaters, motors etc. with assistance of operator.		1.5	0.5	1
	PC18. Switch off main supply of machine.		1.5	0.5	1
	PC19. Clean the machines & its surrounding by helper.		1.5	0.5	1
	PC20. Maintain good interpersonal relation with supervisor and helpers.		1.5	0.5	1
	PC21. Follow disciplined behavior in work place.		1.5	0.5	1
	PC22. Maintain good interdepartmental relations.		1.5	0.5	1
	Total		**44**	**12**	**32**
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.	**40**	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 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

Assessable Outcome	Assessment Criteria	Total Mark (200)	Out Of	Marks Allocation	
				Theory	Skills Practical
	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 others 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 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. Ensure 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.		5	1	4
	PC17. Follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards.		5	1	4
	PC18. Follow the proper labelling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists.		5	1	4
	PC19. Ensure to check the items in the respective areas have been identified as broken or damaged.		5	1	4
	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.		5	1	4

Assessable Outcome	Assessment Criteria	Total Mark (200)	Out Of	Marks Allocation	
				Theory	Skills Practical
	PC21. Make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions.		5	1	4
	Total		**40**	**10**	**30**
	Grand Total	**200**	**200**	**50**	**150**
	Percentage Weightage:			**25%**	**75%**
	Minimum Pass% to qualify (aggregate):			**70%**	