Model Curriculum

Machine Operator Assistant - Blow Moulding

SECTOR: RUBBER
SUB-SECTOR: MANUFACTURING/PLASTICS PROCESSING
OCCUPATION: BLOW MOULDING
REF ID: RSC/Q4101 (CPC/Q0403), V 1.0
NSQF LEVEL: 3

Skill India
कौशल भारत-कुशल भारत

RSDC
RUBBER SKILL DEVELOPMENT COUNCIL

N·S·D·C
National
Skill Development
Corporation

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: **'Machine Operator Assistant - Blow Moulding'**
QP No. **'RSC/Q4101 (CPC/Q0403), V1.0, NSQF Level 3'**

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 Assistant - Blow Moulding

CURRICULUM / SYLLABUS

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

Program Name	**Machine Operator Assistant - Blow Moulding**		
Qualification Pack Name & Reference ID	RSC/Q4101 (CPC/Q0403), V 1.0		
Version No.	1.0	**Version Update Date**	02/05/2019
Pre-requisites to Training	VIIIth Standard		
Training Outcomes	**After completing this programme, participants will be able to:** • Identify fitting tools, measuring equipment and practise using them • Define polymers and thermoplastics materials • Examine the basics of plastics processing methods • Demonstrate blow moulding techniques for plastics processing • Inspect the finished products • Identify the auxiliary equipment used in plastics processing • Demonstrate mould technology techniques for plastics processing • Illustrate the basic knowledge of communication/soft skills • Comply with basic health and safety practices at the workplace		

This course encompasses 8 out of 8 National Occupational Standards (NOS) of "Machine Operator Assistant- Blow Moulding" 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) 10:00 **Practical Duration** (hh:mm) 10:00 **Corresponding NOS Code** Bridge Module	• Explain the history of development of plastic products • Evaluate current industrial scenario of plastics • Identify thetypes of plastic • List major industrial associations related to blow moulding. • Identify equipment used for blow moulding • Describe roles and responsibilities of a machine operator assistant - blow moulding.	• LCD Projector, White Board with marker and duster, charts etc • Pen drives, computers etc for conducting class.
2.	**Identify fitting tools, measuring equipment their use** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 20:00 **Corresponding NOS Code** RSC/N4102 (CPC/N 0412)	• Comply with the procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations • Comply with the procedures and instructions that have been laid down • Operate the tools and machines as per SOP • Ensure that the work area is clean and safe from hazards • Ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition • Comply with job specifications given by a valid and approved source • Identify the job requirements from the job specification document • Report information to the operator from time to time. • Demonstrate basic fitting operations as per procedure • Ensure that all calibrated measuring instruments are used • Inspect whether the components used are free from foreign objects, dirt and corrosion • Choose appropriate tools and measuring instruments.	• LCD Projector, White Board with marker and duster, charts etc • Pen drives, computers etc for conduct of class. • Common hand tools like Vernier calliper, micrometer, drills, tapes and dies etc • Plastics raw material like PP, HDPE, PET, PBT, PVC etc for training on machines of Blow grade from good/reputed supplier. • Basics machines for training like hand blow moulding, semiautomatic blow moulding, Automatic blow moulding, • Pre drying system like Oven Drier, Hopper Drier, Dehumidifier, Chillers etc.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		• Assemble work pieces as per job requirements using appropriate holding devices • Assist the operator while marking specified features with the help of marking-out methods • Demonstrate the different fitting operations on various forms of metal components using hand tools and manually operated machines • Assemble all tools and equipment to the correct location on completion of the fitting activities • Practise cleaning of the work area in a safe and tidy condition.	
3.	**Analyse polymers and thermoplastics materials** **Theory Duration** (hh:mm) 10:00 **Practical Duration** (hh:mm) 18:00 **Corresponding NOS Code** RSC/N4103 (CPC/N0413)	• Analyse the basic importance of polymers in daily life • Describe the fundamental terminology under polymers • Identify the types of polymers and its application • Examine the types of polymers-thermoplastics and elastomers • Evaluate the application of plastics in the commodity sector, telecommunications, automobiles, packaging medical, electrical and electronics and aerospace etc. • Analyse commodity polymers: polyolefin: LDPE – HDPE – LLDPE, PP etc. • Describe engineering polymers: PC, ABS, PMMA, POM, PA-NYLON etc. • Analyse special polymers: FEP, PVDF etc. • Demonstrate the identification method:-drop test, water floatation test, scratch test • Practise the advanced methods of identification:-MFI, melting etc.	• LCD Projector, White Board with marker and duster, charts etc. • Common hand tools like Vernier calliper, micrometer, drills, tapes and dies etc. • Plastics raw material like PP, HDPE, PET, PBT, PVC etc. for training on machines of Blow grade from good/reputed supplier. • Basics machines for training like hand blow moulding, semiautomatic blow moulding, Automatic blow moulding, • Pre drying system like Oven Drier, Hopper Drier, Dehumidifier, Chillers etc.
4.	**Evaluate the methods of plastics processing**	• Identify all plastics processing machinery • Compare merits and demerits of blow moulding over all others plastic process	• Common hand tools like Vernier calliper, micrometer, drills, tapes and dies etc. • Plastics raw material

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Theory Duration (hh:mm) 15:00 **Practical Duration** (hh:mm) 25:00 **Corresponding NOS Code** RSC/N4104 (CPC/N 0414)	• Discuss the definitions and terminology related to plastic processing • Demonstrate the finishing operation including surface treatment of the fabricated product as per SOP • Practise the primary processing methods as per sop • Practise the secondary processing methods as per sop • Identify the fundamentals of the processing method • Estimate the type of process to be used based on a variety of factors, including product shape and size, plastic type, quantity to be produced, quality and accuracy (Tolerances) required, design load performance, cost limitation, and time schedule • Identify the machine operation terminology like, semiautomatic, fully automatic, etc • Describe the types of conversion techniques: injection, blow, compression, transfer, rotational and other processes • Identify the material to be processed • Inspect the product design, tolerance • Identify the process limitations • Analyse the quality of the product • Estimate the cost/performance balance	like PP, HDPE, PET, PBT, PVC etc. for training on machines of Blow grade from good/reputed supplier. • Basics machines for training like hand blow moulding, semiautomatic blow moulding, Automatic blow moulding, • Pre drying system like Oven Drier, Hopper Drier, Dehumidifier, Chillers etc.
5.	**Principles and process parameters for blow moulding** **Theory Duration** (hh.mm) 10:00 **Practical Duration** (hh.mm) 18:00	• Analyse the basic principle of blow moulding process • Identify the types of blow moulding • Identify the plastic materials required for blow moulding • Arrange basic tools, accessories and machineries • Demonstrate the use of weighing machines to measure the quantity of granules	• Basics machines for training like hand blow moulding, semiautomatic blow moulding, Automatic blow moulding, • Pre drying system like Oven Drier, Hopper Drier, Dehumidifier, Chillers etc.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Corresponding NOS Code RSC/N4105 (CPC/N0415)	• Ensure that the correct quantity of granules are put in the hopper • Setup the apparatus as per the selected process and standards • Practise the machine start up and shut down procedure. • Examine the availability of the coolant and working of valves to circulate the coolant	
6.	**Blow moulding process and organization of materials** **Theory Duration** (hh.mm) 20:00 **Practical Duration** (hh.mm) 30:00 **Corresponding NOS Code** RSC/N4105 (CPC/N0415)	• Practise various types of extrusion blow moulding processes. • Demonstrate continuous blow moulding process: single head method, twin station method, rotary table system • Practise intermitted blow moulding process: reciprocating screw extruder, ram accumulator extrusion accumulator head method • Describe extrusion blow moulding (EBM) • Describe injection blow moulding (IBM) • Describe the injection stretch blow moulding process (ISBM) • Define extrusion stretch blow moulding • Evaluate the various types of blow moulds-side feed, centre feed, spiral mandrel, extrusion blow, stretch blow, injection blow moulds etc. • Evaluate the basics of moulding procedure • Elaboarte the process to be adopted for completing the work order from the supervisor • Identify the raw materials like plastics granules, fillers, bonding additives grades etc. required for executing the activity • Ensure that the required material is procured from the store before starting the process • Select the type of die required for executing the required operation	• Basics machines for training like hand blow moulding, semiautomatic blow moulding, Automatic blow moulding, • Pre drying system like Oven Drier, Hopper Drier, Dehumidifier, Chillers etc.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		• Ensure that the number of heaters required for the extruder assembly, heater temperature and current required are present • Practice housekeeping and safety maintenance in the moulding area • Apply lifting equipment to lift/trolley the mould/material	
7.	**Evaluate injection moulding process and parameters** **theory duration** (hh.mm) 10:00 **Practical Duration** (hh.mm) 18:00 **Corresponding NOS Code** RSC/N4105 (CPC/N0415)	• Prepare the plastic compound or granule for feeding into the machine • Demonstrate machine operations and simultaneous feeding • Inspect that the moulding pressure and temperature is maintained during the process • Inspect whether the mould lifting/ejection/ slide mechanism of the press are properly functioning • Maintain manufacturing preform as per SOP • Discard manufacturing preform from the mould as per SOP	• Plastics raw material like PP, HDPE, PET, PBT, PVC etc. for training on machines of Blow grade from good/reputed supplier. • Basics machines for training like hand blow moulding, semiautomatic blow moulding, Automatic blow moulding, • Pre drying system like Oven Drier, Hopper Drier, Dehumidifier, Chillers etc.
8.	**Evaluate extrusion blow moulding process and parison programming** **Theory Duration** (hh.mm) 10:00 **Practical Duration** (hh.mm) 18:00 **Corresponding NOS Code** RSC/N4105 (CPC/N0415)	• Assess the operation of moulding apparatus like hopper, heaters, extruder, blow moulding die/mould, screen pack etc. • Apply the desired die/mould to the blow moulding machine apparatus to achieve the desired output • Assess the functionality and assembly of die • Practice die shaping in blow moulding • Evaluate the basics of blow ratio, parison swell, die swell • Identify the types of parison blowing system: pneumatic and ejection system	• Pen drives, computers etc. for conduct of class. • Common hand tools like Vernier calliper, micrometer, drills, tapes and dies etc. • Plastics raw material like PP, HDPE, PET, PBT, PVC etc. for training on machines of Blow grade from good/reputed supplier, Hand Operated Blow Moulding M/C with accessories, Semi-Automatic Blow Moulding Machine, Fully Automatic Single stage Blow Moulding machine, Full Automatic Double stage Blow Moulding machine.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
9.	**Conduct and monitor actual moulding process** **Theory Duration** (hh.mm) 15:00 **Practical Duration** (hh.mm) 30:00 **Corresponding NOS Code** RSC/N4105 (CPC/N0415)	• Inspect whether the plastic granules are mixed with additives (if any) before being fed into the hopper • Examine the hollow articles (bottles, container) for geometry, material and dimensional parameters as per the Control Plan. • Examine whether the dimensions of the output product are measured as per the process given • Practice the production process • Apply the plastic material in the apparatus for heaters to melt the plastic granules • Evaluate whether the feeding is in line with the defined standards and specifications • Assess the proper functioning of screen pack and die for uniform melting of plastic and removal of the contaminants • Monitor the process parameters like temperature, pressure, speed etc. • Analyse the readings on various panels/ meters to prevent machine breakdown and deviations of the output • Practice cleaning operations of the die opening and die screen pack. • Apply code printing of the product with the identifying information • Deliver the product for further processing • Arrange for the helper to neck finish and pinch off of the product as per the desired geometric specifications.	• Common hand tools like Vernier calliper, micrometer, drills, tapes and dies etc. • Plastics raw material like PP, HDPE, PET, PBT, PVC etc. for training on machines of Blow grade from good/reputed supplier. • Basics machines for training like hand blow moulding, semiautomatic blow moulding, Automatic blow moulding, • Pre drying system like Oven Drier, Hopper Drier, Dehumidifier, Chillers etc.
10.	**Perform the visual inspection of the output**	• Assess the final plastic moulded product • Compare the dimensions as prescribed in the work order/ engineering drawing • Prepare to deliver the unfinished	• LCD Projector, White Board with marker and duster, charts etc. • Pen drives, computers etc. for conduct of class.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Theory Duration (hh.mm) 10:00 **Practical Duration** (hh.mm) 18:00 **Corresponding NOS Code** RSC/N4105 (CPC/N0415)	parts for further processing in terms of cutting, finishing etc. • Assist the operator to measure the specifications of the finished products using devices like micrometers, vernier calipers, gauges, rulers, weighing scales, thickness gauge and any other inspection equipment. • Analyse the observations of the inspection process • Identify pieces which are OK and also not meeting the specified standards • Create records of each category of work outputs as per the batch • Prepare first and last output from each batch for quality check • Collect clearance for the entire batch from the lab	• Common hand tools like Vernier calliper, micrometer, drills, tapes and dies etc. • Plastics raw material like PP, HDPE, PET, PBT, PVC etc. for training on machines of Blow grade from good/reputed supplier. • Basics machines for training like hand blow moulding, semiautomatic blow moulding, Automatic blow moulding, Hand Operated Blow Moulding M/C with accessories, Semi-Automatic Blow Moulding Machine, Fully Automatic Single stage Blow Moulding machine, Full Automatic Double stage Blow Moulding machine • Pre drying system like Oven Drier, Hopper Drier, Dehumidifier, Chillers etc.
11.	**Auxiliary equipment in plastics processing** **Theory Duration** (hh.mm) 20:00 **Practical Duration** (hh.mm) 30:00 **Corresponding NOS Code** RSC/N4106 (CPC/N0416)	• Inspect and monitor operating fuel systems, fuel oil transfer, supply lines and associated equipment and fossil fuel chillers • Operate feed water systems, circulating and cooling water systems, condensate and makeup systems, circulating service water treatment equipment, auxiliary lube oil systems, emission control equipment and miscellaneous equipment. • Plan onsite training programs and follow the safety rules, regulations and procedures • Arrange basic plant services as needed to meet production requirements and make initial checks of operating conditions	• Plastics raw material like PP, HDPE, PET, PBT, PVC etc. for training on machines of Blow grade from good/reputed supplier. • Basics machines for training like hand blow moulding, semiautomatic blow moulding, Automatic blow moulding, • Pre drying system like Oven Drier, Hopper Drier, Dehumidifier, Chillers, Hand Operated Blow Moulding M/C with accessories, Semi-

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		before production • Practise cleaning and lubrication of equipment and tooling and various preventative maintenance tasks • Analyse the different types of predrier-hot air oven, hopper driers, dehumidifiers etc • Examine the basics of chiller, cooling tower for controlling the temperature of mould, machine and fluids • Evaluate the basic operation and monitoring- watching gauges, dials, or other indicators to make sure a machine is working properly • Analyse details about compressors and scrap grinders • Perform routine maintenance on equipment and determine when and what kind of maintenance is needed • Determine the kind of tools and equipment needed to do a job • Comply with the instructions given on the equipment manual describing the operating process • Ensure relevant safety board's/ signs are placed on the shop floor • Operate the machine using the recommended personal protective equipment (PPE) and ensure team members also use the related PPEs at the workplace • Ensure there is no spillage of chemicals, production waste, oil, solvents etc. • Comply with all safety and fire drills to be self-aware of safety hazards and preventive techniques • Manage waste disposal in the designated area and manner as per organization SOP	Automatic Blow Moulding Machine, Fully Automatic Single stage Blow Moulding machine, Full Automatic Double stage Blow Moulding machine etc.
12.	**Mould technology for plastics processing**	• Analyse the mould manufacturing process and machineries • Identify the resources required	• Plastics raw material like PP, HDPE, PET, PBT, PVC etc. for

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Theory Duration (hh.mm) 10:00 **Practical Duration** (hh.mm) 20:00 **Corresponding NOS Code** RSC/N4107 (CPC/N0417)	such as components, machinery, range of materials and processes • Analyse the basics of mould making materials • Identify type of equipment required for machining components based on the operations selected • Describe the basics of construction and study of moulds for EBM, IBM, and SBM • Discuss mould cooling systems: pneumatic, water cooling • Describe mould polishing and its kits • Comply with the instructions given on the equipment manual describing the operating process	training on machines of Blow grade from good/reputed supplier. • Basics machines for training like hand blow moulding, semiautomatic blow moulding, Automatic blow moulding, Hand Operated Blow Moulding M/C with accessories, Semi-Automatic Blow Moulding Machine, Fully Automatic Single stage Blow Moulding machine, Full Automatic Double stage Blow Moulding machine • Pre drying system like Oven Drier, Hopper Drier, Dehumidifier, Chillers etc.
13.	**Basic knowledge of communication/soft skills** **Theory Duration** (hh.mm) 10:00 **Practical Duration** (hh.mm) 20:00 **Corresponding NOS Code** RSC/N4108 (CPC/N0418)	• Define computer fundamentals • Identify the components of computers: hardware and software • Demonstrate accurate receipt of information from the supervisor/operator and fellow workers • Practise accurate passing of information to authorized persons who require it and within agreed timescale • Demonstrate helpful behaviour by assisting others in performing tasks in a positive manner • Practise consultation with others to maximize effectiveness and efficiency in carrying out tasks • Demonstrate active listening skills while interacting with others at work • Apply appropriate tone, pitch and language to convey politeness,	• LCD Projector, White Board with marker and duster, charts etc • Pen drives, computers etc for conduct of class. • Common hand tools like Vernier calliper, micrometer, drills, tapes and dies, Double stage Blow Moulding machine etc

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		assertiveness, care and professionalism • Demonstrate responsible and disciplined behaviour at the workplace • Escalate grievances and problems to appropriate authority as per procedure, to resolve them and avoid conflict	
14.	**Maintain basic health and safety practices at the workplace** **Theory Duration** (hh:mm) 15:00 **Practical Duration** (hh:mm) 25:00 **Corresponding NOS Code** RSC/N4101 (CPC/N 0411)	• Recognise the importance of wearing protective clothing/equipment for specific tasks and work conditions • Demonstrate safe working practices while dealing with hazards to ensure the safety of self and others. • Practise good housekeeping standards • Apply appropriate fire extinguishers on different types of fires correctly • Demonstrate rescue techniques applied during fire hazard, demonstrate good housekeeping in order to prevent fire hazards, demonstrate the correct use of a fire extinguisher. • Identify the injuries caused by sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals, loud noise • Conduct regular checks of the maintenance team on machine health to identify potential hazards • 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 • Practise sharing information on the identified risks to create awareness • Practise the sorting process and check that the tools, fixtures and	• LCD Projector, White Board with marker and duster, charts etc • Pen drives, computers etc for conduct of class. Common hand tools like Vernier calliper, micrometer, drills, tapes and dies, Double stage Blow Moulding machine etc

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		jigs lying on workstations are the ones in use and unnecessary items are not cluttering the workbenches • Categorize waste in hazardous/ non-hazardous types • Demonstrate the technique of waste disposal and waste storage in the proper bins • Segregate the items which are labelled as red tag items for the process area and keep them in the correct places • Demonstrate sorting tools/equipment/fasteners/spare parts as per specifications/utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions • Ensure that areas of material storage are not overflowing • Practise stacking the various types of boxes and containers properly as per the size/utility to avoid any fall of items/breakage • Practise returning extra material and tools to the designated sections and make sure that no additional material/tool is lying near the work area • Identify the floor markings/area markings used for demarcating the various sections in the plant • Identify the proper labelling mechanism of instruments/boxes/containers and maintaining reference files/documents with the codes and the lists • Check whether the items in the respective areas have been identified as broken or damaged • Comply with the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same • Assess whether all material and tools are stored in the designated	

Sr. No.	Module	Key Learning Outcomes	Equipment Required
		places and in the manner indicated in the 5S instructions	
	Total Duration **Theory Duration 180:00** **Practical Duration 300:00**	**Unique Equipment Required:** **1. Class Room equipment:** LCD Projector/Screen, Computer, charts, Black / White board and duster. **2. Measuring equipment:** Steel Ruler, Micrometer, Vernier Caliper, Radius gauge, Feeler gage, Steel measuring tape, Weighing Balance (1 No.) **3. Hand Tools:** Hammer, screw driver set with Multiple heads, **4.** Allen key hexagonal, File triangular, Hacksaw, adjustable, Spanner set double side, Adjustable spanner **5. Personal Protective equipment:** Safety Goggles, Rubber Gloves, Asbestos gloves, Fire Extinguisher, Apron, Helmet, First Aid Box with Medicines **6. Plastics raw material:** PP, HDPE, Blow moulding grade. **7.** Mould: Hand mould, Blow Mould **8. 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, Hand Operated Blow Moulding M/C with accessories, Semi-Automatic Blow Moulding Machine, Fully Automatic Single stage Blow Moulding machine, Full Automatic Double stage Blow Moulding machine.	

Grand Total Course Duration: **480 Hours 0 Minutes**

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

Trainer Prerequisites for Job role: "Machine Operator Assistant - Blow Moulding" mapped to Qualification Pack: "RSC/Q4101 (CPC/Q0403)" 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 "RSC/Q4101 (CPC/Q0403), V 1.0".
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**	VIIIth Standard
4a	**Domain Certification**	Certified for Job Role "Machine Operator Assistant - Blow Moulding" mapped to the Qualification Pack "RSC/Q4101 (CPC/Q0403), V1.0" issued by RSDC
4b	**Platform Certification**	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "MEP/Q2601" 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 Assistant - Blow Moulding **Qualification Pack Code: RSC/Q4101 (CPC/Q0403), V 1.0** **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**	**Total**	**Theory**	**Practical**
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 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

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
	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 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 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	1.5	0.5	1

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
	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
	Subtotal	**40**	**10**	**30**
RSC/N4102 (CPC/N0412): Fitting Tools Measuring Equipments & Practice	PC1. Comply with health and safety, environmental and other relevant regulations	1.5	0.5	1
	PC2. Adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing die fitting operations	1.5	0.5	1
	PC3. Work following laid down procedures and instructions	1.5	0.5	1
	PC4. Ensure work area is clean and safe from hazards	1.5	0.5	1
	PC5. Ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition.	2.5	0.5	2
	PC6. Basic Knowledge of job specification from a valid and approved source	2.5	0.5	2
	PC7. Understand job requirements from the job specification document properly	2.5	0.5	2
	PC8. Report to operator information time to time.	2.5	0.5	2
	PC9. Basic Knowledge of the fitting operations as per procedure	2.5	0.5	2
	PC10. Ensure that all calibrated measuring instruments used.	2.5	0.5	2
	PC11. Ensure that the components used are free from foreign objects, dirt and corrosion	2.5	0.5	2
	PC12. Obtain appropriate tools and measuring instruments.	2.5	0.5	2
	PC13. Understand of work pieces as per job requirements using appropriate holding devices.	2.5	0.5	2

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
	PC14. Helping to operator while marking specified features with the help of marking-out methods on the work pieces as per job specification by using appropriate measuring and marking tools.	2.5	0.5	2
	PC15. Basic knowledge of different fitting operations on various forms of metal components using a range of hand tools and manually operated machines	3	1	2
	PC16. Basic knowledge of carrying and return all tools and equipment to the correct location on completion of the fitting activities	3	1	2
	PC17. Cleaning the work area in a safe and tidy condition on completion of job activities	3	1	2
	Subtotal	**40**	**10**	**30**
RSC/N4103 (CPC/N0413): Introduction to Polymers and thermoplastics Materials	PC1. Basic Importance of polymers in Human Life.	3	1	2
	PC2. Understand fundamental terminology of polymers	3	1	2
	PC3. Types of polymers & its application.	3	1	2
	PC4. Basic Knowledge of Polymers- 1. Types of Polymers-Thermoplastics, Elastomers	3	1	2
	PC5. Plastic Material Application- 1. Commodity sector, telecommunications, automobiles, packaging medical, Electrical and Electronics & aerospace etc.	3	1	2
	PC6. Commodity Polymers: Polyolefin: LDPE – HDPE – LLDPE, PP etc.	5	1	4
	PC7. Engineering Polymers: PC, ABS, PMMA, POM, PA-NYLON etc.	5	1	4
	PC8. Special Polymers: FEP, PVDF etc.	5	1	4
	PC9. Basic Knowledge of Identification Method:-Drop Test, water floatation Test, Scratch test.	5	1	4
	PC10. Basic Knowledge of Advanced Methods of Identification:-MFI, Melting etc.	5	1	4
	Subtotal	**40**	**10**	**30**

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
RSC/N4104 (CPC/N0414): Basics of Plastics Processing methods	PC1. The need for plastics processing	3	1	2
	PC2. Ensure merits and demerits of Blow Moulding to over the all others plastic Process.	3	1	2
	PC3. Definition and terminology related to Plastic Processing.	3	1	2
	PC4. Ensure finishing operation including surface treatment of the fabricated product if required as per SOP.	4	1	3
	PC5. Primary Processing Methods as per company's SOP.	3	1	2
	PC6. Secondary Processing Methods as per company's SOP.	3	1	2
	PC7. Processing fundamentals	3	1	2
	PC8. The type of process to be used depends on a variety of factors, including product shape and size, plastic type, quantity to be produced, quality and accuracy (Tolerances) required, design load performance, cost limitation, and time schedule.	3	1	2
	PC9. Machine Operation Terminology: as per manual, semiautomatic, fully automatic.	5	1	4
	PC10. Type of Conversion Techniques: Injection, Blow, Compression, Transfer, Rotational and Other processes.	5	1	4
	PC11. Material to be processed	5	1	4
	PC12. Product design / configuration, Tolerance	5	1	4
	PC13. Process Limitations	5	1	4
	PC14. Quality	5	1	4
	PC15. Cost / Performance balance.	5	1	4
	Subtotal	**60**	**15**	**45**
RSC/N4105 (CPC/N0415): Blow Moulding Techniques for Plastics processing	PC1. Understanding basic Principle of Blow Moulding process & its Types.	1.5	0.5	1
	PC2. Basic Need of Tools and Accessories and Machineries.	1.5	0.5	1
	PC3. Understanding of Plastic Materials for Blow Moulding	1.5	0.5	1

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
and inspection of the finished products.	PC4. Basic Knowledge of Machine Start up & Shut down Procedure.	1.5	0.5	1
	PC5. Basic Knowledge of Various types of extrusion blow moulding Process.	1.5	0.5	1
	PC6. Basic Knowledge of Continuous blow moulding process:- single head method, Twin station method, Rotary table system	1.5	0.5	1
	PC7. Basic Knowledge of Intermitted blow moulding process:- Reciprocating screw extruder, Ram accumulator extrusion Accumulator head method	1.5	0.5	1
	PC8. Basic Study of Extrusion blow moulding (EBM)	1.5	0.5	1
	PC9. Basic Study of Injection blow moulding(IBM)	1.5	0.5	1
	PC10. Basic Study of Injection Stretch blow moulding process (ISBM)	1.5	0.5	1
	PC11. Basic Study of Extrusion Stretch Blow Moulding	1.5	0.5	1
	PC12. Basic Knowledge of Various types of blow moulds-Side feed, Centre Feed, Spiral Mandrel, Extrusion Blow, stretch Blow, Injection Blow moulds etc.	1.5	0.5	1
	PC13. Make the plastic compound or granule ready for feeding into the machine	2.5	0.5	2
	PC14. Start the machine and feeding simultaneously	2.5	0.5	2
	PC15. Ensure that moulding pressure and temperature is maintained during the process cycle	2.5	0.5	2
	PC16. Ensure mould lifting/ ejection/ slide mechanism of the press are properly functioning	2.5	0.5	2
	PC17. Manufacturing the preform as per SOP	2.5	0.5	2
	PC18. Remove the Manufacturing the preform from the mould as per SOP.	2.5	0.5	2
	PC19. Check for operation of moulding apparatus like hopper, heaters, extruder, blow moulding die/mould, screen pack etc. as per the checklist	2.5	0.5	2

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
	provided			
	PC20. Fix the desired die/mould to the blow moulding machine apparatus in order to achieve the desired operation as per the Work Instructions/ SOPs.	2.5	0.5	2
	PC21. Preliminary requirement and preparation of raw material use weighing machines to measure the quantity of granules and ensure that the correct quantity of granules are put in the hopper	2.5	0.5	2
	PC22. Setup the apparatus as per the selected process and the moulding standards used in the processing industry	2.5	0.5	2
	PC23. Ensure availability of the coolant and working of valves to circulate the coolant to cool and solidify plastic.	2.5	0.5	2
	PC24. Ensure the functionality and assembly of die as per SOP.	2.5	0.5	2
	PC25. Die shaping in blow moulding.	2.5	0.5	2
	PC26. Basic Study of Blow Ratio, parison swell, Die Swell, Types of Parison Blowing system:-Pneumatic and ejection system.	2.5	0.5	2
	PC27. Understand and Basic knowledge about the moulding procedure and process to be adopted for completing the work order from the supervisor/operator by referring the Work Instruction document/ SOP manual	2.5	0.5	2
	PC28. Understanding the raw material like plastics granules, fillers, bonding additives grades etc. required for executing the activity	2.5	0.5	2
	PC29. Ensure that the required material is procured from the store before starting the process.	2.5	0.5	2
	PC30. Understand the type of Die required for executing the required operation and ensure that the same is available for operations	2.5	0.5	2
	PC31. Understand the number of heaters	2.5	0.5	2

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
	required for the extruder assembly, heater temperature and current required for the heating operations as mentioned in the Work Instructions/ SOP manual. Ensure housekeeping safety in the moulding area. Use lifting equipments or for lift/trolley for mould/material. Keep all safety requirements.			
	PC32. Ensure that the plastic granules are mixed with additives (if any) before being fed into the hopper	2.5	0.5	2
	PC33. Check the hollow articles (bottles, container) for geometry, material & dimensional parameters as per the Control Plan before starting the production.	2.5	0.5	2
	PC34. Ensure that the dimensions of the output product are measured as per the process given in the Work Instructions/ SOP	2.5	0.5	2
	PC35. In case the test product matches the dimensions and quality of the final output, start the production process	2.5	0.5	2
	PC36. Feed the required plastic material in the apparatus for heaters to melt the plastic granules at the predefined temperature	2.5	0.5	2
	PC37. Ensure feeding in line with the defined standards and specifications	2.5	0.5	2
	PC38. Ensure the proper functioning of screen pack and die for uniform melting of plastic and removal of the contaminants (if any)	2.5	0.5	2
	PC39. Monitor & understand the process (parameters like temperature, pressure, speed etc.) by observing and analyzing the readings on various panels/ meters to prevent machine breakdown and deviations of the output from desired specifications	1.5	0.5	1
	PC40. Clean the die opening & die; changing the screen pack.	1.5	0.5	1
	PC41. Ensure code printing of the product with the identifying information (wherever	1.5	0.5	1

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
	required) and send the same for further processing			
	PC42. Instruct the helper to neck finishing and pinch off of the product as per the desired geometric specifications.(doesn't required for IBM)	1.5	0.5	1
	PC43. Measure the final plastic moulded product and compare the dimensions as prescribed in the work order/ engineering drawing	1.5	0.5	1
	PC44. In case the parts are not as per the given measurements, send the same for further processing in terms of cutting, finishing etc.	1.5	0.5	1
	PC45. Helping to operator to Measure the specifications of the finished products using devices like micrometers, Vernier calipers, gauges, rulers, weighing scales, Thickness Gauge and any other inspection equipment and compare with the parameters given in the work order.	1.5	0.5	1
	PC46. Note down the observations of the basic inspection process and also not meeting the specified standards	1.5	0.5	1
	PC47. Maintain records of each category of work outputs as per the batch etc. so that correction can be organized.	1.5	0.5	1
	PC48. Provide first and last output from each batch to the lab for quality check on its composition, properties etc.	1.5	0.5	1
	PC49. Obtain clearance for the entire batch from the lab	2	1	1
	Subtotal	**100**	**25**	**75**
RSC/N4106 (CPC/N 0416) Auxiliary equipments in Plastics processing	PC1. Some duties include: Inspecting, monitoring, operating fuel systems, fuel oil transfer & supply lines & associated equipment and fossil fuel chillers.	1.5	0.5	1
	PC2. Operating condensate & feed water systems, circulating & cooling water systems, condensate & makeup systems, circulating service water treatment equipment, auxiliary lube oil systems, emission control equipment	1.5	0.5	1

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
	and miscellaneous equipment. Pass onsite training programs. Follow safety rules, regulations and procedures.			
	PC3. Connects basic plant services as needed to meet production requirements and makes initial checks of operating conditions before initiating production runs.	1.5	0.5	1
	PC4. Connects basic plant services as needed to meet production requirements and makes initial checks of operating conditions before initiating production runs.	1.5	0.5	1
	PC5. Basic Knowledge of different types of Predrier-Hot air Oven, Hopper Driers, Dehumidifiers etc.	1.5	0.5	1
	PC6. Basic Knowledge of Chiller, Cooling Tower for the controlling temperature of Mould, machine and Fluids.	2.5	0.5	2
	PC7. Basic Knowledge of Operation and Monitoring -- Watching gauges, dials, or other indicators to make sure a machine is working properly.	2.5	0.5	2
	PC8. Basic Knowledge of Compressor and Scrap Grinder.	2.5	0.5	2
	PC9. Understand Equipment Maintenance -- Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	2.5	0.5	2
	PC10. Understand Equipment Maintenance -- Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	2.5	0.5	2
	PC11. Understand & Follow the instructions given on the equipment manual describing the operating process of the equipment	2.5	0.5	2
	PC12. Follow the Safety, Health and Environment related practices developed by the organization	2.5	0.5	2
	PC13. Ensure relevant safety board's/ signs are placed on the shop floor	2.5	0.5	2
	PC14. Operate the machine using the	2.5	0.5	2

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
	recommended Personal Protective Equipment (PPE) and ensure team members also use the related PPEs at the workplace			
	PC15. Maintain a clean and safe working environment near the work place and ensure there is no spillage of chemicals, production waste, oil, solvents etc.	2.5	0.5	2
	PC16. Attend all safety and fire drills to be self-aware of safety hazards and preventive techniques	2.5	0.5	2
	PC17. Maintain high standards of personal hygiene at the work place	2	1	1
	PC18. Ensure that the waste disposal is done in the designated area and manner as per organization SOP.	3	1	2
	Subtotal	**40**	**10**	**30**
RSC/N4107 (CPC/N0417): Mould Technology Techniques for Plastics Processing	PC1. Basic Knowledge about Mould Manufacturing Process and machineries.	5	1	4
	PC2. Basic Knowledge to identify and confirm resources required such as components, machinery, range of materials and processes	3	1	2
	PC3. Basic Knowledge about Mould Materials.	7	3	4
	PC4. Identify type of equipment required for machining components based on the operations selected.	5	1	4
	PC5. Basic knowledge about Construction and study of Moulds for EBM, IBM, and SBM.	5	1	4
	PC6. Basic Knowledge of Mould cooling systems:-Pneumatic, water cooling	5	1	4
	PC7. Basic Knowledge of Mould Polishing & its kits	5	1	4
	PC8. Understand & Follow the instructions given on the equipment manual describing the operating process of the equipment	5	1	4
	Subtotal	**40**	**10**	**30**

Assessable outcome		Marks Allocation		
Assessable Outcome	**Assessment Criteria**	**Total**	**Theory**	**Practical**
RSC/N4108 (CPC/N0418): Basic Knowledge of Communication/soft skills	PC1. Accurately receive information and instructions from the supervisor/operator and fellow workers, getting clarification where required PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt	8	2	6
	PC3. Display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible	4	1	3
	PC4. Basic Knowledge of consult with and assist others to maximize effectiveness and efficiency in carrying out tasks.	4	1	3
	PC5. Basic Study of Fundamental of Computers.	4	1	3
	PC6. Components of Computer: - Hardware and the software	4	1	3
	PC7. Display active listening skills while interacting with others at work	4	1	3
	PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism	4	1	3
	PC9. Demonstrate responsible and disciplined behaviours at the workplace	4	1	3
	PC10. Escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict.	4	1	3
	Subtotal	**40**	**10**	**30**
	Total	**400**	**100**	**300**