**CONTACT DETAILS OF THE AWARDING BODY FOR THE QUALIFICATION**

**Name and address of awarding body:** Central Institute of Plastics Engineering andTechnology (CIPET), Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals, Govt. of India, Hajipur, Industrial Area, Vaishali, Bihar. 844102.

**Name and contact details of individual dealing with the submission**

Dr. P.C. Padhi,Director& Head, CIPET Hajipur, Industrial Area, Vaishali, Bihar. 844102. Ph: +91-6224-277424,270085,273515.

E-mail address**:**cipetpatna@gmail.com, hajipur@cipet.gov.in

**SUMMARY**

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| **Qualification Title:** Machine Operator – Blow Moulding |
| **Nature and Purpose of the qualification:**A CIPET trade certificate for Machine Operator-Blow Moulding and the he individual at work sets up and operates the blow moulding machine to produce good quality products from Plastics materials. He is responsible for produce bottles, containers or others hollow objects from plastics resin by operating semi & fully automatic and advance blow Moulding machines, troubleshooting process problems and performing minor maintenance to ensure continued operation of the production line. They are also responsible for completing the output learn Good Manufacturing Practices. |
| **Body/bodies which will award the qualification:**Central Institute of Plastics Engineering and Technology (CIPET), Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals, Govt. of India, Hajipur, Industrial Area, Vaishali, Bihar. 844102. |
| **Body which will accredit providers to offer courses leading to the qualification:**Central Institute of Plastics Engineering and Technology (CIPET), Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals, Govt. of India, Hajipur, Industrial Area, Vaishali, Bihar. 844102. |
| **Body/bodies which will be responsible for assessment:**The assessment is being carried out at of Central Institute of Plastics Engineering and Technology (CIPET), Ministry of Chemicals and Fertilizers, Department of Chemicals and Petrochemicals, Govt. of India, Hajipur, Industrial Area, Vaishali, Bihar. 844102. |
| **Occupation(s) to which the qualification gives access:**Blow Moulding Operator occupation in Plastics product manufacturing process. |
| **Proposed level of the qualification in the NSQF:** Level  |
| **Anticipated volume of training/learning required to complete the qualification:**800 Notional hours. |
| **Entry requirements / recommendations:**Minimum qualification – Preferably Min -Class X/ITI, Minimum age - 18 years completed. |
| **Progression from the qualification:**The Blow Moulding Operator has a clear pathway.  |
| **Planned arrangements for the Recognition of Prior learning (RPL):**RPL arrangements are being developed and will be informed in due course of time. |
| **International comparability where known:** It will be carried out in next phase ascomparability is being verified. |
| **Date of planned review of Qualification:** 20.10.2017 |

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| **Format Structure of the Qualification:** |
| **Title and Identification code of component** | **Mandatory/ Optional** | **Estimated Size (Notional Hours)** | **Level** |
| 1. Maintain basic health and

safety practices at the workplace, 5S. | M | 60 |  |
| 1. Fitting Tools Measuring

Equipments& Practice | M | 80 |  |
| 1. Introduction to Polymers and

thermoplastics Materials | M | 80 |  |
| 1. Basics of Plastics Processing

methods | M | 90 |  |
| 1. Blow Moulding Techniques for

Plastics processing and inspection of thefinished products. | M | 150 |  |
| 1. Auxiliary equipments in

Plastics processing. | M | 120 |  |
| 1. Mould Technology Techniques

for Plastics Processing | M | 80 |  |
| 1. Communication/soft skills and

Basic Computer concepts | M | 80 |  |
| 9. Quality Management systems | M | 60 |  |
|  |  | 800 |  |

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| **Body/Bodies which will carry out assessment:**A Separate department/ body -Training Assessment Wing of Central Institute of PlasticsEngineering and Technology (CIPET), Ministry of Chemicals and Fertilizers, Department ofChemicals and Petrochemicals, Govt. Of India, Hajipur, Vaishali, Bihar 844102.**Will the assessment body be responsible for RPL assessment?**RPL arrangements are being developed and will be informed in due course of time.**Describe the overall assessment strategy and specific arrangements which have been put in****place to ensure that assessment is always valid, consistent and fair and show that these are in****line with the requirements of the NSQF:**With uniformity and setting of learning outcomes for different Jobs Roles the assessment ofcandidates will be at learning outcome level. Assessment criterion has been defined for eachlearning outcome and it includes both theoretical and practical skills on which the candidate willbe assessed. The question suite which will be used to check the skills of the trainee wouldinclude**Theoretical test suite –** Will include multiple choice questions, audio-video question etc.which will test the trainee on his knowledge of the subject**Practical Knowledge suite –** Practical knowledge can be tested through Assessor drivenevaluation/test, Situational Judgment Tests etc to test practical core competence. Amix of these would be able to evaluate the trainee on his practical knowledge of theQualification Document.**Assessment strategy:**1. Assessment criteria for Qualification Document have been developed. Each Learning Outcome have separate marks for Theory and Practical Skills.
2. The Training Assessment Wing will have assessors who will not be associated with

training activities and will be provided training on the said work. Thus it will ensure thatthe assessment carried out is fair and consistent.1. Set of question bank developed to assess the theoretical and practical knowledge. To

ensure the quality, each trainees get the unique set of question1. Student has to score minimum marks separately for theoretical and practical skill and overall percentage should also be 50% for theory and 70% for practical.
2. Empanelment of subject matter expert as assessor to assess trainee specifically on

practical skills1. Assessments are preferably conducted by written examination papers in English/

regional languages according to the requirement.1. It has been ensure that TP/trainer should not be present during assessment
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**Assessment Process Flow:**

**Request for evaluation of batch by**

**Training Partner**



**Allocation of batch to Training Assessment wing**



**Evaluation of batch by Training Assessment wing as per schedule and as per Assessment Process**



**Assessment observation data input sheet from Training Assessment wing including viva, practical and theory marks**



**Result finalization**



**Uploading of result on IT database platform**

**Summative Assessment**:

Based on the Total Marks allotted for the specific subject, formal evaluation shall be conducted. Based on secured marks, candidates shall be declared pass or fail.

Steps undertaken for summative assessment:

1. Based on Completion of Batch, Evaluation Schedule shall be prepared
2. Identified Assessor is nominated for Evaluation
3. Setting up of separate Question Paper for Theory & Practical Examination
4. Conduct of examination as per the schedule
5. Evaluation & Certification

**Evidence Collected during Assessment:** Theoretical Answer Sheets, Practical Exam Sheets,Evaluation Sheets, Jobs produced during practical Exams.

**Protocol for Selection of Assessors:**

* The Assessors should have the minimum qualification: Degree in Engineering.
* The Assessors should have minimum 5 years of Experience in the relevant field.

**ASSESSMENT EVIDENCE**

**Assessment Guidelines:**

1. Criteria for assessment for each Qualification Document will be created by CIPET.
2. Each Assessable outcome (AO) will be assigned marks proportional to its importance in Learning Outcome and few performance criteria may be allotted marks in combine.
3. Each Learning Outcome will be assessed both for theoretical knowledge and practical which is being proportionately demonstrated in the table below.
4. The assessment for the theory part will be based on knowledge bank of questions created by CIPET which will contain multiple choice theory questions and Practical question database with mark allotment criteria.
5. To pass the Qualification Document, every trainee should score a minimum of 50 % in Functional and all Generic Learning Outcome’s.
6. In case of successfully passing only certain number of Learning Outcome’s, the trainee is eligible to take Subsequent assessment on the balance Learning Outcome’s to pass the Qualification Document.

**Title of the Component:** Machine Operator - Blow Moulding

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| **Assessable outcome** | **Assessment criteria for the****outcome** |
| **LO** | **Assessable outcome Description** | **Theory** | **Practical** | **Total** |
| 1. Maintain basic

health andsafety practicesat theworkplace, 5S. | A01. Use protective clothing/equipment forspecific tasks and work conditionsA02. Carry out safe working practices whiledealing with hazards to ensure the safety of Selfand others.AO3. Apply good housekeeping practices at alltimesAO4. Use the various appropriate fireextinguishers on different types of fires correctlyAO5. Demonstrate rescue techniques appliedduring fire hazard, demonstrate goodhousekeeping in order to prevent fire hazards,demonstrate the correct use of a fireextinguisher.AO6. Identify activities which can cause potentialinjury through sharp objects, burns, fall,electricity, gas leakages, radiation, poisonousfumes, chemicals, loud noise, and Identify areasin the plant which are potentially hazardous/unhygienic in nature. Conduct regular checks withsupport of the maintenance team on machine health to identify potential hazards due to wearand tear of machine.AO7. Inform the concerned authorities on thepotential risks identified in the processes,workplace area/ layout, materials used etc,Inform the concerned authorities about machinebreakdowns, damages which can potentiallyharm man/ machine during operations.AO8. Create awareness amongst other by sharinginformation on the identified risks.AO9. Follow the sorting process and check thatthe tools, fixtures & jigs that are lying onworkstations are the ones in use and unnecessaryitems are not cluttering theworkbenches or work surfaces.AO10. Ensure segregation of waste in hazardous/non Hazardous waste as per the sorting workinstructionsAO11. Follow the technique of waste disposaland waste storage in the proper bins as per SOPAO12. Segregate the items which are labeled asred tag items for the process area and keep themin the correct placesAO13. Sort the tools/ equipment/ fasteners/spare parts as per specifications/ utility intoproper trays, cabinets, lockers as mentioned inthe 5S guidelines/ work instructionsAO14. Ensure that areas of material storageareas are not overflowingAO15. Properly stack the various types of boxesand containers as per the size/ utility to avoid anyfall of items/ breakage and also enable easysorting when requiredAO16. Return the extra material and tools to thedesignated sections and make sure that noadditional material/ tool is lying near the workareaAO17. Follow the floor markings/ area markingsused for demarcating the various sections in theplant as per the prescribed instructions andstandards.AO18. Follow the floor markings/ area markingsused for demarcating the various sections in theplant as per the prescribed instructions andstandards.AO19. Check that the items in the respectiveareas have been identified as broken or damaged.AO20. Follow the given instructions and check forlabelling of fluids, oils, lubricants, solvents,chemicals etc. and proper storage of the same toavoid spillage, leakage, fire etc. | 18 | 42 | 60 |
|  | Sub Total | 18 | 42 | 60 |
| **2. Fitting Tools****Measuring****Equipments&****Practice** | AO1. Comply with health and safety,environmental and other relevant regulations andguidelines at work .AO2. Adhere to procedures and guidelines forpersonal protective equipment (PPE) and otherrelevant safety regulations while performing diefitting operationsAO3. Work following laid down procedures andinstructionsAO4. Ensure work area is clean and safe fromhazardsAO6. Obtain job specification from a valid &approved sourceAO7. Read and understand job requirementsfrom the job specification document properlyAO8. Report & rectify incorrect information injob specification documents as per jobrequirementAO9. Preparation for the fitting operations as perprocedureAO10. Ensure that all calibrated measuringinstruments used.AO11. Ensure that the components used are freefrom foreign objects, dirt and corrosionAO12. Obtain correct work pieces andconsumables as per job requirementsAO13. Obtain appropriate tools and measuringinstruments.AO14. Setting of work pieces as per jobrequirements using appropriate holding devicesAO15. Marking specified features with the helpof marking-out methods on the work pieces asper job specification by using appropriatemeasuring and marking tools.AO16. mark out templates fortracing/transferring the specified features on thework pieces as per drawingAO17. Tracing or transfer the specified featuresfrom the templates onto the work pieces as perdrawin.AO18. Perform fitting operations on various forms of metal components using a range of handtools and manually operated machinesAO19. Follow the specified machining sequenceand procedure as per job specificationsAO20. Check the machined components toensure completeness of workAO21. Check the quality of the output as perrequired standards, using visual checks andmeasurement of dimensional parameters usingmeasuring instruments.AO22. Produce components with variousfeatures as per standards applicable to theprocess.AO23. Check the finished components as per jobrequirementAO24. Complete documentation during and postoperations as per proceduresAO25. Return all tools and equipment to thecorrect location on completion of the fittingactivitiesAO26. Leave the work area in a safe and tidycondition on completion of job activities | 24 | 56 | 80 |
|  | Sub total | 24 | 56 | 80 |
| **3. Introduction to****Polymers and****thermoplastics****Materials** | AO1. Basic Importance of polymers in HumanLife.AO2. Study of fundamental terminology ofpolymersAO3. Classification of polymers- polymerstructure & morphology, etcAO4. Introduction to monomers and Polymers AO6. Types of Polymerization- Condensation-Addition- CopolymerizationAO7. Characterization AO8. Polymer Solution AO9. Measurement of Molecular weight andsizes-Structure and properties of Polymers.AO10. Commodity Polymers: Polyolefin: LDPE –HDPE – LLDPE, PP etc.AO11. Engineering Polymers: PC, ABS, PMMA,POM and PA- Nylon etc.AO12. Special Polymers: FEP, PVDF etc and PETmaterial properties and its application in blowMolding.AO15. Conventional Methods of Identification:-Drop Test, water floatation Test, Scratch testAO16. Advanced Methods of Identification:-MFI, Melting etc. and common acronyms in the plastics and commercial trade names. | 24 | 56 | 80 |
|  | Sub total | 24 | 56 | 80 |
| 4. **Basics of****Plastics****Processing****methods** | AO1. The need for plastics processing AO2. Ensure merits and demerits of BlowMolding to over the all others plastic Process.AO3. Definition and terminology related toPlastic Processing.AO4. Ensure finishing operation including surfacetreatment of the fabricated product if required asper SOP.AO5. Primary Processing Methods as percompany’s SOP.AO6. Secondary Processing Methods as percompany’s SOP.AO7. Processing fundamentals AO.8 The type of process to be used depends on avariety of factors, including product shape andsize, plastic type, quantity to be produced, qualityand accuracy (Tolerances) required, design loadperformance, cost limitation, and time schedule.AO.9 Machine Operation Terminology: as permanual, semiautomatic, fully automatic.AO.10 Type of Conversion Techniques: Injection,Blow, Compression, Transfer, Rotational andOther processes and comparison of BlowMolding with other process.AO11. Material to be processed 1 6 7AO12. Product design / configuration, Tolerance. AO13. Process Limitations AO14. Quality AO15. Cost / Performance balance. | 27 | 63 | 90 |
|  | Sub Total | 27 | 63 | 90 |
| 5. **Blow Moulding****Techniques for****Plastics****processing and****inspection of****the finished****products.** | AO1. Study of Principle of Blow Molding process. • Plasticizing/ melting the resin • Parison or preform production • Blowing of • Ejection of the part and trim AO2. Basic Need of Tools and Accessories andMachineries.AO3. Understanding of Plastic Material for BlowMolding- Commodity-Polyolefin’s, Engineering-PETAO4. Various types of extrusion blow mouldingProcess.AO5. Continuous blow moulding process:- single head method, Twin station method, Rotary tableSystem.Intermitted blow moulding process:-Reciprocating screw extruder, Ram accumulatorextrusion Accumulator head methodAO4. Study of Extrusion blow molding (EBM) AO5. Study of Injection blow molding(IBM) AO6. Study of Injection Stretch blow moldingprocess (ISBM)AO7. Study of Extrusion Stretch Blow Molding 0AO8. Various types of blow moulds-Side feed,Centre Feed, Spiral Mandrel, Extrusion Blow,stretch Blow, Injection Blow molds etc.AO9. Setting of PET Injection moulding Machineoperation , Load the material in the correctpattern as per SOP to minimize materialoverflow/ wastage/ excess flashAO10. Check the identified feed strip fordimension uniformity/identified granulesAO11. Make the plastic compound or granuleready for feeding into the machineAO12. Start the machine and feedingsimultaneouslyAO13. Ensure that moulding pressure andtemperature is maintained during the processcycleAO14. Ensure mould lifting/ ejection/ slidemechanism of the press are properly functioningAO15. Manufacturing the preform as per SOP AO16. Remove the Manufacturing the preformfrom the mould as per SOP.AO17. Check for operation of molding apparatuslike hopper, heaters, extruder, blow moldingdie/mold, screen pack etc. as per the checklistprovidedAO18. Fix the desired die/mold to the blowmolding machine apparatus in order to achievethe desired operation as per the WorkInstructions/ SOPsAO19. Make modifications in the processparameters ( by selecting the right program fromthe machine control system) if required andensure alignment with the prescribed standardsAO20. Use weighing machines to measure thequantity of granules and ensure that the correctquantity of granules are put in the hopper.AO21. Check the parameters – Temperature,pressure, current, extruder speed etc. in line withthe work instructions/ SOPsAO22. Setup the apparatus as per the selectedprocess and the moulding standards used in theprocessing industryAO23. Adjust the temperature and otherparameters of the moulding apparatus as per thevalues given in Work Instructions/ SOPsAO24. Ensure availability of the coolant andworking of valves to circulate the coolant to cooland solidify plasticAO25. Ensure the functionality and assembly of die as per SOP.AO26. Adjust the Parison controlling andprogram the parison with the help of parisonprogramming tools and software as perrequirement.AO27. Die shaping in blow molding. AO28. Study the types of mandrel used in blowmolding.-Divergent and convergent.AO29. Study of Blow Ratio, parison swell, DieSwell, Types of Parison Blowing system:-Pneumatic and ejection systemAO30. Understand the molding procedure &process to be adopted for completing the workorder from the supervisor by referring the WorkInstruction document/ SOP manualAO31. Set the various molding parameters liketemperature of heaters, back pressure/ airpressure/ vacuum pressure, screw speed of theextruder, regulating current, flow of coolant/water etc. before starting the process. Processparameters are mentioned in the WorkInstructions/ SOP manualAO32. Understand raw material like plasticsgranules, fillers, bonding additives grades etc.required for executing the activityAO33. Ensure that the required material isprocured from the store before starting theprocessAO34. Understand the type of Die required forexecuting the required operation and ensure thatthe same is available for operationsAO35. Understand the number of heatersrequired for the extruder assembly, heatertemperature and current required for the heating operations as mentioned in the WorkInstructions/ SOP manual. Ensure housekeepingsafety in the molding area. Use lifting equipmentsor for lift/trolley for mold/material. Keep allsafety requirements.AO36. Preheating of plastic granules to improvetheir tensile strengthAO37. Ensure that the plastic granules are mixedwith additives (if any) before being fed into thehopperAO38. Turn valves of machines to regulate screwspeed and quantity of the plastic coming out ofthe hopperAO39. Ensure pouring in line with the definedstandards and specificationsAO40. Record the feeding observations likeinterrupted pouring or any abnormality• In case extrusion blow molding. • In case of Injection Blow Molding. • In case of Injection Blow Molding • Optimization of Process Parameters. AO41. Conduct a test process and produce asample output as per the sketches/ engineeringdrawing shared with the supervisor.AO42. Check the hollow articles (bottles,container) for geometry, material & dimensionalparameters as per the Control Plan beforestarting the production.AO43. Ensure that the dimensions of the outputproduct are measured as per the process given inthe Work Instructions/ SOP. In case the testproduct matches the dimensions and quality ofthe final output, start the production processAO44. Feed the required operation code in theapparatus for heaters to melt the plastic granulesat the predefined temperatureAO45. Adjust the extruder speed and theextruder pressure to force the molten plastic intothe die to create the desired output.AO46. Turn valves of machines to regulate speedand quantity of the plastic coming out of thehopperAO47. Ensure feeding in line with the definedstandards and specificationsAO48. Record the feeding observations likeinterrupted pouring or any abnormality.AO49. Ensure the proper functioning of screenpack and die for uniform melting of plastic andremoval of the contaminants (if any)AO50. Monitor the process (parameters liketemperature, pressure, speed etc.) by observingand analyzing the readings on various panels/meters to prevent machine breakdown anddeviations of the output from desiredspecificationsAO51. Observe and analyze any irregularity in theprocess and take preventive stepsAO52. Clean the die opening & die; changing thescreen pack.AO53. Ensure code printing of the product withthe identifying information (wherever required)and send the same for further processingAO54. Instruct the helper to neck finishing andpinch off of the product as per the desiredgeometric specifications. (doesn’t required forIBM)AO55. Measure the final plastic molded productand compare the dimensions as prescribed in thework order/ engineering drawingAO56. In case the parts are not as per the givenmeasurements, send the same for furtherprocessing in terms of cutting, finishing etc.AO57. Measure the specifications of the finishedproducts using devices like micrometers, Verniercalipers, gauges, rulers, weighing scales,Thickness Gauge and any other inspectionequipment and compare with the parametersgiven in the work order.AO58. Compare texture, surface properties,hardness and strength with the given productspecificationsAO59. Note down the observations of the basicinspection process and Identify pieces which areOK and also not meeting the specified standardsAO60. Discard the batch which are beyond repairand repair the ones which need minormodifications in settings.AO61. Maintain records of each category of workoutputs as per the batch etc. so that correctioncan be organized.AO62. Establish linkage between rejection ofoutput and the pertinent causes for the same(process/ material etc.); Recommend the means for rejection control.AO64. Rectify minor defects like dimensionvariation, thickness variation etc. by controlprocess parameters etc.AO65. Escalate all issues related to change insurface properties, Tensile strength etc. so thatthe manufacturing equipment can be reset toachieve the specified outputAO66. Provide first and last output from eachbatch to the lab for quality check on itscomposition, properties etc.AO67. Obtain clearance for the entire batch fromthe lab | 45 | 105 | 150 |
|  | Sub total  | 45 | 105 | 150 |
| 6. **Auxiliary****equipments in****Plastics****processing.** | AO1. Some duties include: Inspecting,monitoring, operating fuel systems, fuel oiltransfer & supply lines & associated equipmentand fossil fuel chillers.AO2. Operating condensate & feed watersystems, circulating & cooling water systems,condensate & makeup systems, circulatingservice water treatment equipment, auxiliarylube oil systems, emission control equipment andmiscellaneous equipment. Pass onsite trainingprograms. Follow safety rules, regulations andprocedures.AO3. Setup and maintain molding machines andspecified auxiliary equipment to meet productionquality and quantity requirements.AO4. Connects basic plant services as needed tomeet production requirements and makes initialchecks of operating conditions before initiatingproduction runs.AO5. Complete complex job changes on moldingmachines and auxiliary equipment.AO6. Assist in cleaning and lubrication ofequipment and tooling and performs variouspreventative maintenance tasks as needed.AO7. Study of different types of Predrier-Hot airOven, Hopper Driers, Dehumidifiers etc.AO8. Working of Chiller, Cooling Tower for thecontrolling temperature of Mold, machine andFluids.AO9. Operation Monitoring -- Watching gauges,dials, or other indicators to make sure a machineis working properly Operation and Control --Controlling operations of equipment or systems.AO10. Getting Information - Observing, receiving,and otherwise obtaining information from allrelevant sources.AO11. Controlling Machines and Processes -Usingeither control mechanisms or direct physicalactivity to operate machines or processes.AO12. Study of Compressor and Scrap Grinder. 0.5 2 2.5AO13. Equipment Maintenance -- Performingroutine maintenance on equipment anddetermining when and what kind of maintenanceis needed.AO14. Equipment Selection -- Determining thekind of tools and equipment needed to do a job.AO15. Troubleshooting -- Determining causes ofoperating errors and deciding what to do about it.AO16. Follow the instructions given on theequipment manual describing the operatingprocess of the equipmentAO17. Follow the Safety, Health and Environmentrelated practices developed by the organizationAO18. Ensure relevant safety board’s/ signs areplaced on the shop floorAO19. Operate the machine using therecommended Personal Protective Equipment(PPE) and ensure team members also use therelated PPEs at the workplaceAO20. Maintain a clean and safe workingenvironment near the work place and ensurethere is no spillage of chemicals, productionwaste, oil, solvents etc.AO21. Attend all safety and fire drills to be selfawareof safety hazards and preventivetechniquesAO22. Maintain high standards of personalhygiene at the work placeAO23. Ensure that the waste disposal is done inthe designated area and manner as perorganization SOP. | 36 | 84 | 120 |
|  | Sub total | 36 | 84 | 120 |
| **7.** **Mould****Technology****Techniques for****Plastics****Processing** | AO1. Basic Study of Mould Material requirement,Mold Manufacturing Process and machineries.AO2. Compute dimensions, sizes, shapes andtolerances of machining component are as perspecifications and as per company proceduresAO3. Determine information such as number ofparts to make, engineered components and material to be used, and machines to be used.AO4. Identify and confirm resources requiredsuch as components, machinery, range ofmaterials and processesAO5. Study of range of Materials and how itseffect on process and life of mould: Ferrousmetals: eg. Carbon steels, stainless steels, castiron, tool steel, hard metals; Non-ferrous alloysAO6. Identify the operations that will be requiredfor machining components based on designrequirementsAO7. Identify type of equipment required formachining components based on the operationsselected.AO8. Comparison of Blow Mold with theInjection rotational merits and demerits forovercome the above process mould.AO9. Construction and study Mold for EBM, IBM,and SBM.AO10. Mold cooling systems:-Pneumatic, watercoolingAO11. Basic Study of The main components ofmolds (Die Core, Die Cavity And Screw Neck) aremade by injection process, which are made ofspecial mold steel.AO12. Cavities Preform Mold, designed anddeveloped as per SOPAO13. Follow the instructions given on theequipment manual describing the operatingprocess of the equipment | 24 | 56 | 80 |
|  | Sub total  | 24 | 56 | 80 |
| **8****:Communicatio****n/soft skills and****Basic Computer****concepts** | AO1. Accurately receive information andinstructions from the supervisor and fellowworkers, getting clarification where requiredAO2. Accurately pass on information toauthorized persons who require it and withinagreed timescale and confirm its receiptAO3. Give information to others clearly, at a paceand in a manner that helps them to understandAO4. Display helpful behavior by assisting othersin performing tasks in a positive manner, whererequired and possibleAO5. Consult with and assist others to maximizeeffectiveness and efficiency in carrying out tasksAO6. Display appropriate communicationetiquette while working AO7. Display active listening skills whileinteracting with others at workAO8. Use appropriate tone, pitch and languageto convey politeness, assertiveness, care andprofessionalismAO9. Demonstrate responsible and disciplinedbehaviors at the workplaceAO10. Escalate grievances and problems toappropriate authority as per procedure to resolvethem and avoid conflictAO11. Stimulus AO12. Encoding/message AO13. Channel AO14. Decoding AO15. Receiver AO16. Barriers AO17. Principle of Communication Process • Clarity • Conciseness • Objectivity • Consistency • Completeness • Relevancy • Audience Knowledge AO18. Study of Fundamental of Computers. AO19. Components of Computer: - Hardware andthe software.AO20. Study of Hardware Component:- centralprocessing unit (CPU), memory, storage device,input devices, output devices.AO21. The computer accepts input AO22. The computer performs useful operations AO23. The computer stores data AO24. The computer produces output. AO25. Turning the Computer On and Logging On AO26.Introduction to Microsoft Office AO27. Study of MS Word AO28. Study of MS Excel AO29. Study of MS PPT. | 24 | 56 | 80 |
|  | Sub total  | 24 | 56 | 80 |
| **9.** **Quality****Management****systems.** | AO1. Study and understand of Total QualityControlAO2. Need of Management of Product Quality. AO3. Understand the Concept of Total QualityManagement.AO4. Understanding the TQM Philosophy.AO5. Understanding the need for Quality system. AO6. Study and understand of Total Qualitycontrol tools - ISO, 5S, Six Sigma, OHSAS 18001AO7. Study and understand of Behavioral Science. AO8. Different between Behavioral Science andSocial Science.AO9. Categories of Behavioral Science. AO10. Theories of Behavioral Psychology,Entrepreneurship development, preparing projectreport selecting a particular plastic product oftheir choice and submission. | 18 | 42 | 60 |
|  | Sub total | 18 | 42 | 60 |
|  | Total  | 240 | 560 | 800 |
| **Means of assessment 1:**The assessment comprise of -Theory AssessmentViva vocePractical assessment |
| **Means of assessment 2:**Pass/Fail-The Pass mark of theory written assessment is 50% and for viva and practical assessment is 70%.The candidate has to pass separately in Theory and Practical. |

**EVIDENCE OF LEVEL**

**Level of qualification**

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| --- |
| **Title /Name of Qualification/Component:** Machine Operator **-** Blow Moulding**Level:**  |
| **NSQF Domain** | **Outcomes of the****Qualification/Component** | **How the job role****relates to the NSQF****Level descriptors** | **NSQF****Level** |
| **Process** | Machine Operator **-** Blow Mouldingis expected to ensure housekeepingand safety in the moulding area andselect the correct mould, etc he/shehas to-Understanding the work order andthe process requirement from thesupervisorArranging the required rawmaterial and Moulds for theprocessTo interact with the supervisor inorder to understand theproduction scheduleTo plan the day’s productionactivities based on thesupervisor’s instructionsTo collect material data sheet,machine instructions and workmanualsTo ensure availability ofconsumables and plasticsmaterials for production insufficient quantity as perproduction plan/supervisorinstructions.Clearly understanding the doesand don’ts of the manufacturingprocess as defined in SOPs/ WorkInstructions or defined bysupervisors.Check availability of the personalprotective equipments (PPE) likeGloves, Goggles etc.Ensure that the required material is procured from the store beforestarting the processUnderstand the Mould requiredfor executing the requiredoperation and ensure that thesame is available for operation.If mould is not available collect themould from tool room.Install and bolt the mould in placeand slide the safety door shut.Add the raw material in themachine using material loader orby manual feeding.Ensure moulds are clean if notclean with soft cotton cloth.Ensure cleaning of the otherauxiliaries tools, (if any) before theinitiation of the moulding andtrimming processEnsure cleaning of the areaaround the apparatus for any oil,grease, combustible substancesetc. so as to prevent any accidentEnsure availability of the coolantand working of valves to circulatethe coolant to cool and solidifyplasticUnderstand the raw material likeplastics granules, fillers, bondingadditives etc. required forexecuting the activityRefer the queries to supervisor ifthey cannot be resolved by theoperatorConfirm self - understanding tothe supervisor once the query isresolved so that all doubts &queries can be resolved before theactual process executionHe is responsible for checking theoperations of the equipmentFeeding the granules as per requirementSet up and operate the Injectionmoulding machinePerform visual inspection of theoutput productsAchieve productivity, quality andsafety standards as per company’snormsReport problems to supervisorHe will be responsible forInspecting the finishedcomponentskeeping records of production anddefectsconducting minor repair/deflashingif any on output partswhich can be reworkedThe role holder will interact withmaintenance team and materialmanagement teamThe individual needs to ensuresorting, streamlining & organizing,storage and documentation,cleaning, standardization andsustenance across the plant andoffice premises of the organizationHe needs to understand MarketInformation ManagementClient Relation ManagementMarketing knowhow and strategyHe also needs to understand andpractice Entering, update andmaintain data in MS Officesystem/ Office open sourcesystem. | Machine Operator**-** Blow Mouldingjob requireslimited range ofactivities whichare familiar andpredictable likeavailability ofconsumables,safety PPE, rawmaterial used,basic machineparts and itsfunctions etc.He has to collectthe mould fromtool room.He has to checkthe moulds areclean if not cleanwith soft cottoncloth.He shouldunderstand theraw material likeplastics granules,fillers, bondingadditives etc.required forexecuting theactivity.he should know aboutentrepreneurship,marketing andother qualityrelated functions. |  |
| **Professional****knowledge** | The user/individual on the job needs toknow and understand:Different types of Plasticsmaterials, Processes andprocedures followed forProcessing the lot/ pieces/products.Cleanliness and safetyrequirements for operating ablow moulding machineDifferent types of blow moulding machine, distributions systemsand moulds, Operation ofmultiple presses with commonpower pack and importance ofsequencing.Start Up & Shut down procedurefor blow Moulding | Machine Operator **-**Blow Mouldingshould understandand know factualknowledge aboutprocess, principleof blow MouldingTechnique and itsoperation, types,process related queries,entrepreneurship,marketing, qualityetc. |  |
| **Professional****skill** | The user/individual on the job needs toknow and understand:General principles of Blowmoulding procedure and processknowledge mould loading andunloading procedure, parametersettings etc.Types of plastics likethermoplastics and the additives& grades to be used tonnage andcapacity of the machine beingoperated.Different types of tools andmachinery to process the plasticand trim the outputVarious types of cooling systemsand their properties.How to perform mouldingmachine safety checkHazards and safety aspectsinvolved in tape production andusage of relevant PPEsSafety procedures to be adoptedto complete mould removalprocessDetect problems in day to daytasks:Support operator in usingspecific problem solvingtechniques and detailing out theproblemsDiscuss possible solution with thesupervisor for problem solving.The user/individual on the job needs toknow and understand how to:Plan and organize the work orderand jobs received from theinternal customers/ operator.Organize all process/ equipmentmanuals so that sorting outThe user/individual on the job needs toknow and understand how to:Follow instructions and work onareas of improvement identifiedComplete the assigned tasks withminimum supervisionComplete the job defined by theoperator within the timelines andquality.The user/individual on the jobneeds to know and understandhow to:Use common sense and makejudgments during day to daybasisUse basic reasoning skills toidentify and resolve basicproblemsUse intuition to detect anypotential problems which couldarise during operations.He needs to know aboutentrepreneurship associated withinjection moulding, its conceptsetcHe needs to know aboutmarketing strategy involved forthe products manufactured,market availability etc. | Machine Operator **-**Blow Mouldingshould recallgeneral principlesof mouldingprocedure andprocess knowledgewhich may berepetitive type ofwork in the areaallotted, Types ofplastics likethermoplastics andthe additives &grades to be usedtonnage etc. Thushe shoulddemonstratepractical skill,routine andrepetitive in BlowMouldingapplication/process, he shouldalso understandquality conceptsand use in the areaof work allotted. |  |
| **Core skill** | The user/ individual on the job needs toknow and understand how to:How to be able to read warnings,instructions and other textmaterial on product labels,components etcHow to enter into the historycard details of the fault identifiedin the plastic productmanufactured read equipmentmanuals and process documentsto understand the equipmentand processes better tsRead instructions especiallysafety instructions especiallysymbols while using theequipment in the plant area logs.The user/individual on the job needs to know and understand how to:Discuss task lists, schedules, andwork-loads with coworkers/assistants andsupervisorsQuestion internal customers/Shop floor operatorappropriately in order tounderstand the nature of theproblem and make a diagnosisAvoid using jargon, slang oracronyms when communicatingwith a operator /fellowsubordinates etc. Unless it isrequired. | Machine Operator**-** Blow Mouldingshould be able toread /writewarnings,instructions andother text materialon product labels,components etcwith minimumrequired clarity,should have skill ofbasic arithmetic,like raw materialweights additionsetc. |  |
| **Responsibility** | Machine Operator **-** Blow Mouldingis majorly responsible for his own jobandself learning. He/she Set up basicas well as all critical machine controlsand may operate Blow mouldingMachine in order to produce goodquality moulding as per approvedspecifications by supervisor. He mayneed to control/ check multiplemachines at a time. | Machine Operator**-** Blow Mouldingis majorlyresponsible for hisown job andlearning whichjustifies thepegging.  |  |

**EVIDENCE OF RECOGNITION AND PROGRESSION**

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| **What steps have been taken in the design of this or other qualifications to ensure that****there is a clear path to other qualifications in this sector?**Relevant information was collected from Industries and allied sector working in this area.The Plastics industries are recruiting people based on the qualification acquired. Maximumof the industries accept this as qualification for selection/short listing of the individual.approved by members.**Vertical Pathway:**The Occupational Map has been created & attached.The Blow Moulding Operator has a clear pathway **Horizontal Pathway:**The individual can migrate within the Plastics Processing related industries. |