QUALIFICATIONS PACK- OCCUPATIONAL STANDARDS FOR PLASTICS INDUSTRY

Contents

What are Occupational Standards (OS)?

- OS describe what individuals need to do, know and understand in order to carry out a particular job role or function
- OS are performance standards that individuals must achieve when carrying out functions in the workplace, together with specifications of the underpinning knowledge and understanding

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Introduction

Qualifications Pack- Machine Operator –Plastic Blow Molding

SECTOR: RUBBER

SUB SECTOR: PLASTICS PROCESSING

OCCUPATION: BLOW MOULDING

REFERENCE ID: RSC/Q4102 (CPC/Q0404)

ALIGNED TO:

Brief Job Description:
Plastics blow moulding operator is responsible for produce bottles, containers or others hollow objects from plastics resin by operating semi & fully automatic and advance blow moulding machines. They are responsible for 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.

Personal Attributes:
This job requires the basic communication, numerical & computational abilities for the individuals to be result oriented. At all times he should strive to achieve highest quality standards. The operator is expected to be able to work in a factory environment.

Qualifications Pack for Machine operator Plastic Blow Moulding

Job Details

Qualifications Pack Code	**RSC/Q4102 (CPC/Q0404)**		
Job Role	**Machine Operator Plastic Blow Moulding**		
Credits (NSQF)	**48**	**Version number**	**1.0**
Sector	**Rubber**	**Drafted on**	**18/05/2016**
Sub Sector	**Plastics Processing**	**Last reviewed on**	**26/12/2016**
Occupation	**Blow Moulding**	**Next review date**	**31/12/2021**
NSQC Clearance on	**21/07/2016**		

Job Role	**Machine operator Blow Molding/ Technician**
Role Description	Machine operator Plastic Blow Molding
NSQF level **Minimum Educational Qualifications*** **Maximum Educational Qualifications***	4 VIII Standard
Training (Suggested but not mandatory)	No previous training required
Minimum Job Entry Age	18
Experience	No previous experience required
Applicable National Occupational Standards (NOS)	1. RSC/N4101 (CPC/N0411): Maintain basic health and safety practices at the workplace, 5S. 2. RSC/N4109 (CPC/N 0420): Advanced method for Fitting Tools Measuring Equipments & Practice 3. RSC/N 4110 (CPC/N 0421): Introduction and test method for Polymers & thermoplastics Materials 4. RSC/N4104 (CPC/N0414): Basics of Plastics Processing methods 5. RSC/N4111 (CPC/N 0423): Advanced Blow Moulding Techniques for Plastics processing and inspection of the finished products. 6. RSC/N4106 (CPC/N0416): Auxiliary equipments in Plastics processing. 7. RSC/N4112 (CPC/N 0425): Advanced Mould Technology Techniques for Plastics Processing 8. RSC/N4108 (CPC/N0418): Basic Knowledge of Communication/soft skills. 9. RSC/N4113 (CPC/N 0427): Quality Management systems.
Performance Criteria	As described in the relevant OS units

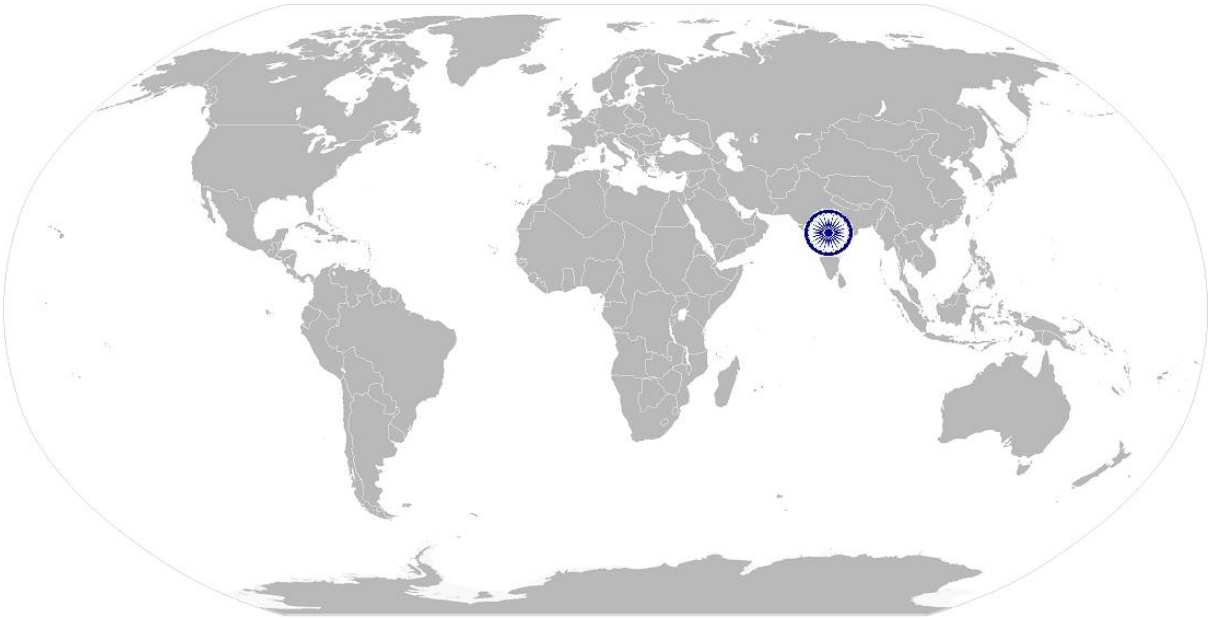
Definitions

Keywords /Terms	Description
Core Skills/Generic Skills	Core Skills or Generic Skills are a group of skills that are key to learning and working in today's world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Function	Function is an activity necessary for achieving the key purpose of the sector, occupation, or area of work, which can be carried out by a person or a group of persons. Functions are identified through functional analysis and form the basis of OS.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organization.
Knowledge and Understanding	Knowledge and Understanding are statements which together specify the technical, generic, professional and organizational specific knowledge that an individual needs in order to perform to the required standard.
Occupational Standards (OS)	OS are Occupational Standards which apply uniquely in the Indian context
Occupation	Occupation is a set of job roles, which perform similar/related set of functions in an industry.
Organizational Context	Organizational Context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Performance Criteria	Performance Criteria are statements that together specify the standard of performance required when carrying out a task.
Qualifications Pack(QP)	Qualifications Pack comprises the set of NOS, together with the educational, training and other criteria required to perform a job role. A Qualifications Pack is assigned a unique qualification pack code.
Qualifications Pack Code	Qualifications Pack Code is a unique reference code that identifies a qualifications pack.
Scope	Scope is the set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on the quality of performance required.
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-Sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Sub-functions	Sub-functions are sub-activities essential to fulfil the achieving the objectives of the function.
Technical Knowledge	Technical Knowledge is the specific knowledge needed to accomplish specific designated responsibilities.

Qualifications Pack for Machine operator Plastic Blow Moulding

Acronyms

Unit Code	Unit Code is a unique identifier for a OS unit, which can be denoted with an '**N**'
Unit Title	Unit Title gives a clear overall statement about what the incumbent should be able to do.
Vertical	Vertical may exist within a sub-sector representing different domain areas or the client industries served by the industry.
Keywords /Terms	**Description**
OS	Occupational Standard(s)
NVEQF	National Vocational Education Qualifications Framework
NVQF	National Vocational Qualifications Framework
NSQF	National Skills Qualifications Framework
OEM	Original Equipment Manufacturer
OS	Occupational Standard(s)
QP	Qualifications Pack



National Occupational Standards

Overview

This unit is about establishing a Safe, Healthy and Environment friendly also covers safety and security at the workplace. This includes procedures and practices that candidates need to follow to help maintain a healthy, safe and secure work environment.

National Occupational Standards

Unit Code	**RSC/N4101 (CPC/N 0411)**
Unit Title (Task)	**Maintain basic health and safety practices at the workplace, 5S**
Description	This OS unit is about knowledge and practices relating to health, safety and security that candidates need to use in the workplace. It covers responsibilities towards self, others, assets and the environment. It includes understanding of risks & hazards in the workplace, along with common techniques to minimize risk, deal with accidents, emergencies etc. It covers knowledge of fire safety, common first aid applications and safe practice. This OS is about ensuring all 5S activities both at the shop floor and the office area to facilitate increase in work productivity.
Scope	The role holder will be responsible for • Health and safety procedure. • Fire safety procedure. • Emergencies, rescue and first aid procedures. • Ensure sorting, stream lining, storage and documentation, cleaning, standardization and sustenance across the plant premises of the organization.
Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Health and safety	The individual on the job should be able to: PC1. Wear protective clothing/equipment for specific tasks and work conditions PC2. Carry out safe working practices while dealing with hazards to ensure the safety of Self and others. PC3. Keep good housekeeping practices at all times
Fire safety	PC4. Use the various appropriate fire extinguishers on different types of fires correctly 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.
Identify and report the risks identified	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. 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. PC8. Create awareness amongst others by sharing information on the identified risks.

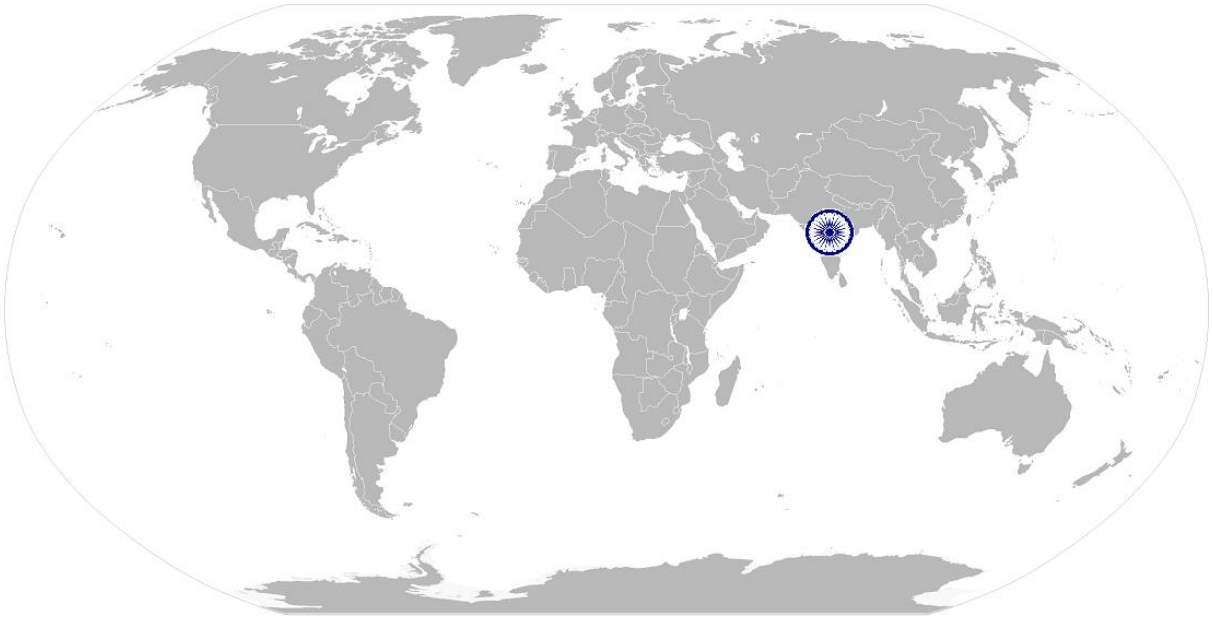
Ensure sorting	PC9. Follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and un- necessary items are not cluttering the workbenches or work surfaces. PC10. Ensure segregation of waste in hazardous/ non Hazardous waste as per the sorting work instructions PC11. Follow the technique of waste disposal and waste storage in the proper bins as per SOP PC12. Segregate the items which are labeled as red tag items for the process area and keep them in the correct places 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 PC14. Ensure that areas of material storage are not overflowing 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 PC16. Return of extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area PC17. Follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards
Ensure proper documentation and storage(organizing, streamlining)	PC18. Follow the proper labelling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists PC19. Ensure to check the items in the respective areas have been identified as broken or damaged PC20. Follow the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc. PC21. Make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. The relevant standards, procedures and policies related to Health, Safety and Environment followed in the company KA2. The emergency handling procedures & hierarchy for escalation
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. The basic knowledge of Safety procedures (fire fighting, first aid) within the organization KB2. The basic knowledge of various types of PPEs and their usage KB3. The basic knowledge of risks/hazards associated with each occupation in the organization

	KB4. The knowledge of personal hygiene and how an individual contribute towards creating a highly safe and clean working environment the individual on the job needs to know and understand. KB5. The meaning of "hazards" and "risks" KB6 The health and safety hazards commonly present in the work environment and related precautions KB7. The possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible KB8. The Possible causes of risk and accident (due to oil leakage) KB9. The Methods of accident prevention KB9. Safe working practices when working with tools and machines KB10. Safe working practices while working at various hazardous sites KB11. The general health and safety equipment in the workplace KB12. Various dangers associated with the use of electrical equipment KB13. Preventative and remedial actions to be taken in the case of exposure to toxic materials KB14. The Importance of using protective clothing/equipment while working KB15. Precautionary activities to prevent the fire accident KB16. Various causes of fire KB17. The techniques of using the different fire extinguishers KB18. The different methods of extinguishing fire KB19. The different materials used for extinguishing fire KB20. Rescue techniques applied during a fire hazard KB21. Various types of safety signs and what they mean KB22. The appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries KB23. The content of written accident report KB24. Potential injuries and ill health associated with incorrect manual handing KB25. Safe lifting and carrying practices KB26. Personal safety, health and dignity issues relating to the movement of a person by others KB27. Potential impact to a person who is moved incorrectly KB28. To have basic knowledge of 5S procedures KB29. To know the various types 5s practices followed in various areas KB30. Understand to the 5S checklists provided in the department/ team KB31. To have skills to identify useful & non useful items KB32. To have knowledge of labels , signs & colours used as indicators KB33. To have knowledge on how to sort and store various types of tools, equipment, material etc. KB34. The Identification of various types of waste products KB35. The impact of waste/ dirt/ dust/unwanted substances on the process/ environment/ machinery/ human body. KB36. The knowledge of best ways of cleaning & waste disposal

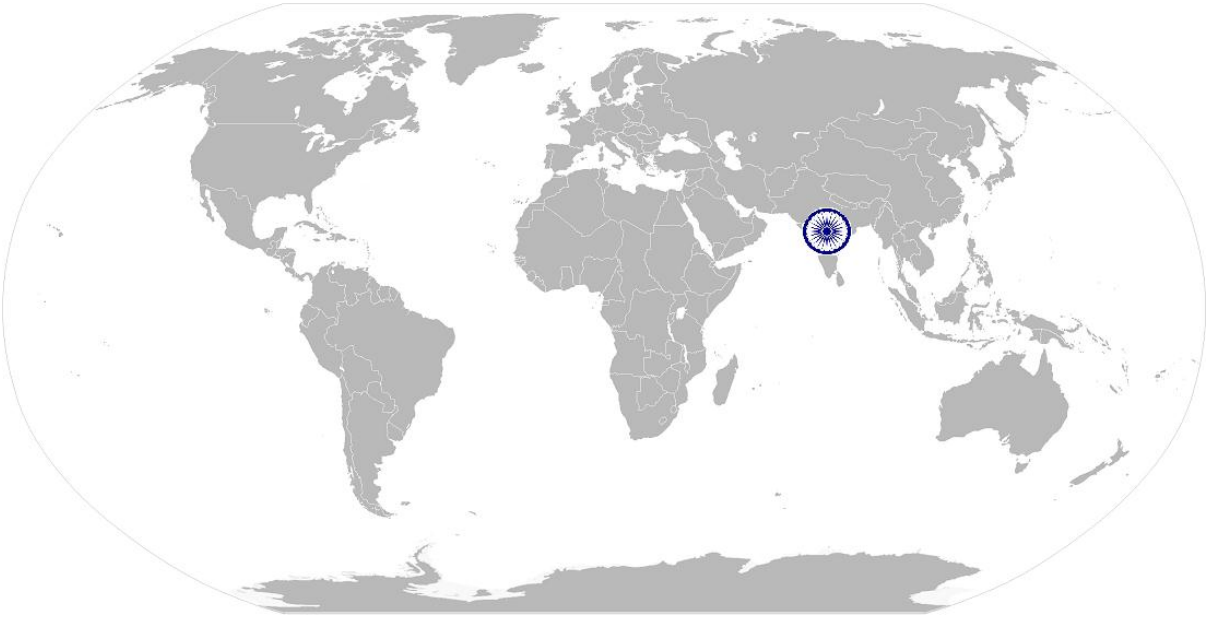
Skills (S) [Optional]	
Element	**Skills**
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Understand basic level notes and observations.
	Reading Skills
	The user/ individual on the job needs to know and understand how to: SA2. Put up safety instructions across the plant premises SA3. Put up safety precautions mentioned in equipment manuals and panels and understand the potential risks associated
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA4. Communicate information to team members effectively SA5. Inform employees in the plant and concerned functions about events, Incidents & potential risks observed related to Safety, Health and Environment. SA6. Question operator/ supervisor in order to understand the safety related issues SA7. Attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs
B. Professional Skills	**Plan and Organize**
	The user/individual on the job needs to know and understand how to: SB1. Process the work order and jobs received from the internal customers. SB2. Design documents received from internal customers SB3. Understand & organize all process/ equipment manuals so that sorting out information is fast.
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB4. Use common sense and make judgments during day to day basis SB5. Use intuition to detect any potential problems which could arise during operations
	Problem solving
	The user/individual on the job needs to know and understand how to: SB6. Follow instructions and work on areas of improvement identified SB7. Complete the assigned tasks with minimum supervision SB8. Complete the job defined by the supervisor within the timelines and quality norms

NOS Version Control

NOS Code	**RSC/N4101 (CPC/N0411)**		
Credits (NSQF)	**4**	**Version number**	**1.0**
Sector	**Rubber**	**Drafted on**	**18/05/2016**
Sub Sector	**Plastics Processing**	**Last reviewed on**	**26/12/2016**
Occupation	**Blow Moulding**	**Next review date**	**31/12/2021**



National Occupational Standards



Overview

This unit covers fitting operations on machining components using hand tools to make shape of the component from raw material as per given drawing specifications.

National Occupational Standards

Unit Code	**RSC/N4109 (CPC/N 0420)**
Unit Title (Task)	**Advanced method for Fitting Tools Measuring Equipments and Practice**
Description	This unit covers fitting of machining components using hand tools and manually operated machines, to form the shape of a component from raw material, as per given specifications in the drawing. This involves carrying out the fitting operations like filing, drilling, and manual lapping and shaping in order to fit a component as per specifications. The candidate will be expected to perform under minimum supervision, taking self-interest at work and for the quality and accuracy of the work.
Scope	The blow molding operator will be responsible for • Working safely • Preparing for fitting operations • Marking components • Performing fitting operation to maintain blow molding machine & mold.
Performance criteria(PC) w.r.t. the Scope	
Element	**Performance criteria**
Working safely	The individual on the job should be able to: PC1. Comply with health and safety, environmental & other relevant regulations PC2. Adhere to procedures and guidelines for personal protective equipment (PPE) and other relevant safety regulations while performing die fitting operations PC3. Work following laid down procedures and instructions PC4. Ensure work area is clean and safe from hazards PC5. Ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition
Preparing for fitting operations	The individual on the job shall be able to: PC6. Obtain job specification from a valid and approved source PC7. Read & understand job requirements from the job specification document properly PC8. Report and rectify incorrect information in job specification documents as per job requirement PC9. Preparation for the fitting operations as per procedure PC10. Ensure that all calibrated measuring instruments used. PC11. Ensure that the components used are free from foreign objects, dirt and corrosion PC12. Obtain correct work pieces & consumables as per job requirements PC13. Obtain appropriate tools and measuring instruments. PC14. Setting of work pieces as per job requirements using appropriate holding devices
Marking components	The individual on the job shall be able to:

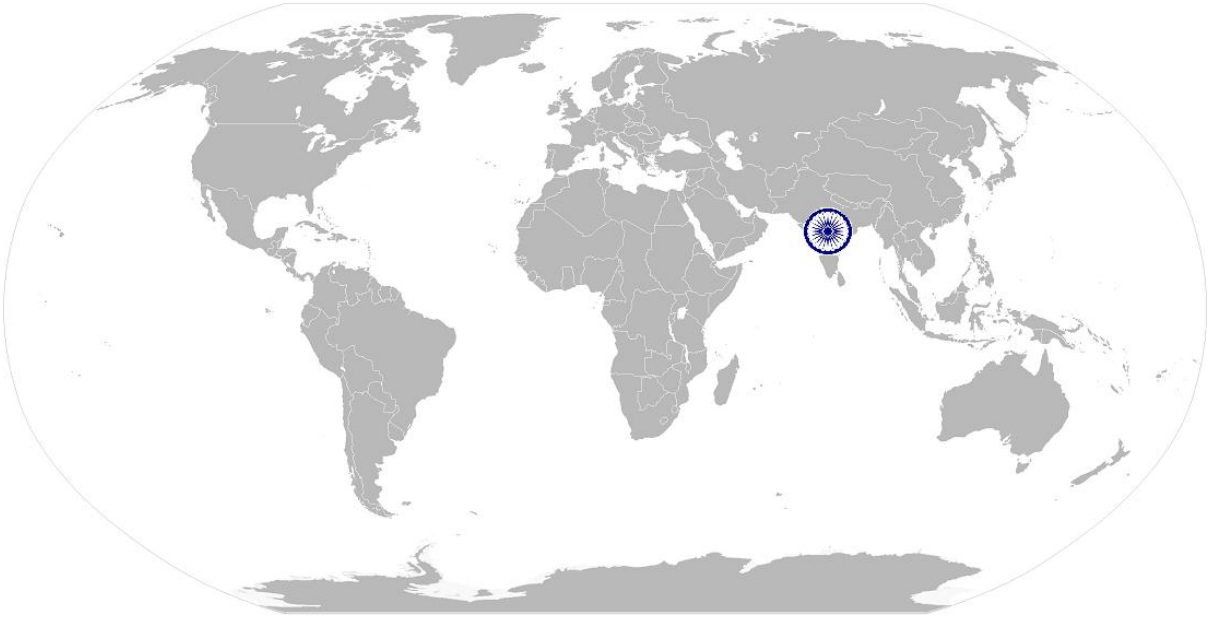
	PC15. Mark specified features with the help of marking-out methods on the work pieces as per job specification by using appropriate measuring and marking tools. PC16. Mark out templates for tracing/transferring the specified features on the work pieces as per drawing PC17. Trace or transfer the specified features from the templates onto the work pieces as per drawing
Performing fitting operations on machining components using hand tools and conventional machines e.g. Drilling and Shaper	The individual on the job should be able to: PC18. Perform fitting operations on various forms of metal components using a range of hand tools and manually operated machines PC19. Follow the specified machining sequence and procedure as per job specifications PC20. Check the machined components to ensure completeness of work PC21. Check the quality of the output as per required standards, using visual checks and measurement of dimensional parameters using measuring instruments. PC22. Produce components with various features as per standards applicable to the process . PC23. Check the finished components as per job requirement PC24. Complete documentation during & post operations as per procedures PC25. Return all tools and equipment to the correct location on completion of the fitting activities PC26. Leave the work area in a safe and tidy condition on completion of job activities
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The individual on the job needs to know and understand: KA1. Policies and procedures followed in the company relevant to own employment and performance conditions KA2. The Health and safety requirements in the work place KA3. Clean and safe environment at working place KA4. Job responsibilities and information related to employment terms, entitlements, job role and responsibilities KA5. Reporting mechanism, department functions and procedures in the work place KA6. The Related workforce and their responsibilities within the work area KA7. Procedures for reporting at work and employment related issues KA8. Documentation and related procedures applicable related to employment and work KA9. Documentation in connection with employment and work
B. Technical Knowledge	The individual on the job needs to know and understand: KB1. Specific safe working practices, fitting procedures KB2. Hazards associated with carrying out the fitting operations and how can they be minimized

	KB3. Personal protective equipment to be used during the fitting activities and where can it be obtained KB4. Types and sources of appropriate job specifications KB5. Common terminology used in fitting KB6. Importance of following specified fitting sequences and procedures KB7. Importance and procedures of ensuring suitability of work piece and consumables for the specified job KB8. Tools and equipment used for the fitting operations KB9. Importance and procedures to ensure that tools and equipment are in a safe and usable condition KB10. Correct techniques and procedures to carry out specific fitting operations by hand tools and manually operated machines KB11. Importance of securing the work piece correctly using appropriate devices and mechanisms KB12. Common problems that can occur in the fitting operations and their implications KB13. Correct procedures to address problems commonly encountered during fitting operations KB14. Importance of reporting problems immediately and accurately KB15. Meaning and importance of quality in relation to final and intermediate job output KB16. How to check the correctness of the shaped components against the specified quality standards KB17. Range of materials used in relevant fitting applications
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	**Writing Skills** The individual on the job needs to know and understand how to: SA1. Read and interpret information correctly from various job specification documents, manuals, health and safety instructions, etc. SA2. Fill up appropriate technical forms, process charts, log sheet as per organizational format SA3. Convey and share technical information clearly using appropriate language SA4. Check and clarify task-related information SA5. Liaise with appropriate authorities using correct protocol SA6. Communicate with people in respectful form and manner in line with organizational protocol **Reading Skills** The user/individual on the job needs to know and understand how to: SA6. Read and interpret engineering drawing and sketches SA7. Read equipment manuals and process documents to understand the equipment and processes better

	SA8. Read instructions especially safety instructions especially symbols while using the equipment in the plant area SA9. Read internal drawings send by internal customers (other functions within the organization)
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA10. Discuss task lists, schedules, and work-loads with co-workers SA11. Question internal customers/ Moulding shop supervisor appropriately in order to understand the nature of the problem and make a Diagnosis
B. Professional Skills	**Problem Solving**
	The user/individual on the job needs to know and understand how to: SB1. Identify problems with work planning, procedures, output and behavior and their implications SB2. Prioritize and plan for problem solving SB3. Communicate problems appropriately to others SB4. Identify sources of information and support for problem solving SB5. Seek assistance and support from other sources to solve problems SB6. Identify effective resolution techniques SB7. Select and apply resolution techniques SB8. Seek evidence for problem resolution
	Plan and Organize
	The user/individual on the job needs to know and understand how to: SB9. Plan, prioritize & sequence work operations as per job requirements SB10. Organize and analyze information relevant to work SB11. Basic concepts of shop-floor work productivity including waste reduction, efficient material usage and optimization of time
	Customer Centricity
	The individual on the job needs to know and understand how to: SB12. Undertake and express new ideas and initiatives to others SB13. Modify work plan to overcome unforeseen difficulties or developments that occur as work progresses SB14. Participate in improvement procedures including process, quality and customer relationships SB15. Competencies in new and different situations to achieve more
	Team Work
	The user/individual on the job needs to know and understand how to: SB12. Follow instructions and work on areas of improvement identified SB13. Complete the assigned tasks with minimum supervision SB14. Complete the job defined by the supervisor within timelines and quality norms

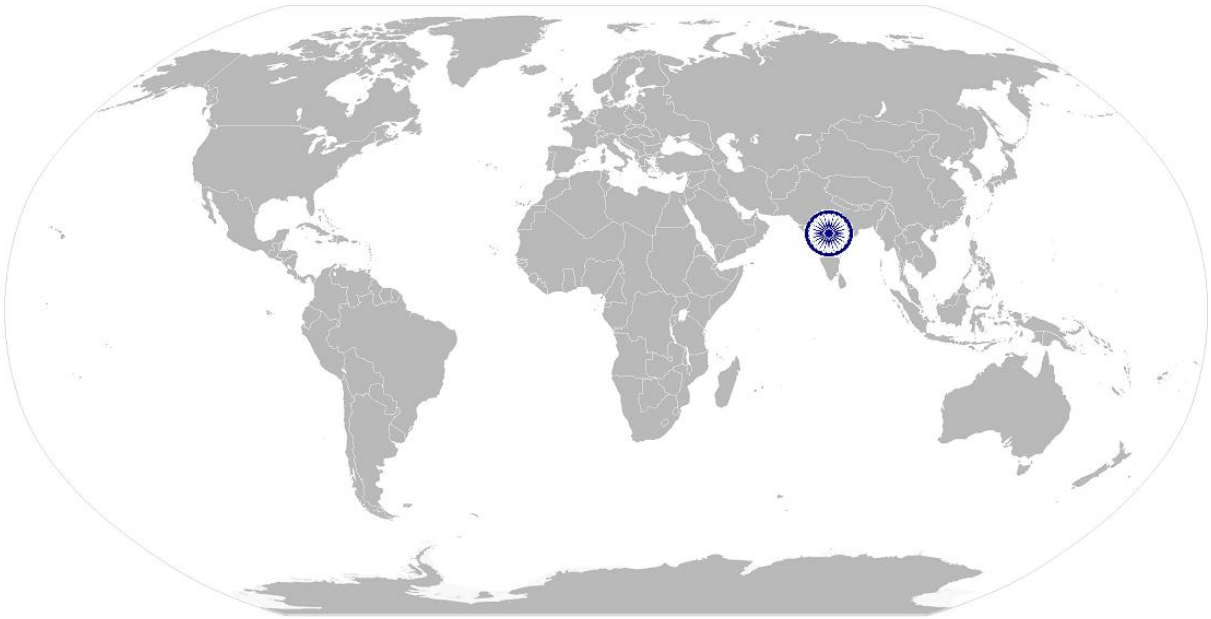
NOS Version Control

NOS Code	**RSC/N4109 (CPC/N 0420)**		
Credits (NSQF)	**4**	**Version number**	**1.0**
Sector	**Rubber**	**Drafted on**	**18/05/2016**
Sub Sector	**Plastics Processing**	**Last reviewed on**	**26/12/2016**
Occupation	**Blow Moulding**	**Next review date**	**31/12/2021**



RSC/N 4110 (CPC/N 0421) Introduction and test method for Polymers & Thermoplastics Materials

National Occupational Standards



Overview

This unit covers the fundamentals polymers and demonstrating their properties relationship with molecular structure. Polymerization techniques used for manufacturing polymers and classifications. Thermoplastics materials and their properties and end use application.

National Occupational Standard

Unit Code	RSC/N 4110 (CPC/N 0421)
Unit Title (Task)	**Introduction and Test methods for Polymers & Thermoplastics Materials**
Description	This unit is about Introduction to Polymers Thermoplastics Materials 1. Understanding fundamental of polymers. 2. Indicate how the properties of polymeric materials can be exploited by a product designer. 3. Become familiar with thermoplastics materials. 4. Recognize the potential value of polymeric materials and their areas of application.
Scope	The Blow moulding operator will be learning about. Nomenclature of polymers, sources of raw materials, methods of manufacture, General character & properties , processing behavior and applications Use of Polymers and their applications in industries like Bottles, Hollow container, automotive fuel aerospace, etc.
Performance criteria (PC) w.r.t. the Scope	
Element	**Performance criteria**
Introduction To Polymers	The individual on the job should be able to: PC1. Learn basic Importance of polymers in Human Life. PC2. Study the fundamental terminology of polymers PC3. Learn Classification of polymers- polymer structure and morphology, etc
Study of Plastics Material	PC4. Study that Introduction of monomers and Polymers Types of Polymers-Thermoplastics, Elastomers PC5. Study the Polymerization PC6. Learn Types of Polymerization – Condensation – Addition - Copolymerization PC7. Study the Characterization PC8. Study the Polymer Solution PC9. Determine the Measurement of Molecular weight & sizes-Structure & properties of Polymers.
Thermoplastic Materials	PC10. Study the Commodity Polymers: Polyolefin: LDPE – HDPE – LLDPE, PP etc. PC11. Study the Engineering Polymers: PC, ABS, PMMA, POM, PA-NYLON etc. PC12. Study about Special Polymers: FEP, PVDF etc.
Identification of Plastics Material	PC13. Do the Conventional Methods of Identification:-Drop Test, water floatation Test Scratch test PC14. Do the Advanced Methods of Identification:-MFI, Melting etc and common acronyms in the plastics and commercial trade names.

Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Relevant standards specified to identify the polymers KA2. Basic process to be followed for inspection of the lot. KA3. Batch size, material grade and nomenclature.
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Processes and procedures followed for identification of polymers. KB2. Techniques of using instruments burner, copper rods, solvents, weighing scales & other instruments and machineries to identify the polymers and its properties. KB3. Methods to identify quality defects. KB4. Working knowledge & procedure of testing & identifying machines. KB6. Various quality standards in India (ISO) used by the organization
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Note the values and process of polymer with specification. SA2. Identify the different type of format relevant to the polymer
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA3. Read values and equipment manuals to understand the working of the equipment SA4. Read measuring instruments reading to identify any deviations from the dimensions given in the standards.
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA5. Inform supervisor of any quality related defects arising out of the manufacturing process SA6. Question internal customers/ supervisor appropriately in order to understand the nature of the problem and make a Diagnosis
B. Professional Skills	**Plan and Organize**
	The user/individual on the job needs to know and understand how to: SB1. Plan & organize the work order and jobs received from the supervisor according to the polymer. SB2. Organize all process/ equipment manuals so that sorting/ identifying information is easy SB3. Keep fixtures, tools, drawings, Work Instructions, SOP manuals as

	per the part number, colour codes etc as defined under the 5S systems
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB4. Use common sense and make judgments during day to day basis Use reasoning skills to identify and resolve basic problems SB5. Analyze carefully the body part for various assembling defects at every station SB6. Carefully analyze each defect observed during inspection and try to find solution for the defect along with the assembly line operator
	Quality Consciousness
	The user/individual on the job needs to know and understand how to: SB7. Identify defective materials in the manufacturing line by comparing manufactured hollow articles(container; bottles) with the work standard SB8. Link the defect observed with the overall impact on the performance of the output.

NOS Version Control

NOS Code	**RSC/N 4110 (CPC/N 0421)**		
Credits (NSQF)	**4**	**Version number**	**1.0**
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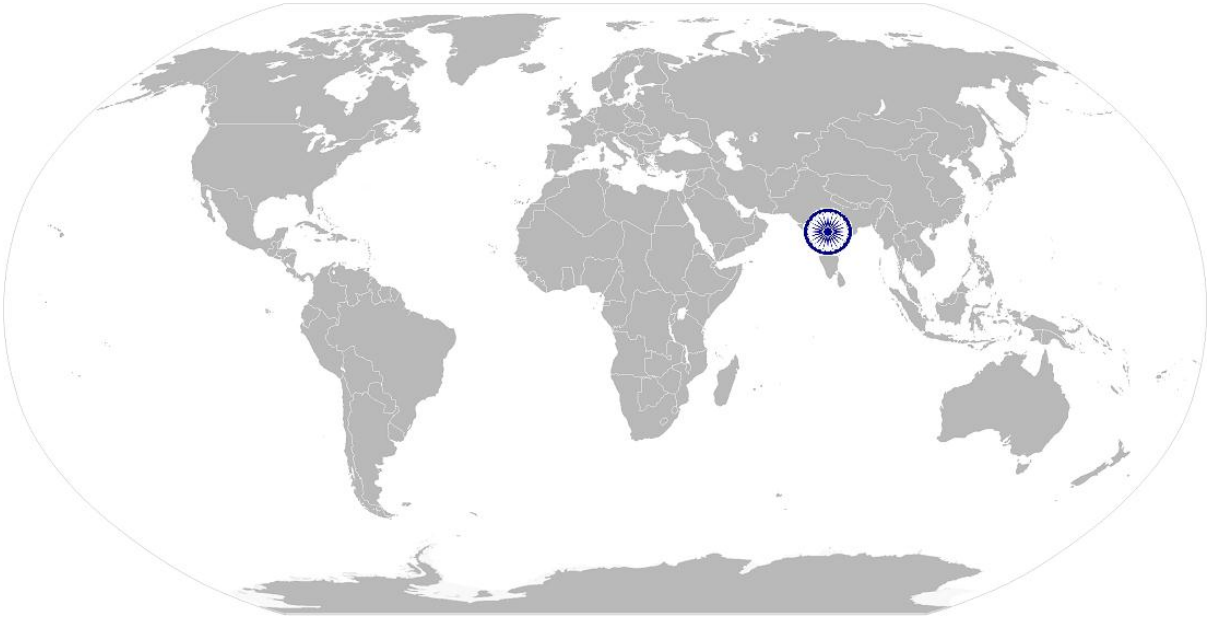
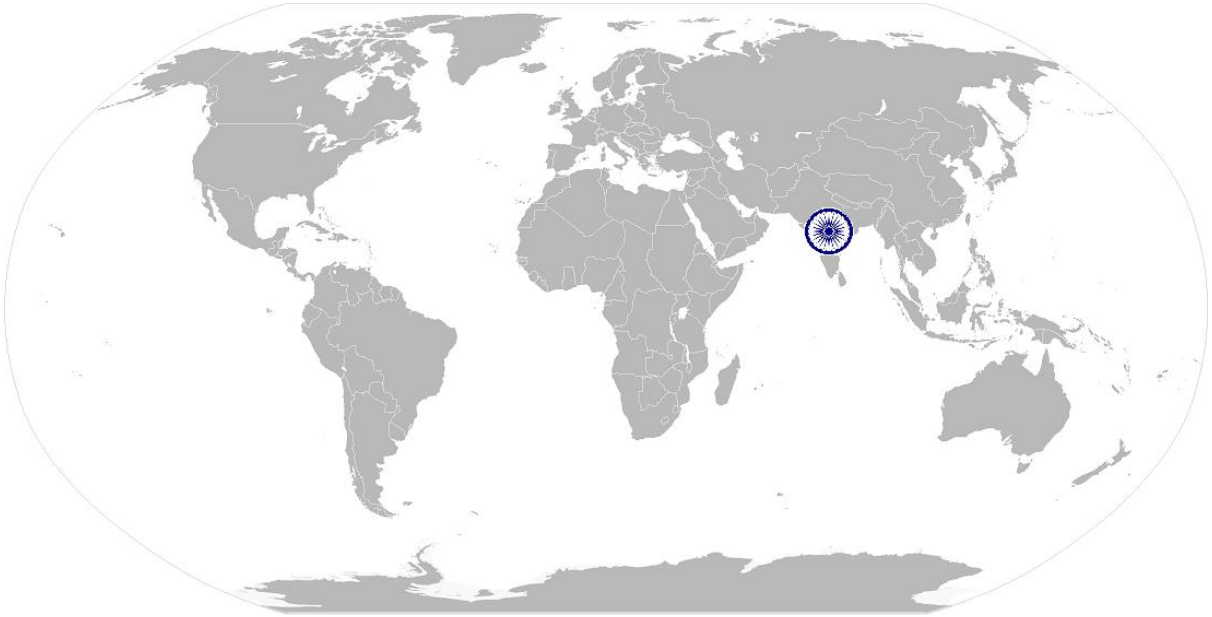


RSC/N4104 (CPC/N0414) Basics of Plastics Processing Methods

National Occupational Standards



Overview

This unit is for an overview of plastics processing methods with respect to various products. Various types of equipment /process used and melt processing ranges of various polymer formulations to make plastic products in comparison with blow moldings are discussed. Depending upon the configuration of the part, the selection of processing methods, economic viability are also discussed.

RSC/N4104 (CPC/N0414) Basics of Plastics Processing Methods

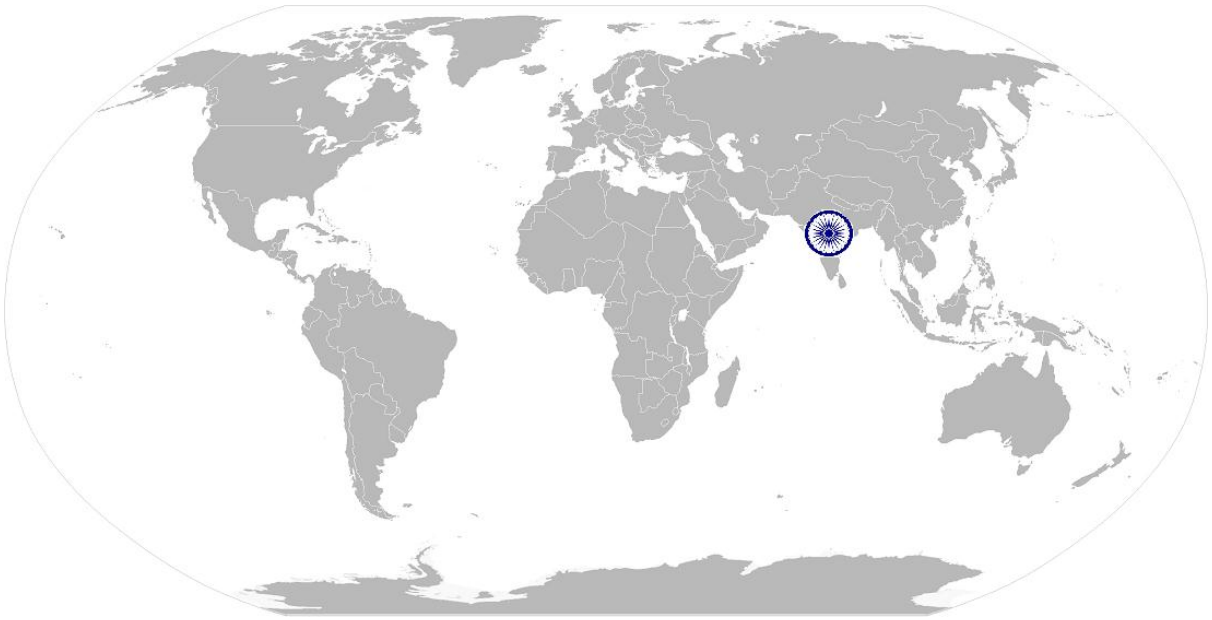
National Occupational Standard

Unit Code	RSC/N4104 (CPC/N0414)
Unit Title (Task)	**Basics of Plastics Processing Methods**
Description	This unit is about Basics of Plastics Processing methods 1. There are a variety of methods used to process plastic. Each method has its Advantages and disadvantages and are better suited for specific applications. 2. Plastics processing encompasses the processing, design, development, and Manufacture of plastics products.
Scope	1. Plastic industry is making significant contribution. 3. Development and growth of various key sectors such as: Automotive, Construction, Electronics, Healthcare, Textiles etc. 4. To understand the merits and demerits of Blow Moulding to over the all others plastic Process. 5. To understand the basic knowledge of fundamental of Plastics Processing Methods.
Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance criteria**
Introduction to Plastics Processing	The individual on the job should be able to: PC1. Learn the all plastics processing Machineries. PC2. Identify merits and demerits of Blow Moulding and over all others plastic Process. PC3. Ensure the definition and terminology related to Plastic Processing. PC4. Ensure the finishing operation including surface treatment of the fabricated product if required as per SOP.
Classification of processing methods	PC5. Follow the Primary Processing Methods as per SOP. PC6. Follow the Secondary Processing Methods as per SOP. PC7. Follow the Fundamentals of processing method.
Processing methods and comparison of Blow Molding with other process	PC8. Adhere 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. PC9. Follow the Machine Operation Terminology: as per manual, semiautomatic, fully automatic. PC10. Learn the type of Conversion Techniques: Injection, Blow, Compression, Transfer, Rotational and Other processes. PC11. Identify the Material to be processed PC12. Ensure the Product design / configuration, Tolerance. PC13. Ensure the process Limitations PC14. Ensure the quality PC15. Ensure the cost / Performance balance.

RSC/N4104 (CPC/N0414) Basics of Plastics Processing Methods

Knowledge and Understanding (K)	
1. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Relevant standards specified for the Processing KA2. Basic process followed through manual. KA3. Quality Management policy of the organization
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Processes and procedures followed for Processing the lot/ pieces/ products. KB2. Techniques of using measurement instruments like rulers, Vernier calipers, micrometers, weighing scales etc. KB3. Methods to identify quality defects in the Processing. KB4. Impact of defects on the overall working of the product. KB5. Methods used for cutting, finishing which can repair lot with minor defects KB6. Various quality standards in India (ISO) used by the organization
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Note the number of lot with defects which can be repaired to number of lot which will be discarded
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA2. Read process and equipment manuals to understand the working of the equipment SA3. Read measuring instruments reading to identify any deviations from the dimensions given in the product engineering drawing
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA4. Inform supervisor of any quality related defects arising out of the manufacturing process SA5. Question internal customers/ supervisor appropriately in order to understand the nature of the problem and make a Diagnosis
B. Professional Skills	**Plan and Organize**
	The user/individual on the job needs to know and understand how to: SB1. Plan & organize the work order and jobs received from the supervisor. SB2. Organize all process/ equipment manuals so that sorting/ identifying information is easy SB3. Keep fixtures, tools, drawings, Work Instructions, SOP manuals as

	per the part number, colour codes etc as defined under the 5S systems
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB4. Use common sense and make judgments during day to day basis use reasoning skills to identify and resolve basic problems SB5. Analyze the body part for various assembling defects at every station SB6. Analyze each defect observed during inspection and try to find solution for the defect along with the assembly line operator
	Quality Consciousness
	The user/individual on the job needs to know and understand how to: SB7. Identify defective materials in the manufacturing line by comparing manufactured hollow articles(container; bottles) with the work standard SB8. Link the defect observed with the overall impact on the performance of the output.



RSC/N4104 (CPC/N0414) Basics of Plastics Processing Methods

NOS Version Control

NOS Code	**RSC/N4104 (CPC/N0414)**		
Credits (NSQF)	**6**	**Version number**	**1.0**
Sector	**Rubber**	**Drafted on**	**18/05/2016**
Sub Sector	**Plastics Processing**	**Last reviewed on**	**26/12/2016**
Occupation	**Blow Moulding**	**Next review date**	**31/12/2021**

National Occupational Standards

Overview

In this unit represent the process and blow moulding process the most popular way of producing blow bottles, drums, and other hollow products with thermoplastic materials. This unit is about moulding the plastic in the desired mouldings for EBM, IBM, and SBM as per the final output specifications and the standards specified by the organization/institution

National Occupational Standard

Unit Code	**RSC/N4111 (CPC/N 0423)**
Unit Title (Task)	**Advanced Blow Moulding Techniques for Plastics Processing & Inspection of the finished products**
Description	This unit is about the various Blow Moulding Techniques for Plastics. The operator will gain a knowledge and understanding of EBM,IBM and SBM for – 1. The blow molding process and its basic principles. 2. The detailed types of blow molding process. 3. The production of parisons / preforms. 4. Continuous and intermittent blow molding is explained. 5. The biaxial and co-extrusion methods are discussed.
Scope	The blow molding operator will be able to: • Operating Blow molding machine to produce the Parison/perform and identify the sequence of operation to produce the required output EBM,IBM and SBM • Feeding the granules as per requirement. • Inspecting the finished hollow articles (Bottles; container). • Auto / manual deflashing the product. • Keeping records of production and defects. • Conducting minor repair on output parts which can be reworked. • Prepare & document daily production reports, including rejects, regrinds, line efficiencies and other. • Checking the operations of the equipment
Performance criteria (PC) w.r.t. the Scope	
Element	**Performance criteria**
Principles and basics Of Blow Moulding	The individual on the job should be able to: PC1. Study the Principle of Blow Molding process. • Plasticizing/ melting the resin • Parison or preform production • Blowing of parison • Ejection of the part and trim PC2. Conform basic Need of Tools and Accessories and Machineries. PC3. Ensure the Plastic Material to use Blow Molding
Typologies of blow molding Process and type of Die/ Mold	PC4. Study Various types of extrusion blow moulding and Process. PC5. Learn Continuous blow moulding process:- single head method, Twin station method, Rotary table system PC6. Learn Intermitted blow moulding process:- Reciprocating screw extruder, Ram accumulator extrusion Accumulator head method PC4. Study the Extrusion blow molding (EBM) PC5. Study the Injection blow molding(IBM) PC6. Study the Injection Stretch blow molding process (ISBM)

	PC7. Study the Extrusion Stretch Blow Molding PC8. Study Various types of blow moulds-Side feed, Centre Feed, Spiral Mandrel, Extrusion Blow, stretch Blow, Injection Blow moulds etc.
Study of Injection Molding Machine for preform production and process parameters	PC9. Set the PET Injection moulding Machine operation merits and demerits/over other Molding Process , Load the material in the correct pattern as per SOP to minimize material overflow/ wastage/ excess flash PC10. Check the identified feed strip for dimension uniformity/identified granules PC11. Make the plastic compound or granule ready for feeding into the machine PC12. Start the machine and feeding simultaneously PC13. Set the moulding pressure and temperature is maintained during the process cycle PC14. Check the mould lifting/ ejection/ slide mechanism of the press are properly functioning PC15. Ensure the manufacturing the preform as per SOP PC16. Remove the Manufacturing the preform from the mould as per SOP.
Check the operations of the equipment used in the Extrusion blow molding process	PC17. Check for operation of molding apparatus like hopper, heaters, extruder, blow molding die/mold, screen pack etc. as per the checklist provided PC18. Fix the desired die/mold to the blow molding machine apparatus in order to achieve the desired operation as per the Work Instructions/ SOPs PC19. Make modifications in the process parameters (by selecting the right program from the machine control system) if required and ensure alignment with the prescribed standards
Study of process parameters for the blow molding as per SOP	PC20. Conform the 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 PC21. Check the parameters – Temperature, pressure, current, extruder speed etc. in line with the work instructions/ SOPs PC22. Setup the apparatus as per the selected process and the moulding standards used in the processing industry PC23. Adjust the temperature and other parameters of the moulding apparatus as per the values given in Work Instructions/ SOPs PC24. Check availability of the coolant and working of valves to circulate the coolant to cool and solidify plastic
Study of parison Programming and Controlling of Parison and Preform	PC25. Check the functionality and assembly of die as per SOP. PC26. Adjust the Parison controlling and program the parison with the help of parison programming tools and software as per requirement. PC27. Check the die shaping in blow molding. PC28. Study the types of mandrel used in blow molding.-Divergent and

	convergent. PC29. Learn the Blow Ratio, parison swell, Die Swell, Types of Parison Blowing system:-Pneumatic and ejection system.
Organize for the material to be molded and apparatus required for the same	PC30. Follow the molding procedure and process to be adopted for completing the work order from the supervisor by referring the Work Instruction document/ SOP manual PC31. Set the various molding parameters like temperature of the heaters, back pressure/ air pressure/ vacuum pressure, screw speed of the extruder, regulating current, flow of coolant/ water etc. before starting the process. Process parameters are mentioned in the Work Instructions/ SOP manual PC32. Handle the raw material like plastics granules, fillers, bonding additives grades etc. required for executing the activity PC33. Ensure that the required material is procured from the store before starting the process PC34. Ensure the type of Die required for executing the required operation and ensure that the same is available for operations PC35. Ensure the number of heaters 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 molding area. Use lifting equipment's or for lift/trolley for mold/material. Keep all safety requirements.
Feed the plastic granules in the hopper and conduct a test process	PC36. Set Preheating of plastic granules to improve their tensile strength PC37. Handle the plastic granules are mixed with additives (if any) before being fed into the hopper PC38. Turn valves of machines to regulate screw speed and quantity of the plastic coming out of the hopper PC39. Ensure pouring in line with defined standards and specifications PC40. Record the feeding observations like interrupted pouring or any abnormality • In case extrusion blow molding. • In case of Injection Blow Molding. • In case of Extrusion Injection Stretch Blow Molding. • Multilayer blow Molding. • Optimization of Process Parameters. PC41. Conduct a test process and produce a sample output as per the sketches/ engineering drawing shared with the supervisor. PC42. Check the hollow articles (bottles, container) for geometry, material & dimensional parameters as per the Control Plan before starting the production. PC43. Ensure that the dimensions of the output product are measured as per the process given in the Work Instructions/ SOP PC44. Start the production process if test product matches the dimensions and quality of the final output.

Conduct the actual moulding process monitor the moulding process variations	PC45. Feed the required plastic material in the apparatus for heaters to melt the plastic granules at the predefined temperature PC46. Adjust the extruder speed and the extruder pressure to force the molten plastic into the die to create the desired output. PC47. Turn valves of machines to regulate speed and quantity of the plastic coming out of the hopper PC48. Ensure feeding in line with the defined standards and specifications PC49. Record the feeding observations like interrupted pouring or any abnormality PC50. Ensure the proper functioning of screen pack and die for uniform melting of plastic and removal of the contaminants (if any) PC51. Monitor 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 PC52. Observe and analyze any irregularity in the process and take preventive steps PC53. Clean the die opening & die; changing the screen pack. PC54. Make code printing of the product with the identifying information (wherever required) and send the same for further processing PC55. Instruct the helper to neck finishing and pinch off of the product as per the desired geometric specifications.(doesn't required for IBM)
Perform the visual inspection of the output and finishing operation	PC56. Measure the final plastic molded product and compare the dimensions as prescribed in the work order/ job work. PC57. Check, In case the parts are not as per the given measurements, send the same for further processing in terms of cutting, finishing etc.
Inspection of finished goods to detect any deviations from the product design	PC58. 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. PC59. Compare texture, surface properties, hardness and strength with the given product specifications
Record log of defective products and discard defective batch process	PC60. Note down the observations of the basic inspection process and Identify pieces which are OK and also not meeting the specified standards PC61. Discard the batch which are beyond repair and repair the ones which need minor modifications in settings. PC62. Maintain records of each category of work outputs as per the batch etc. so that correction can be organized. PC63. Establish linkage between rejection of output and the pertinent causes for the same (process/ material etc.); Recommend the means for rejection control.

Corrective batch process with minor defects	PC64. Rectify minor defects like dimension variation, thickness variation etc. by control process parameters etc. PC65. Escalate all issues related to change in surface properties, Tensile strength etc. so that the manufacturing equipment can be reset to achieve the specified output
Perform Batch Quality Procedure	PC66. Provide first and last output from each batch to the lab for quality check on its composition, properties etc. PC67. Obtain clearance for the entire batch from the lab
Knowledge and Understanding (K)	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Processes and procedures followed for manufacturing the lot/pieces/ products. KA2. Techniques of using measurement instruments like rulers, Vernier calipers, micrometers, weighing scales etc. KA3. Methods to identify quality defects in the lot. KA4. Impact of defects on the overall working of the parison/preform. KA5. methods used for cutting, finishing which can repair lot with minor defects KA6. Various quality standards in India (ISO) used by the organization KA7. Quality and damage checks to be done and importance of the same KA8. Importance of identifying non-conforming products and storage of the same KA9. Risk and impact of not following defined procedures/work instructions KA10. Escalation matrix for reporting identified issues KA11. Types of documentation in organization and importance of the same KA12. Records to be maintained and implications of non-maintenance of the same KA13. Importance of housekeeping & good shop floor practices KA14. Health, Safety and Environment guidelines, legislation and regulations as applicable KA15. Personal protection (Which protective equipment to be used and how) KA16. Impact of poor practices on health, safety and environment KA17. Potential hazards and actions to minimize the same KA18. Escalation matrix and escalation procedure for reporting hazards KA19. Importance of Operational Manual. KA20. The usage of different fire extinguisher KA21. Impact of various practices on cost, quality, productivity, delivery and safety KA22. Handover/ Takeover the equipment/ work area as per company's SOP
B. Technical Knowledge	The user/individual on the job needs to know and understand KB1. Startup procedure as per SOP

	KB2. Cleanliness and safety requirements for operating a blow moulding machine KB3. Influence of parameters (e.g. time, temperature, pressure) on blow moulding operation KB4. Injection moulding operation to get minimum rejection KB5. The operation of moulding machine (Equipment working, possible setting levels, typical process followed for different batches) KB6. The different types of blow moulding machine, distributions systems and moulds. KB7. The operation of multiple presses with common power pack and importance of sequencing KB8. Specific pressure required for different types of moulding KB9. Influence of time and temperature on curing of thick products KB10. The state of curing – under curing and over curing KB11. The Effect of improper processing on properties of rubber compound & product KB12. The Units of measurement KB13. The response to emergencies e.g. Power failures, fire and system failures and manual intervention to avoid disaster KB14. Appropriate batch size with respect to appropriate machinery KB15. Use of weighing scale, time, temperature & pressure measurement KB16. Possible causes of common moulding problems & their remedies KB17. Shut down procedure for blow Molding-IBM,EMB,SBM as per SOP
Skills (S) [Optional]	
A. Core Skills/ Generic Skills	**Writing Skills** The user/ individual on the job needs to know and understand how to: SA1. Note the number of lot with defects which can be repaired to number of lot which will be discarded

	Reading Skills
	The user/individual on the job needs to know and understand how to: SA2. Read process and equipment manuals to understand the working of the equipment SA3. Read measuring instruments reading to identify any deviations from the dimensions given in the product engineering drawing
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA4. Inform supervisor of any quality related defects arising out of the manufacturing process SA5. Question internal customers/ supervisor appropriately in order to understand the nature of the problem and make a Diagnosis
B. Professional Skills	**Plan and Organize**
	The user/individual on the job needs to know and understand how to: SB1. Plan & organize the work order & jobs received from the supervisor SB2. Organize all process/ equipment manuals so that sorting/ accessing information is easy SB3. Keep fixtures, tools, drawings, Work Instructions, SOP manuals as per the part number, colour codes etc as defined under the 5S systems
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB4. Use common sense and make judgments during day to day basis use reasoning skills to identify and resolve basic problems SB5. Carefully analyze the body part for various assembling defects at every station SB6. Carefully analyze each defect observed during inspection and try to find solution for the defect along with the assembly line operator
	Quality Consciousness
	The user/individual on the job needs to know and understand how to: SB7. Identify defective parts in the manufacturing line by comparing manufactured (lot/articles) with the work standard SB8. Link the defect observed with the overall impact on the performance of the output.

NOS Version Control

NOS Code	**RSC/N4111 (CPC/N 0423)**		
Credits (NSQF)	**10**	**Version number**	**1.0**
Sector	**Rubber**	**Drafted on**	**18/05/2016**
Sub Sector	**Plastics Processing**	**Last reviewed on**	**26/12/2016**
Occupation	**Blow Moulding**	**Next review date**	**31/12/2021**

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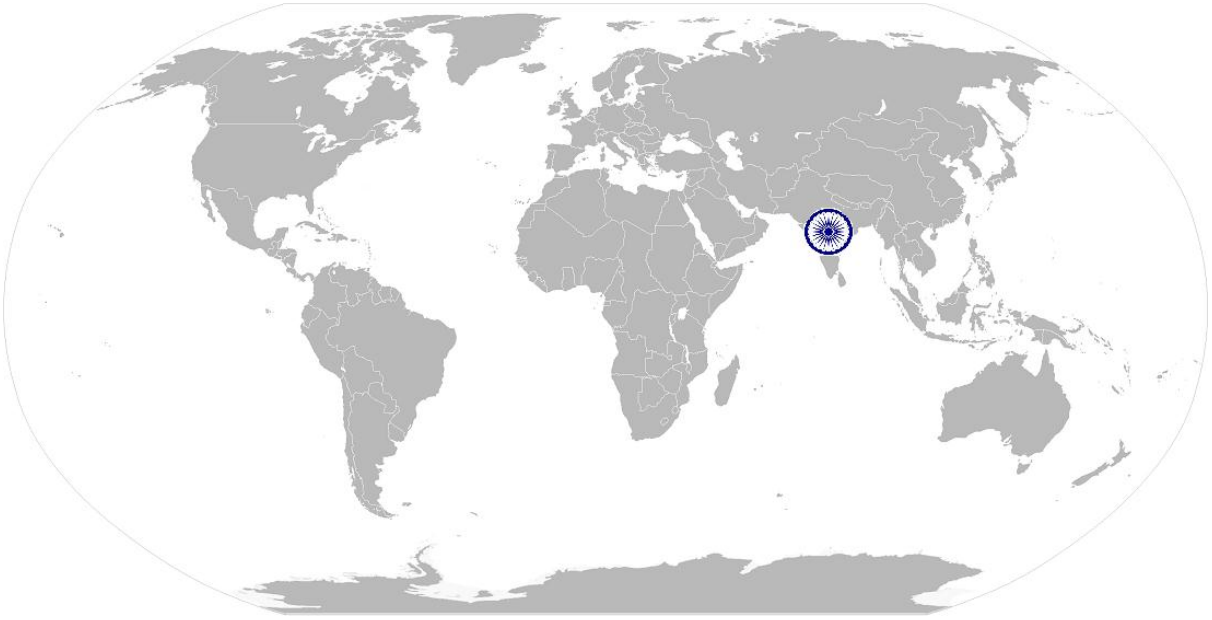
Transforming the skill landscape

CPC/N0424 *Auxiliary equipments in Plastics Processing*

National Occupational Standards



Overview

This unit is about establishing Plastic auxiliary equipment consists of several components, such as material management, reclamation, heat transfer. Auxiliary equipment provides the source for every possible processing advantages in terms of productivity and quality output.

RSC/N4106 (CPC/N0416) Auxiliary equipments in Plastics Processing

National Occupational Standard

Unit Code	**RSC/N4106 (CPC/N0416)**
Unit Title (Task)	**Auxiliary equipments in Plastics processing**
Description	This OS unit is about Control and maintains auxiliary equipment, such as chillers pumps, fans, compressors, condensers, feed water heaters, filters, and chlorinators that supply water, fuel, lubricants, air, and auxiliary power for chillers.
Scope	The role holder will be responsible for • Opens and closes valves and switches in sequence upon signal from other worker to start or shut down auxiliary units.
Performance criteria (PC) w.r.t. the Scope	
Element	**Performance criteria**
Basic requirement of Auxiliary Equipment's and machineries	The individual on the job should be able to: PC1. Inspect, monitor, operating fuel systems, fuel oil transfer, supply lines & associated equipment and fossil fuel chillers. PC2. Operate condensate and 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. Pass onsite training programs. Follow the safety rules, regulations and procedures. PC3. Connect basic plant services as needed to meet production requirements and makes initial checks of operating conditions before initiating production runs. PC4. Assist in cleaning and lubrication of equipment and tooling and performs various preventative maintenance tasks as needed.
Different type of Auxiliary Equipment	PC5. Study adout different types of Predrier-Hot air Oven, Hopper Driers, Dehumidifiers etc. PC6. Study the basics of Chiller, Cooling Tower for the controlling temperature of Mould, machine and Fluids. PC7. Ensure the basic Operation and Monitoring -- Watching gauges, dials, or other indicators to make sure a machine is working properly. PC8. Study about the Compressor and Scrap Grinder.
Study process of operation and maintenance of auxiliary equipment	PC9. Ensure the equipment maintenance -- Performing routine maintenance on equipment and determining when and what kind of maintenance is needed. PC10. Ensure the Equipment Selection -- Determining the kind of tools and equipment needed to do a job. PC11. Follow the instructions given on the equipment manual describing the operating process of the equipment PC12. Follow the Safety, Health and Environment related practices developed by the organization PC13. Ensure relevant safety board's/ signs are placed on the shop floor PC14. Operate the machine using the 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. PC16. Attend all safety and fire drills to be self-aware of safety hazards and preventive techniques PC17. Maintain high standards of personal hygiene at the work place PC18. Ensure that the waste disposal is done in the designated area and manner as per organization SOP.
Knowledge and Understanding (K)w.r.t. the scope	
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. Relevant standards, procedures and policies related to auxiliaries machineries followed in the company KA2. Emergency handling procedures & hierarchy for escalation
B. Technical Knowledge	The user/individual on the job needs to know and understand: KB1. Startup procedure as per SOP KB2. Basic knowledge of Safety procedures(firefighting, first aid) within the organization KB3. Basic knowledge of various types of PPEs and their usage KB4. Basic knowledge of risks/hazards associated with each occupation in the organization KB5. Knowledge of personal hygiene and how an individual an contribute towards creating a highly safe and clean working environment KB6. Basic knowledge of various operations of machineries and equipment as per the operation manual. KB7. Shut down procedure as per SOP
Skills (S)w.r.t. the scope	
Element	**Skills**
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Write basic level notes and observations
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA2. Read safety instructions put up across the plant premises SA3. Read safety precautions mentioned in equipment manuals and panels to understand the potential risks associated
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA4. Communicate information to team members effectively SA5. Inform employees in the plant and concerned functions about events, incidents & potential risks observed related to Safety, Health and Environment. SA6. Question operator/ supervisor in order to understand the safety related issues SA7. Attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs

RSC/N4106 (CPC/N0416) Auxiliary equipments in Plastics Processing

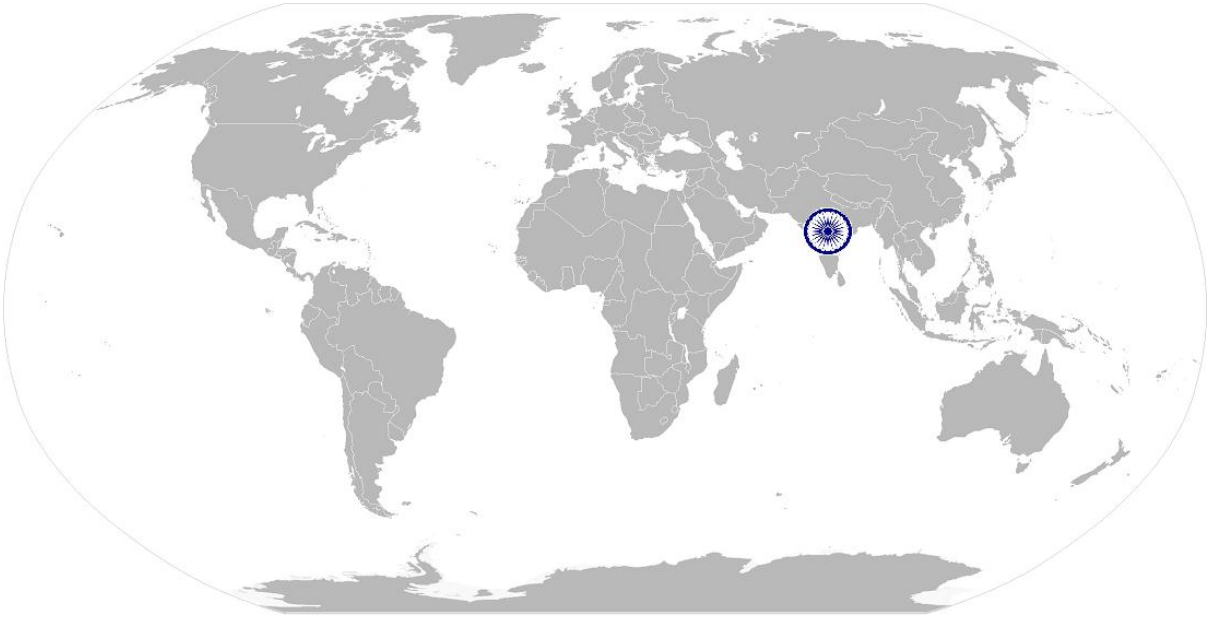
B. Professional Skills	**Problem solving**
	The user/individual on the job needs to know and understand how to: SB1. Use common sense and make judgments during day to day basis SB2. Use reasoning skills to identify and resolve basic problems

NOS Version Control

NOS Code	**RSC/N4106 (CPC/N0416)**		
Credits(NSQF)	**4**	**Version number**	**1.0**
Sector	**Rubber**	**Drafted on**	**18/05/2016**
Sub Sector	**Plastics Processing**		
Occupation Sector	**Blow Moulding Rubber**	**Last reviewed on**	**26/12/2016**
		Next review date	**31/12/2021**

RSC/N4112 (CPC/N0425) Advanced Mould Technology Techniques for Plastics Processing

National Occupational Standard



Overview

This unit is about operating and tending metal or plastic moulding, core making, or casting machines to mould or cast metal or thermoplastic parts or products

RSC/N4112 (CPC/N 0425) Advanced Mould Technology for Plastics Processing

National Occupational Standard

Unit Code	**RSC/N4112 (CPC/N 0425)**
Unit Title (Task)	**Advanced Mould Technology for Plastics Processing**
Description	This OS unit is about Mould Technology Techniques for Plastics Processing
Scope	The role holder will be responsible for • Understanding blow Molds manufacturing. • Steel Mold and cast metal aluminum mold. • Design and development for PET molds. • Polishing of Mold
Performance criteria(PC) w.r.t. the Scope	
Element	**Performance criteria**
Study of type of mold Manufacturing	The user/individual on the job should be able to: PC1. Learn the Mould Material requirement, Mold Manufacturing Process and machineries. PC2. Ensure the dimensions, sizes, shapes and tolerances of machining component are as per specifications and as per company procedures PC3. Determine information such as number of parts to make, engineered components and material to be used, and machines to be used PC4. Identify and confirm resources required such as components, machinery, range of materials and processes PC5. Study the range of Materials and how its effect on process and life of mould: Ferrous metals: e.g. Carbon steels, stainless steels, cast iron, tool steel, hard metals; Non-ferrous metals: eg. bronze, bronze alloys, copper and copper alloys PC6. Identify the operations that will be required for machining components based on design requirements PC7. Identify type of equipment required for machining components based on the operations selected. PC8. Compare the Blow Mold with the Injection/rotational and merits and demerits for overcome the above process mold. PC9. Construct and study of Molds for EBM, IBM, and SBM. PC10. Handle the Mold cooling systems:-Pneumatic, water cooling
PET Preform mold construction and polish requirements.	PC11. Study the main components of molds (Die Core, Die Cavity And Screw Neck) are made by injection process, which are made of special mold steel. PC12. Check Cavities Preform Mold, designed and developed as per SOP PC13. Follow the instructions given on the equipment manual describing the operating process of the equipment

Knowledge and Understanding (K)w.r.t. the scope	
Element	**Assessable Outcome**
A. Organizational Context (Knowledge of the company / organization and its processes)	The individual on the job needs to know and understand: KA1. Policies and procedures followed in the company relevant to own employment and performance conditions KA2. Health and safety requirements in the work place KA3. The cleanliness and safe environment at work place KA4. Job responsibilities and information related to employment terms, entitlements, job role and responsibilities KA5. Reporting mechanism, department functions and procedures in the work place KA6. Related workforce and their responsibilities within the work area KA7. Procedures for reporting at work and employment related issues KA8. Documentation and related procedures applicable related to employment and work KA9. Documentation in connection with employment and work
B. Technical Knowledge	The individual on the job needs to know and understand: KB1. Specific safe working practices, fitting procedures KB2. Hazards associated with carrying out the fitting operations and how can they be minimized KB3. Personal protective equipment to be used during the fitting activities and where can it be obtained KB4. Types and sources of appropriate job specifications KB5. Common terminology used in fitting KB6. Importance of following specified fitting sequences and procedures KB7. Importance and procedures of ensuring suitability of work piece and consumables for the specified job KB8. Tools and equipment used for the fitting operations KB9. Importance and procedures to ensure that tools and equipment are in a safe and usable condition KB10. Correct techniques and procedures to carry out specific fitting operations by hand tools and manually operated machines KB11. Importance of securing the work piece correctly using appropriate devices and mechanisms KB12. Common problems that can occur in the fitting operations and their implications KB13. Correct procedures to address problems commonly encountered during fitting operations KB14. Importance of reporting problems immediately and accurately KB15. Meaning and importance of quality in relation to final and intermediate job output

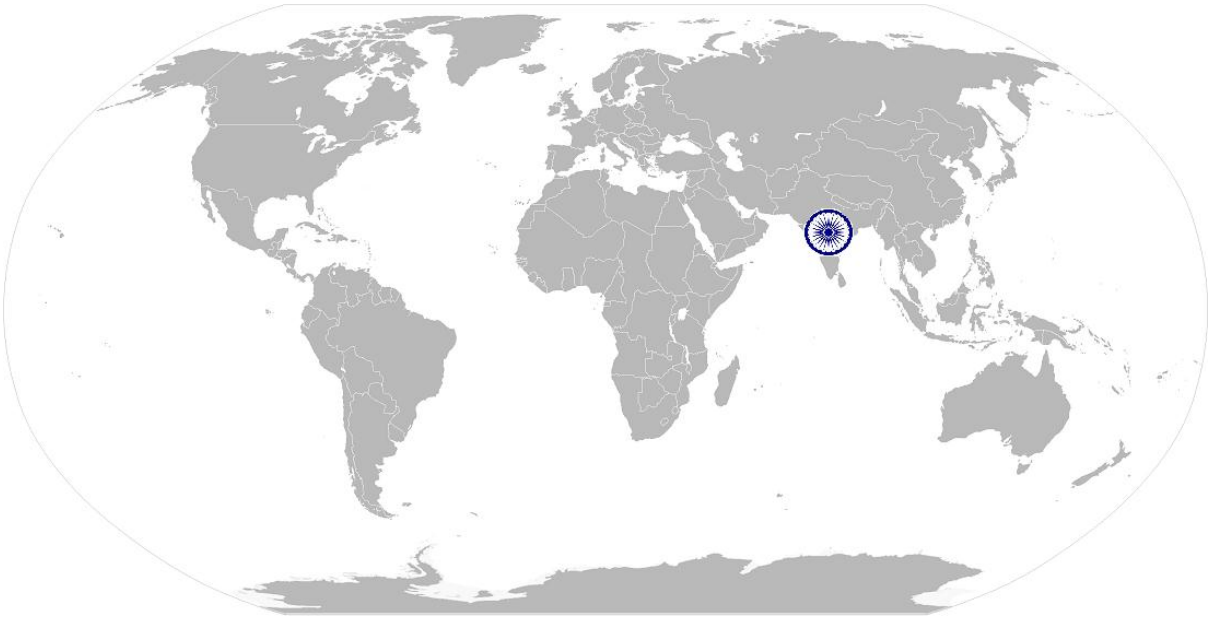
Skills (S)w.r.t. the scope	
Element	**Skills**
A. Core Skills/ Generic Skills	**Communication**
	The individual on the job needs to know and understand how to: SA1. Read and interpret information correctly from various job specification documents, manuals, health and safety instructions, etc. SA2. Fill up appropriate technical forms, process charts, log sheet as per organizational format SA3. Convey and share technical information clearly using appropriate language SA4. Check and clarify task-related information SA5. Liaise with appropriate authorities using correct protocol SA6. Communicate with people in respectful form and manner in line
	Numerical and computational skills
	The individual on the job needs to know and understand how to: SA7. Undertake numerical operations, and calculations/ formulae SA8. Identify and draw various basic, compound and solid shapes as per dimensions given SA9. Use appropriate measuring techniques and units of measurement SA10. Use appropriate units and number systems to express degree of accuracy SA11. Interpret and express tolerance in terms of limits on dimensions SA12. Calculation of the value of angles in a triangle
B. Professional Skills	**Critical Thinking**
	The user/individual on the job needs to know and understand how to: SB1. Use common sense and make judgments during day to day basis SB2. Use reasoning skills to identify and resolve basic problems SB3. Communicate problems appropriately to others SB4. Identify sources of information and support for problem solving SB5. Seek assistance and support from other sources to solve problems SB6. Identify effective resolution techniques SB7. Select and apply resolution techniques SB8. Seek evidence for problem resolution

NOS Version Control

NOS Code	**RSC/N4112 (CPC/N 0425)**		
Credits (NSQF)	**4**	**Version number**	**1.0**
Sector	**Rubber**	**Drafted on**	**18/05/2016**
Sub Sector	**Plastics Processing**	**Last reviewed on**	**26/12/2016**
Occupation	**Blow Moulding**	**Next review date**	**31/12/2021**

RSC/N4108 (CPC/N0418) ***Basic Knowledge of Communication/soft skills***

National Occupational Standards



Overview

This unit is about the soft skills include situational awareness and the ability to read a situation as it unfolds to decide upon a response that yields the best result for all involved, and the concepts associated with computer technology

RSC/N4108 (CPC/N0418) ***Basic Knowledge of Communication/soft skills***

National Occupational Standards

Unit Code	**RSC/N4108 (CPC/N0418)**
Unit Title (Task)	**Basic Knowledge of Communication/soft skills**
Description	This OS is about ensuring a Person with this attribute has the ability to work in various situations equally well and move from one situation to another with ease and grace. The ability to be diplomatic and respectful even when there are disagreements is also a key soft skill. This skill requires the employee to maintain a professional tone and demeanor even when frustrated.
Scope	The individual needs to • Basic Knowledge on functions of computer & operations of computer. • Effective communication. • Inter personal skills
Performance Criteria (PC) w.r.t. the Scope	
Element	**Performance Criteria**
Communication and its importance	The individual on the job should be able to: PC1. Learn about Fundamental of Computers. PC2. Identify the components of Computer: - Hardware and the software PC3. Receive information and instructions from the supervisor/operator accurately and fellow workers, getting clarification where required PC4. Pass on information to authorized persons accurately who require it and within agreed timescale and confirm its receipt PC5. Display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible PC6. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks. PC7. Display active listening skills while interacting with others at work PC8. Use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism PC9. Demonstrate responsible and disciplined behaviors at the workplace PC10. Escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict.
Elements and Principles of Communication	Basic Study of Elements of the Soft communication skills:- • Stimulus • Encoding/message • Channel • Decoding • Receiver • Barriers • Principle of Communication Process

	• Clarity • Conciseness • Objectivity • Consistency • Completeness • Relevancy • Audience Knowledge
How does a computer work?	A computer functions in the following manner: • The computer accepts input • The computer performs useful operations • The computer stores data • The computer produces output. • Turning the Computer On and Logging On
Knowledge and Understanding (K) w.r.t. the scope	
Element	**Knowledge and Understanding**
A. Organizational Context (Knowledge of the company / organization and its processes)	**The individual on the job needs to know and understand:** KA1. Standards, policies, and procedures followed in the company relevant to own employment and performance conditions KA2. Reporting structure, inter-dependent functions, lines and procedures in the work area KA3. Relevant people and their responsibilities within the work area
B. Technical Knowledge	**The individual on the job needs to know and understand:** KB1. Various categories of people that one is required to communicate and co-ordinate with in the organization KB2. The importance of effective communication in the workplace KB3. Key elements of active listening KB4. The value and importance of active listening and assertive communication KB5. The importance of tone and pitch in effective communication KB6. The importance of ethics for professional success KB7. The importance of discipline for professional success. KB8. The Importance of developing effective working relationships for professional success. KB9. Expressing and addressing grievances appropriately and effectively KB10. The importance and ways of managing interpersonal conflict effectively

NOS Version Control

NOS Code	**RSC/N4108 (CPC/N0418)**		
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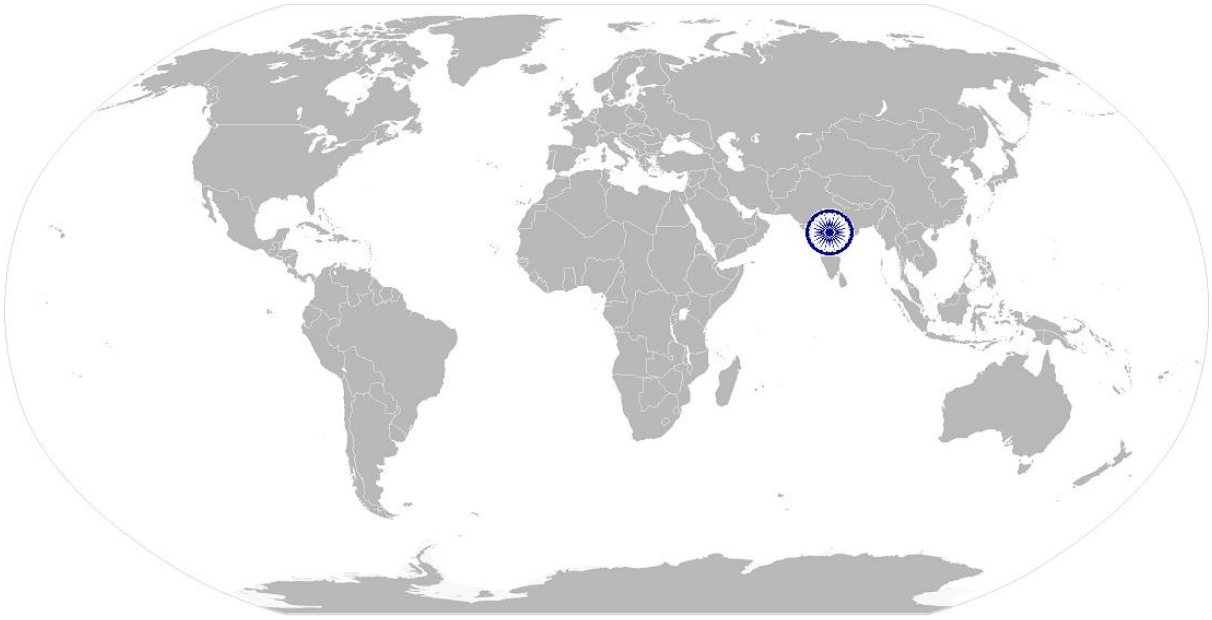
Sector	**Rubber**	**Drafted on**	**18/05/2016**
Sub Sector	**Plastics Processing**	**Last reviewed on**	**26/12/2016**
Occupation	**Blow Moulding**	**Next review date**	**31/12/2021**

National Occupational Standards



Overview

This unit is about understand you your requirements better and turn any challenges into opportunities for product improvement and greater success, and conducting inspection of the finished products produced and repair the bad quality items produced in the manufacturing process.

RSC/N4113 (CPC/N 0427) Quality Management Systems

National Occupational Standard

Unit Code	RSC/N4113 (CPC/N 0427)
Unit Title (Task)	**Quality Management Systems**
Description	This unit is about understanding Quality Management systems
Scope	The quality management system shall ensure that the provider has the capability to establish and maintain an environment fit for delivering education and training to specified standard and ensure continuous improvement of system.
Performance criteria (PC) w.r.t. the Scope	
Element	**Performance criteria**
Introduction to TQM	The user/individual on the job should be able to: PC1. Study and follow of Total Quality Control PC2. Study the need of Management in Product Quality. PC3. Read the Concept of Total Quality Management. PC4. Follow the TQM Philosophy. PC5. Ensure the need for Quality system. PC6. Study & Follow of Total Quality control tools-ISO, 5S, Six Sigma, OHSAS 18001
Behavioral science and Entrepreneurship development	PC7. Study and Follow of Behavioral Science. PC8. Find the different between Behavioral Science and Social Science. PC9. Study the Categories of Behavioral Science. PC10. Study the Theories of Behavioral Psychology, Entrepreneurship development, preparing project report selecting a particular plastic product of their choice and submission.
Knowledge and Understanding (K) w.r.t. the scope	
Element	**Knowledge and Understanding**
A. Organizational Context (Knowledge of the company / organization and its processes)	The user/individual on the job needs to know and understand: KA1. The individual on the job needs to know and understand: KA2. Standards, policies & procedures followed in the company relevant to own employment and performance conditions KA3. Reporting structure, inter-dependent functions, lines and procedures in the work area KA4. Relevant people and their responsibilities within the work area KA5. Escalation matrix and procedures for reporting work and employment.
B. Technical Knowledge	The individual on the job needs to know and understand: KB1. Various categories of people that one is required to communicate and co-ordinate within the organization KB2. Importance of effective communication in the workplace KB3. Importance of teamwork in organizational and individual success KB4. Various components of effective communication KB5. Key elements of active listening KB6. Value and importance of active listening and assertive

	communication KB7. Barriers to effective communication KB8. Importance of tone and pitch in effective communication KB9. Importance of avoiding casual expletives and unpleasant terms while communicating professional circles KB10. How poor communication practices can disturb people, environment and cause problems for the employee, the employer and the customer KB11. Importance of ethics for professional success KB12. Importance of discipline for professional success KB13. What constitutes disciplined behavior for a working professional KB14. Common reasons for interpersonal conflict. KB15. Importance of developing effective working relationships for professional success. KB16. Expression and address the grievances appropriately and effectively KB17. Importance and ways of managing interpersonal conflict effectively
Skills (S)	
A. Core Skills/ Generic Skills	**Writing Skills**
	The user/ individual on the job needs to know and understand how to: SA1. Note the number of lot with defects which can be repaired to number of lot which will be discarded
	Reading Skills
	The user/individual on the job needs to know and understand how to: SA2. Read process and equipment manuals to understand the working of the equipment SA3. Read measuring instruments reading to identify any deviations from the dimensions given in the product engineering drawing
	Oral Communication (Listening and Speaking skills)
	The user/individual on the job needs to know and understand how to: SA4. Inform supervisor of any quality related defects arising out of the manufacturing process SA5. Question internal customers/ supervisor appropriately in order to understand the nature of the problem and make a Diagnosis
B. Professional Skills	**Plan and Organize**
	The user/individual on the job needs to know and understand how to: SB1. Plan & organize the work order & jobs received from the supervisor SB2. Organize all process/ equipment manuals so that sorting/ accessing information is easy SB3. Keep fixtures, tools, drawings, Work Instructions, SOP manuals as per the part number, colour codes etc as defined under the 5S systems
	Critical Thinking
	The user/individual on the job needs to know and understand how to: SB4. Use common sense and make judgments during day to day basis use

RSC/N4113 (CPC/N 0427) Quality Management Systems

	reasoning skills to identify and resolve basic problems SB5. Carefully analyze the body part for various assembling defects at every station SB6. Carefully analyze each defect observed during inspection and try to find solution for the defect along with the assembly line operator
	Quality Consciousness
	The user/individual on the job needs to know and understand how to: SB7. Identify defective parts in the manufacturing line by comparing manufactured (lot/extrudate) with the work standard SB8. Link the defect observed with the overall impact on the performance of the (lot/extrudate)

NOS Version Control

NOS Code	**RSC/N4113 (CPC/N 0427)**		
Credits (NSQF)	**4**	**Version number**	**1.0**
Sector	**Rubber**	**Drafted on**	**18/05/2016**
Sub Sector	**Plastics Processing**	**Last reviewed on**	**26/12/2016**
Occupation	**Blow Moulding**	**Next review date**	**31/12/2021**

CRITERIA FOR ASSESSMENT OF TRAINEES

Job Role: Machine Operator –Plastic Blow Moulding
Qualification Pack Code: RSC/Q4502 (CPC/Q0404)
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 this 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		Assessment criteria for the outcome		
NOS	Performance criteria	Total	Theory	Practical
RSC/N4101 (CPC/N0411) Maintain basic health and safety practices at the workplace, 5S.	PC1. Use 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. Keep good housekeeping practices at all times	2.5	0.5	2
	PC4. Use the various appropriate fire extinguishers on different types of fires correctly	2.5	0.5	2
	PC5. Demonstrate rescue techniques applied during fire hazard, demonstrate good housekeeping in order to prevent fire hazards, demonstrate the correct use of a fire extinguisher.	2.5	0.5	2
	PC6. Identify activities which can cause potential injury through sharp objects, burns, fall, electricity, gas leakages, radiation, poisonous fumes, chemicals, loud noise, and Identify areas in the plant which are potentially hazardous/ unhygienic in nature. Conduct regular checks with support of the maintenance team on machine health to identify potential hazards due to wear and tear of machine.	2.5	0.5	2
	PC7. Inform the concerned authorities on the potential risks identified in the processes, workplace area/ layout, materials used etc, Inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during	2.5	0.5	2

	operations.			
	PC8. Create awareness amongst other by sharing information on the identified risks.	2.5	0.5	2
	PC9. Follow the sorting process and check that the tools, fixtures & jigs that are lying on workstations are the ones in use and un- necessary items are not cluttering the workbenches or work surfaces.	2.5	0.5	2
	PC10. Ensure segregation of waste in hazardous/ non Hazardous waste as per the sorting work instructions	2.5	0.5	2
	PC11. Follow the technique of waste disposal and waste storage in the proper bins as per SOP	1.5	0.5	1
	PC12. Segregate the items which are labeled as red tag items for the process area and keep them in the correct places	1.5	0.5	1
	PC13. Sort the tools/ equipment/ fasteners/ spare parts as per specifications/ utility into proper trays, cabinets, lockers as mentioned in the 5S guidelines/ work instructions	1.5	0.5	1
	PC14. Ensure that areas of material storage areas are not overflowing	1.5	0.5	1
	PC15. Properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required	1.5	0.5	1
	PC16. Return the extra material and tools to the designated sections and make sure that no additional material/ tool is lying near the work area	1.5	0.5	1
	PC17. Follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards.	1.5	0.5	1
	PC18. Follow the floor markings/ area markings used for demarcating the various sections in the plant as per the prescribed instructions and standards.	1.5	0.5	1
	PC19. Check that the items in the respective areas have been identified as broken or damaged	1.5	0.5	1
	PC20. Follow the given instructions and check for labelling of fluids, oils, lubricants, solvents, chemicals etc. and proper storage of the same to avoid spillage, leakage, fire etc. PC21.Make sure that all material and tools are stored in the designated places and in the manner indicated in the 5S instructions	1.5	0.5	1
	Sub total	**40**	**10**	**30**
RSC/N4109 (CPC/N 0420) Advanced	PC1. Comply with health and safety, environmental and other relevant regulations and guidelines at work.	5	2	3
	PC2. Adhere to procedures and guidelines for	5	2	3

method for Fitting Tools Measuring Equipments & Practice	personal protective equipment (PPE) and other relevant safety regulations while performing die fitting operations			
	PC3. Work following laid down procedures and instructions	5	2	3
	PC4. Ensure work area is clean and safe from hazards	5	2	3
	PC6. Obtain job specification from a valid & approved source	5	2	3
	PC7. Read and understand job requirements from the job specification document properly	4	1	3
	PC8. Report & rectify incorrect information in job specification documents as per job requirement	4	1	3
	PC9. Preparation for the fitting operations as per procedure	4	1	3
	PC10. Ensure that all calibrated measuring instruments used.	4	1	3
	PC11. Ensure that the components used are free from foreign objects, dirt and corrosion	4	1	3
	PC12. Obtain correct work pieces and consumables as per job requirements	4	1	3
	PC13. Obtain appropriate tools and measuring instruments.	4	1	3
	PC14. Setting of work pieces as per job requirements using appropriate holding devices	4	1	3
	PC15. 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.	4	1	3
	PC16. mark out templates for tracing/transferring the specified features on the work pieces as per drawing	4	1	3
	PC17. Tracing or transfer the specified features from the templates onto the work pieces as per drawing	2.5	0.5	2
	PC18. Perform fitting operations on various forms of metal components using a range of hand tools and manually operated machines	2.5	0.5	2
	PC19. Follow the specified machining sequence and procedure as per job specifications	2.5	0.5	2
	PC20. Check the machined components to ensure completeness of work	2.5	0.5	2
	PC21. Check the quality of the output as per required standards, using visual checks and measurement of dimensional parameters using measuring instruments.	2.5	0.5	2
	PC22. Produce components with various features as per standards applicable to the process.	2.5	0.5	2
	PC23. Check the finished components as per job requirement	2.5	0.5	2

	PC24. Complete documentation during and post operations as per procedures	2.5	0.5	2
	PC25. Return all tools and equipment to the correct location on completion of the fitting activities	2.5	0.5	2
	PC26. Leave the work area in a safe and tidy condition on completion of job activities	2.5	0.5	2
	Sub total	**90**	**25**	**65**
RSC/N 4110 (CPC/N 0421) Introduction and test method for Polymers & thermoplastics Materials	PC1. Learn basic Importance of polymers in Human Life.	3	1	2
	PC2. Study of fundamental terminology of polymers	3	1	2
	PC3. Lear classification of polymers- polymer structure & morphology, etc.	5	1	4
	PC4. Study the Introduction to monomers and Polymers PC5. Study the Polymerization	5	1	4
	PC6. Learn Types of Polymerization- Condensation- Addition- Copolymerization	5	1	4
	PC7. . Study the Characterization	5	1	4
	PC8. . Study the Polymer Solution	6	2	4
	PC9. Determine the Measurement of Molecular weight and sizes-Structure and properties of Polymers.	6	2	4
	PC10. . Study the Commodity Polymers: Polyolefin: LDPE – HDPE – LLDPE, PP etc.	5	1	4
	PC11. . Study the Engineering Polymers: PC, ABS, PMMA, POM and PA- Nylon etc.	5	1	4
	PC12. . Study the Special Polymers: FEP, PVDF etc and PET material properties and its application in blow Molding.	5	1	4
	PC13. Do the Conventional Methods of Identification:- Drop Test, water floatation Test, Scratch test	5	1	4
	PC14. Do the Advanced Methods of Identification:- MFI, Melting etc. and common acronyms in the plastics and commercial trade names.	2	1	1
	Sub total	**60**	**15**	**45**
RSC/N4104 (CPC/N0414) Basics of Plastics Processing methods	PC1. Learn that all plastics processing machineries	3	1	2
	PC2. Identify merits and demerits of Blow Moulding to over the all others plastic Process.	3	1	2
	PC3. Ensure 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. Follow the Primary Processing Methods as per company's SOP.	3	1	2
	PC6. Follow the Secondary Processing Methods as per company's SOP.	3	1	2

	PC7. Follow the fundamentals of plastics processing method	3	1	2
	PC8. Adhere 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. Follow the Machine Operation Terminology: as per manual, semiautomatic, fully automatic.	5	1	4
	PC10. Learn the Type of Conversion Techniques: Injection, Blow, Compression, Transfer, Rotational and Other processes.	5	1	4
	PC11. Identify Material to be processed	5	1	4
	PC12. Ensure the Product design / configuration, Tolerance.	5	1	4
	PC13. Ensure the Process Limitations	5	1	4
	PC14. Ensure the Quality	5	1	4
	PC15. Ensure the Cost / Performance balance.	5	1	4
	Sub total	**60**	**15**	**45**
RSC/N4111 (CPC/N 0423) Advanced Blow Moulding Techniques for Plastics processing and inspection of the finished products.	PC1. Study of Principle of Blow Molding process.	1.25	0.25	1
	• Plasticizing/ melting the resin	1.25	0.25	1
	• Parison or preform production	1.25	0.25	1
	• Blowing of parison	1.25	0.25	1
	• Ejection of the part and trim	1.25	0.25	1
	PC2. Conform basic Need of Tools and Accessories and Machineries.	1.25	0.25	1
	PC3. Ensure the Plastic Material for Blow Molding-Commodity-Polyolefin's, Engineering-PET	1.5	0.5	1
	PC4. Study the various types of extrusion blow moulding Process.	1.5	0.5	1
	PC5. Learn Continuous blow moulding process:- single head method, Twin station method, Rotary table system	1.5	0.5	1
	PC6. Learn Intermitted blow moulding process:- Reciprocating screw extruder, Ram accumulator extrusion Accumulator head method	1.5	0.5	1
	PC4. Study the Extrusion blow molding (EBM)	1.5	0.5	1
	PC5. Study the Injection blow molding(IBM)	1.5	0.5	1
	PC6. Study the Injection Stretch blow molding process (ISBM)	1.5	0.5	1
	PC7. Study the Extrusion Stretch Blow Molding	1.5	0.5	1
	PC8. Learn Various types of blow moulds-Side feed, Centre Feed, Spiral Mandrel, Extrusion Blow, stretch Blow, Injection Blow molds etc.	1.5	0.5	1
	PC9. Set the PET Injection moulding Machine operation , Load the material in the correct pattern as per SOP to minimize material overflow/ wastage/	1.5	0.5	1

	excess flash			
	PC10. Check the identified feed strip for dimension uniformity/identified granules	1.5	0.5	1
	PC11. Make the plastic compound or granule ready for feeding into the machine	1.5	0.5	1
	PC12. Start the machine and feeding simultaneously	1.5	0.5	1
	PC13. Ensure that moulding pressure and temperature is maintained during the process cycle	1.5	0.5	1
	PC14. Ensure mould lifting/ ejection/ slide mechanism of the press are properly functioning	1.5	0.5	1
	PC15. Manufacturing the preform as per SOP	1.5	0.5	1
	PC16. Remove the Manufacturing the preform from the mould as per SOP.	1.5	0.5	1
	PC17. Check for operation of molding apparatus like hopper, heaters, extruder, blow molding die/mold, screen pack etc. as per the checklist provided	1.5	0.5	1
	PC18. Fix the desired die/mold to the blow molding machine apparatus in order to achieve the desired operation as per the Work Instructions/ SOPs	1.5	0.5	1
	PC19. Make modifications in the process parameters (by selecting the right program from the machine control system) if required and ensure alignment with the prescribed standards	1.5	0.5	1
	PC20. Use weighing machines to measure the quantity of granules and ensure that the correct quantity of granules are put in the hopper	1.5	0.5	1
	PC21. Check the parameters – Temperature, pressure, current, extruder speed etc. in line with the work instructions/ SOPs	1.5	0.5	1
	PC22. Setup the apparatus as per the selected process and the moulding standards used in the processing industry	1.5	0.5	1
	PC23. Adjust the temperature and other parameters of the moulding apparatus as per the values given in Work Instructions/ SOPs	1.5	0.5	1
	PC24. Ensure availability of the coolant and working of valves to circulate the coolant to cool and solidify plastic	1.5	0.5	1
	PC25. Ensure the functionality and assembly of die as per SOP.	1.5	0.5	1
	PC26. Adjust the Parison controlling and program the parison with the help of parison programming tools and software as per requirement.	1.5	0.5	1
	PC27. Die shaping in blow molding.	1.5	0.5	1
	PC28. Study the types of mandrel used in blow molding.-Divergent and convergent.	1.5	0.5	1

	PC29. Study of Blow Ratio, parison swell, Die Swell, Types of Parison Blowing system:-Pneumatic and ejection system	1.5	0.5	1
	PC30. Follow the molding procedure & process to be adopted for completing the work order from the supervisor by referring the Work Instruction document/ SOP manual	1.5	0.5	1
	PC31. Set the various molding parameters like temperature of heaters, back pressure/ air pressure/ vacuum pressure, screw speed of the extruder, regulating current, flow of coolant/ water etc. before starting the process. Process parameters are mentioned in the Work Instructions/ SOP manual	1.5	0.5	1
	PC32. Handle the raw material like plastics granules, fillers, bonding additives grades etc. required for executing the activity	1.5	0.5	1
	PC33. Ensure that the required material is procured from the store before starting the process	1.5	0.5	1
	PC34. Ensure the type of Die required for executing the required operation and ensure that the same is available for operations	2.5	0.5	2
	PC35. Ensure the number of heaters 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 molding area. Use lifting equipments or for lift/trolley for mold/material. Keep all safety requirements.	2.5	0.5	2
	PC36. Set Preheating of plastic granules to improve their tensile strength	2.5	0.5	2
	PC37. Handle that the plastic granules are mixed with additives (if any) before being fed into the hopper	2.5	0.5	2
	PC38. Turn valves of machines to regulate screw speed and quantity of the plastic coming out of the hopper	2.5	0.5	2
	PC39. Ensure pouring in line with the defined standards and specifications	2.5	0.5	2
	PC40. Record the feeding observations like interrupted pouring or any abnormality	2.5	0.5	2
	• In case extrusion blow molding.	2.5	0.5	2
	• In case of Injection Blow Molding.	2.5	0.5	2
	• In case of Injection Blow Molding	2.5	0.5	2
	• Optimization of Process Parameters.	2.5	0.5	2
	PC41. Conduct a test process and produce a sample output as per the sketches/ engineering drawing shared with the supervisor.	2.5	0.5	2

	PC42. 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
	PC43. Ensure that the dimensions of the output product are measured as per the process given in the Work Instructions/ SOP. In case the test product matches the dimensions and quality of the final output, start the production process	2.5	0.5	2
	PC44. Feed the required operation code in the apparatus for heaters to melt the plastic granules at the predefined temperature	2.5	0.5	2
	PC45. Adjust the extruder speed and the extruder pressure to force the molten plastic into the die to create the desired output.	2.5	0.5	2
	PC46. Turn valves of machines to regulate speed and quantity of the plastic coming out of the hopper	2.5	0.5	2
	PC47. Ensure feeding in line with the defined standards and specifications	2.5	0.5	2
	PC48. Record the feeding observations like interrupted pouring or any abnormality	2.5	0.5	2
	PC49. 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
	PC50. Monitor 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	2.5	0.5	2
	PC51. Observe and analyze any irregularity in the process and take preventive steps	2.5	0.5	2
	PC52. Clean the die opening & die; changing the screen pack.	2.5	0.5	2
	PC53. Ensure code printing of the product with the identifying information (wherever required) and send the same for further processing	2.5	0.5	2
	PC54. Instruct the helper to neck finishing and pinch off of the product as per the desired geometric specifications. (doesn't required for IBM)	2.5	0.5	2
	PC55. Measure the final plastic molded product and compare the dimensions as prescribed in the work order/ engineering drawing	2.5	0.5	2
	PC56. In case the parts are not as per the given measurements, send the same for further processing in terms of cutting, finishing etc.	2.5	0.5	2
	PC57. Measure the specifications of the finished products using devices like micrometers, Vernier	2.5	0.5	2

	calipers, gauges, rulers, weighing scales, Thickness Gauge and any other inspection equipment and compare with the parameters given in the work order.			
	PC58. Compare texture, surface properties, hardness and strength with the given product specifications	1.5	0.5	1
	PC59. Note down the observations of the basic inspection process and Identify pieces which are OK and also not meeting the specified standards	1.25	0.25	1
	PC60. Discard the batch which are beyond repair and repair the ones which need minor modifications in settings.	1.25	0.25	1
	PC61. Maintain records of each category of work outputs as per the batch etc. so that correction can be organized.	1.25	0.25	1
	PC62. Establish linkage between rejection of output and the pertinent causes for the same (process/ material etc.); Recommend the means for rejection control.	1.25	0.25	1
	PC64. Rectify minor defects like dimension variation, thickness variation etc. by control process parameters etc.	1.25	0.25	1
	PC65. Escalate all issues related to change in surface properties, Tensile strength etc. so that the manufacturing equipment can be reset to achieve the specified output	1.25	0.25	1
	PC66. Provide first and last output from each batch to the lab for quality check on its composition, properties etc.	1.25	0.25	1
	PC67. Obtain clearance for the entire batch from the lab	1.25	0.25	1
	Sub total	**140**	**35**	**105**
RSC/N4106 (CPC/N0416) 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 and miscellaneous equipment. Pass onsite training programs. Follow safety rules, regulations and procedures.	1.5	0.5	1
	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	1.5	0.5	1

	runs.			
	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. Ensure Equipment Maintenance -- Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	2.5	0.5	2
	PC10. Ensure Equipment Maintenance -- Performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	2.5	0.5	2
	PC11. 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 recommended Personal Protective Equipment (PPE) and ensure team members also use the related PPEs at the workplace	2.5	0.5	2
	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
	Sub total	**40**	**10**	**30**
RSC/N4112 (CPC/N 0425) Advanced Mould Technology Techniques for Plastics Processing	PC1. Basic Study of Mould Material requirement, Mold Manufacturing Process and machineries.	8	2	6
	PC2. Compute dimensions, sizes, shapes and tolerances of machining component are as per specifications and as per company procedures	8	2	6
	PC3. Determine information such as number of parts to make, engineered components and material to be used, and machines to be used	8	2	6
	PC4. Identify and confirm resources required such as components, machinery, range of materials and processes	8	2	6

	PC5. Study of range of Materials and how its effect on process and life of mould: Ferrous metals: e.g. Carbon steels, stainless steels, cast iron, tool steel, hard metals; Non-ferrous alloys	8	2	6
	PC6. Identify the operations that will be required for machining components based on design requirements	8	2	6
	PC7. Identify type of equipment required for machining components based on the operations selected.	8	2	6
	PC8. Comparison of Blow Mold with the Injection rotational merits and demerits for overcome the above process mould.	8	2	6
	PC9. Construction and study Mold for EBM, IBM, and SBM.	8	2	6
	PC10. Mold cooling systems:-Pneumatic, water cooling	4.5	0.5	4
	PC11. Basic Study of The main components of molds (Die Core, Die Cavity And Screw Neck) are made by injection process, which are made of special mold steel.	4.5	0.5	4
	PC12. Cavities Preform Mold, designed and developed as per SOP	4.5	0.5	4
	PC13. Follow the instructions given on the equipment manual describing the operating process of the equipment	4.5	0.5	4
	Sub total	**90**	**20**	**70**
RSC/N4108 (CPC/N0418) Basic Knowledge of Communication/soft skills.	PC1. Accurately receive information and instructions from the supervisor and fellow workers, getting clarification where required	4	1	3
	PC2. Accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt	4	1	3
	PC3. Give information to others clearly, at a pace and in a manner that helps them to understand	4	1	3
	PC4. Display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible	4	1	3
	PC5. Consult with and assist others to maximize effectiveness and efficiency in carrying out tasks	4	1	3
	PC6. Display appropriate communication etiquette while working	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 behaviors 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
	Sub total	**40**	**10**	**30**
RSC/N4113 (CPC/N 0427) Quality Management systems.	PC1. Study and understand of Total Quality Control	4	1	3
	PC2. Study the Need of Management of Product Quality.	4	1	3
	PC3. Read the Concept of Total Quality Management.	4	1	3
	PC4. Follow the TQM Philosophy.	4	1	3
	PC5. Ensure the need for Quality system.	4	1	3
	PC6. Study & Follow the Total Quality control tools- ISO, 5S, Six Sigma, OHSAS 18001	4	1	3
	PC.7 Study and Follow the Behavioral Science.	4	1	3
	PC8. Find the Different between Behavioral Science and Social Science.	4	1	3
	PC9. Study the Categories of Behavioral Science.	4	1	3
	PC10. Study the Theories of Behavioral Psychology, Entrepreneurship development, preparing project report selecting a particular plastic product of their choice and submission.	4	1	3
	Sub total	**40**	**10**	**30**
	Total	**600**	**150**	**450**