RCPSDC
Rubber, Chemical & Petrochemical Skill Development Council

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GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

Qualification Pack

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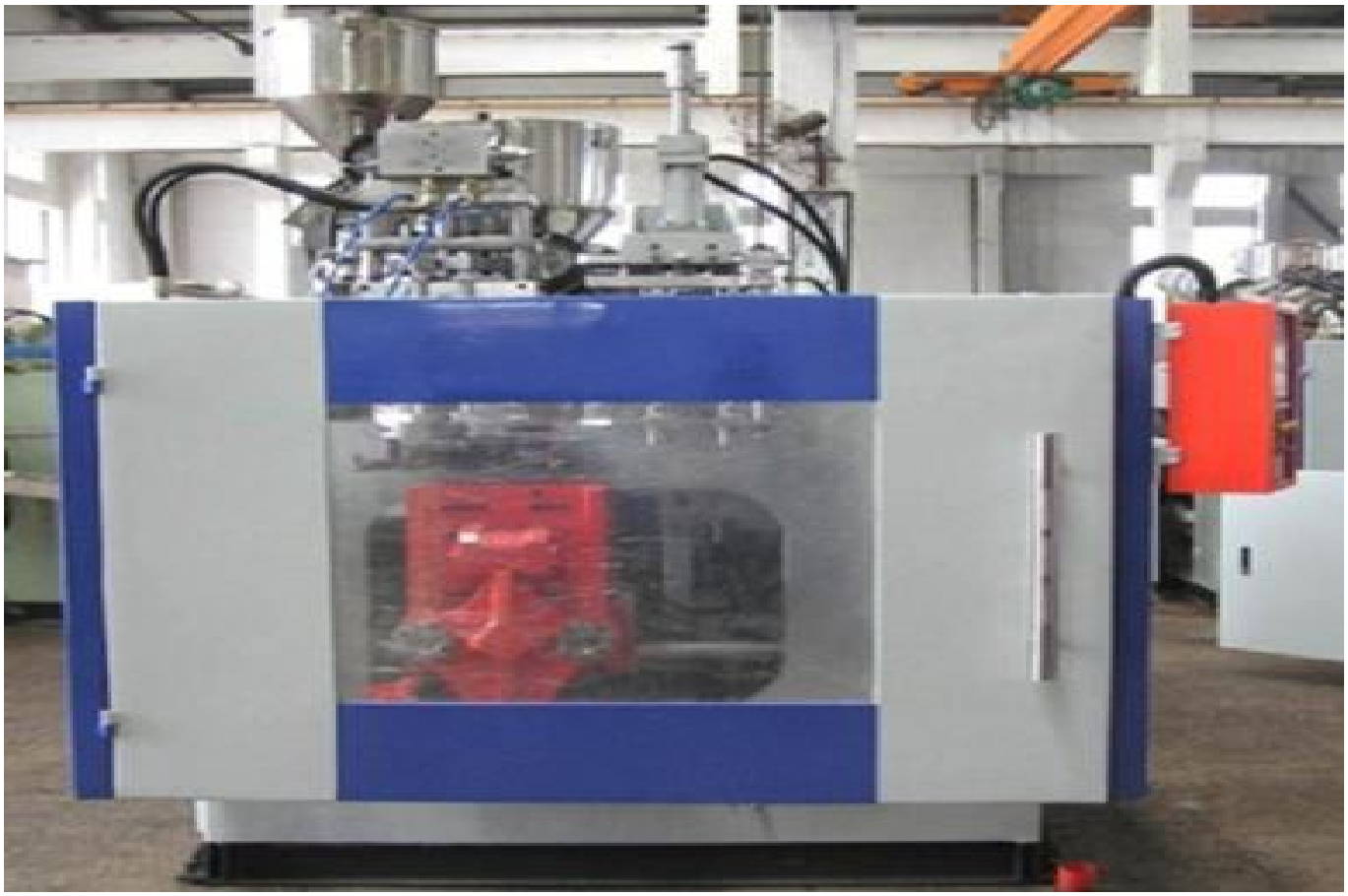

Machine Operator Assistant Blow Moulding

QP Code: RSC/Q4101

Version: 1.0

NSQF Level: 3

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RSC/Q4101: Machine Operator Assistant Blow Moulding

Brief Job Description

The individual will be assisting the machine operator. They will be assisting for Smooth and safe operation/ repair/ maintenance of the equipment at site, help the operator for operating semi & fully automatic and advance blow moulding machines. Monitoring during loading & unloading of Moulds, Machine Set up, Moving Spare parts, raw material & finished components from and to the stores etc. They are having basic knowledge of troubleshooting process problems and performing minor maintenance to ensure continued operation of the production line.

Personal Attributes

This job requires the basic communication & written abilities for the individuals to be result oriented. Basic Knowledge of maintaining equipments & housekeeping process, ability to do physical tasks like lifting, holding etc. and dexterity. He must also demonstrate strong work ethics, courteously with co-workers, and must be good with following instructions of the supervisor/operator.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. RSC/N4101: Maintain basic health and safety practices at the workplace, 5S
2. RSC/N4102: Fitting Tools Measuring Equipments and Practice
3. RSC/N4103: Introduction to Polymers and Thermoplastics Materials
4. RSC/N4104: Basics of Plastics Processing Methods
5. RSC/N4105: Blow Moulding Techniques for Plastics Processing & Inspection of the finished goods
6. RSC/N4106: Auxiliary equipments in Plastics processing
7. RSC/N4107: Mould Technology for Plastics Processing
8. RSC/N4108: Basic Knowledge of Communication/soft skills

Qualification Pack (QP) Parameters

Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing

Qualification Pack

Occupation	Blow Moulding
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NIL
Minimum Educational Qualification & Experience	8th Class
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	26/12/2016
Next Review Date	31/12/2024
NSQC Approval Date	21/07/2016
Version	1.0
Reference code on NQR	2019/CP/CIPET/02888
NQR Version	1.0

Remarks:

Rubber SSC QP-NOS and CIPET qualification codes mapping. QP: RSC/Q4101 (CPC/Q0403)NOS: RSC/N4101(CPC/N0411), RSC/N4102(CPC/N0412), RSC/N4103(CPC/N0413), RSC/N4104(CPC/N0414), RSC/N4105(CPC/N0415), RSC/N4106(CPC/N0416), RSC/N4107(CPC/N0417), RSC/N4108(CPC/N0418).

RSC/N4101: 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

Elements and Performance Criteria

Health and safety

To be competent, the user/individual on the job must 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. ensure good housekeeping practices at all times

Fire safety

To be competent, the user/individual on the job must be able to:

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.

Emergencies, rescue and first aid procedure

To be competent, the user/individual on the job must be able to:

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, stream lining, storage and documentation, cleaning, standardization and sustenance across the plant premises of the organization.

To be competent, the user/individual on the job must be able to:

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

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. ensure to check the items in the respective areas have been identified as broken or damaged

PC21. to 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 (KU)

The individual on the job needs to know and understand:

KU1. the relevant standards, procedures and policies related to health, safety and environment followed in the company

KU2. the emergency handling procedures & hierarchy for escalation

KU3. the basic knowledge of safety procedures (fire fighting, first aid) within the organization

KU4. the basic knowledge of various types of ppes and their usage

KU5. the basic knowledge of risks/hazards associated with each occupation in the organization

KU6. 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.

KU7. the meaning of hazards and risks

KU8. the health and safety hazards commonly present in the work environment and related precautions

KU9. the possible causes of risk, hazard or accident in the workplace and why risk and/or accidents are possible

KU10. the possible causes of risk and accident (due to oil leakage)
KU11. methods of accident prevention
KU12. safe working practices when working with tools and machines
KU13. safe working practices while working at various hazardous sites
KU14. to know the where to find all the general health and safety equipment in the workplace
KU15. various dangers associated with the use of electrical equipment
KU16. preventative and remedial actions to be taken in the case of exposure to toxic materials
KU17. the importance of using protective clothing/equipment while working
KU18. precautionary activities to prevent the fire accident
KU19. various causes of fire
KU20. to know the techniques of using the different fire extinguishers
KU21. to know the different methods of extinguishing fire
KU22. to know the different materials used for extinguishing fire
KU23. rescue techniques applied during a fire hazard
KU24. various types of safety signs and what they mean
KU25. to know 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
KU26. to know the content of written accident report
KU27. potential injuries and ill health associated with incorrect manual handing
KU28. safe lifting and carrying practices
KU29. personal safety, health and dignity issues relating to the movement of a person by others
KU30. potential impact to a person who is moved incorrectly
KU31. to have basic knowledge of 5s procedures
KU32. to know the various types 5s practices followed in various areas
KU33. understand to the 5s checklists provided in the department/ team
KU34. to have skills to identify useful & non useful items
KU35. to have knowledge of labels , signs & colours used as indicators
KU36. to have knowledge on how to sort and store various types of tools, equipment, material etc
KU37. to know , how to identify various types of waste products
KU38. understand to the impact of waste/ dirt/ dust/unwanted substances on the process/ environment/ machinery/ human body.
KU39. to have knowledge of best ways of cleaning & waste disposal

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. understand basic level notes and observations.
GS2. safety instructions put up across the plant premises
GS3. safety precautions mentioned in equipment manuals and panels and understand the potential risks associated

GS4. effectively communicate information to team members

GS5. inform employees in the plant and concerned functions about events, incidents & potential risks observed related to safety, health and environment.

GS6. question operator/ supervisor in order to understand the safety related issues

GS7. attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs

GS8. process the work order and jobs received from the internal customers.

GS9. design documents received from internal customers

GS10. understand & organize all process/ equipment manuals so that sorting out information is fast.

GS11. use common sense and make judgments during day to day basis

GS12. use intuition to detect any potential problems which could arise during operations

GS13. follow instructions and work on areas of improvement identified

GS14. complete the assigned tasks with minimum supervision

GS15. complete the job defined by the supervisor within the timelines and quality norms

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Health and safety	**1.5**	**6**	**-**	**-**
PC1. wear protective clothing/equipment for specific tasks and work conditions	0.5	2	-	-
PC2. carry out safe working practices while dealing with hazards to ensure the safety of self and others.	0.5	2	-	-
PC3. ensure good housekeeping practices at all times	0.5	2	-	-
Fire safety	**1**	**4**	**-**	**-**
PC4. use the various appropriate fire extinguishers on different types of fires correctly	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.	0.5	2	-	-
Emergencies, rescue and first aid procedure	**1.5**	**6**	**-**	**-**
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.	0.5	2	-	-
PC7. inform the concerned authorities on the potential risks identified in the processes, workplace area/ layout, materials used etc, inform the concerned authorities about machine breakdowns, damages which can potentially harm man/ machine during operations.	0.5	2	-	-
PC8. create awareness amongst others by sharing information on the identified risks.	0.5	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure sorting, stream lining, storage and documentation, cleaning, standardization and sustenance across the plant premises of the organization.	**6**	**14**	**-**	**-**
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.	0.5	2	-	-
PC10. ensure segregation of waste in hazardous/ non hazardous waste as per the sorting work instructions	0.5	1	-	-
PC11. follow the technique of waste disposal and waste storage in the proper bins as per sop	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	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	0.5	1	-	-
PC14. ensure that areas of material storage are not overflowing	0.5	1	-	-
PC15. ensure properly stack the various types of boxes and containers as per the size/ utility to avoid any fall of items/ breakage and also enable easy sorting when required	0.5	1	-	-
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	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	0.5	1	-	-
PC18. follow the proper labelling mechanism of instruments/ boxes/ containers and maintaining reference files/ documents with the codes and the lists	0.5	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC19. ensure to check the items in the respective areas have been identified as broken or damaged	0.5	1	-	-
PC20. ensure to check the items in the respective areas have been identified as broken or damaged	0.5	1	-	-
PC21. to make sure that all material and tools are stored in the designated places and in the manner indicated in the 5s instructions	-	1	-	-
NOS Total	**10**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4101
NOS Name	Maintain basic health and safety practices at the workplace, 5S
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Blow Moulding
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	26/12/2016
Next Review Date	31/12/2024
NSQC Clearance Date	21/07/2016

RSC/N4102: Fitting Tools Measuring Equipments and Practice

Description

This OS unit give Basic knowledge to candidates for 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 assisting for smooth & safe operation/repair/maintenance of the equipment at site. 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 Moulding person will be responsible for

Elements and Performance Criteria

Working safely

To be competent, the user/individual on the job must be able to:

PC1. comply with health and safety, environmental and 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

To be competent, the user/individual on the job must be able to:

PC6. adhere to job specification from a valid and approved source

PC7. carry out the job requirements from the job specification document properly

PC8. report to operator the information time to time.

PC9. ensure 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 appropriate tools and measuring instruments.

PC13. adhere to work pieces as per job requirements using appropriate holding devices

Marking components

To be competent, the user/individual on the job must be able to:

PC14. help the operator while marking specified features with the help of marking-out methods on the work pieces as per job specification by using appropriate measuring and marking tools.

Performing fitting operations on machining components using hand tools and

To be competent, the user/individual on the job must be able to:

PC15. learn the different fitting operations on various forms of metal components using a range of hand tools and manually operated machines

PC16. carrying & return all tools and equipment to the correct location on completion of the fitting activities

PC17. clean the work area in a safe and tidy condition on completion of job activities

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the policies and procedures followed in the company relevant to own employment and performance conditions

KU2. the health and safety requirements in the work place

KU3. working in clean and safe environment

KU4. the job responsibilities and information related to employment terms, entitlements, job role and responsibilities

KU5. reporting mechanism, department functions and procedures in the work place

KU6. the related workforce and their responsibilities within the work area

KU7. the procedures for reporting at work and employment related issues

KU8. the specific safe working practices, fitting procedures

KU9. the hazards associated with carrying out the fitting operations and how can they be minimized

KU10. the personal protective equipment to be used during the fitting activities and where can it be obtained

KU11. the common terminology used in fitting

KU12. the importance of following specified fitting sequences and procedures

KU13. the importance and procedures of ensuring suitability of work piece and consumables for the specified job

KU14. the tools and equipment used for the fitting operations

KU15. the importance and procedures to ensure that tools and equipment are in a safe and usable condition

KU16. the importance of securing the work piece correctly using appropriate devices and mechanisms

KU17. the common problems that can occur in the fitting operations and their implications

KU18. the correct procedures to address problems commonly encountered during fitting operations

KU19. the importance of reporting problems immediately and accurately

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. discuss task lists, schedules, and work-loads with co-workers

GS2. question internal customers/ moulding shop supervisor appropriately in order to understand the nature of the problem and make a diagnosis

GS3. communicate problems appropriately to others

GS4. identify sources of information and support for problem solving
GS5. seek assistance and support from other sources to solve problems
GS6. identify effective resolution technique
GS7. select and apply resolution techniques
GS8. seek evidence for problem resolution
GS9. understand prioritize and sequence work operations as per job requirements
GS10. understand basic concepts of shop-floor work productivity including waste reduction, efficient material usage and optimization of time
GS11. undertake and express new ideas and initiatives to others
GS12. participate in improvement procedures including process, quality and customer relationships
GS13. competencies in new and different situations to achieve more
GS14. follow instructions and work on areas of improvement identified
GS15. complete the assigned tasks with minimum supervision
GS16. complete the job defined by the supervisor within timelines and quality norms

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Working safely	**2.5**	**6**	**-**	**-**
PC1. comply with health and safety, environmental and other relevant regulations	0.5	1	-	-
PC2. adhere to procedures and guidelines for personal protective equipment (ppe) and other relevant safety regulations while performing die fitting operations	0.5	1	-	-
PC3. work following laid down procedures and instructions	0.5	1	-	-
PC4. ensure work area is clean and safe from hazards	0.5	1	-	-
PC5. ensure that all tools, equipment, power tool cables, extension leads are in a safe and usable condition	0.5	2	-	-
Preparing for fitting operations	**4**	**16**	**-**	**-**
PC6. adhere to job specification from a valid and approved source	0.5	2	-	-
PC7. carry out the job requirements from the job specification document properly	0.5	2	-	-
PC8. report to operator the information time to time.	0.5	2	-	-
PC9. ensure the fitting operations as per procedure	0.5	2	-	-
PC10. ensure that all calibrated measuring instruments used.	0.5	2	-	-
PC11. ensure that the components used are free from foreign objects, dirt and corrosion	0.5	2	-	-
PC12. obtain appropriate tools and measuring instruments.	0.5	2	-	-
PC13. adhere to work pieces as per job requirements using appropriate holding devices	0.5	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Marking components	**0.5**	**2**	**-**	**-**
PC14. help the operator while marking specified features with the help of marking-out methods on the work pieces as per job specification by using appropriate measuring and marking tools.	0.5	2	-	-
Performing fitting operations on machining components using hand tools and	**3**	**6**	**-**	**-**
PC15. learn the different fitting operations on various forms of metal components using a range of hand tools and manually operated machines	1	2	-	-
PC16. carrying & return all tools and equipment to the correct location on completion of the fitting activities	1	2	-	-
PC17. clean the work area in a safe and tidy condition on completion of job activities	1	2	-	-
NOS Total	**10**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4102
NOS Name	Fitting Tools Measuring Equipments and Practice
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Blow MouldingPlastics Sacks
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	26/12/2016
Next Review Date	31/12/2024
NSQC Clearance Date	21/07/2016

RSC/N4103: Introduction to Polymers and Thermoplastics Materials

Description

This unit is about Introduction to Polymers Thermoplastics Materials1. Types of Polymers.2 Difference between plastics & other materials.3. Become familiar with thermoplastics materials.4. Recognize the potential value of polymeric materials and their areas of Application.

Scope

The Blow moulding person will be learning about.

Elements and Performance Criteria

Introduction To Polymers

To be competent, the user/individual on the job must be able to:

PC1. learn the basic importance of polymers in human life.

PC2. learn the fundamental terminology of polymers

PC3. study the types of polymers & its application.

Study of Plastics Material

To be competent, the user/individual on the job must be able to:

PC4. study abou types of polymers-thermoplastics, elastomers.

PC5. learn the plastic material applications- commodity sector, telecommunications, automobiles, packaging medical, electrical and electronics & aerospace etc.

Thermoplastic Materials

To be competent, the user/individual on the job must be able to:

PC6. study about commodity polymers: polyolefin: ldpe hdpe lldpe, pp etc.

PC7. study about engineering polymers: pc, abs, pmma, pom, pa-nylon etc.

PC8. study about special polymers: fep, pvdf etc.

Identification of Plastics Material

To be competent, the user/individual on the job must be able to:

PC9. learn the identification method:-drop test, water floatation test, scratch test.

PC10. learn the advanced methods of identification:-mfi, melting etc.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant standards specified to identify the polymers

KU2. basic process to be followed for inspection of the lot.

KU3. batch size, material grade and nomenclature.

KU4. about identification of polymers.

KU5. about the instruments burner, copper rods, solvents, weighing scales and other instruments and machineries to identify the polymers and its properties.

KU6. knowledge to identify quality defects.

KU7. working knowledge and procedure of testing and identifying machines.

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. read the values and process of polymer with specification.

GS2. knowledge about different type of format relevant to the polymer identification.

GS3. read values and equipment manuals to understand the working of the equipment

GS4. understand measuring instruments reading to identify any deviations from the dimensions given in the standards.

GS5. inform supervisor/operator of any quality related defects arising out of the manufacturing proce

GS6. question internal customers/ supervisor appropriately in order to understand the nature of the problem and make a diagnosis

GS7. use common sense and make judgments during day to day basis use reasoning skills to identify and resolve basic problems

GS8. understand & carefully analyze the body part for various assembling defects at every station.

GS9. carefully analyze each defect observed during inspection and try to find solution for the defect along with the assembly line operator.

GS10. identify defective materials in the manufacturing line by comparing manufactured hollow articles(container

GS11. link the defect observed with the overall impact on the performance of the output.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction To Polymers	**3**	**6**	**-**	**-**
PC1. learn the basic importance of polymers in human life.	1	2	-	-
PC2. learn the fundamental terminology of polymers	1	2	-	-
PC3. study the types of polymers & its application.	1	2	-	-
Study of Plastics Material	**2**	**4**	**-**	**-**
PC4. study abou types of polymers-thermoplastics, elastomers.	1	2	-	-
PC5. learn the plastic material applications-commodity sector, telecommunications, automobiles, packaging medical, electrical and electronics & aerospace etc.	1	2	-	-
Thermoplastic Materials	**3**	**12**	**-**	**-**
PC6. study about commodity polymers: polyolefin: ldpe hdpe lldpe, pp etc.	1	4	-	-
PC7. study about engineering polymers: pc, abs, pmma, pom, pa-nylon etc.	1	4	-	-
PC8. study about special polymers: fep, pvdf etc.	1	4	-	-
Identification of Plastics Material	**2**	**8**	**-**	**-**
PC9. learn the identification method:-drop test, water floatation test, scratch test.	1	4	-	-
PC10. learn the advanced methods of identification:-mfi, melting etc.	1	4	-	-
NOS Total	**10**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4103
NOS Name	Introduction to Polymers and Thermoplastics Materials
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Blow MouldingPlastics Sacks
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	26/12/2016
Next Review Date	31/12/2024
NSQC Clearance Date	21/07/2016

RSC/N4104: 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

Elements and Performance Criteria

Introduction to Plastics Processing

To be competent, the user/individual on the job must 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

To be competent, the user/individual on the job must be able to:

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

To be competent, the user/individual on the job must be able to:

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. learning about 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.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant standards specified for the processing

KU2. basic process followed through manual.

KU3. the processes and procedures followed for processing the lot/ pieces/ products.

KU4. the techniques of using measurement instruments like rulers, vernier calipers, micrometers, weighing scales etc.

KU5. the methods to identify quality defects in the processing.

KU6. the methods used for cutting, finishing which can repair lot with minor defects

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. note the number of lot with defects which can be repaired to number of lot which will be discarded.

GS2. understand process and equipment manuals to understand the working of the equipment

GS3. understand measuring instruments reading to identify any deviations from the dimensions given in the product engineering drawing

GS4. inform supervisor/operator of any quality related defects arising out of the manufacturing process

GS5. question internal customers/ supervisor appropriately in order to understand the nature of the problem and make a diagnosis

GS6. maintain all process/ equipment manuals so that sorting/ accessing information is easy

GS7. keep fixtures, tools, drawings, work instructions, sop manuals as per the part number, colour codes etc. as defined under the 5s systems.

GS8. use common sense and make judgments during day to day basis

GS9. carefully analyze the body part for various assembling defects at every station

GS10. identify defective parts in the manufacturing line by comparing manufactured hollow articles (container

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Plastics Processing	**4**	**9**	**-**	**-**
PC1. learn the all plastics processing machineries.	1	2	-	-
PC2. identify merits and demerits of blow moulding and over all others plastic process.	1	2	-	-
PC3. ensure the definition and terminology related to plastic processing.	1	2	-	-
PC4. ensure the finishing operation including surface treatment of the fabricated product if required as per sop.	1	3	-	-
Classification of processing methods	**3**	**6**	**-**	**-**
PC5. follow the primary processing methods as per sop.	1	2	-	-
PC6. follow the secondary processing methods as per sop.	1	2	-	-
PC7. follow the fundamentals of processing method.	1	2	-	-
Processing methods	**8**	**30**	**-**	**-**
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.	1	2	-	-
PC9. follow the machine operation terminology: as per manual, semiautomatic, fully automatic.	1	4	-	-
PC10. learning about the type of conversion techniques: injection, blow, compression, transfer, rotational and other processes.	1	4	-	-
PC11. identify the material to be processed	1	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. ensure the product design / configuration, tolerance.	1	4	-	-
PC13. ensure the process limitations	1	4	-	-
PC14. ensure the quality	1	4	-	-
PC15. ensure the cost / performance balance.	1	4	-	-
NOS Total	**15**	**45**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4104
NOS Name	Basics of Plastics Processing Methods
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Blow Moulding
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	26/12/2016
Next Review Date	31/12/2024
NSQC Clearance Date	21/07/2016

RSC/N4105: Blow Moulding Techniques for Plastics Processing & Inspection of the finished goods

Description

This unit is about the various Blow Moulding Techniques for Plastics. The person will gain a knowledge of EBM,IBM and SBM for 1. Blow Moulding process and its basic principles. 2. Detailed types of blow moulding process. . Production of Parisons / Performs. 4. About Continuous and intermittent blow Moulding process. 5. Machine Startup & Shut down Procedure.

Scope

The blow moulding person will be responsible for

- Helping to operator in Blow moulding machine to produce the Parison/ Performs and identify the sequence of operation to produce the required output EBM, IBM and SBM.
- Feeding the granules as per requirement.
- Inspect 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.
- Involving in Prepare & document daily production reports, including rejects, regrinds, line efficiencies and other.

Elements and Performance Criteria

Principles and basics of Blow Moulding

To be competent, the user/individual on the job must be able to:

PC1. learn the basic principle of blow moulding process & its types.

PC2. ensure the basic need of tools, accessories and machineries.

PC3. identify the plastic materials required for blow moulding

PC4. learning about the machine start up & shut down procedure.

Typologies of blow moulding Process and type of Die/ Mould

To be competent, the user/individual on the job must be able to:

PC5. learn various types of extrusion blow moulding process.

PC6. learn continuous blow moulding process:- single head method, twin station method, rotary table system

PC7. learn intermitted blow moulding process:- reciprocating screw extruder, ram accumulator extrusion accumulator head method

PC8. study the extrusion blow moulding (ebm)

PC9. study the injection blow moulding(ibm)

PC10. study the injection stretch blow moulding process (isbm)

PC11. study the extrusion stretch blow moulding

PC12. study the various types of blow moulds-side feed, centre feed, spiral mandrel, extrusion blow, stretch blow, injection blow moulds etc.

Study of Injection Moulding Machine for performs production and process parameters

To be competent, the user/individual on the job must be able to:

PC13. make the plastic compound or granule ready for feeding into the machine

PC14. start the machine and feeding simultaneously

PC15. ensure that moulding pressure and temperature is maintained during the process cycle

PC16. ensure mould lifting/ ejection/ slide mechanism of the press are properly functioning

PC17. add the manufacturing preform as per sop

PC18. remove the manufacturing preform from the mould as per sop.

Check the operations of the equipment used in the Extrusion blow moulding process

To be competent, the user/individual on the job must be able to:

PC19. check for operation of moulding apparatus like hopper, heaters, extruder, blow moulding die/mould, screen pack etc. as per the checklist provided

PC20. fix the desired die/mould to the blow moulding machine apparatus in order to achieve the desired operation as per the work instructions/ sops

Study of process parameters for the blow moulding as per SOP

To be competent, the user/individual on the job must be able to:

PC21. ensure 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

PC22. setup the apparatus as per the selected process and the moulding standards used in the processing industry

PC23. ensure 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

To be competent, the user/individual on the job must be able to:

PC24. ensure the functionality and assembly of die as per sop.

PC25. ensure the die shaping in blow moulding

PC26. ensure the basic study of blow ratio, parison swell, die swell, types of parison blowing system:-pneumatic and ejection system.

Organize for the material to be moulded and apparatus required for the same

To be competent, the user/individual on the job must be able to:

PC27. ensure the basic study of moulding procedure and process to be adopted for completing the work order from the supervisor/operator by referring the work instruction document/ sop manual

PC28. identify the raw material like plastics granules, fillers, bonding additives grades etc. required for executing the activity

PC29. ensure that the required material is procured from the store before starting the process.

PC30. ensure that type of die required for executing the required operation and ensure that the same is available for operations

PC31. ensure that 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 moulding area. use lifting equipments or for lift/trolley for mould/material. keep all safety requirements.

Feed the plastic granules in the hopper and conduct a test process

To be competent, the user/individual on the job must be able to:

PC32. ensure that plastic granules are mixed with additives (if any) before being fed into the hopper

PC33. check the hollow articles (bottles, container) for geometry, material & dimensional parameters as per the control plan before starting the production.

PC34. ensure that the dimensions of the output product are measured as per the process given in the work instructions/ sop

PC35. start the production process if the test product matches the dimensions and quality of the final output,

Conduct the actual moulding process monitor the moulding process variations

To be competent, the user/individual on the job must be able to:

PC36. feed the required plastic material in the apparatus for heaters to melt the plastic granules at the predefined temperature

PC37. ensure feeding in line with the defined standards and specifications

PC38. ensure the proper functioning of screen pack and die for uniform melting of plastic and removal of the contaminants (if any)

PC39. monitor & understand the process (parameters like temperature, pressure, speed etc.) by observing and analyzing the readings on various panels/ meters to prevent machine breakdown and deviations of the output from desired specifications

PC40. clean the die opening & die, changing the screen pack.

PC41. ensure code printing of the product with the identifying information (wherever required) and send the same for further processing

PC42. instruct the helper to neck finishing and pinch off of the product as per the desired geometric specifications.(doesnt required for ibm)

Perform the visual inspection of the output and finishing operation

To be competent, the user/individual on the job must be able to:

PC43. measure the final plastic moulded product and compare the dimensions as prescribed in the work order/ engineering drawing

PC44. 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

To be competent, the user/individual on the job must be able to:

PC45. help the operator to measure the specifications of the finished products using devices like micrometers, vernier calipers, gauges, rulers, weighing scales, thickness gauge and any other inspection equipment and compare with the parameters given in the work order.

Record log of defective products and discard defective batch process

To be competent, the user/individual on the job must be able to:

PC46. note down the observations of the basic inspection process and identify pieces which are ok and also not meeting the specified standards

PC47. maintain records of each category of work outputs as per the batch etc. so that correction can be organized.

Perform Batch Quality Procedure

To be competent, the user/individual on the job must be able to:

PC48. provide first and last output from each batch to the lab for quality check on its composition, properties etc.

PC49. obtain clearance for the entire batch from the lab

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the processes and procedures followed for manufacturing the lot/pieces/ products.

KU2. the techniques of using measurement instruments like rulers, vernier calipers, micrometers, weighing scales etc.

KU3. the methods to identify quality defects in the lot.

KU4. the methods used for cutting, finishing which can repair lot with minor defects

KU5. the types of documentation in organization and importance of the same

KU6. records to be maintained and implications of non-maintenance of the same

KU7. the importance of housekeeping & good shop floor practices

KU8. health, safety and environment guidelines, legislation and regulations as applicable

KU9. the personal protection (which protective equipment to be used and how)

KU10. the impact of poor practices on health, safety and environment

KU11. the potential hazards and actions to minimize the same

KU12. the escalation matrix and escalation procedure for reporting hazards

KU13. the usage of different fire extinguisher

KU14. the impact of various practices on cost, quality, productivity, delivery and safety

KU15. handover/ takeover the equipment/ work area as per companys sop

KU16. the startup procedure as per sop

KU17. the cleanliness and safety requirements for operating a blow moulding machine

KU18. the influence of parameters (e.g. time, temperature, pressure) on blow moulding operation

KU19. the injection moulding operation to get minimum rejection

KU20. the operation of moulding machine (equipment working, possible setting levels, typical process followed for different batches)

KU21. the different types of blow moulding machine, distributions systems and moulds.

KU22. the operation of multiple presses with common power pack and importance of sequencing

KU23. the specific pressure required for different types of moulding

KU24. the influence of time and temperature on curing of thick products

KU25. the state of curing undercuring and overcuring

KU26. the effect of improper processing on properties of rubber compound & product

KU27. units of measurement

KU28. response to emergencies e.g. power failures, fire and system failures and manual intervention to avoid disaster

KU29. the appropriate batch size with respect to appropriate machinery

KU30. the use of weighing scale, time, temperature & pressure measurement

KU31. the possible causes of common moulding problems & their remedies

KU32. the shut down procedure for blow moulding-ibm,emb,sbm as per sop

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. understand number of lot with defects which can be repaired to number of lot which will be discarded

GS2. read measuring instruments reading to identify any deviations from the dimensions given in the product engineering drawing

GS3. inform supervisor /operator of any quality related defects arising out of the manufacturing process

GS4. question internal customers/ supervisor appropriately in order to understand the nature of the problem and make a diagnosis.

GS5. all process/ equipment manuals so that sorting/ accessing information is easy

GS6. fixtures, tools, drawings, work instructions, sop manuals as per the part number, colour codes etc as defined under the 5s systems.

GS7. use common sense and make judgments during day to day basis use reasoning skills to identify and resolve basic problems

GS8. carefully analyze the body part for various assembling defects at every station

GS9. carefully analyze each defect observed during inspection and try to find solution for the defect along with the assembly line operator

GS10. identify defective parts in the manufacturing line by comparing manufactured (lot/articles) with the work standard

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Principles and basics of Blow Moulding	**2**	**4**	**-**	**-**
PC1. learn the basic principle of blow moulding process & its types.	0.5	1	-	-
PC2. ensure the basic need of tools, accessories and machineries.	0.5	1	-	-
PC3. identify the plastic materials required for blow moulding	0.5	1	-	-
PC4. learning about the machine start up & shut down procedure.	0.5	1	-	-
Typologies of blow moulding Process and type of Die/ Mould	**4**	**8**	**-**	**-**
PC5. learn various types of extrusion blow moulding process.	0.5	1	-	-
PC6. learn continuous blow moulding process:- single head method, twin station method, rotary table system	0.5	1	-	-
PC7. learn intermitted blow moulding process:- reciprocating screw extruder, ram accumulator extrusion accumulator head method	0.5	1	-	-
PC8. study the extrusion blow moulding (ebm)	0.5	1	-	-
PC9. study the injection blow moulding(ibm)	0.5	1	-	-
PC10. study the injection stretch blow moulding process (isbm)	0.5	1	-	-
PC11. study the extrusion stretch blow moulding	0.5	1	-	-
PC12. study the various types of blow moulds-side feed, centre feed, spiral mandrel, extrusion blow, stretch blow, injection blow moulds etc.	0.5	1	-	-
Study of Injection Moulding Machine for performs production and process parameters	**3**	**12**	**-**	**-**
PC13. make the plastic compound or granule ready for feeding into the machine	0.5	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. start the machine and feeding simultaneously	0.5	2	-	-
PC15. ensure that moulding pressure and temperature is maintained during the process cycle	0.5	2	-	-
PC16. ensure mould lifting/ ejection/ slide mechanism of the press are properly functioning	0.5	2	-	-
PC17. add the manufacturing preform as per sop	0.5	2	-	-
PC18. remove the manufacturing preform from the mould as per sop.	0.5	2	-	-
Check the operations of the equipment used in the Extrusion blow moulding process	**1**	**4**	**-**	**-**
PC19. check for operation of moulding apparatus like hopper, heaters, extruder, blow moulding die/mould, screen pack etc. as per the checklist provided	0.5	2	-	-
PC20. fix the desired die/mould to the blow moulding machine apparatus in order to achieve the desired operation as per the work instructions/ sops	0.5	2	-	-
Study of process parameters for the blow moulding as per SOP	**1.5**	**6**	**-**	**-**
PC21. ensure 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	0.5	2	-	-
PC22. setup the apparatus as per the selected process and the moulding standards used in the processing industry	0.5	2	-	-
PC23. ensure availability of the coolant and working of valves to circulate the coolant to cool and solidify plastic.	0.5	2	-	-
Study of parison Programming and Controlling of Parison and Preform	**1.5**	**6**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. ensure the functionality and assembly of die as per sop.	0.5	2	-	-
PC25. ensure the die shaping in blow moulding	0.5	2	-	-
PC26. ensure the basic study of blow ratio, parison swell, die swell, types of parison blowing system:- pneumatic and ejection system.	0.5	2	-	-
Organize for the material to be moulded and apparatus required for the same	**2.5**	**10**	**-**	**-**
PC27. ensure the basic study of moulding procedure and process to be adopted for completing the work order from the supervisor/operator by referring the work instruction document/ sop manual	0.5	2	-	-
PC28. identify the raw material like plastics granules, fillers, bonding additives grades etc. required for executing the activity	0.5	2	-	-
PC29. ensure that the required material is procured from the store before starting the process.	0.5	2	-	-
PC30. ensure that type of die required for executing the required operation and ensure that the same is available for operations	0.5	2	-	-
PC31. ensure that 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 moulding area. use lifting equipments or for lift/trolley for mould/material. keep all safety requirements.	0.5	2	-	-
Feed the plastic granules in the hopper and conduct a test process	**2**	**8**	**-**	**-**
PC32. ensure that plastic granules are mixed with additives (if any) before being fed into the hopper	0.5	2	-	-
PC33. check the hollow articles (bottles, container) for geometry, material & dimensional parameters as per the control plan before starting the production.	0.5	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC34. ensure that the dimensions of the output product are measured as per the process given in the work instructions/ sop	0.5	2	-	-
PC35. start the production process if the test product matches the dimensions and quality of the final output,	0.5	2	-	-
Conduct the actual moulding process monitor the moulding process variations	**3.5**	**10**	**-**	**-**
PC36. feed the required plastic material in the apparatus for heaters to melt the plastic granules at the predefined temperature	0.5	2	-	-
PC37. ensure feeding in line with the defined standards and specifications	0.5	2	-	-
PC38. ensure the proper functioning of screen pack and die for uniform melting of plastic and removal of the contaminants (if any)	0.5	2	-	-
PC39. monitor & understand the process (parameters like temperature, pressure, speed etc.) by observing and analyzing the readings on various panels/ meters to prevent machine breakdown and deviations of the output from desired specifications	0.5	1	-	-
PC40. clean the die opening & die, changing the screen pack.	0.5	1	-	-
PC41. ensure code printing of the product with the identifying information (wherever required) and send the same for further processing	0.5	1	-	-
PC42. instruct the helper to neck finishing and pinch off of the product as per the desired geometric specifications.(doesnt required for ibm)	0.5	1	-	-
Perform the visual inspection of the output and finishing operation	**1**	**2**	**-**	**-**
PC43. measure the final plastic moulded product and compare the dimensions as prescribed in the work order/ engineering drawing	0.5	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC44. in case the parts are not as per the given measurements, send the same for further processing in terms of cutting, finishing etc.	0.5	1	-	-
Inspection of finished goods to detect any deviations from the product design	**0.5**	**1**	**-**	**-**
PC45. help the operator to measure the specifications of the finished products using devices like micrometers, vernier calipers, gauges, rulers, weighing scales, thickness gauge and any other inspection equipment and compare with the parameters given in the work order.	0.5	1	-	-
Record log of defective products and discard defective batch process	**1**	**2**	**-**	**-**
PC46. note down the observations of the basic inspection process and identify pieces which are ok and also not meeting the specified standards	0.5	1	-	-
PC47. maintain records of each category of work outputs as per the batch etc. so that correction can be organized.	0.5	1	-	-
Perform Batch Quality Procedure	**1.5**	**2**	**-**	**-**
PC48. provide first and last output from each batch to the lab for quality check on its composition, properties etc.	0.5	1	-	-
PC49. obtain clearance for the entire batch from the lab	1	1	-	-
NOS Total	**25**	**75**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4105
NOS Name	Blow Moulding Techniques for Plastics Processing & Inspection of the finished goods
Sector	Rubber
Sub-Sector	Plastics Processing
Occupation	Blow Moulding
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	26/12/2016
Next Review Date	31/12/2024
NSQC Clearance Date	21/07/2016

RSC/N4106: 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.

Elements and Performance Criteria

Basic requirement of Auxiliary Equipments and machinerie

To be competent, the user/individual on the job must 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. connects 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

To be competent, the user/individual on the job must be able to:

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

To be competent, the user/individual on the job must be able to:

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 boards/ 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 (KU)

The individual on the job needs to know and understand:

KU1. relevant standards, procedures and policies related to auxiliaries machineries followed in the company

KU2. emergency handling procedures & hierarchy for escalation

KU3. the startup procedure as per sop

KU4. to have basic knowledge of safety procedures(fire fighting, first aid) within the organization

KU5. basic knowledge of various types of ppes and their usage

KU6. basic knowledge of risks/hazards associated with each occupation in the organization

KU7. knowledge of personal hygiene and how an individual an contribute towards creating a highly safe and clean working environment

KU8. health, safety and environment guidelines, legislation and regulations as applicable

KU9. the personal protection (which protective equipment to be used and how)

KU10. basic knowledge of various operations of machineries and equipment as per the operation manual.

KU11. the shut down procedure as per sop

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. understand basic level notes and observations

GS2. read safety instructions put up across the plant premises

GS3. read safety precautions mentioned in equipment manuals and panels to understand the potential risks associated

GS4. effectively communicate information to team members

GS5. inform employees in the plant and concerned functions about events, incidents & potential risks observed related to safety, health and environment.

GS6. question operator/ supervisor in order to understand the safety related issues

GS7. attentively listen with full attention and comprehend the information given by the speaker during safety drills and training programs.

GS8. carefully analyze the body part for various assembling defects at every station

GS9. carefully analyze each defect observed during inspection and try to find solution for the defect along with the assembly line operator

GS10. use common sense and make judgments during day to day basis

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Basic requirement of Auxiliary Equipments and machinerie	**2**	**4**	**-**	**-**
PC1. inspect, monitor, operating fuel systems, fuel oil transfer, supply lines & associated equipment and fossil fuel chillers.	0.5	1	-	-
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	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.	0.5	1	-	-
PC4. assist in cleaning and lubrication of equipment and tooling and performs various preventative maintenance tasks as needed.	0.5	1	-	-
Different type of Auxiliary Equipment	**2**	**7**	**-**	**-**
PC5. study adout different types of predrier-hot air oven, hopper driers, dehumidifiers etc.	0.5	1	-	-
PC6. study the basics of chiller, cooling tower for the controlling temperature of mould, machine and fluids.	0.5	2	-	-
PC7. ensure the basic operation and monitoring -- watching gauges, dials, or other indicators to make sure a machine is working properly.	0.5	2	-	-
PC8. study about the compressor and scrap grinder.	0.5	2	-	-
Study process of operation and maintenance of auxiliary equipment	**6**	**19**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC9. ensure the equipment maintenance -- performing routine maintenance on equipment and determining when and what kind of maintenance is needed.	0.5	2	-	-
PC10. ensure the equipment selection -- determining the kind of tools and equipment needed to do a job.	0.5	2	-	-
PC11. follow the instructions given on the equipment manual describing the operating process of the equipment	0.5	2	-	-
PC12. follow the safety, health and environment related practices developed by the organization	0.5	2	-	-
PC13. ensure relevant safety boards/ signs are placed on the shop floor	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	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.	0.5	2	-	-
PC16. attend all safety and fire drills to be self-aware of safety hazards and preventive techniques	0.5	2	-	-
PC17. maintain high standards of personal hygiene at the work place	1	1	-	-
PC18. ensure that the waste disposal is done in the designated area and manner as per organization sop.	1	2	-	-
NOS Total	**10**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4106
NOS Name	Auxiliary equipments in Plastics processing
Sector	Rubber
Sub-Sector	Plastics Processing
Occupation	Blow Moulding
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	26/12/2016
Next Review Date	31/12/2024
NSQC Clearance Date	21/07/2016

RSC/N4107: Mould Technology for Plastics Processing

Description

This OS unit is about Basic Knowledge of Mould Technology Techniques for Plastics Processing

Scope

The role holder will be responsible for

Elements and Performance Criteria

Study of type of mould Manufacturing

To be competent, the user/individual on the job must be able to:

PC1. study the mould manufacturing process and machineries.

PC2. identify and confirm resources required such as components, machinery, range of materials and processes

PC3. learning about the basics of mould making materials.

PC4. identify type of equipment required for machining components based on the operations selected.

PC5. study the basics of construction and study of moulds for ebm, ibm, and sbm.

PC6. study of mould cooling systems:-pneumatic, water cooling

PET Preform mould construction and polish requirements

To be competent, the user/individual on the job must be able to:

PC7. to study the mould polishing & its kits.

PC8. follow the instructions given on the equipment manual describing the operating process of the equipment.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the health and safety requirements in the work place

KU2. the working in clean and safe environment

KU3. job responsibilities and information related to employment terms, entitlements, job role and responsibilities

KU4. reporting mechanism, department functions and procedures in the work place

KU5. related workforce and their responsibilities within the work area

KU6. the procedures for reporting at work and employment related issues

KU7. maintaining documentation and related procedures applicable related to employment and work.

KU8. specific safe working practices, fitting procedures

KU9. hazards associated with carrying out the fitting operations and how can they be minimized

KU10. personal protective equipment to be used during the fitting activities and where can it be obtained

KU11. basic terminology used in fitting

KU12. knowledge of tools and equipment used for the fitting operations

KU13. importance and procedures to ensure that tools and equipment are in a safe and usable condition.

KU14. correct techniques and procedures to carry out specific fitting operations by hand tools and manually operated machines

KU15. understanding importance of securing the work piece correctly using appropriate devices and mechanisms

KU16. importance of reporting problems immediately and accurately

Generic Skills (GS)

User/individual on the job needs to know how to:

GS1. interpret information correctly from various job specification documents, manuals, health and safety instructions, etc.

GS2. communicate with people in respectful form and manner in line with organizational protocol.

GS3. basic knowledge of numerical operations, and calculations/ formulae etc. basic shapes: basic knowledge of shapes like square, rectangle, triangle, circle etc.

GS4. basic knowledge of appropriate measuring techniques and units of measurement

GS5. use common sense and make judgments during day to day basis

GS6. communicate problems appropriately to others

GS7. identify sources of information and support for problem solving

GS8. seek assistance and support from other sources to solve problems.

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Study of type of mould Manufacturing	**8**	**22**	**-**	**-**
PC1. study the mould manufacturing process and machineries.	1	4	-	-
PC2. identify and confirm resources required such as components, machinery, range of materials and processes	1	2	-	-
PC3. learning about the basics of mould making materials.	3	4	-	-
PC4. identify type of equipment required for machining components based on the operations selected.	1	4	-	-
PC5. study the basics of construction and study of moulds for ebm, ibm, and sbm.	1	4	-	-
PC6. study of mould cooling systems:- pneumatic, water cooling	1	4	-	-
PET Preform mould construction and polish requirements	**2**	**8**	**-**	**-**
PC7. to study the mould polishing & its kits.	1	4	-	-
PC8. follow the instructions given on the equipment manual describing the operating process of the equipment.	1	4	-	-
NOS Total	**10**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4107
NOS Name	Mould Technology for Plastics Processing
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Blow Moulding
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	26/12/2016
Next Review Date	31/12/2024
NSQC Clearance Date	21/07/2016

RSC/N4108: 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 needsto understand the following:

- Basic Knowledge on functions of computer & its operations.
- Effective communication & Inter-personal skills

Elements and Performance Criteria

Basic Knowledge on functions of computer & its operations.

To be competent, the user/individual on the job must be able to:

PC1. perform basic computer operartions.

PC2. learn about basic functions in a computer

Effective communication & Inter-personal skills

To be competent, the user/individual on the job must be able to:

PC3. accurately receive information and instructions from the supervisor/operator and fellow workers, getting clarification where required

PC4. accurately pass on information to authorized persons 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 and assist others to maximize the 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. behave as a responsible person at the workplace

PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. standards, policies, and procedures followed in the company relevant to own employment and performance conditions

KU2. reporting structure, inter-dependent functions, lines and procedures in the work area

KU3. relevant people and their responsibilities within the work area

KU4. basic study of elements of soft communication skills: principle of communication process clarity conciseness objectivity consistency completeness relevancy audience knowledge receiver barriers

KU5. 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

KU6. various categories of people that one is required to communicate and co-ordinate with in the organization

KU7. the importance of effective communication in the workplace

KU8. key elements of active listening

KU9. the value and importance of active listening and assertive communication

KU10. the importance of tone and pitch in effective communication

KU11. the importance of ethics for professional success

KU12. the importance of discipline for professional success.

KU13. the importance of developing effective working relationships for professional success.

KU14. expressing and addressing grievances appropriately and effectively

KU15. the importance and ways of managing interpersonal conflict effectively

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Basic Knowledge on functions of computer & its operations.	**2**	**6**	**-**	**-**
PC1. perform basic computer operartions.	1	3	-	-
PC2. learn about basic functions in a computer	1	3	-	-
Effective communication & Inter-personal skills	**8**	**24**	**-**	**-**
PC3. accurately receive information and instructions from the supervisor/operator and fellow workers, getting clarification where required	1	3	-	-
PC4. accurately pass on information to authorized persons who require it and within agreed timescale and confirm its receipt	1	3	-	-
PC5. display helpful behavior by assisting others in performing tasks in a positive manner, where required and possible	1	3	-	-
PC6. consult and assist others to maximize the effectiveness and efficiency in carrying out tasks	1	3	-	-
PC7. display active listening skills while interacting with others at work	1	3	-	-
PC8. use appropriate tone, pitch and language to convey politeness, assertiveness, care and professionalism	1	3	-	-
PC9. behave as a responsible person at the workplace	1	3	-	-
PC10. escalate grievances and problems to appropriate authority as per procedure to resolve them and avoid conflict	1	3	-	-
NOS Total	**10**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4108
NOS Name	Basic Knowledge of Communication/soft skills
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Blow Moulding
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	26/12/2016
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Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each Element/ PC.

2. The assessment for the theory part will be based on knowledge bank of questions created by the SSC.

3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.

4. Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).

5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.

6. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

7. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 50

(**Please note**: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
RSC/N4101.Maintain basic health and safety practices at the workplace, 5S	10	30	-	-	40	10
RSC/N4102.Fitting Tools Measuring Equipments and Practice	10	30	-	-	40	10
RSC/N4103.Introduction to Polymers and Thermoplastics Materials	10	30	-	-	40	10
RSC/N4104.Basics of Plastics Processing Methods	15	45	-	-	60	15
RSC/N4105.Blow Moulding Techniques for Plastics Processing & Inspection of the finished goods	25	75	-	-	100	25
RSC/N4106.Auxiliary equipments in Plastics processing	10	30	-	-	40	10
RSC/N4107.Mould Technology for Plastics Processing	10	30	-	-	40	10
RSC/N4108.Basic Knowledge of Communication/soft skills	10	30	-	-	40	10
Total	**100**	**300**	**-**	**-**	**400**	**100**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

Glossary

Sector	Sector is a conglomeration of different business operations having similar business 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.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
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.
Scope	Scope is a 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 quality of performance required.

Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.
Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today's world. These skills are typically needed in any work environment 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.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.