RCPSDC
Rubber, Chemical & Petrochemical Skill Development Council

सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

Qualification Pack

N·S·D·C
National
Skill Development
Corporation
Transforming the skill landscape

Machine Operator Assistant Plastics Extrusion

QP Code: RSC/Q4601

Version: 1.0

NSQF Level: 3

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Contents

RSC/Q4601: Machine Operator Assistant Plastics Extrusion

Brief Job Description

The Individual is responsible to assist the Machine Operator during the Extrusion process and operate Scrap Grinders, Blenders, High Speed Mixers , Agglomerators independently.

Personal Attributes

This job requires the individual to work as an assistant to the operator and work independently under supervision of that operator. He must have excellent skills and result oriented and positive in attitude.The individual must be attentive and focused in attaining the set objectives. He must be a good learner to understand machines and materials at the level of production he is engaged in.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. RSC/N4101: Maintain basic health and safety practices at the workplace, 5S
2. RSC/N4601: Basics Plastics Raw Materials & Additives, Master batches, Pigments & Extrusion Concept
3. RSC/N4602: Deal With Plastics Compounding / Mixing, Scrap Grinding, Agglomerating
4. RSC/N4603: Deal With HDPE / PVC Pipe Extruder & Film Extruder Machine Operation
5. RSC/N4604: reporting and documentation
6. RSC/N4605: To carry out quality checks

Qualification Pack (QP) Parameters

Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Plastics Extrusion
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/02890
NQR Version	1.0

Remarks:

Rubber SSC QP-NOS and CIPET qualification codes mapping. QP: RSC/Q4601 (CPC/Q0303)NOS: RSC/N4601(CPC/N0311), RSC/N4101(CPC/N0411), RSC/N4602(CPC/N0313), RSC/N4603(CPC/N0314), RSC/N4604(CPC/N0315), RSC/N4605(CPC/N0316)

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/N4601: Basics Plastics Raw Materials & Additives, Master batches, Pigments & Extrusion Concept

Description

This OS unit is about providing a basic knowledge of Plastics Raw Materials Used in Extrusion Process and The Extrusion Process.

Scope

This unit/task covers the following:

- Study about Polymers , Plastics , Additives , Master batches & pigments used in the process
- Types of Extrusion Items Produce
- Extrusion Process

Elements and Performance Criteria

Raw Materials

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

PC1. study the types of plastics used in extrusion and its properties

PC2. study the types of additives , master batches and pigments

PC3. store and handling of raw materials & house keeping

Extrusion Process

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

PC4. learn the types of extruders used in the extrusion process and their parts

PC5. store and handling of finished products & house keeping.

Compounding and Mixing

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

PC6. ensure the types of mixing and compounding

PC7. ensure measurement of additives, pigments and materials.

Scrap Grinding & Agglomerator

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

PC8. study and operation of scrap grinding machines , blenders & agglomerator

Health & Safety

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

PC9. study about safety equipments and its use.

PC10. follow the dos and donts in area of operation

PC11. follow the safety precaution before majors operations.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the organization chart, relevant legislation, standards, policies, procedures & code of conduct followed in the company
KU2. different types of products manufactured by the company
KU3. quality check and grading and segregation of non conforming products
KU4. risk and impact of not following defined procedures/work instructions
KU5. 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 (e.g. 3s & 5s)
KU8. health, safety and environment guidelines
KU9. the impact of poor practices on health, safety and environment
KU10. the potential hazards and actions to minimize the same.
KU11. the impact of various practices on cost, quality, productivity, delivery and safety
KU12. handover/ takeover the equipment/ work area as per companys sop
KU13. the emergency stops procedure for compounding and extruder machine
KU14. cleanliness and safety requirements for commencing compounding & extruder
KU15. importance of rpm, temperature and pressure parameters.
KU16. preparation of formulations
KU17. raw material feeding auto / manual process,
KU18. health hazards of process and compounding ingredients
KU19. measurement techniques using gauges and balance (for thickness, width and weight)
KU20. response to emergencies e.g. power failures, fire and system failures and manual intervention to avoid disaster
KU21. knowledge of appropriate batch size with respect to appropriate machinery

Generic Skills (GS)

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

GS1. fill up appropriate technical forms, process charts, activity logs in required format of the company
GS2. perform functional mathematical operations, including apply basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes
GS3. enter into the history card details of the fault identified in the plastic product manufactured
GS4. read and understand manuals, warning, health and safety instructions, raw material labels, components, memos, reports, job cards etc
GS5. read images, graphs, diagrams
GS6. understand the various coding systems as per company norms
GS7. express opinions or information clearly
GS8. discuss task lists, schedules, and work-loads with co-workers
GS9. communicate with supervisors job & issue related tasks
GS10. communication between upstream and downstream teams

GS11. avoid using slang when communicating with a supervisor /fellow subordinates etc unless it is required

GS12. work in a team and other behavioral skills required to support the small group activities (quality circle, cross functional team, suggestion scheme)

GS13. practice honesty with respect to company property and time

GS14. take responsibility for completing ones own work assignment

GS15. take initiative to enhance/learn skills in ones area of work

GS16. learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse ones learning

GS17. identify new ways of doing things

GS18. envisage and articulate personal goals

GS19. avoid absenteeism

GS20. act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations

GS21. work in disciplined factory environment

GS22. be punctual

GS23. make decisions pertaining to the concerned area of work

GS24. the operation of different types of extruders

GS25. handling of plastics raw materials, additives and master batches

GS26. handling of various types of material handling equipment like forklifts, trolley etc.

GS27. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)

GS28. use common sense and make judgments during day to day basis.

GS29. use reasoning skills to identify and resolve basic problems.

GS30. identify immediate or temporary solutions to resolve delays analytical

GS31. diagnose common problems in the machine based on visual inspection, sound etc

GS32. suggest improvements(if any) in process based on experience

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Raw Materials	**7.5**	**18**	**-**	**-**
PC1. study the types of plastics used in extrusion and its properties	2.5	6	-	-
PC2. study the types of additives , master batches and pigments	2.5	6	-	-
PC3. store and handling of raw materials & house keeping	2.5	6	-	-
Extrusion Process	**5**	**12**	**-**	**-**
PC4. learn the types of extruders used in the extrusion process and their parts	2.5	6	-	-
PC5. store and handling of finished products & house keeping.	2.5	6	-	-
Compounding and Mixing	**4.5**	**12**	**-**	**-**
PC6. ensure the types of mixing and compounding	2.5	6	-	-
PC7. ensure measurement of additives, pigments and materials.	2	6	-	-
Scrap Grinding & Agglomerator	**2**	**6**	**-**	**-**
PC8. study and operation of scrap grinding machines , blenders & agglomerator	2	6	-	-
Health & Safety	**6**	**17**	**-**	**-**
PC9. study about safety equipments and its use.	2	7	-	-
PC10. follow the dos and donts in area of operation	2	5	-	-
PC11. follow the safety precaution before majors operations.	2	5	-	-
NOS Total	**25**	**65**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4601
NOS Name	Basics Plastics Raw Materials & Additives, Master batches, Pigments & Extrusion Concept
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Plastics Extrusion
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/N4602: Deal With Plastics Compounding / Mixing, Scrap Grinding, Agglomerating

Description

This OS unit is about providing knowledge of Plastics Compounding and Mixing

Scope

This unit/task covers the following:

- Understanding Chemicals, Additives and Colorants
- Types of Blenders and Mixers
- Parameters Involved in High Speed Mixing and Blending
- Study & Operation of Scrap Grinding & Agglomerating
- Health and Safety

Elements and Performance Criteria

Understanding Chemicals, Additives and Colorants

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

PC1. study the types of chemicals, additives and colorants.

PC2. laid down formulation for different products

PC3. do weighing and batch size

Types of Blenders and Mixers

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

PC4. study the types of blenders , mixers and their parts

PC5. prepare batches as per the formulations

PC6. do loading and unloading of batches.

Parameters Involved in High Speed Mixing and Blending

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

PC7. ensure the temperature, pressure and speed involved in blenders and mixers.

PC8. ensure the importance of each and every parameters.

PC9. precaution to be taken care during the batch preparation.

PC10. storing of batches after preparation.

Types of Scrap Grinders & Agglomerators

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

PC11. study the types of scrap grinders and agglomerator and their parts

PC12. study the operation & trouble shooting

PC13. ensure that storing, house keeping, safety while operation

Health & Safety

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

PC14. study about safety equipments and its use.

PC15. follow the dos and donts in area of operation
PC16. follow the safety precaution before majors operations.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. different types of formulation vis-a-vis products manufactured by the company
KU2. quality check and grading and segregation of non conforming batches
KU3. risk and impact of not following defined procedures/work instructions
KU4. types of documentation in organization and importance of the same
KU5. records to be maintained and implications of non-maintenance of the same
KU6. importance of housekeeping & good shop floor practices (e.g. 3s & 5s)
KU7. health, safety and environment guidelines
KU8. the impact of poor practices on health, safety and environment
KU9. potential hazards and actions to minimize the same.
KU10. the impact of various practices on cost, quality, productivity, delivery and safety
KU11. handover/ takeover the equipment/ work area as per companys sop
KU12. the emergency stops procedure for mixing and blending machines.
KU13. machine cleanliness and safety requirements for commencing compounding mixing & blender.
KU14. importance of rpm, temperature and pressure parameters.
KU15. importance of formulations vis-a-vis items produced.
KU16. health hazards of process and compounding ingredients
KU17. measurement techniques using gauges and balance.
KU18. response to emergencies e.g. power failures, fire and system failures and manual intervention to avoid disaster
KU19. knowledge of appropriate batch size with respect to appropriate machinery

Generic Skills (GS)

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

GS1. fill up appropriate technical forms, process charts, activity logs in required format of the company
GS2. enter into the history card details of the fault identified in the plastic product manufactured
GS3. read and understand manuals, warning, health and safety instructions, raw material labels, components, memos, reports, job cards etc
GS4. read images, graphs, diagrams
GS5. understand the various coding systems as per company norms
GS6. express opinions or information clearly
GS7. discuss task lists, schedules, and work-loads with co-workers

GS8. communicate with supervisors job & issue related tasks

GS9. communicate between upstream and downstream teams

GS10. avoid using jargon, slang or acronyms when communicating with a supervisor /fellow subordinates etc unless it is required

GS11. work in a team and other behavioral skills required to support the small group activities (quality circle, cross functional team, suggestion scheme)

GS12. practice honesty with respect to company property and time

GS13. take responsibility for completing ones own work assignment

GS14. take initiative to enhance/learn skills in ones area of work

GS15. learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse ones learning.

GS16. identify new ways of doing things

GS17. envisage and articulate personal goals

GS18. avoid absenteeism

GS19. act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations

GS20. work in disciplined factory environment

GS21. be punctual

GS22. make decisions pertaining to the concerned area of work

GS23. operate different types of blenders and mixers, scrap grinder & agglomerator.

GS24. handling of plastics additives, colorants and master batches

GS25. handling of various types of material handling equipment like forklifts, trolley etc

GS26. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)

GS27. use common sense and make judgments during day to day basis.

GS28. use reasoning skills to identify and resolve basic problems.

GS29. identify immediate or temporary solutions to resolve delays

GS30. diagnose common problems in the machine based on visual inspection, sound etc

GS31. suggest improvements(if any) in process based on experience

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Understanding Chemicals, Additives and Colorants	**3**	**15**	**-**	**-**
PC1. study the types of chemicals, additives and colorants.	1	5	-	-
PC2. laid down formulation for different products	1	5	-	-
PC3. do weighing and batch size	1	5	-	-
Types of Blenders and Mixers	**3**	**12**	**-**	**-**
PC4. study the types of blenders , mixers and their parts	1	4	-	-
PC5. prepare batches as per the formulations	1	4	-	-
PC6. do loading and unloading of batches.	1	4	-	-
Parameters Involved in High Speed Mixing and Blending	**5**	**25**	**-**	**-**
PC7. ensure the temperature, pressure and speed involved in blenders and mixers.	2	4	-	-
PC8. ensure the importance of each and every parameters.	1	7	-	-
PC9. precaution to be taken care during the batch preparation.	1	7	-	-
PC10. storing of batches after preparation.	1	7	-	-
Types of Scrap Grinders & Agglomerators	**2**	**19**	**-**	**-**
PC11. study the types of scrap grinders and agglomerator and their parts	1	7	-	-
PC12. study the operation & trouble shooting	0.5	7	-	-
PC13. ensure that storing, house keeping, safety while operation	0.5	5	-	-
Health & Safety	**2**	**14**	**-**	**-**

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. study about safety equipments and its use.	0.5	5	-	-
PC15. follow the dos and donts in area of operation	0.5	5	-	-
PC16. follow the safety precaution before majors operations.	1	4	-	-
NOS Total	**15**	**85**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4602
NOS Name	Deal With Plastics Compounding / Mixing, Scrap Grinding, Agglomerating
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Plastics Extrusion
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/N4603: Deal With HDPE / PVC Pipe Extruder & Film Extruder Machine Operation

Description

This OS unit is about knowledge of HDPE /PVC Pipe Extruder & Film Extruder Machine Operation.

Scope

This unit/task covers the following:

- HDPE / PVC Pipe Extruders and their parts
- Film Extruders & their Parts
- Extrusion Process and Parameters.
- Material Loading & Handling.
- Finished Items Segregating & Storing.
- Health and Safety

Elements and Performance Criteria

Extruders and their parts

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

PC1. study the types of hdpe / pvc extruders & their parts.

PC2. study the types of film extruders & their parts

PC3. study about start up & shutting down process.

PC4. do threading (initial take up) of pipes & films

PC5. follow the safety precaution to be taken during assembling and disassembling.

Material Loading & Handling

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

PC6. ensure material loading and handling.

PC7. handle the finished products segregation & stacking

PC8. ensure post production operation

Health & Safety

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

PC9. follow the safety equipments and its use.

PC10. follow dos and donts in area of operation

PC11. follow the safety precaution before major operations.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the organization chart, relevant legislation, standards, policies, procedures & code of conduct followed in the company

KU2. different types of products manufactured by the company
KU3. quality check and grading and segregation of non conforming products
KU4. risk and impact of not following defined procedures/work instructions
KU5. 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 (e.g. 3s & 5s)
KU8. health, safety and environment guidelines
KU9. the impact of poor practices on health, safety and environment
KU10. potential hazards and actions to minimize the same.
KU11. the impact of various practices on cost, quality, productivity, delivery and safety handover/ takeover the equipment/ work area as per companys sop
KU12. emergency stops procedure for extruder machines
KU13. cleanliness and safety requirements before and after operation.
KU14. process parameters and its control.
KU15. common faults and trouble shooting.
KU16. health hazards of process and safety precautions.
KU17. measurement techniques using gauges and balance (for thickness, width and weight)
KU18. response to emergencies e.g. power failures, fire and system failures and manual intervention to avoid disaster
KU19. knowledge of appropriate batch size with respect to appropriate machinery

Generic Skills (GS)

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

GS1. fill up appropriate technical forms, process charts, activity logs in required format of the company
GS2. enter into the history card details of the fault identified in the plastic product manufactured
GS3. read and understand manuals, warning, health and safety instructions, raw material labels, components, memos, reports, job cards etc
GS4. read images, graphs, diagrams
GS5. understand the various coding systems as per company norms
GS6. express opinions or information clearly
GS7. discuss task lists, schedules, and work-loads with co-workers
GS8. communicate with supervisors job & issue related tasks
GS9. communicate between upstream and downstream teams
GS10. avoid using jargon, slang or acronyms when communicating with a supervisor /fellow subordinates etc unless it is required
GS11. work in a team and other behavioral skills required to support the small group activities (quality circle, cross functional team, suggestion scheme)
GS12. practice honesty with respect to company property and time
GS13. take responsibility for completing ones own work assignment

GS14. take initiative to enhance/learn skills in ones area of work

GS15. learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse ones learning.

GS16. identify new ways of doing things

GS17. envisage and articulate personal goals

GS18. avoid absenteeism

GS19. act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations

GS20. work in disciplined factory environment

GS21. be punctual

GS22. make decisions pertaining to the concerned area of work

GS23. the operation of different types of extruders

GS24. handling of plastics raw materials, additives and master batches

GS25. handling of various types of material handling equipment like forklifts, trolley etc

GS26. think through the problem, evaluate the possible solution(s) and suggest an optimum /best possible solution(s)

GS27. use common sense and make judgments during day to day basis.

GS28. use reasoning skills to identify and resolve basic problems.

GS29. identify immediate or temporary solutions to resolve delays

GS30. diagnose common problems in the machine based on visual inspection, sound etc

GS31. suggest improvements(if any) in process based on experience

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Extruders and their parts	**6**	**21**	**-**	**-**
PC1. study the types of hdpe / pvc extruders & their parts.	1	4	-	-
PC2. study the types of film extruders & their parts	1	5	-	-
PC3. study about start up & shutting down process.	1	4	-	-
PC4. do threading (initial take up) of pipes & films	1	4	-	-
PC5. follow the safety precaution to be taken during assembling and disassembling.	2	4	-	-
Material Loading & Handling	**6**	**12**	**-**	**-**
PC6. ensure material loading and handling.	2	4	-	-
PC7. handle the finished products segregation & stacking	2	4	-	-
PC8. ensure post production operation	2	4	-	-
Health & Safety	**3**	**12**	**-**	**-**
PC9. follow the safety equipments and its use.	1	4	-	-
PC10. follow dos and donts in area of operation	1	4	-	-
PC11. follow the safety precaution before major operations.	1	4	-	-
NOS Total	**15**	**45**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4603
NOS Name	Deal With HDPE / PVC Pipe Extruder & Film Extruder Machine Operation
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Plastics Extrusion
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/N4604: reporting and documentation

Description

This unit is about carrying out reporting and documentation

Scope

This unit/task covers the following:

- Reporting of data/problem/incidents etc
- Documentation
- Information Security

Elements and Performance Criteria

Reporting

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

PC1. report data/problems/incidents as per the laid down procedure in the prescribed format and registers

PC2. report to the appropriate authority as laid down by the company procedure

Recording and Documentation

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

PC3. identify documentation to be completed relating to the job profile.

PC4. record details accurately in an appropriate format

PC5. complete all documentation within stipulated time according to company procedure.

PC6. make sure documents are available to all appropriate authorities to inspect.

Information Security

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

PC7. respond to requests for information in an appropriate manner whilst following organizational procedures.

PC8. inform the appropriate authority of requests for information received.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. different methods of recording information.

KU2. various documents that need to be maintained.

KU3. the company procedure for filling/maintaining up the documents

KU4. procedures for reporting to the appropriate authority

KU5. procedures for recording damage, breakages etc.

KU6. the importance of accurate documentation completion within a prescribed timeframe.

KU7. actions to be taken if the documents are not correct.

KU8. the importance of maintaining the security and confidentiality of recorded information.
KU9. procedures to maintain confidentiality of information
KU10. appropriate method for responding to requests for information

Generic Skills (GS)

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

GS1. construct simple sentences and express ideas clearly through written communication
GS2. fill up appropriate technical forms, process charts, activity logs in required format of the company
GS3. rread and understand manuals, health and safety instructions, memos, documents, reports, job cards etc
GS4. read images, graphs, diagrams etc
GS5. understand the various coding systems as per company norms
GS6. express statements, opinions or information clearly so that others can hear and understand
GS7. respond appropriately to any queries
GS8. communicate with supervisor, upstream and downstream teams
GS9. work in a team and other behavioral skills required to support the small group activities (quality circle, cross functional team, suggestion scheme)
GS10. practice honesty with respect to company property and time
GS11. communicate with people in a form and manner and using language that is open and respectful
GS12. resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust
GS13. take responsibility for completing ones own risk assignment
GS14. take initiative to enhance/learn skills in ones area of work
GS15. learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse ones learning.
GS16. identify new ways of doing things
GS17. envisage and articulate personal goals
GS18. avoid absenteeism
GS19. act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations
GS20. work in disciplined factory environment
GS21. be punctual
GS22. the operation of different types of extruders. handling of rubber compound & chemicals. handling of various types of material handling equipment like forklifts, trolley the capacity to apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technological. principles needed to explore and adapt systems.
GS23. seek clarification on problems from others
GS24. apply problem-solving approaches in different situations

GS25. refer anomalies to the line manager

GS26. interpret quality for sheet

GS27. suggest improvements(if any) in process/product/materials based on results and experience

GS28. proper collection of waste material

GS29. identify defects in the material and communicate it at the earliest and suggest improvements(if any) in process/material based on experience

GS30. diagnose common problems in the machine based on visual inspection, sound , temperature etc

GS31. suggest improvements(if any) in process based on experience

GS32. handle equipment/rubber sheet sb6. seek clarification on problems from others

GS33. apply problem-solving approaches in different situations

GS34. refer anomalies to the line manager

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Reporting	**4**	**9**	**-**	**-**
PC1. report data/problems/incidents as per the laid down procedure in the prescribed format and registers	2	4	-	-
PC2. report to the appropriate authority as laid down by the company procedure	2	5	-	-
Recording and Documentation	**12**	**24**	**-**	**-**
PC3. identify documentation to be completed relating to the job profile.	2	6	-	-
PC4. record details accurately in an appropriate format	4	6	-	-
PC5. complete all documentation within stipulated time according to company procedure.	4	6	-	-
PC6. make sure documents are available to all appropriate authorities to inspect.	2	6	-	-
Information Security	**4**	**12**	**-**	**-**
PC7. respond to requests for information in an appropriate manner whilst following organizational procedures.	2	6	-	-
PC8. inform the appropriate authority of requests for information received.	2	6	-	-
NOS Total	**20**	**45**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4604
NOS Name	reporting and documentation
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Plastics Extrusion
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/N4605: To carry out quality checks

Description

This unit is about carrying out quality control activities

Scope

This unit/task covers the following:

- Inspection: Carrying out quality checks to identify problems
- Analysis: Take corrective actions
- Reporting the results

Elements and Performance Criteria

Inspection

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

PC1. ensure that total range of checks as per the prescribed national and international standards on regular intervals throughout the shifts.

PC2. use appropriate measuring instruments, equipment, tools, accessories etc, as prescribed / required

Analysis

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

PC3. identify non-conformities to quality assurance standards.

PC4. identify potential causes of non-conformities to quality assurance standards

PC5. identify impact on final product due to non-conformance to prescribed standards.

PC6. evaluate the need for action to ensure that problems do not reoccur.

PC7. suggest corrective action to address problem.

PC8. review effectiveness of corrective action.

Reporting

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

PC9. interpret the results of the quality check correctly

PC10. take up results of the findings with qc in charge/appropriate authority.

PC11. take up the results of the findings within stipulated time

PC12. rrecord of results of action taken.

PC13. record adjustments not covered by established procedures for future reference.

PC14. review effectiveness of action taken.

PC15. follow reporting procedures where the cause of defect cannot be identified.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. the importance of quality control procedures with respect to national and international standards.

KU2. relevance and importance of activities and how they contribute to the achievement of the quality objectives,

KU3. proper procedure for selecting the material/product and performing quality checks without affecting the material

KU4. availability of work instructions, as necessary,

KU5. characteristics of the product/material

KU6. use of suitable equipment.

KU7. availability and use of monitoring and measuring devices,

KU8. the requirements of records.

KU9. the importance of maintaining accurate up-to-date records.

KU10. need to report within the stipulated time.

KU11. implications of inaccurate measuring and testing instruments and equipment.

KU12. the cost of non-conformance to quality standards.

KU13. implications (impact on internal/external customers) of defective products, materials or components

Generic Skills (GS)

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

GS1. construct simple sentences and express ideas clearly through written communication

GS2. fill up appropriate technical forms, process charts, activity logs in required format of the company

GS3. write simple letters, mails, etc

GS4. perform functional mathematical operations, including apply basic mathematical principles, such as numbers and space, and techniques such as estimation and approximation, for practical purposes

GS5. read and understand manuals, health and safety instructions, memos, reports, job cards etc

GS6. read images, graphs, diagrams

GS7. understand the various coding systems as per company norms

GS8. express statements, opinions or information clearly so that others can hear and understand

GS9. respond appropriately to any queries

GS10. communicate with supervisor

GS11. communicate with upstream and downstream teams

GS12. work in a team and other behavioral skills required to support the small group activities (quality circle, cross functional team, suggestion scheme)

GS13. practice honesty with respect to company property and time

GS14. communicate with people in a form and manner and using language that is open and respectful

GS15. resolve any difficulties in relationships with colleagues , or get help from an appropriate person, in a way that preserves goodwill and trust

GS16. take responsibility for completing ones own work assignment

GS17. take initiative to enhance/learn skills in ones area of work

GS18. learn from experience in a range of settings and scenarios and the capacity to reflect on and analyse ones learning.

GS19. identify new ways of doing things

GS20. envisage and articulate personal goals

GS21. avoid absenteeism

GS22. act objectively , rather than impulsively or emotionally when faced with difficult/stressful or emotional situations

GS23. work in disciplined factory environment

GS24. be punctual

GS25. the operation of different types of measuring instruments.

GS26. the operation of different types of testing equipments.

GS27. handle of various types of material handling equipment like forklifts, trolley.

GS28. apply technology, combining the physical and sensory skills needed to operate equipment with the understanding of scientific and technological principles needed to explore and adapt systems.

GS29. seek clarification on problems from others

GS30. apply problem-solving approaches in different situations

GS31. refer anomalies to the line manager

GS32. interpret quality for sheet

GS33. suggest improvements(if any) in process/product/materials based on results and experience

GS34. proper collection of waste material

GS35. identify defects in the material and communicate it at the earliest and suggest improvements (if any) in process/material based on experience

GS36. diagnose common problems in the machine based on visual inspection, sound , temperature etc

GS37. to suggest improvements(if any) in process based on experience

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Inspection	**2**	**5**	**-**	**-**
PC1. ensure that total range of checks as per the prescribed national and international standards on regular intervals throughout the shifts.	1	3	-	-
PC2. use appropriate measuring instruments, equipment, tools, accessories etc, as prescribed / required	1	2	-	-
Analysis	**6**	**22**	**-**	**-**
PC3. identify non-conformities to quality assurance standards.	1	2	-	-
PC4. identify potential causes of non-conformities to quality assurance standards	1	4	-	-
PC5. identify impact on final product due to non-conformance to prescribed standards.	1	4	-	-
PC6. evaluate the need for action to ensure that problems do not reoccur.	1	4	-	-
PC7. suggest corrective action to address problem.	1	4	-	-
PC8. review effectiveness of corrective action.	1	4	-	-
Reporting	**7**	**18**	**-**	**-**
PC9. interpret the results of the quality check correctly	1	4	-	-
PC10. take up results of the findings with qc in charge/appropriate authority.	1	4	-	-
PC11. take up the results of the findings within stipulated time	1	2	-	-
PC12. rrecord of results of action taken.	1	2	-	-
PC13. record adjustments not covered by established procedures for future reference.	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. review effectiveness of action taken.	1	2	-	-
PC15. follow reporting procedures where the cause of defect cannot be identified.	1	2	-	-
NOS Total	**15**	**45**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	RSC/N4605
NOS Name	To carry out quality checks
Sector	Rubber
Sub-Sector	Manufacturing / Plastics Processing
Occupation	Plastics Extrusion
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

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/N4601.Basics Plastics Raw Materials & Additives, Master batches, Pigments & Extrusion Concept	25	65	-	-	90	25
RSC/N4602.Deal With Plastics Compounding / Mixing, Scrap Grinding, Agglomerating	15	85	-	-	100	20
RSC/N4603.Deal With HDPE / PVC Pipe Extruder & Film Extruder Machine Operation	15	45	-	-	60	15
RSC/N4604.reporting and documentation	20	45	-	-	65	15
RSC/N4605.To carry out quality checks	15	45	-	-	60	15
Total	**100**	**315**	**-**	**-**	**415**	**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.