Model Curriculum

QP Name: Plastic Recycling Operator

QP Code: SGJ/Q4005

QP Version: 1.0

NSQF Level: 3

Model Curriculum Version: 1.0

CBIP Building, Plot No 4, Malcha Marg, Block C, Institutional Area, Chanakyapuri,
New Delhi- 110021

Contents

Training Parameters

Sector	Green Job
Sub-Sector	Waste Management
Occupation	Technician
Country	India
NSQF Level	3
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8143.9900 Plastic Moulding Technician or Operator
Minimum Educational Qualification and Experience	Grade 10 with no experience required Or Grade 8 with two year of (NTC/ NAC) after 8th with no experience required Or Grade 8 pass and pursuing continuous schooling in regular school with vocational subject with no experience required Or 8th grade pass with 2years relevant experience Or 5th grade pass with 5 years relevant experience Or Previous relevant Qualification of NSQF Level 2 with 3 year relevant experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed on	31.08.2023
Next Review Date	30.08.2026
NSQC Approval Date	31.08.2023
QP Version	1.0
Model Curriculum Creation Date	31.08.2023
Model Curriculum Valid Up to Date	30.08.2023
Model Curriculum Version	1.0
Minimum Duration of the Course	360 hours includes 240 hours (Theory+ Practical) +30 hours Employability Skills+90 hours On the Job Training (OJT)
Maximum Duration of the Course	360 hours includes 240 hours (Theory+ Practical) +30 hours Employability Skills+90 hours On the Job Training (OJT)

Program Overview

This section summarizes the end objectives of the program along with its duration.

Training Outcomes

At the end of the program, the learner will be able to:

- Know the raw material specifications of the unit, have a thorough understanding of machinery and other tools used in the unit
- List down resource requirement
- Operate the machinery
- Check the health of machinery and equipment
- Manage staff and workers of the unit
- Network with other technicians
- Understand the compliance requirement
- Understand the operational procedures of the machines
- Check the quality of the end product
- Package and deliver the end product
- Maintain Environment, Health and Safety within the facility
- Have effective communication and soft skills

Compulsory Modules

The table lists the modules, their duration and mode of delivery.

NOS and Module Details	Theory Duration	Practical Duration	Employability Skills	On the Job Training	Total Duration
SGJ/N4033: Introduce Plastic recycling **NOS Version No. 1.0** **NSQF Level 3** **Credit:1**	**20:00**	**10:00**			**30:00**
Module 1: Introduction to Plastic Recycling Unit	**20:00**	**10:00**			**30:00**
SGJ/N4034: Describe tools and Equipment/mach	**20:00**	**10:00**			**30:00**

ineries used for Plastic recycling NOS Version No. 1.0 NSQF Level 3 Credit:1					
Module 2: Identify and demonstrate use of different tools and equipment/machi neries used in plastic recycling	**10:00**	**20:00**			**30:00**
SGJ/N4035 Describe process line and products of plastic recycling NOS Version No. 1.0 NSQF Level 3 Credit:4	**40:00**	**80:00**			**120:00**
Module 3: Processing of plastic waste into chips	**10:00**	**20:00**			**30:00**
Module 4: Processing of plastic waste into granules	**10:00**	**20:00**			**30:00**
Module 5: Processing of plastic waste into board	**10:00**	**20:00**			**30:00**
Module 6: Processing of LDPE plastic waste into LDPE Recycled Sheets	**10:00**	**20:00**			**30:00**
SGJ/N4036: Describe operation and maintenance of plastic recycling unit NOS Version No. 1.0 NSQF Level 3 Credit:1	**10:00**	**20:00**			**30:00**

Modules 7: Maintenance of machinery	**10:00**	**20:00**			**30:00**
SGJ/N04052: Maintain Personal Health & Safety in plastic recycling facility NOS Version No. 3.0 NSQF Level 3 Credit:1	**15:00**	**15:00**			**30:00**
Module 8: Maintain Environment, Health & Safety at plastic recycling unit	**15:00**	**15:00**			**30:00**
DGT/VSQ/N0101 Employability Skill NOS Version No. 1.0 NSQF Level 2 Credit:1			**30.00**	**0.00**	**30:00**
Module 9: Employability Skills			**30.00**	**0.00**	**30:00**
On the Job training			**0.00**	**90.00**	**90:00**
Total Duration	**95:00**	**145:00**	**30.00**	**90.00**	**360:00**

Module Details

Module 1: Introduction to Plastic Recycling Unit
Mapped to SGJ/N4033: Introduce Plastic recycling

Terminal Outcomes:

- Explain plastic waste and its sources
- Explain functioning of a recycling unit

Duration: 20:00	*Duration: 10:00*

Theory – Key Learning Outcomes	Practical – Key Learning Outcomes
• Brief introduction to 'Waste Stream' and different types of waste found • Brief about different types of plastic and its uses • Different types of plastics waste that exists in the waste stream and different conditions it is found in. • Explain physical and chemical properties of different kinds of plastic waste • Brief different types of technologies/ machines for plastic recycling • Explain operational procedure of plastic waste recycling unit	• Exposure visits to landfills, MRFs, and open dumpsites • Interaction with on-ground waste pickers, sanitation workers, recyclers, and eco-guards • Expose plastic recycling facility to have an overview of the operations
Classroom Aids	
Whiteboard, Marker, Duster, Projector, Laptop, PowerPoint Presentation, Pictorial charts, illustrative Pictures, Samples of all types of plastic waste, Summary of key articles on plastic waste	
Tools, Equipment and Other Requirements	
Safety equipment for exposure visits	

Module 2: Identify and demonstrate use of different tools and equipment/machineries used in plastic recycling
Mapped to SGJ/N4034: Describe tools and Equipment/machineries used for Plastic recycling

Terminal Outcomes:

- Differentiate between different technologies for recycling different types/grades of plastic waste.
- Demonstrate use of different tools in use
- Demonstrate the operations of machinery of a recycling unit
- Identify each component of machinery
- Explain all factors that contribute to the recycling process

Duration: 10:00	*Duration: 20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss different types of machines/technologies used to recycle different types/grades of plastic • Discuss raw material specification for each machinery • Explain factors affecting the processing/ recycling of the plastic waste • Identify various tools used in the recycling unit • Discuss specifications of machines/equipment • Discuss specific requirement: electric load, temperature, pressure, feeding cycle and capacity, manpower requirement at each unit • Discuss dos and don'ts while assembling components of machines • Discuss requirements of end product so specific procedures can be followed accordingly	• Illustrate different machines and equipment used to recycle plastic • Overview of the requirement of other utility items like electricity, water, boiler, space, etc • Overview of various tools including safety tools used in the recycling unit • Illustrate about the machine and its components • List out Factors affecting selection of machinery/ plastic waste at the unit • Ability to calculate requirement of raw material, power load, human resource and other utility items for recycling of plastic waste
Classroom Aids	
Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, Presentation, Participant Handbook	
Tools, Equipment and Other Requirements	
Machinery and equipment at recycling units	

Module 3: Processing of plastic waste into chips
Mapped to SGJ/N4035: Describe process line and products of plastic recycling

Terminal Outcomes:

- Understanding of the process of converting plastic waste into chips
- Knowledge of procedure for preparing raw material quality report
- Knowledge of specific machinery, raw material and end product specification
- Understanding of documentation that is required to be done for the end product, its packaging and dispatch

Duration: 10:00	*Duration: 20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**

• Raw material specification of the chip- quality and quantity • Knowledge of procedures to conduct quality analysis of the raw material received at the unit • Procedure to prepare quality report of the raw material received • Knowledge of pre- process requirements for preparing the feed stock for recycling • Knowledge of machines and technology required for making chips- • Knowledge of SOP (process of segregation, washing, grinding, and cleaning) for converting plastic waste into chips • Packing of the end product for sale • Maintaining necessary documentation for facility and for dispatch of end product	• Practical experience of day-to-day functioning of plastic grinding facility • Practical experience of all the theoretical training provided in the module • Demonstrate Packing of the end product for sale. • Show how to prepare necessary documentation for facility and for dispatch of end product
Classroom Aids	
Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, and Presentation	
Tools, Equipment and Other Requirements	
Machinery/ equipment at the recycling unit that converts plastic waste into chips	

Module 4: Processing of plastic waste into granules
Mapped to SGJ/N4035: Describe process line and products of plastic recycling

Terminal Outcomes:

- Understanding of the process of converting plastic waste into granules
- Knowledge of procedure for preparing raw material quality report
- Knowledge of specific machinery, raw material and end product specification
- Understanding of documentation that is required to be done for the end product, its packaging and dispatch

Duration: 10:00	*Duration: 20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**

• Raw material specification of the granules- quality and quantity • Knowledge of procedures to conduct quality analysis of the raw material received at the unit • Procedure to prepare quality report of the raw material received • Knowledge of pre- process requirements for preparing the feed stock for recycling including the knowledge of other raw material like chemicals, pigments, etc required to produce the granules of specific requirement • Knowledge of machines and technology required for making granules • Knowledge of SOP (process of segregation, washing, grinding, and extrusion) for converting plastic waste into granules • Packing of the end product for sale • Maintaining necessary documentation for facility and for dispatch of end product	• Practical experience of day-to-day functioning of plastic grinding facility • Practical experience of all the theoretical training provided in the module • Demonstrate Packing of the end product for sale. • Show how to prepare necessary documentation for facility and for dispatch of end product
Classroom Aids	
Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, and Presentation	
Tools, Equipment and Other Requirements	
Machinery/ equipment at the recycling unit that converts plastic waste into granules	

Module 5: Processing of plastic waste into board
Mapped to SGJ/N4035: Describe process line and products of plastic recycling

Terminal Outcomes:

- Understanding of the process of converting plastic waste into boards
- Knowledge of procedure for preparing raw material quality report
- Knowledge of specific machinery, raw material and end product specification
- Understanding of documentation that is required to be done for the end product, its packaging and dispatch

Duration: 10:00	*Duration: 20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**

• Raw material specification of the board- quality and quantity • Knowledge of procedures to conduct quality analysis of the raw material received at the unit • Procedure to prepare quality report of the raw material received • Knowledge of pre- process requirements for preparing the feed stock for recycling • Knowledge of machines and technology required for making boards • Knowledge of SOP (process of segregation, washing, grinding, chiller, boiler, hot and cold press, cutter) for converting plastic waste into boards • Packing of the end product for sale • Maintaining necessary documentation for facility and for dispatch of end product	• Practical experience of day-to-day functioning of plastic grinding facility • Practical experience of all the theoretical training provided in the module • Demonstrate Packing of the end product for sale. • Show how to prepare necessary documentation for facility and for dispatch of end product
Classroom Aids	
Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, and Presentation	
Tools, Equipment and Other Requirements	
Machinery/ equipment at the recycling unit that recycles plastic waste into board	

Module 6: Processing of LDPE plastic waste into LDPE Recycled Sheets Mapped to SGJ/N4035: Describe process line and products of plastic recycling

Terminal Outcomes:

- Understanding of the process of converting LDPE plastic waste into LDPE Recycled Sheets
- Knowledge of procedure for preparing raw material quality report
- Knowledge of specific machinery, raw material and end product specification
- Understanding of documentation that is required to be done for the end product, its packaging and dispatch

Duration: 10:00	*Duration: 20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**

• Raw material specification of the sheet quality and quantity • Knowledge of procedures to conduct quality analysis of the raw material received at the unit • Procedure to prepare quality report of the raw material received • Knowledge of pre-process requirements for preparing the LDPE sheets for recycling known as 'Layering Process' • Knowledge of machines and technology required for making LDPE sheets • Knowledge of SOP (process of segregation, washing, cleaning, and cutting) for converting LDPE plastic waste into sheet • LDPE Plastic Waste Recycled sheet designing and production • Packing of the end product for sale • Maintaining necessary documentation for facility and for dispatch of end product	• Practical experience of day-to-day functioning of LDPE plastic waste sheet press machinery, facility, and process • Practical experience of all the theoretical training provided in the module • Demonstrate Packing of the end product for sale. • Show how to prepare necessary documentation for facility and for dispatch of end product
Classroom Aids	
Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, and Presentation	
Tools, Equipment and Other Requirements	
Machinery/ equipment at the recycling unit that converts LDPE plastic waste into LDPE Plastic Waste Sheets • Sheet Making Machine • Layering Table • Cooling Table	

Module 7: Maintenance of machinery

Mapped to SGJ/N4036: Describe operation and maintenance of plastic recycling unit

Terminal Outcomes:

- Understanding of health of the machinery and its components
- Skill to identify dysfunctions in the machinery in the early phases
- Skill to arrange repairman/ resolve the issue in due time

Duration: 10:00	*Duration: 20:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**

• Skill to check the health of machinery and equipment • Ability to figure out dysfunctionality of parts of machinery • Ability to identify problem in the machinery at initial phases • Ability to identify technicians to repair the dysfunctional part of the machinery • Ability to resolve the issue at the earliest in the most efficient manner	• Ability to differentiate between critical and non-critical issues related to machineries and the unit • Under the guidance of experts, exposure to identify dysfunctions in machines • Ability to re address the issues related to machinery • Ability to get the machinery repaired and in proper shape in due time
Classroom Aids	
Training kit (Trainer guide, Presentations), White board, Marker, Projector, Laptop, and Presentation	
Tools, Equipment and Other Requirements	
Machinery/ equipment at the recycling unit	

Module 8: Maintain Personal Health & Safety in Plastic recycling facility

Mapped to SCGJ/N4052: Maintain Personal Health & Safety in Plastic recycling facility

Terminal Outcomes:

- Explain how to follow established safe work procedure.
- Explain to use and maintain personal protective equipment.
- Discuss to identify and mitigate safety hazards.
- Demonstrate safe and proper use of required tools and equipment.

Duration: 15:00	*Duration: 15:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Identify the requirements for safe work area. • Explain how to Administer first aid. • Identify the personal protective equipment used for the specific purpose. • Identify the heavy electrical and mechanical equipment's associated with manufacturing. • Identify work safety procedures and instructions to operate plastic recycling facility • Explain occupational health & safety standards and regulations for Plastic recycling process.	• Demonstrate how to Administer first aid. • Illustrate the personal protective equipment used for the specific purpose • Show how to Identify the heavy electrical and mechanical equipment's associated with plastic recycling facility. • Demonstrate how to Identify and perform work safety procedures and instructions to operate plastic recycling machines. • Demonstrate good housekeeping practices and infection control guidelines. • Demonstrate how to Dispose- off any waste materials in accordance with safe working practices and procedures.
Classroom Aids	
Laptop, white board, marker, projector, charts	
Tools, Equipment and Other Requirements	
Site Visit for Practical Learning	

Module 09: Employability Skill (30 Hours)

Mapped to DGT/VSQ/N0101

Terminal Outcomes:

- Communicate effectively with team members, clients, vendors, visitors and stake holders
- Build personal and professional
- Digital and financial literacy which includes basic components of computer system and related concept, saving money, opening bank account and filing tax return

Duration: *30:00*
Key Learning Outcomes
• Discuss the importance of Employability Skills in meeting the job requirements • Explain constitutional values, civic rights, duties, citizenship, responsibility towards society etc. that are required to be followed to become a responsible citizen. • Show how to practice different environmentally sustainable practices • Discuss 21st century skills. • Display positive attitude, self -motivation, problem solving, time management skills and continuous learning mindset in different situations. • Use appropriate basic English sentences/phrases while speaking • Demonstrate how to communicate in a well -mannered way with others. • Demonstrate working with others in a team • Show how to conduct oneself appropriately with all genders and PwD • Discuss the significance of reporting sexual harassment issues in time • Discuss the significance of using financial products and services safely and securely. • Explain the importance of managing expenses, income, and savings. • Explain the significance of approaching the concerned authorities in time for any exploitation as per legal rights and laws • Show how to operate digital devices and use the associated applications and features, safely and securely • Discuss the significance of using internet for browsing, accessing social media platforms, safely and securely • Discuss the need for identifying opportunities for potential business, sources for arranging money and potential legal and financial challenges • Differentiate between types of customers • Explain the significance of identifying customer needs and addressing them • Discuss the significance of maintaining hygiene and dressing appropriately • Create a biodata • Use various sources to search and apply for jobs • Discuss the significance of dressing up neatly and maintaining hygiene for an interview • Discuss how to search and register for apprenticeship opportunities
Classroom Aids
Laptop, white board, marker, projector, charts

Tools, Equipment and Other Requirements
Computer (PC) with latest configurations – and Internet connection with standard operating system

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
ITI	NA	3				
Certified under relevant Craft Instructor Training Scheme (CITS) course						

Trainer Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Plastic Recycling Operator" mapped to QP: "SGJ/Q4005 Version 1.0". Minimum accepted score as per SCGJ is 70%.	Recommended that the Trainer is certified, mapped (VET and Skills)", to the Qualification Pack: "MEP/Q2601, V2.0". Minimum accepted Score as per SCGJ is 80%.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
ITI		5				
Certified under relevant Craft Instructor Training Scheme (CITS) course						

Assessor Certification	
Domain Certification	**Platform Certification**
Certified for Job Role: "Plastic Recycling Operator" mapped to QP: "SGJ/Q4005 Version 1.0". Minimum accepted score as per SCGJ is 70%.	Recommended that the Assessor is certified, mapped (VET and Skills)", to the Qualification Pack: "MEP/Q2701", V2.0. Minimum accepted Score as per SCGJ is 80%.

Assessment Strategy

This section includes the processes involved in identifying, gathering and interpreting information to evaluate the learner on the required competencies of the program.

1. Assessment System Overview:

    - Batches assigned to the assessment agencies for conducting the assessment on SDSM/SIP or email
    - Assessment agencies send the assessment confirmation to VTP/TC looping SSC
    - Assessment agency deploys the ToA certified Assessor for executing the assessment
    - SSC monitors the assessment process & records
    - If the batch size is more than 30, then there should be 2 Assessors.

2. Testing Environment: Assessor must:

    - Confirm that the centre is available at the same address as mentioned on SDMS or SIP
    - Check the duration of the training.
    - Check the Assessment Start and End time to be as 10 a.m. and 5 p.m.
    - Check that the allotted time to the candidates to complete Theory & Practical Assessment is correct.
    - Check the mode of assessment—Online (TAB/Computer) or Offline (OMR/PP).
    - Confirm the number of TABs on the ground are correct to execute the Assessment smoothly.
    - Check the availability of the Lab Equipment for the particular Job Role.

3. Assessment Quality Assurance levels / Framework:

    - Question papers created by the Subject Matter Experts (SME)
    - Question papers created by the SME verified by the other subject Matter Experts
    - Questions are mapped with NOS and PC
    - Question papers are prepared considering that level 1 to 3 are for the unskilled & semi-skilled individuals, and level 4 and above are for the skilled, supervisor & higher management
    - Assessor must be ToA certified & trainer must be ToT Certified.

4. Types of evidence or evidence-gathering protocol:
    - Time-stamped & geotagged reporting of the assessor from assessment location
    - Centre photographs with signboards and scheme specific branding
    - Biometric or manual attendance sheet (stamped by TP) of the trainees during the training period
    - Time-stamped & geotagged assessment (Theory + Viva + Practical) photographs & videos

5. Method of verification or validation:
    - Surprise visit to the assessment location
    - Random audit of the batch
    - Random audit of any candidate

6. Method for assessment documentation, archiving, and access
    - Hard copies of the documents are stored

- Soft copies of the documents & photographs of the assessment are uploaded / accessed from Cloud Storage and are stored in the Hard Drives

References

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 organization.
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 organizational specific knowledge that an individual needs in order to perform to the required standard.
Organizational Context	Organizational context includes the way the organization is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
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.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NOS	National Occupational Standards
TVET	Technical and Vocational Education and Training
SOP	Standard Operating Procedure
CBG	Compressed Bio Gas
SAP	Systems, Applications & Products in Data Processing
PPE	Personal Protective Equipment
LDPE	Low Density Polyethylene