Model Curriculum

QP Name: Mulberry Cocoon sorter, Dryer cum Grader

QP Code: TSC/Q7102

QP Version: 1.0

NSQF Level: 4

Model Curriculum Version: 1.0

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Training Parameters

Sector	Textile
Sub-Sector	Handloom &Khadi
Occupation	Preparatory
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7318.9900
Minimum Educational Qualification and Experience	Basic literacy and numeracy with 0-6 months of experience
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 years
Last Reviewed On	19/02/2021
Next Review Date	19/02/2026
NSQC Approval Date	
QP Version	1.0
Model Curriculum Creation Date	19/02/2021
Model Curriculum Valid Up to Date	19/02/2026
Model Curriculum Version	1.0
Minimum Duration of the Course	300 hours
Maximum Duration of the Course	300 hours

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:

- Sort, grade and mix cocoon samples.
- Perform reelability test of cocoons.
- Undertake the process to dry cocoon samples.
- Maintain work area, tools, and machines as per guidelines.
- Follow greening and energy conservation activities as per guidelines.
- Describe the importance of health, safety, and security at the workplace.
- Communicate and work effectively in a team.
- Comply with organizational and industry standards.

Compulsory Modules

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

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
Bridge Module	**03:00**	**01:00**			**04:00**
Module 1: Introduction to silk sub sector and cocoon sorter, drier cum grader responsibilities	03:00	01:00			04:00
TSC/N7103 - Collect, sort and mix green cocoons Version 1.0 NSQF Level - 4	**32:00**	**118:00**			**150:00**
Module 2: Cocoon sorting and grading	06:00	27:00			33:00
Module 3: Cocoon transfer and storage	06:00	27:00			33:00
Module 4: Reelability test	10:00	27:00			37:00
Module 5: Cocoon mixing	10:00	37:00			47:00
TSC/N7104 - Undertake drying operation of graded cocoons Version 1.0 NSQF Level - 4	**20:00**	**46:00**			**66:00**
Module 6: Cocoon preparation for drying	10:00	16:00			26:00
Module 7: Cocoon drying process	10:00	30:00			40:00

NOS and Module Details	Theory Duration	Practical Duration	On-the-Job Training Duration (Mandatory)	On-the-Job Training Duration (Recommended)	Total Duration
TSC/N9015: Follow machine, safety & organizational guidelines in textile sector Version 1.0 NSQF Level - 4	**19:00**	**46:00**			**65:00**
Module 8: Maintaining the work area, tools and machines	02:00	06:00			08:00
Module 9: Greening and energy conservation in textile sector	02:00	06:00			08:00
Module 10: Health, safety and emergency response at workplace	09:00	23:00			32:00
Module 11: Organizational standards and policies	06:00	11:00			17:00
TSC/N9016:Follow teamwork, adaptability and communication guidelines in textile sector Version 1.0 NSQF Level - 4	**05:00**	**10:00**			**15:00**
Module 12: Teamwork, trust and communication	03:00	07:00			10:00
Module 13: Adaptability	02:00	03:00			05:00
Total Duration	**79:00**	**221:00**			**300:00**

Module Details

Module 1: Introduction to silk sub-sector and cocoon sorter, drier cum grader responsibilities

Bridge Module

Terminal Outcomes:

- Describe the role and significance of the silk industries in the textile sector.
- Explain the position and significance of the role of Mulberry cocoon sorter, dryer cum grader in the hierarchy line in the silk industry.
- Discuss the rules and regulations of the silk reeling unit.

Duration: ***03:00***	**Duration**: ***01:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the objectives of skill development programs. • Discuss the expectation of the program. • Discuss the contribution of Indian silk industries to the country's economy. • Describe the roles and responsibilities of Mulberry cocoon sorter, dryer cum grader. • List the rules and regulations followed in a silk reeling unit like shift timing and duration, limits of leave, and holidays, etc.	• Prepare an organization chart depicting the various departments in a silk unit and their roles.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment, and Other Requirements	
Samples of cocoons – 5 Kgs, Defective cocoons – 5 Kgs, Cocoon drying machine - 1, Silk process and material flow chart – 2 Nos	

Module 2: Cocoon sorting and grading

Mapped to TSC/N7103, v1.0

Terminal Outcomes:

- Identify and segregate defective and good cocoons.
- Prepare a report on segregated cocoons.

Duration: *06:00*	**Duration**: *27:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the process and material flow of silk production. • Classify the available varieties of cocoons. • Categorize the types of defects in cocoons infected, urinated, uzi, etc. • Distinguish between different qualities of cocoons. • Discuss the properties of the good cocoon. • Discuss the impact of the cocoon defects on process and product quality in post-processing.	• Segregate good and defective cocoons. • Measure the weight of defective and good cocoons and record the findings as per the standard procedure. • Prepare a sample report on the quantity of good and defective cocoons in the standard format.
Classroom Aids:	
Charts, Projector, Blackboard, Note books, Pens.	
Tools, Equipment, and Other Requirements	
Cocoon samples - 5 Kgs, Weighing balance - 1 Auto sorter - 1, Cocoon Sorting table – 2 Nos, Cocoon report format - 30	

Module 3: Cocoon transfer and storage

Mapped to TSC/N7103, v1.0

Terminal Outcomes:

- Demonstrate the process of transferring cocoons to the drying area as per the standard procedure.
- Store cocoons as per the standard storing method.

Duration: *06:00*	**Duration**: *27:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Classify the available operational tools required for cocoon transfer and storage. • Discuss various factors that impact cocoon storage. • Discuss the importance of the prescribed method of transport of reelable cocoons.	• Demonstrate the process of preparing the cocoon storing area as per the standard method. • Demonstrate cocoon transfer using prescribed trolley. • Demonstrate the process of storing segregated cocoons as per the standard method.
Classroom Aids:	
Charts, Projector, Blackboard, Notebooks, Pens, Chalk, Markers	
Tools, Equipment, and Other Requirements	
Cocoon samples – 5 Kgs, Cocoon storing bag – 5 Nos, Cocoon transferring trolley – 2 Nos, Cleaning brush – 5 Nos	

Module 4: Reelability test

Mapped to TSC/N7103, v1.0

Terminal Outcomes:

- Perform cocoon reelability test as per the standard procedure.
- Prepare reelability test report as per standard format.

Duration: ***10:00***	**Duration**: ***27:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Explain the cocoon testing parameters for quality assessment. • List the steps of the cocoon reelability test. • Classify operational tools required for cocoon reelability test. • Discuss potential hazards while conducting a reelability test. • Discuss the impact of cocoon defects on final product quality.	• Segregate reeling quality cocoons from a given lot for processing. • Test a sample set of cocoons for reelability as per the standard operating procedure. • Prepare a sample reelability test report as per standard format. • Demonstrate the process of disposing of cocoons after the reelability test as per the standard method.
Classroom Aids:	
Charts, Projector, Blackboard, Note books, Pens.	
Tools, Equipment, and Other Requirements	
Cocoon samples – 5 Kgs, Weighing balance - 1, Auto sorter -1, Cocoon Sorting table - 1, Multi end reel - 1	

Module 5: Cocoon mixing

Mapped to TSC/N7103, v1.0

Terminal Outcomes:

- Perform cocoon mixing as per the quality requirement.
- Transfer mixed cocoons as per the standard method.

Duration: ***10:00***	**Duration**: ***37:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the need for cocoon mixing to achieve the required quality and cost. • Describe the factors to be considered while cocoon mixing. • Discuss the advantages of cocoon mixing. • Discuss the costs of various varieties of silk in the market and the factors affecting them.	• Carryout cocoon mixing as per final quality and cost requirement. • Prepare sample cocoon mixing and grade report as per standard format. • Demonstrate the process of transferring mixed cocoon to drying area as per the standard procedure.
Classroom Aids:	
Charts, Projector, Blackboard, Note books, Pens.	
Tools, Equipment, and Other Requirements	
Cocoon samples – 5 Kg, Cocoon sorting table – 2 Nos, Cocoon transferring trolley – 1 Nos, Cleaning brush – 5 Nos	

Module 6: Cocoon preparation for drying

Mapped to TSC/N7103, v1.0

Terminal Outcomes:

- Prepare cocoon drying machine for operation.
- Handle cocoons as per the standard method.

Duration: ***10:00***	**Duration**: ***16:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the preparation activity for the cocoon drying operation with steps. • Discuss checklist for cocoon drying operation. • Classify the operational tools required for cocoon drying.	• Show the steps to prepare the cocoon drying machine for operation. • Demonstrate the process of operating a drying machine as per the standard procedure. • Exhibit the standard method to arrange a given set of cocoons in the feeding trolley. • Demonstrate the process of feeding cocoons to a drying machine as per the standard loading method.
Classroom Aids:	
Charts, Projector, Blackboard, Note books, Pens.	
Tools, Equipment, and Other Requirements	
Cocoon samples - 5 Kgs, Cocoon sorting table - 1, Cocoon Transferring trolley - 1, Cocoon drying machine - 1	

Module 7: Cocoon drying process

Mapped to TSC/N7103, v1.0

Terminal Outcomes:

- Perform cocoon drying operation as per the standard method.
- Prepare cocoon drying report as per standard format.

Duration: ***10:00***	**Duration**: ***30:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Describe the processing parameters for cocoon drying as per quality requirements. • Discuss the requirements of the cocoon storing process after drying. • Discuss the factors that impact cocoon drying. • Describe the effects of temperature on cocoon.	• Demonstrate the process of running a cocoon drying machine as per the standard operating procedure. • Calculate the degree of dryness using the prescribed method. • Demonstrate the steps of storing dried cocoons as per the standard method. • Prepare a sample cocoon drying report as per standard format.
Classroom Aids:	
Charts, Projector, Blackboard, Note books, Pens.	
Tools, Equipment, and Other Requirements	
Cocoon samples - 5 Kgs, Cocoon sorting table - 1, Cocoon transferring trolley - 2, Cocoon drying machine - 1.	

Module 8: Maintaining the work area, tools, and machines

Mapped to TSC/N9015, v1.0

Terminal Outcomes:

- Maintain the work area, tools, and machines in the silk unit.
- Explain the objective of tools, PPE used in the silk unit.

Duration: *02:00*	**Duration: *06:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Differentiate various types of tools used for cleaning and maintenance in a silk drying, sorting and grading unit. • Explain the objectives of each maintenance and cleaning tool used in cocoon sorting, drying, and grading operation. • Discuss the significance of safe handling procedures of tools and equipment. • Brief the importance and written instructions on the allocated instruments. • Discuss the significance of minimizing the wastage of material, effort & time. • Assist to prepare a draft schedule for cleaning and waste collection for the assigned job role. • List the available types of material handling equipment and handling methods. • Discuss the types and importance of PPE used in cocoon handling.	• Demonstrate the handling procedure of raw materials, tools, PPE, and machines. • Identify the appropriate tools and equipment for the respective job. • Demonstrate the scheduled cleaning of machines and equipment. • Check and report the condition of machine guards in the allotted cocoon drier machine.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment, and Other Requirements	
Cocoon samples of different varieties and quality - Total 5 Kgs, Cocoon sorting table - 1, Cocoon Auto sorter - 1, Weighing balance - 1, Knife - 15	

Module 9: Greening and energy conservation in the textile sector

Mapped to TSC/N9015, v1.0

Terminal Outcomes:

- Identify the recyclable, non-recyclable, and hazardous wastes in the silk unit.
- Optimize usage of material and resources at the workplace.

Duration: *02:00*	**Duration: *06:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Define the terms pollution control, soil conservation, waste management, recycle, forest conservation, global warming, organic products, etc. • List the different sources of energy. • Discuss the impact of using non-biodegradable materials on the environment. • Discuss different ways to conserve energy in a textile factory. • Explain the significance of conserving the environment and energy resources. • Discuss the significance of specified usage of resources at the work area.	• Demonstrate the segregation of recyclable, non-recyclable, hazardous wastes in the silk unit. • Demonstrate the handling and storage of waste materials. • Demonstrate potential ways to reduce wastage and conserve energy in a silk factory.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment, and Other Requirements	
Cocoon samples, Recyclable, Non-recyclable, and Hazardous wastes.	

Module 10: Health, safety and emergency response at workplace

Mapped to TSC/N9015, v1.0

Terminal Outcomes:

- Perform first aid at the workplace.
- Follow fire safety protocol in case of fire emergencies in the silk unit.
- Recognize hazardous materials in the silk unit.

Duration: *09:00*	**Duration:** *23:00*
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the significance of safe handling procedures of tools and equipment. • Discuss the importance and standard procedure for materials. • Discuss the impacts hazards of unsafe workplace conditions and procedures in the textile industry (operational, environmental, personal, ergonomic, chemical, electric, fire) and methods to avoid hazards. • Distinguish between the various type of fire extinguishers. • Distinguish different types of alarms and their significance. • Differentiate the different items in a First Aid box. • Discuss the correct work posture and importance of ergonomics for the assigned job role.	• Classify abnormal sounds emanating from faulty/worn-out machine parts. • Classify Personal Protective Equipment (PPEs) like body protectors, earplugs, nose masks, head caps, etc. as per guidelines. • Demonstrate handling of fire extinguishers. • Locate emergency exits of workplace and organization. • Participate in fire drills/evacuation at the workplace. • Demonstrate application of first aid procedures for injury/accidents in mock situations. • Demonstrate lifting of heavyweight materials as per the standard procedure.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment, and Other Requirements	
PPE, first aid kit, fire extinguishers, PPE kits, Faulty and worn-out machine parts.	

Module 11: Organizational standards and policies

Mapped to TSC/N9015, v1.0

Terminal Outcomes:

- Recognize the significance of organization policies, quality standards, rules, and regulations in Textile industries.
- Maintain a hygienic working atmosphere as per the protocol of the textile sector.

Duration: *06:00*	**Duration: *11:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the significance of following organizational standard procedures, quality standards, rules, codes, policies, and safety standards for the textile sector. • Discuss the need for organizational quality systems, 5S, ISO, SA, etc. following in the textile sector. • Brief the importance of following work wear standards, behavioural protocols, and etiquette in the textile sector. • Discuss the contents of the organization's formats and procedures for reporting production, defects, faults, material/tool requisition, and quality parameters and tasks completed for the assigned job.	• Demonstrate steps to practice the systems like Quality circles, 5S, ISO, etc. in the routine work. • Demonstrate the steps to maintain a hygienic workplace.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment, and Other Requirements	
List of rules and regulations followed in the organization, list of industry standards i.e., performance indicators of mills, process, worker, etc, details of quality systems followed in the organization.	

Module 12: Teamwork, trust, and communication

Mapped to TSC/N9016, v1.0

Terminal Outcomes:

- Conform to standard guidelines while working with the team.
- Communicate effectively with others at the workplace.

Duration: *03:00*	**Duration: *07:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the importance of teamwork and following industry protocols at the workplace. • Explain the limits and responsibilities for the assigned duties in the textile sector. • Summarize emergency contact numbers, details of officials, reporting protocols, and formats. • List hierarchy of communication and communication etiquettes in the textile sector.	• Demonstrate Application of methods of teamwork to complete/for a given task. • Prepare a sample shift performance report for an allotted task. • Demonstrate the use of appropriate verbal and non-verbal communication skills while interacting with others at the workplace.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment, and Other Requirements	
Video visuals of basic communications and team working, models of communicating and team working area at the assigned job	

Module 13: Adaptability

Mapped to TSC/N9016, v1.0

Terminal Outcomes:

- Operate at the various environment and different hierarchy levels for the assigned task.
- Assist to create a work plan for the allotted task.

Duration: *02:00*	**Duration: *03:00***
Theory – Key Learning Outcomes	**Practical – Key Learning Outcomes**
• Discuss the significance of adaptability at the workplace with various levels of people. • Discuss the importance of developing adaptability skills. • Discuss the impacts of inadaptability at the workplace.	• Demonstrate the ability to work in a dynamic work environment by developing coping mechanisms, survival tactics, and traits of flexibility within the limits of responsibility. • Assist to create a sample backup work plan for the shortage of manpower, raw materials, etc.
Classroom Aids:	
Charts, Posters, Projector, Blackboard.	
Tools, Equipment, and Other Requirements	
Video visuals of adaptability with suitable examples	

Annexure

Trainer Requirements

Trainer Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
Basic literacy and numeracy	NA	6	Cocoon sorting, grading, and drying	1	Cocoon sorting, grading, and drying	

Trainer Certification	
Domain Certification	**Platform Certification**
TSC/Q7102, v1.0 - Cocoon sorter, dryer cum grader, Minimum pass percentage 80 percent.	MEP/Q2601, v1.0– Trainer, Minimum pass percentage 80 percent.

Assessor Requirements

Assessor Prerequisites						
Minimum Educational Qualification	**Specialization**	**Relevant Industry Experience**		**Training/Assessment Experience**		**Remarks**
		Years	***Specialization***	***Years***	***Specialization***	
8th Standard	NA	7	Silk	-	-	

Assessor Certification	
Domain Certification	**Platform Certification**
TSC/Q7102, v1.0- Cocoon sorter, dryer cum grader, Minimum pass percentage 80 percent.	MEP/Q2701, v1.0 – Assessor, Minimum pass percentage 80 percent.

Assessment Strategy

The overall assessment strategy and specific arrangements have been put in place to ensure that assessment is always valid, reliable, and fair and show that these are in line with the requirements of the NSQF.

a) The emphasis is on 'learn-by-doing' and practical demonstration of skills and knowledge based on the performance criteria.

b) The assessment papers are developed by Subject Matter Experts (SME) available with the Assessment Agency as per the performances and assessment criteria mentioned in the Qualification Packs.

c) The assessment papers are also checked for the various outcome-based parameters such as quality, time taken, tools & equipment requirement, etc.

d) The assessments are designed to assess maximum parts during the practical hands-on work. Duties and responsibility of Mulberry cocoon sorter, dryer cum grader also assessed. The technical limitations at the training centres are taken care of in theory and viva.

e) The assessment agencies are instructed to hire qualified and experienced assessors as per TSC's criteria who have integrity, reliability, and fairness. Each assessor shall sign a document with its assessment agency by which they commit themselves to comply with the rules of confidentiality and conflict of interest, independence from commercial and other interests that would compromise the impartiality of the assessments.

f) The assessment agencies are instructed to ideally have assessors with the right mix of industry experience, academia and these are detailed in the Assessment Agency Protocol of TSC

g) The assessors selected by Assessment Agencies are scrutinized and made to undergo training and introduction to Assessment Framework, competency-based assessments, assessors guide, etc. and they are assessed for Domain and assessment skills. Only those assessors who clear both the assessments with a minimum of 80% marks in each are permitted to carry out assessments.

h) The assessors are provided with an Assessors guide developed by the Subject Matter Expert of the Assessment Agency or by Textile SSC as per Assessment Framework. The Assessors guides are developed to ensure the maximum possible consistency/transparency in the assessment by different assessors and elaborate on the following:

1. Qualification Pack Structure.
2. Guidance for the assessors to conduct theory, practical, and viva assessments.
3. Guidance for trainees to be given by the assessor before the start of the assessments.
4. Guidance on the assessment process, practical brief with a step of operational practical observation checklist Attendance Sheet and mark sheet.
5. Viva guidance for uniformity and consistency across the batch.
6. Guidance on assessment evidence collection.

The assessment results are backed by evidence collected by assessors.

1. The assessors need to collect a copy of the attendance sheets for the training done under the scheme. The attendance sheets are signed and stamped by the in-charge/ Head of the training centre.
2. The assessors need to verify the authenticity of the candidate by checking the photo ID card issued by the institute as well as anyone's Photo ID card issued by the Central/Government. The same needs to be mentioned in the attendance sheet. In case of suspicion, the assessor should authenticate and cross verify the trainee's credentials in the enrolment form.
3. The assessors need to take a camera to click a photograph of the trainees working on the job and giving a theory exam as evidence.
4. The assessors also need to carry a Photo ID card.
5. The assessors also need to take the photographs as evidence from appropriate angles/sides of the final workpiece/job submitted by the trainee.
6. The details on the assessment framework are elaborated in the Textile SSC protocol for accreditation of Assessment Agencies and Assessment Framework.

All accredited Assessment Agencies follow the "Textile SSC's protocol for accreditation of Assessment Agencies and Assessment Framework". Each NOS in the Qualification Pack (QP) will be assigned a relative weightage for assessment based on the criticality of the NOS. Therein each Performances Criteria in the NOS will be assigned marks for theory or practical based on relative importance, the criticality of function, and training infrastructure.

References

Glossary

Term	Description
Declarative Knowledge	Declarative knowledge refers to facts, concepts and principles that need to be known and/or understood in order to accomplish a task or to solve a problem.
Key Learning Outcome	Key learning outcome is the statement of what a learner needs to know, understand and be able to do in order to achieve the terminal outcomes. A set of key learning outcomes will make up the training outcomes. Training outcome is specified in terms of knowledge, understanding (theory) and skills (practical application).
OJT (M)	On-the-job training (Mandatory); trainees are mandated to complete specified hours of training on site
OJT (R)	On-the-job training (Recommended); trainees are recommended the specified hours of training on site
Procedural Knowledge	Procedural knowledge addresses how to do something, or how to perform a task. It is the ability to work, or produce a tangible work output by applying cognitive, affective or psychomotor skills.
Training Outcome	Training outcome is a statement of what a learner will know, understand and be able to do **upon the completion of the training**.
Terminal Outcome	Terminal outcome is a statement of what a learner will know, understand and be able to do **upon the completion of a module.** A set of terminal outcomes help to achieve the training outcome.

Acronyms and Abbreviations

Term	Description
QP	Qualification Pack
NSQF	National Skills Qualification Framework
NSQC	National Skills Qualification Committee
NOS	National Occupational Standards
SOP	Standard Operating Procedure
PPE	Personal Protective Equipment
QC	Quality Control
ISO	International Organization for Standardization
SA	Standards on Auditing