

Model Curriculum

Testing & Quality Control for Plastic Materials & Products Technician

SECTOR: Rubber
SUB-SECTOR: Manufacturing/Plastics Processing
OCCUPATION: Testing & Quality Control
REF ID: RSC/Q5001 (CPC/Q8103), V1.0
NSQF LEVEL: 3



Certificate

CURRICULUM COMPLIANCE TO
QUALIFICATION PACK - NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

RUBBER SKILL DEVELOPMENT COUNCIL

for the

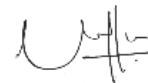
MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/ Qualification Pack: '**Testing & Quality Control for Plastic Materials and
Products Technician**' QP No. '**RSC/Q5001 (CPC/Q8103) NSQF Level 3**'

Date of Issuance: December 23, 2018

Valid up to: December 22, 2023

**Valid up to the next review date of the Qualification Pack*



Authorised Signatory
(Rubber Skill Development Council)

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Testing & Quality Control for Plastic Materials & Products Technician

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a “Testing & Quality Control for Plastic Materials & Products Technician”, in the “Rubber” Sector/Industry and aims at building the following key competencies amongst the learner.

Program Name	Testing & Quality Control for Plastic Materials & Products Technician		
Qualification Pack Name & Reference ID	RSC/Q5001(CPC/Q8103), v1.0		
Version No.	1.0	Version Update Date	29/05/2019
Pre-requisites to Training	X Standard		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Perform calibration of the plastic testing and inspection equipment. • Perform testing of plastic products as per the company standards. • Use statistical procedures for quality control of the production process of plastic parts. • Perform online and offline product inspection, during plastic part production. • Perform final inspection of plastic parts, before packing. • Identify and resolve problems arising during production of plastic part. • Report data/problems/incidents to the appropriate authority. • Demonstrate timely escalation of the problems to the superiors. • Perform housekeeping and inspection of the work area as per the company procedure. 		

This course encompasses 5 out of 5 NOS (National Occupational Standards) of “Testing & Quality Control for Plastic Materials & Products Technician” Qualification Pack issued by “Rubber Skill Development Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	Introduction Theory Duration (hh:mm) 16:00 Practical Duration (hh:mm) 8:00 Corresponding NOS Code Bridge Module	<ul style="list-style-type: none"> • Explain the developmental history of plastics. • Describe current industrial scenario of plastics and its future prospects. • Identify the types of plastic. • Recognise major industrial associations in Plastic. • Identify equipment used for plastic material and product testing and quality control. • Describe roles and responsibilities of a “Testing & Quality Control for Plastic Materials & Products Technician”. 	White board, marker, duster, laptop/PC, projector, flipcharts, samples – Plastic injection moulded products
2	Quality assurance during production Theory Duration (hh:mm) 32:00 Practical Duration (hh:mm) 48:00 Corresponding NOS Code RSC/N5001 (CPC/N8106)	<ul style="list-style-type: none"> • Choose sample from the lot to be tested as per the standard operating procedure. • Apply label / tag on the testing sample for identification. • Select the most appropriate equipment for testing as per the SOP. • Perform calibration of the testing equipment, periodically, as per SOP. • Identify defective equipment/ apparatus and steps to be taken for their rectification as per the SOP. • Perform testing of plastic products as per the standards. • Use statistical procedures for quality control of the plastic parts, being produced. • Perform online and offline checking during plastic part production, basis the product parameters laid out • Perform final inspection of plastic parts before packing. • Perform QC audit of the produced lot as per the quality procedures. • Perform pre-shipment inspection and lot release activity for plastic parts. • Compare the products supplied by the vendor with standard criteria laid out for accepting / rejecting the product. • Create records of the inspection and maintain data for the produced plastic parts as per the company standards (SOP). 	White board, marker, duster, laptop/PC, projector, flipcharts, plastic samples with various process defect – Plastic injection moulded products, microprocessor based injection moulding machine, automatic hopper loader, vernier, micrometer, glass ware, chemicals, measuring tape, thickness gauge, air compressor

Sr. No.	Module	Key Learning Outcomes	Equipment Required
3	Performing quality checks Theory Duration (hh:mm) 24:00 Practical Duration (hh:mm) 64:00 Corresponding NOS Code RSC/N5002 (CPC/N8107)	<ul style="list-style-type: none"> • Select measuring instruments, equipment, tools and accessories for carrying out tests on the plastic parts. • Perform total range of checks on the produced plastic parts as per the defined frequency. • Identify the non-conformities in the inspected products. • Analyze the potential causes of the non-conformities in the rejected parts. • Interpret the results of the quality check correctly. • Determine the impact of the identified non-conformities, on the final product. • Determine counter measures to ensure that the problems do not recur. • Evaluate effectiveness of corrective actions taken to stop non-conformities. 	White board, marker, duster, laptop/PC, projector, flipcharts, plastic samples with various process defect – Plastic injection moulded products, microprocessor based injection moulding machine, automatic hopper loader, specimen mould, hydrostatic pressure tester, universal testing machine, hot air oven, humidity chamber, weighing balance, Izod /charpy impact tester, gloss/haze meter, hardness tester, coefficient of friction tester, abrasion resistance tester, vernier, micrometer, glass ware, chemicals, measuring tape, thickness gauge, air compressor, dart impact tester, MFI instrument, HDT/VSP tester, flammability tester, thermal conductivity tester, LOI tester, CTI tester, volume and surface resistivity tester, ESCR tester, water bath, oil bath, optical microscope, allen key set, hand hacksaw

Sr. No.	Module	Key Learning Outcomes	Equipment Required
4	Problem identification and escalation Theory Duration (hh:mm) 24:00 Practical Duration (hh:mm) 72:00 Corresponding NOS Code RSC/N5003 (CPC/N8108)	<ul style="list-style-type: none"> Identify defects/ indicators of problems during production of plastic parts. Identify any wrong practices during plastic part production which may lead to problems. Demonstrate timely escalation of the problems to superiors. Determine appropriate counter measures for the identified problem. Formulate corrective action plan for problems identified, according to the company procedures. Report the problem and the corrective action in an appropriate manner. Check if the corrective action selected is viable and practical. Check if the problem has been resolved by implementing the corrective action. 	White board, marker, duster, laptop/PC, projector, flipcharts, plastic part production work place
5	Reporting and documentation Theory Duration (hh:mm) 24:00 Practical Duration (hh:mm) 72:00 Corresponding NOS Code RSC/N5004 (CPC/N8104)	<ul style="list-style-type: none"> Report data/ problems/ incidents as applicable in a timely manner to the appropriate authority as laid down in the company procedure. Identify documentation to be completed, with respect to the role of an individual. Record details accurately in an appropriate format. Create all documentation within stipulated time according to the company's procedure. Check if the requirement of the final document meets the expectation of the persons who requested it else make amendments accordingly. Create response for the requests made for the information, in an appropriate manner following organizational procedures. 	White board, marker, duster, laptop/PC, projector, flipcharts, plastic part production work place
6	Work place housekeeping Theory Duration (hh:mm) 24:00 Practical Duration (hh:mm) 72:00	<ul style="list-style-type: none"> Perform housekeeping inspection of the work area as per the company's procedure. Identify the material requirements for cleaning the areas inspected, considering risk, time, efficiency and type of stain. Select appropriate equipment for cleaning the work area. Perform inspection of the working condition of the cleaning equipment's. Select suitable alternative equipment for 	White board, marker, duster, laptop/PC, projector, flipcharts, plastic part production work place, cleaning equipment

Sr. No.	Module	Key Learning Outcomes	Equipment Required
	Corresponding NOS Code RSC/N5005 (CPC/N8105)	<p>cleaning the areas in case the appropriate equipment and materials are not available.</p> <ul style="list-style-type: none"> • Create plan for keeping the area clean so as to avoid re-soiling of cleaned areas and surfaces. • Demonstrate the appropriate signage for the housekeeping work in progress. • Use the personal protective equipment required for the cleaning method and materials being used. • Use the correct cleaning method for the work area, type of soiling and surface. • Perform cleaning activity as per the company's procedure. • Identify and report to the appropriate authority, regarding the requirement of any additional cleaning that is outside one's responsibility or skill • Perform maintenance of the housekeeping equipment. • Perform the disposal of the waste garnered from the activity as per the company procedure. • Create schedules and records for housekeeping duty. 	
	Total Duration: Theory Duration 144:00 Practical Duration 336:00	Unique Equipment Required: White board, marker, duster, laptop/PC, projector, flipcharts, plastic samples with various process defect – Plastic injection moulded products, microprocessor based injection moulding machine, automatic hopper loader, specimen mould, hydrostatic pressure tester, universal testing machine, hot air oven, humidity chamber, weighing balance, Izod /charpy impact tester, gloss/haze meter, hardness tester, coefficient of friction tester, abrasion resistance tester, vernier, micrometer, glass ware, chemicals, measuring tape, thickness gauge, air compressor, dart impact tester, MFI instrument, HDT/VSP tester, flammability tester, thermal conductivity tester, LOI tester, CTI tester, volume and surface resistivity tester, ESCR tester, water bath, oil bath, optical microscope, allen key set, hand hacksaw, cleaning equipment	

Grand Total Course Duration: 480 Hours, 0 Minutes.

(This syllabus/ curriculum has been approved by [Rubber Skill Development Council](#))

Trainer Prerequisites for Job role: “Testing & Quality Control for Plastic Materials & Products Technician” mapped to Qualification Pack: “RSC/Q5001(CPC/Q8103), v1.0”

Sr. No.	Area	Details
1	Description	To deliver accredited training service, mapping to the curriculum detailed above, in accordance with the Qualification Pack “ <u>RSC/Q5001 (CPC/Q8103) Version 1.0</u> ”.
2	Personal Attributes	Aptitude for conducting training, and pre/ post work to ensure competent, employable candidates at the end of the training. Strong communication skills, interpersonal skills, ability to work as part of a team; a passion for quality and for developing others; well- organized and focused, eager to learn and keep oneself updated with the latest in the mentioned field.
3	Minimum Educational Qualifications	Any Graduate preferably in plastic technology.
4a	Domain Certification	Certified for Job Role: “ <u>Testing & Quality Control for Plastic Materials & Products Technician</u> ” mapped to QP: “ <u>RSC/Q5001 (CPC/Q8103)</u> ”. Minimum accepted score as per SSC guidelines is 80%.
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: “ <u>Trainer</u> ”, mapped to the Qualification Pack: “ <u>MEP/ Q2601</u> ”. Minimum accepted score as per SSC guidelines is 80%.
5	Experience	5+ years of relevant work-experience, above supervisor level.

Annexure: Assessment Criteria

Assessment Criteria	
Job Role:	Testing & Quality Control for Plastic Materials & Products Technician
Qualification Pack Code:	RSC/Q5001 (CPC/Q8103)
Sector Skill Council:	Rubber Skill Development Council

S. No.	Guidelines for Assessment
1	Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Performance Criteria (PC) will be assigned marks proportional to its importance in NOS. SSC will also lay down proportion of marks for Theory and Skills Practical for each PC.
2	The assessment for the theory part will be based on knowledge bank of questions created by the SSC.
3	Individual assessment agencies will create unique question papers for theory part for each candidate at each examination/training center (as per assessment criteria below).
4	Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/training center based on this criterion.
5	To pass the Qualification Pack, every trainee should score a minimum of 70% of aggregate marks to successfully clear the assessment.
6	In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Assessable Outcome	Assessment Criteria	Total Mark (800)	Out Of	Marks Allocation	
				Theory	Skills Practical
RSC/ 5001 (CPC/N8106) Quality assurance at all the stages of production	PC1. Draw sample of the material from the lot to be tested as per standard procedures (SOP).	83	4	1	3
	PC2. Sampling should be as per the guidelines.		4	1	3
	PC3. Identify the sample by labelling /numbering as per SOP.		4	1	3
	PC4. Identify the most appropriate equipment for testing as per the SOP.		4	1	3
	PC5. Calibrate /verify/validate the testing equipment periodically as per SOP.		4	1	3
	PC6. Identify defective equipment/ apparatus and steps to be taken as per SOP.		5	1	4
	PC7. Carry out testing of latex products as per the standards.		5	1	4
	PC8. Follow statistical quality control procedures.				
	PC9. Work according to laboratory procedures, standards and testing procedures.		5	1	4
	PC10. Check product parameters through on line and off line test procedures.				
	PC11. Communicate tag for batch marking to downstream team & upstream teams.		5	1	4
	PC12. Carry out Inspection and packing controls and procedures.				
	PC13. Confirm product dimensions and weight controls.		5	1	4
	PC14. Ensure that the material is not altered in any way during checking.				
	PC15. Record dimensions in check sheet.		5	1	4
	PC16. Carry out Q C audit and quality procedures.				
	PC17. Pre shipment inspection and lot release.		5	1	4
	PC18. Comparison of the vendor supplied product specifications with standards for accept/ reject criteria up on lab testing.				
	PC19. GMP and other quality standards / procedure observances.		4	1	3
	PC20. Record and maintain data as per company standards (SOP).				
	PC21. Ensure that reports/records are accurate and clear.		4	1	3
	PC22. Release or hold the material as per finding for further processing.				
	PC23. Take up the results of the findings with supplier/ QA in-charge/ appropriate authority.		4	1	3

Assessable Outcome	Assessment Criteria	Total Mark (800)	Out Of	Marks Allocation	
				Theory	Skills Practical
	PC24. Inform concerned persons for rectifications, if needed in specified time limit.		4	1	3
	PC25. Handle the equipment's and samples properly.				
	PC26. Conduct the quality checks wearing the appropriate attire and safety gears.		4	1	3
	PC27. Precaution for dust / chemical inhaling and handling.				
	PC28. Comply with health, safety, environment guidelines, regulations etc in accordance with international/ national standards or organizational standards (SOP).		4	1	3
	PC29. Dispose all materials used in the QA test safely as per health and safety management system of the company.		4	1	3
	Total		83	19	64
RSC/N5002 (CPC/N8107) To carry out quality checks	PC1. Ensure that total range of checks is regularly and consistently performed.	75	5	1	4
	PC2. Use appropriate measuring instruments, equipment, tools, accessories etc., as required.		5	1	4
	PC3. Identify non-conformities to quality assurance standards.		5	1	4
	PC4. Identify potential causes of non-conformities to quality assurance standards.		5	1	4
	PC5. Identify impact on final product due to non-conformance to company standards.		5	1	4
	PC6. Evaluating the need for action to ensure that problems do not recur.		5	1	4
	PC7. Suggest corrective action to address problem.		5	1	4
	PC8. Review effectiveness of corrective action.		5	1	4
	PC9. Interpret the results of the quality check correctly.		5	1	4
	PC10. Take up results of the findings with QC in charge/ appropriate authority.		5	1	4
	PC11. Take up the results of the findings within stipulated time.		5	1	4
	PC12. Record of results of action taken.		5	1	4
	PC13. Record adjustments not covered by established procedures for future reference.		5	1	4
	PC14. Review effectiveness of action taken.		5	1	4
	PC15. Follow reporting procedures where the cause of defect cannot be identified.		5	1	4
Total		75	15	60	

Assessable Outcome	Assessment Criteria	Total Mark (800)	Out Of	Marks Allocation	
				Theory	Skills Practical
RSC/N5003 (CPC/N8108) To carry out problem identification and escalation	PC1. Identify defects/ indicators of problems.	80	4	1	3
	PC2. Identify any wrong practices that may lead to problems.		4	1	3
	PC3. Identify practices that may impact the final product quality.		4	1	3
	PC4. Identify if the problem has occurred before.		4	1	3
	PC5. Identify other operations that might be impacted by the problem.		4	1	3
	PC6. Ensure that no delays are caused as a result of failure to escalate problems.		4	1	3
	PC7. Take appropriate materials and sample, conduct tests and evaluate results to establish reasons to confirm suspected reasons for non-conformance (where required).		4	1	3
	PC8. Consider possible reasons for identification of problems.		4	1	3
	PC9. Consider applicable corrections and formulate corrective action.		3	1	2
	PC10. Formulate action in a timely manner.		3	1	2
	PC11. Communicate problem/ remedial action to appropriate parties.		3	1	2
	PC12. Take corrective action in a timely manner.		3	1	2
	PC13. Take corrective action for problems identified according to the company procedures.		3	1	2
	PC14. Report/ document problem and corrective action in an appropriate manner.		3	1	2
	PC15. Monitor corrective action.		3	1	2
	PC16. Evaluate implementation of corrective action taken to determine if the problem has been resolved		3	1	2
	PC17. Ensure that corrective action selected is viable and practical.		3	1	2
	PC18. Ensure that correct solution is identified to an identified problem.		3	1	2
	PC19. Take corrective action for problems identified according to the company procedures.		3	1	2
	PC20. Ensure that no delays are caused as a result of failure to take necessary action.		3	1	2
	PC21. Escalate problem as per laid down escalation matrix.		3	1	2
	PC22. Escalate the problem within stipulated time.		3	1	2
	PC23. Escalate the problem in an appropriate manner.		3	1	2
	PC24. Ensure that no delays are caused as a result of failure to escalate problems.		3	1	2

Assessable Outcome	Assessment Criteria	Total Mark (800)	Out Of	Marks Allocation	
				Theory	Skills Practical
	Total		80	24	56
RSC/N5004 (CPC/N8104) To carry out reporting and documentation	PC1. Report data/ problems/ incidents as applicable in a timely manner.	70	7	1	6
	PC2. Report to the appropriate authority as laid down by the company.		7	1	6
	PC3. Follow reporting procedures as prescribed by the company.		7	1	6
	PC4. Identify documentation to be completed relating to one's role.		7	1	6
	PC5. Record details accurately in appropriate format.		7	1	6
	PC6. Complete all documentation within stipulated time according to company procedure.		7	1	6
	PC7. Ensure that the final document meets with the requirements of the persons who requested it or make any amendments accordingly.		7	1	6
	PC8. Make sure documents are available to all appropriate authorities to inspect.		7	1	6
	PC9. Respond to requests for information in an appropriate manner whilst following organizational procedures.		7	1	6
	PC10. Inform the appropriate authority of requests for information received.		7	1	6
	Total		70	10	60
RSC/N5005 (CPC/N8105) To carry out housekeeping	PC1. Inspect the area while taking into account various surfaces.	92	4	1	3
	PC2. Identify the material requirements for cleaning the areas inspected, by considering risk, time, efficiency and type of stain.		4	1	3
	PC3. Ensure that the cleaning equipment is in proper working condition.		4	1	3
	PC4. Select the suitable alternatives for cleaning the areas in case the appropriate equipment and materials are not available and inform the appropriate person.		4	1	3
	PC5. Plan the sequence for cleaning the area to avoid re-soiling clean areas and surfaces.		4	1	3
	PC6. Inform the affected people about the cleaning activity.		4	1	3
	PC7. Display the appropriate signage for the work being conducted.		4	1	3

Assessable Outcome	Assessment Criteria	Total Mark (800)	Out Of	Marks Allocation	
				Theory	Skills Practical
	PC8. Ensure that there is adequate ventilation for the work being carried out.		4	1	3
	PC9. Wear the personal protective equipment required for the cleaning method and materials being used.		3	1	2
	PC10. Use the correct cleaning method for the work area, type of soiling and surface.		4	2	2
	PC11. Carry out cleaning activity without disturbing others.		4	2	2
	PC12. Deal with accidental damage, if any, caused while carrying out the work.		4	2	2
	PC13. Report to the appropriate person any difficulties in carrying out your work.		4	2	2
	PC14. Identify and report to the appropriate person any additional cleaning required that is outside one's responsibility or skill.		6	2	4
	PC15. Ensure that there is no oily substance on the floor to avoid slippage.		6	2	4
	PC16. Ensure that no scrap material is lying around.		4	2	2
	PC17. Maintain and store housekeeping equipment and supplies.		4	2	2
	PC18. Follow workplace procedures to deal with any accidental damage caused during the cleaning process.		3	1	2
	PC19. Ensure that, on completion of the work, the area is left clean and dry and meets requirements.		3	1	2
	PC20. Return the equipment, materials and personal protective equipment that were used to the right places making sure they are clean, safe and securely stored.		3	1	2
	PC21. Dispose the waste garnered from the activity in an appropriate manner.		3	1	2
	PC22. Dispose of used & un-used solutions according to manufacturer's instructions, and clean the equipment thoroughly.		3	1	2
	PC23. Maintain schedules & records for house-keeping duty.		3	1	2
	PC24. Replenish any necessary supplies or consumables.		3	1	2
	Total		92	32	60
	Grand Total	400	400	100	300
	Percentage Weightage:			25%	75%
	Minimum Pass% to qualify (aggregate):			70%	