



Model Curriculum

1. Production QC In-Charge

SECTOR: PAINTS AND COATINGS
SUB-SECTOR: MANUFACTURING
OCCUPATION: LIQUID AND POWDER PAINT PRODUCTION
REF ID: PCS/Q0505, V1.0
NSQF LEVEL: 5



Certificate

CURRICULUM COMPLIANCE TO QUALIFICATION PACK – NATIONAL OCCUPATIONAL STANDARDS

is hereby issued by the

PAINTS AND COATINGS SKILL COUNCIL

for

MODEL CURRICULUM

Complying to National Occupational Standards of
Job Role/Qualification Pack: **'Production QC in charge'** QP No. **'PCS/Q0505 NSQF Level 5'**

Date of Issuance: December 27th, 2016

Valid up to*: March 31st, 2018

*Valid up to the next review date of the Qualification Pack or the
'Valid up to' date mentioned above (whichever is earlier)

Authorised Signatory
(Paints and Coatings Skill Council)



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Production QC In-Charge

CURRICULUM / SYLLABUS

This program is aimed at training candidates for the job of a "Production QC In-Charge", in the "Paints and Coatings" Sector/Industry and aims at building the following key competencies amongst the learner

Program Name	Production QC In-Charge		
Qualification Pack Name & Reference ID. ID	PCS/Q0505, v1.0		
Version No.	1.0	Version Update Date	
Pre-requisites to Training	12 th Standard		
Training Outcomes	<p>After completing this programme, participants will be able to:</p> <ul style="list-style-type: none"> • Know about the sector: Discuss the Paints and Coatings sector in India and its sub-sectors • Know about different types of liquid and powder paints and its uses with advantages and disadvantages • Know about the major ingredients of liquid and powder paint • Know about paint and powder manufacturing in general and the manufacturing process flow. • Know about the various in process tests to be performed to maintain consistent quality for each batch • Know about the various test instruments, its principle, calibration and interpretation of the results • Document the test results as per company's procedure and SOP • Demonstrate various skills: Performance of behavioural, professional, technical and communication skills • Understand safety: Work in a safe manner without endangering your health and that of your colleagues 		



This course encompasses 5 out of 5 National Occupational Standards (NOS) of “Production QC In-Charge” Qualification Pack issued by “Paints and Coatings Skill Council”.

Sr. No.	Module	Key Learning Outcomes	Equipment Required
1	<p>Introduction</p> <p>Theory Duration (hh:mm) 6:00</p> <p>Practical Duration (hh:mm) 00:00</p> <p>Corresponding NOS Code Bridge Module</p>	<ul style="list-style-type: none"> Understand General Discipline in the class room (Do’s & Don’ts) Understand the scope of the Paints and Coatings sector in India with its sub sectors Understand the liquid and powder paint segment Advantages and benefits and features of various liquid and powder paints as well as its uses and shortcomings Learn and Practice Basic skills of communication 	Laptop, white board, marker, projector
2	<p>Check inline production quality</p> <p>Theory Duration (hh:mm) 60:00</p> <p>Practical Duration (hh:mm) 110:00</p> <p>Corresponding NOS Code PCS/No501</p>	<ul style="list-style-type: none"> Understand the different types of liquid and powder paints, their characteristics and where they are used Compare and explain differences between water based and solvent based paints Compare, understand and explain the differences between the various resin systems used Understand the components of liquid paints and powder paints and their chemistry Learn basics of liquid and powder paint manufacture Learn the in process checks to be conducted on different paints Learn to read and understand the process log sheet and carry out in process checks Learn to interpret and judge the results of the in process tests, take corrective actions, if required Learn the correct calibration process of the instrument before use Maintain the data base of the in process checks and identify continuous process improvements Maintain all test instruments as per the recommended maintenance procedure suggested by the manufacturer or the company’s SOP Communicate with colleagues/supervisor regarding the operation at each stage 	<p>Laptop, white board, marker, projector, first aid kit.</p> <p>Lab model paint processing set up, test instruments.</p>
3	<p>Co-ordinate with colleagues and/or customers</p>	<ul style="list-style-type: none"> Understand customer requirements and specifications Learn about various performance indicators, meaning of targets ad 	Laptop, white board, marker, projector



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>Theory Duration (hh:mm) 08:00</p> <p>Practical Duration (hh:mm) 04:00</p> <p>Corresponding NOS Code PCS/N9901</p>	<p>timelines and how to communicate about these with your colleagues and customers</p> <ul style="list-style-type: none"> Learn appropriate behavioural skills whilst dealing with colleagues/co-workers Learn how you can contribute to improving customer satisfaction 	
4	<p>Maintain standards of product / service quality</p> <p>Theory Duration (hh:mm) 12:00</p> <p>Practical Duration (hh:mm) 10:00</p> <p>Corresponding NOS Code PCS/N9902</p>	<ul style="list-style-type: none"> Learn about quality requirements for manufacturing process Understand how quality is defined, various tests and their acceptance criteria, and how standards can be achieved Learn about various equipment used for quality tests and how to use them Learn to meet and exceed quality requirements of a customer 	Laptop, white board, marker, projector
5	<p>Maintain OH&S standards and follow environmental standards</p> <p>Theory Duration (hh:mm) 6:00</p> <p>Practical Duration (hh:mm) 16:00</p> <p>Corresponding NOS Code PCS/N9903</p>	<ul style="list-style-type: none"> Learn about health hazards of chemicals/ ingredients used in paint manufacturing Learn the use and importance of personal protective equipment Learn to handle chemical, powder materials, tools and equipment in a safe manner Minimising risks of inhalation injury Become aware of hazards in liquid paint manufacturing process and how to prevent/eliminate them Understand methods and precautions to be taken for safe disposal of waste generated in the process Learn about safety signs in a plant environment and how to interpret and adhere to them 	Laptop, white board, marker, projector
6	<p>Maintain IPR of organisation and customers</p> <p>Theory Duration (hh:mm) 04:00</p>	<ul style="list-style-type: none"> Learn to explain the meaning of IPR and the various confidential information and trade secrets in an organisation Understand why protection of IPR and trade secrets are critical for a business Learn about your responsibilities in maintaining IPR and trade secrets of your organisation and customers 	Laptop, white board, marker, projector



Sr. No.	Module	Key Learning Outcomes	Equipment Required
	<p>Practical Duration (hh:mm) 04:00</p> <p>Corresponding NOS Code PCS/N9904</p>		
	<p>Total Duration</p> <p>Theory Duration 96:00</p> <p>Practical Duration 144:00</p>	<p>Unique Equipment Required: First aid kit</p>	

Grand Total Course Duration: **240Hours, 0 Minutes**

(This syllabus/ curriculum has been approved by [Paints and Coatings Skill Council](#))



Trainer Prerequisites for Job role: "Production QC In-Charge" mapped to Qualification Pack: "PCS/Q0505, v1.0"

Sr. No.	Area	Details
1	Description	A Production QC In-Charge is an individual who sample checks the intermediate products during the production process with specific tests as well as visually to ensure the end product is as per company's or customer's specifications
2	Personal Attributes	A Production QC In-Charge should have good physical strength, ability to work in paint-redolent environment, attention to details, good eyesight, and command over test equipment and procedures.
3	Minimum Educational Qualifications	B Sc (Chemistry/ Paint Technology)
4a	Domain Certification	Certified for Job Role: "Production QC In-Charge" mapped to QP: "PCS/Q0505, v1.0". Minimum accepted score is 80%
4b	Platform Certification	Recommended that the Trainer is certified for the Job Role: "Trainer", mapped to the Qualification Pack: "SSC/Q1402". Minimum accepted % as per respective SSC guidelines is 70%.
5	Experience	<ul style="list-style-type: none"> 5-year experience in laboratory or manufacturing and relevant training or teaching experience.



Annexure: Assessment Criteria

Assessment Criteria	
Job Role	Production QC In-Charge
Qualification Pack	PCS/Q0505, v1.0
Sector Skill Council	Paints and Coatings

Sr. 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 centre (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 criteria
5	To pass the Qualification Pack, every trainee should score a minimum of 60% in aggregate and each NOS
6	In case of successfully passing only certain number of NOS's, the trainee is eligible to take subsequent assessment on the balance NOS's to pass the Qualification Pack.

	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
PCS/N0501 Check inline production quality	PC1. receive the process doc-sheet from the shift in-charge or production supervisor	50	0.7	0.2	0.5
	PC2. understand the overall process flow		0.7	0.2	0.5
	PC3. understand the instances where the production QC has to be performed		0.7	0.2	0.5
	PC4. understand the quantities of intermediate products that need to be checked		0.7	0.2	0.5
	PC5. understand the quality check process and its impact on production		0.7	0.2	0.5
	PC6. read the customer's and company's doc sheet		0.7	0.2	0.5
	PC7. perform the quality check as specified		1.5	0.5	1
	PC8. weigh the appropriate quantities of the intermediate products using the appropriate aids and equipment like scales, gloves, etc		1.5	0.5	1
	PC9. check if there is uniform dispersion		1.5	0.5	1
	PC10. check the viscosity of the mix		1.5	0.5	1



	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
	PC11. check for fineness using appropriate tools like Hegmann guage		1.5	0.5	1
	PC12. perform any other tests in line with customer and company requirement		1.5	0.5	1
	PC13. visually check the intermediate products for conformance to fidelity		1.5	0.5	1
	PC14. adhere to the timelines		1.5	0.5	1
	PC15. ensure the overall production process is not interrupted by the tests		1.5	0.5	1
	PC16. comply with quality standards of the company		1.5	0.5	1
	PC17. implement process control techniques and procedures for manufacturing		1.5	0.5	1
	PC18. manage improvement in quality over time		1.5	0.5	1
	PC19. work with a cross functional teams like mixing, grinding, etc		1.5	0.5	1
	PC20. replace the excess intermediate products in the appropriate locations		1.5	0.5	1
	PC21. read the customer's and company's doc sheet		1.5	0.5	1
	PC22. perform the quality check as specified		1.5	0.5	1
	PC23. weigh the appropriate quantities of the intermediate products using the appropriate aids and equipment like scales, gloves, etc		1.5	0.5	1
	PC24. check for the pattern		1.5	0.5	1
	PC25. check the curing time		1.5	0.5	1
	PC26. perform any other tests in line with customer and company requirement		1.5	0.5	1
	PC27. visually check the intermediate products for conformance to fidelity		1.5	0.5	1



	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
	PC28. adhere to the timelines		1.5	0.5	1
	PC29. ensure the overall production process is not interrupted by the tests		1.5	0.5	1
	PC30. comply with quality standards of the company		0.7	0.2	0.5
	PC31. implement process control techniques and procedures for manufacturing		1.5	0.5	1
	PC32. manage improvement in quality over time		0.7	0.2	0.5
	PC33. work with a cross functional teams like extrusion, grinding, etc		0.7	0.2	0.5
	PC34. replace the excess intermediate products in the appropriate locations		0.7	0.2	0.5
	PC35. identify if there are any deviations from expected outcomes and expound the same to production / shift in-charge		0.7	0.2	0.5
	PC36. provide creative solutions with high quality and on time		0.7	0.2	0.5
	PC37. provide technical assistance as needed to prevent recurrence of the complaints and issues		0.7	0.2	0.5
	PC38. identify process improvement opportunities and implement the changes		0.7	0.2	0.5
	PC39. paste stickers such as quality check passed or okay on the test batch		0.7	0.2	0.5
	PC40. highlight and return the defective batches to the respective departments, in case of any deviations		0.7	0.2	0.5
	PC41. give the 'go-ahead' for the quality check passes batch to further processes in production		0.7	0.2	0.5
	PC42. understand the associated documentation procedures		0.7	0.2	0.5
	PC43. record the production QC findings appropriately		0.7	0.2	0.5
	PC44. file the documentations for any future references		0.7	0.2	0.5



	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
	POINTS		50	16	34
	TOTAL POINTS			50	

	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
PCS/N9901 Coordinate with colleagues and/or customers	PC1. receive job order and instructions from reporting superior	50	0.5	0.0	0.5
	PC2. understand the work output requirements, targets, performance indicators and incentives		2.0	0.5	1.5
	PC3. deliver quality work on time and report any anticipated reasons for delays		2.0	0.5	1.5
	PC4. escalate unresolved problems or complaints to the relevant senior		2.0	0.5	1.5
	PC5. communicate maintenance and repair schedule proactively to the superior		2.0	0.5	1.5
	PC6. receive feedback on work standards		1.0	0.0	1.0
	PC7. document the completed work schedule and handover to the superior		2.0	0.5	1.5
	PC8. exhibit trust, support and respect to all the colleagues in the workplace		1.0	0.25	0.75
	PC9. aim to achieve smooth workflow		2.0	0.5	1.5
	PC10. help and assist colleagues with information and knowledge		1.0	0.0	1.0
	PC11. seek assistance from the colleagues when required		1.0	0.25	0.75
	PC12. identify the potential and existing conflicts with the colleagues and resolve		1.0	0.25	0.75
	PC13. pass on essential information to other colleagues on timely basis		1.0	0.0	1.0
	PC14. maintain the etiquette, use polite language, demonstrate responsible and disciplined behaviors to the colleagues		2.0	0.5	1.5
	PC15. interact with colleagues from different functions clearly and effectively on all aspects to carry out the work among the team and understand the nature of their work		1.0	0.25	0.75
	PC16. put team over individual goals and multi task or share work where necessary supporting the colleagues		2.0	0.0	2.0
	PC17. highlight any errors of colleagues, help to rectify and ensure quality output		1.0	0.25	0.75
	PC18. work with cooperation, coordination, communication and collaboration, with shared goals and supporting each other's performance		1.0	0.0	1.0



	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
	PC19. ask more questions to the customers and identify their needs		1.0	0.25	0.75
	PC20. possess strong knowledge on the product, services and market		2.0	0.5	1.5
	PC21. brief the customers clearly on potential costs and hazards		1.0	0.25	0.75
	PC22. communicate with the customers in a polite, professional and friendly manner		1.0	0.25	0.75
	PC23. build effective but impersonal relationship with the customers		0.5	0.25	0.25
	PC24. ensure the appropriate language and tone are used with customers		1.0	0.25	0.75
	PC25. listen actively and have a two way communication		1.0	0.25	0.75
	PC26. be sensitive to the gender, cultural and social differences such as modes of greeting, formality, etc.		1.0	0.25	0.75
	PC27. understand the customer expectations correctly and provide the appropriate products and services		2.0	0.5	1.5
	PC28. understand the customer dissatisfaction and address or escalate their complaints effectively		2.0	0.5	1.5
	PC29. maintain a positive, sensible and cooperative manner all time		1.0	0.25	0.75
	PC30. ensure to maintain a proper body language, dress code, gestures and etiquettes towards the customers		1.0	0.25	0.75
	PC31. avoid interrupting the customers while they talk		1.0	0.0	1.0
	PC32. ensure to avoid negative questions and statements to the customers		1.0	0.0	1.0
	PC33. inform the customers on any issues or problems before hand and also on the developments involving them		2.0	0.5	1.5
	PC34. ensure to respond back to the customer immediately for their voice messages, e-mails, apps, etc.		1.0	0.0	1.0
	PC35. develop good rapport with the customers and promote other products and services		2.0	0.5	1.5
	PC36. seek feedback from the customers on their understanding to what was discussed		1.0	0.0	1.0
	PC37. explain the terms and conditions clearly		2.0	0.5	1.5
	POINTS		50	10	40
	TOTAL POINTS			50	



	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
PCS/N9902 Maintain standards of product/ service quality	PC1. keep in mind the profiles of expected customers	50	2.0	0.5	1.5
	PC2. understand the target customers and their product/ service quality requirements as defined by the company		3.0	0.5	2.5
	PC3. receive superior's/ customer feedback regularly		2.0	0.0	2.0
	PC4. aim to build a good connect with the customers through quality product/ service		2.0	0.5	1.5
	PC5. keep tab on frequent discussions with regular customers on general likes and dislikes in the market, latest trends, customer expectations, etc.		2.0	0.5	1.5
	PC6. receive updates on regular feedbacks from the clients on current service, complaints, and improvements to be made, etc.		2.0	0.5	1.5
	PC7. if necessary, compulsively seek customer rating of product/ service in order to help develop a set of regularly improved procedures		2.0	0.5	1.5
	PC8. demonstrate quality orientation at all level		4.0	1.5	2.5
	PC9. aim to gain their long lasting loyalty through satisfaction		3.0	1.0	2.0
	PC10. ensure 100% customer satisfaction via product/ service quality		3.0	0.5	2.5
	PC11. treat the customers fairly and with due respect		3.0	0.5	2.5
	PC12. focus on executing company's marketing strategies and product development needs		3.0	1.0	2.0
	PC13. focus on enhancing brand value of company by maintaining or enhancing quality standards		3.0	1.0	2.0
	PC14. ensure that customer expectations are met		2.0	0.5	1.5
	PC15. learn to read customers' needs and wants		2.0	0.5	1.5
	PC16. willingly accept and implement new and innovative products and services that help improve customer satisfaction		3.0	1.0	2.0
	PC17. communicate feedback of customer to senior, especially, the negative feedback		2.0	0.5	1.5
	PC18. maintain close contact with the customers and focus groups		2.0	0.5	1.5



	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
	PC19. offer promotions to improve product satisfaction level to the customers periodically		3.0	1.0	2.0
	PC20. weigh the cost of fulfilling unscheduled customer requests, consult with senior and advise the customer on alternatives		2.0	0.5	1.5
	POINTS		50	13	37
	TOTAL POINTS			50	

	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
PCS/N9903 Maintain O&HS standards and follow environmental norms	PC1. assess the various health, safety and environmental hazards in the work areas	50	1.5	0.4	1.1
	PC2. take necessary steps to eliminate or minimize the hazards		1.0	0.4	0.6
	PC3. analyze the causes of accidents at the workplace		1.5	0.4	1.1
	PC4. suggest measures to prevent such accidents from taking place		1.5	0.4	1.1
	PC5. take preventive measures to avoid risk of burns and other injury due to contact with hot surfaces, gas, fire, hot fluids/ liquids, etc.		1.5	0.4	1.1
	PC6. suggest methods to improve the existing safety procedures at the workplace		1.5	0.4	1.1
	PC7. dispose waste in the designated areas safely as per company's policies and rules		1.5	0.4	1.1
	PC8. maintain appropriate ventilation in the rooms while there is more exposure to paint vapours		1.0	0.4	0.6
	PC9. avoid dumping unused cans to safeguard the environment		1.0	0.0	1.0
	PC10. be aware of the locations of fire extinguishers, emergency exits, etc.		1.0	0.4	0.6
	PC11. practice correct emergency procedures		1.5	0.4	1.1
	PC12. check and review the storage areas frequently		1.5	0.4	1.1
	PC13. stack items in an organized way and use safe lifting techniques to reduce risk of injuries from handling procedures at the storage areas		1.5	0.4	1.1
	PC14. ensure to be safe while handling materials, tools, acids, chemicals, equipment, etc.		1.0	0.4	0.6
	PC15. store the chemicals and acids in a well-ventilated and locked areas with warning signs displayed		1.5	0.4	1.1



	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
	PC16. ensure safe techniques while moving furniture and fixtures		1.5	0.4	1.1
	PC17. ensure to reduce risk of injury from use of electrical tools		1.5	0.4	1.1
	PC18. read the manufacturer's manual carefully before use of any equipment		1.0	0.0	1.0
	PC19. unplug the electrical equipment before performing maintenance		1.0	0.4	0.6
	PC20. keep the floors free from oil, water and grease to avoid slippery surface		1.0	0.4	0.6
	PC21. use rubber mats in the places where floors are constantly wet		1.0	0.0	1.0
	PC22. ensure safety from injuries of cuts to loss of fingers, while handling sharp hazardous tools and equipment		1.5	0.4	1.1
	PC23. use flat surfaces, secure holding and protective wear while using such sharp tools		1.5	0.4	1.1
	PC24. use health, safety and environmental protection practices for storing, cleaning, and maintaining tools, equipment, and supplies		1.5	0.4	1.1
	PC25. practice ergonomic lifting, bending, or moving equipment and supplies		1.5	0.4	1.1
	PC26. identify the requirement for maintaining environmental norms		1.0	0.4	0.6
	PC27. comply with the environmental safety norms while on work to prevent accidents and health hazards		1.0	0.4	0.6
	PC28. follow company policies and rules regarding use of hazardous materials to avoid health, safety and environmental impacts caused by them		1.0	0.4	0.6
	PC29. ensure the employees have access to first aid kit when needed		1.0	0.0	1.0
	PC30. ensure all equipment and tools are stored and maintained properly and safe to use		1.0	0.4	0.6
	PC31. ensure to use personal protective equipment and safety gear such as gloves, mask, headwear, footwear, glasses, goggles, etc. for specific tasks and work conditions where required		1.5	0.4	1.1
	PC32. ensure to display safety signs at places where necessary for people to be cautious		1.5	0.4	1.1
	PC33. ensure electrical precautions such as insulated clothing, adequate equipment insulation, dry work area, switch off the power supply when not required, etc.		1.5	0.4	1.1



	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
	PC34. ensure availability of general health and safety equipment such as fire extinguishers, first aid equipment, safety equipment, clothing, safety installations such as fire exits, exhaust fans, etc.		1.5	0.4	1.1
	PC35. document all the first aid treatments, inspections, etc., conducted to keep track of the safety measures undertaken		1.0	0.4	0.6
	PC36. document all the environmental hazards caused and the measures undertaken to comply with the established safety procedures of the workplace		1.0	0.0	1.0
	PC37. report to the supervisor on any problems and hazards identified and any breach of environmental procedures.		1.0	0.4	0.6
	PC38. ensure zero accident at workplace		1.0	0.4	0.6
	PC39. adhere to safety standards and ensure no material damage		1.0	0.4	0.6
	PC40. take necessary action and correct any environmental hazards caused		1.0	0.4	0.6
	POINTS		50	14	36
	TOTAL POINTS				50

	Performance Criteria	Total Marks (250)	Out of	Theory	Skills Practical
PCS/N9904 Maintain IPR of organisation and customer	PC1. prevent leak of new plans and designs to competitors by reporting on time	50	7.0	0.0	7.0
	PC2. be aware of any of company's product or design patents		8.0	1.0	7.0
	PC3. report IPR violations observed in the market, to supervisor or company head		8.0	2.0	6.0
	PC4. read copyright clause of the material published on the internet and any other printed material		8.0	0.5	7.5
	PC5. protect infringement upon customer's business or design plans		8.0	2.0	6.0
	PC6. consult supervisor or senior management when in doubt about using information available from customer		6.0	0.0	6.0
	PC7. report any infringement observed by anyone in the company		5.0	0.0	5.0
	POINTS		50	5.5	44.5
	TOTAL POINTS				50
	GRAND TOTAL	250			

