



Automotive Casting Technician

QP Code: ASC/Q3205

Version: 2.0

NSQF Level: 4

Automotive Skills Development Council || 153, Gr Floor, Okhla Industrial Area, Phase - III, Leela Building
New Delhi - 110020

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ASC/Q3205: Automotive Casting Technician

Brief Job Description

The individual is involved in operating the casting apparatus and performing various casting and post-casting activities.

Personal Attributes

The person should be patient, organised, team-oriented and have the ability to work for long hours in adverse conditions. They should be keen observers and have an eye for detail and quality.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. [ASC/N9803: Organize work and resources \(Manufacturing\)](#)
2. [ASC/N9802: Interact effectively with colleagues, customers and others](#)
3. [ASC/N3214: Prepare for casting process operations](#)
4. [ASC/N3215: Perform various casting operations](#)
5. [ASC/N3216: Perform post-casting activities](#)

Qualification Pack (QP) Parameters

Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Casting Operation
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2015/7211.0201
Minimum Educational Qualification & Experience	8th Class + 2 years ITI with 2 years of relevant experience OR 10th Class pass with 2 years of relevant experience

	<p>OR</p> <p>10th Class + 2 years ITI</p> <p>OR</p> <p>12th Class with 1 Year of experience</p> <p>OR</p> <p>Certificate- NSQF ((Automotive Casting Operator Level 3) with 2 years of experience</p>
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	31/08/2021
Next Review Date	31/08/2024
NSQC Approval Date	31/08/2021
Version	2.0

ASC/N9803: Organize work and resources (Manufacturing)

Description

This NOS unit is about implementing safety, planning work, adopting sustainable practices for optimising use of resources

Scope

The scope covers the following :

- Maintain safe and secure working environment
- Health and hygiene
- Perform work as per quality standards
- Effective waste management practices
- Material/energy conservation practices

Elements and Performance Criteria

Maintain safe and secure working environment

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

- PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace
- PC2. follow safe working practices while dealing with hazards to ensure safety of self and others
- PC3. carry out routine check of the machine for identifying potential hazards
- PC4. use appropriate protective clothing/equipment for specific tasks and work
- PC5. follow safety hazards and preventive techniques during fire drill
- PC6. report any identified breaches in health, safety and security policies and procedures to the designated person

Health and hygiene

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

- PC7. ensure workstation and equipment are regularly clean and sanitized
- PC8. clean hands with soap, alcohol-based sanitizer regularly
- PC9. avoid contact with ill people and self-isolate in a similar situation
- PC10. wear and dispose PPEs regularly and appropriately
- PC11. report advanced hygiene and sanitation issues to appropriate authority
- PC12. follow stress and anxiety management techniques

Perform work as per quality standards

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

- PC13. ensure that work is accomplished as per the requirements within the specified timeline
- PC14. ensure team goals are given preference over individual goals

Effective waste management practices

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

- PC15. follow the fundamentals of 5S for waste management
- PC16. segregate waste into different categories

- PC17. follow processes specified for disposal of hazardous waste
- PC18. identify recyclable, non-recyclable and hazardous waste
- PC19. dispose non-recyclable, recyclable and reusable waste appropriately at identified location

Material/energy conservation practices

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

- PC20. identify ways to optimize usage of material in various tasks/activities/processes
- PC21. check for spills/leakages in various tasks/activities/processes
- PC22. plug spills/leakages and escalate to appropriate authority if unable to rectify
- PC23. check if the equipment/machine is functioning normally before commencing work and rectify wherever required
- PC24. report malfunctioning (fumes/ sparks/emission/vibration/noise) and lapse in maintenance of equipment
- PC25. ensure electrical equipment and appliances are properly connected and turned off when not in use

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. organisation procedures for health, safety and security, individual role and responsibilities in this context
- KU2. the organisation's emergency procedures for different emergency situations and the importance of following the same
- KU3. evacuation procedures for workers and visitors
- KU4. how and when to report hazards as well as the limits of responsibility for dealing with hazards
- KU5. potential hazards, risks and threats based on the nature of work
- KU6. preventative and remedial actions to be taken in case of exposure to toxic material
- KU7. various types of fire extinguisher
- KU8. various types of safety signs and their meaning
- KU9. appropriate first aid treatment relevant to different condition e.g. bleeding, minor burns, eye injuries etc.
- KU10. relevant standards, procedures and policies related to 5S followed in the company
- KU11. the various materials used and their storage norms
- KU12. efficient utilisation of material and water
- KU13. basics of electricity and prevalent energy efficient devices
- KU14. common practices of conserving electricity
- KU15. common sources and ways to minimize pollution
- KU16. categorisation of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics
- KU17. usage of different colors of dustbins
- KU18. waste management techniques
- KU19. significance of greening

Generic Skills (GS)

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

- GS1. read safety instructions/guidelines
- GS2. modify work practices to improve them
- GS3. ask for clarifications from superior about the job requirement
- GS4. work with supervisors/team members to carry out work related tasks
- GS5. complete tasks efficiently and accurately within stipulated time
- GS6. inform/report to concerned person in case of any problem
- GS7. make timely decisions for efficient utilization of resources
- GS8. write reports such as accident report, in at least English/regional language
- GS9. be punctual and utilize time efficiently

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Maintain safe and secure working environment</i>	11	5	-	7
PC1. identify hazardous activities and the possible causes of risks or accidents in the workplace	2	1	-	2
PC2. follow safe working practices while dealing with hazards to ensure safety of self and others	2	-	-	1
PC3. carry out routine check of the machine for identifying potential hazards	2	1	-	1
PC4. use appropriate protective clothing/equipment for specific tasks and work	2	1	-	1
PC5. follow safety hazards and preventive techniques during fire drill	2	1	-	1
PC6. report any identified breaches in health, safety and security policies and procedures to the designated person	1	1	-	1
<i>Health and hygiene</i>	7	5	-	2
PC7. ensure workstation and equipment are regularly clean and sanitized	2	2	-	1
PC8. clean hands with soap, alcohol-based sanitizer regularly	1	1	-	1
PC9. avoid contact with ill people and self-isolate in a similar situation	1	-	-	-
PC10. wear and dispose PPEs regularly and appropriately	1	-	-	-
PC11. report advanced hygiene and sanitation issues to appropriate authority	1	1	-	-
PC12. follow stress and anxiety management techniques	1	1	-	-
<i>Perform work as per quality standards</i>	5	3	-	2
PC13. ensure that work is accomplished as per the requirements within the specified timeline	2	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. ensure team goals are given preference over individual goals	3	1	-	1
<i>Effective waste management practices</i>	15	10	-	4
PC15. follow the fundamentals of 5S for waste management	3	2	-	1
PC16. segregate waste into different categories	2	1	-	-
PC17. follow processes specified for disposal of hazardous waste	2	2	-	1
PC18. identify recyclable, non-recyclable and hazardous waste	4	2	-	1
PC19. dispose non-recyclable, recyclable and reusable waste appropriately at identified location	4	3	-	1
<i>Material/energy conservation practices</i>	12	7	-	5
PC20. identify ways to optimize usage of material in various tasks/activities/processes	2	1	-	1
PC21. check for spills/leakages in various tasks/activities/processes	2	1	-	1
PC22. plug spills/leakages and escalate to appropriate authority if unable to rectify	2	1	-	-
PC23. check if the equipment/machine is functioning normally before commencing work and rectify wherever required	2	2	-	1
PC24. report malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment	2	1	-	1
PC25. ensure electrical equipment and appliances are properly connected and turned off when not in use	2	1	-	1
NOS Total	50	30	-	20

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9803
NOS Name	Organize work and resources (Manufacturing)
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed On	31/08/2021
Next Review Date	31/08/2024
NSQC Approval Date	31/08/2021

ASC/N9802: Interact effectively with colleagues, customers and others

Description

This NOS unit is about communicating with customers and colleagues/superiors, either in own work group or in other work groups within organisation.

Scope

The scope covers the following :

- Communicate effectively with colleagues, customers and others
- Interact with supervisor or superior

Elements and Performance Criteria

Communicate effectively with colleagues, customers and others

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

- PC1. maintain clear communication with colleagues, customers and others, wherever needed, through all means i.e. face-to-face, telephonic or written
- PC2. adjust communication styles to reflect gender and persons with disability (PWD) sensitivity
- PC3. work in a way that shows respect for colleagues and others
- PC4. follow the organisation's policies and procedures while working in a team
- PC5. respect personal space of colleagues and customers

Interact with supervisor or superior

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

- PC6. identify work requirements by receiving instructions from reporting supervisor
- PC7. escalate problems to supervisors that cannot be handled including repairs and maintenance of machine
- PC8. report the completed work
- PC9. rectify errors as per feedback

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. the importance of effective communication and establishing good working relationships with colleagues and supervisor
- KU2. different methods of communication as per the circumstances
- KU3. gender based concepts, issues and legislation

Generic Skills (GS)

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

- GS1. read instructions/guidelines/procedures

- GS2. listen effectively and orally communicate information
- GS3. ask for clarification and advice from the concerned person
- GS4. maintain positive and effective relationships with colleagues and customers
- GS5. evaluate the possible solution(s) to the problem
- GS6. deliver consistent and reliable service to customers
- GS7. complete written work with attention to detail
- GS8. check that the work meets customer requirements

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Communicate effectively with colleagues, customers and others</i>	36	11	-	14
PC1. maintain clear communication with colleagues, customers and others, wherever needed, through all means i.e. face-to-face, telephonic or written	8	-	-	4
PC2. adjust communication styles to reflect gender and persons with disability (PwD) sensitivity	8	-	-	-
PC3. work in a way that shows respect for colleagues and others	7	4	-	3
PC4. follow the organisation's policies and procedures while working in a team	7	4	-	3
PC5. respect personal space of colleagues and customers	6	3	-	4
<i>Interact with supervisor or superior</i>	14	19	-	6
PC6. identify work requirements by receiving instructions from reporting supervisor	7	4	-	-
PC7. escalate problems to supervisors that cannot be handled including repairs and maintenance of machine	-	5	-	3
PC8. report the completed work	7	5	-	-
PC9. rectify errors as per feedback	-	5	-	3
NOS Total	50	30	-	20

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N9802
NOS Name	Interact effectively with colleagues, customers and others
Sector	Automotive
Sub-Sector	Generic
Occupation	Generic
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed On	31/08/2021
Next Review Date	31/08/2024
NSQC Approval Date	31/08/2021

ASC/N3214: Prepare for casting process operations

Description

This NOS is about preparing for casting operations as per the given work order and the standards specified by the organization.

Scope

The scope covers the following :

- Identify work requirements
- Prepare for casting operations

Elements and Performance Criteria

Identify work requirements

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

- PC1. identify the work to be done by interpreting the engineering drawings/work order/SOPs and instructions from supervisor
- PC2. select the latest version of the available engineering drawing so that the final measurements and design is available with the team
- PC3. identify the specifications and dimensions of output and determine the dimensions and type of sand to be used to prepare core and mould
- PC4. identify the tools, equipment, consumables and input materials required for the job
- PC5. select and arrange the right material, tools, equipment and consumables as per the SOP and job requirements

Prepare for casting operations

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

- PC6. use appropriate Personal Protective Equipment (PPE) for safe working in workshop
- PC7. check the input material, tools and equipment for any defects before use
- PC8. ensure that casting equipment and auxiliaries are cleaned properly and free from any dust and impurities
- PC9. set the casting apparatus and its parameters as per the job requirements and SOP
- PC10. ensure that the right type of die is put in the machine
- PC11. support the casting operator in securely loading/unloading and placing the workpieces on the designated slot/space in casting line as indicated in the work instructions

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. relevant standards and procedures followed in the company
- KU2. different types of casting processes
- KU3. different types of sand used for preparing core and mould
- KU4. operation of casting machine being used for the process

- KU5. mechanical and heat laws applicable on casting
- KU6. Standard Operating Procedures (SOP) recommended by OEM for using tools and equipment required during casting operations
- KU7. various parameters pertinent to casting process like sand properties- GCS, compatibility, clay and moisture percentage, squeeze pressure, metal temperature, inoculation addition, cooling time, casting hardness, tensile strength, elongation and microstructure requirement etc.
- KU8. various processes such as furnace operation, melting process, charging method and safety process of handling hot liquid iron, furnace lining process etc.
- KU9. how to collect and store consumables, tools etc. as per organisational procedures
- KU10. use of appropriate PPE, material handling equipment and tools for completing the tasks
- KU11. how to check defects the casting machine and tools
- KU12. safety requirements during the casting work

Generic Skills (GS)

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

- GS1. read and interpret drawings, work instructions, equipment manuals and process documents
- GS2. communicate the process requirements to the supervisor and co-workers
- GS3. attentively listen and comprehend the information given by the lead technician/team members
- GS4. write work related information in English/regional language
- GS5. recognise a workplace problem and take suitable action
- GS6. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently
- GS7. plan and organise work according to the work requirements
- GS8. complete the assigned tasks with minimum supervision
- GS9. report to the supervisor or deal with a colleague individually, depending on the type of concern

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Identify work requirements</i>	13	24	-	8
PC1. identify the work to be done by interpreting the engineering drawings/work order/SOPs and instructions from supervisor	2	3	-	2
PC2. select the latest version of the available engineering drawing so that the final measurements and design is available with the team	3	5	-	2
PC3. identify the specifications and dimensions of output and determine the dimensions and type of sand to be used to prepare core and mould	3	5	-	1
PC4. identify the tools, equipment, consumables and input materials required for the job	3	5	-	1
PC5. select and arrange the right material, tools, equipment and consumables as per the SOP and job requirements	2	6	-	2
<i>Prepare for casting operations</i>	17	26	-	12
PC6. use appropriate Personal Protective Equipment (PPE) for safe working in workshop	2	5	-	2
PC7. check the input material, tools and equipment for any defects before use	4	3	-	2
PC8. ensure that casting equipment and auxiliaries are cleaned properly and free from any dust and impurities	3	5	-	2
PC9. set the casting apparatus and its parameters as per the job requirements and SOP	3	5	-	2
PC10. ensure that the right type of die is put in the machine	2	3	-	2
PC11. support the casting operator in securely loading/unloading and placing the workpieces on the designated slot/space in casting line as indicated in the work instructions	3	5	-	2
NOS Total	30	50	-	20

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3214
NOS Name	Prepare for casting process operations
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Casting Operation
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed On	31/08/2021
Next Review Date	31/08/2024
NSQC Approval Date	31/08/2021

ASC/N3215: Perform various casting operations

Description

This NOS is about performing various casting operations as per the final output specifications and the standards specified by the organization.

Scope

The scope covers the following :

- Perform sand making related operations
- Perform core making related operations
- Perform mould making related operations

Elements and Performance Criteria

Perform sand making related operations

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

- PC1. instruct the casting operator for pouring the sand into mixer and turning the valves of machines to regulate speed and quantity of the sand
- PC2. feed the additives in the mixer in right quantities as mentioned in the Work Instructions/ SOPs
- PC3. monitor the sand feeding and mixing process parameters by reading the various gauges and correct them if not within standards
- PC4. check the quality of output sand in terms of grain compressive strength etc. and send the same for further processing, in case there are any inconsistencies identified

Perform core making related operations

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

- PC5. instruct the casting operator for pouring the sand and additives into die and turning the valves of machines of additives and sand into the die
- PC6. adjust the temperature, pressure and other parameters as per the core's requirement
- PC7. monitor the core making process parameters by reading the various gauges and correct them if not within standards
- PC8. ensure proper hardening of the core by creating hot vapor within the core making process
- PC9. support the operator in removing the output core carefully from the machine at the end of the core making cycle time
- PC10. instruct operator to prepare the water based paint and dip the core into paint tank till the same is coated with paint properly
- PC11. put the painted core into heater/combustion zone for hardening
- PC12. use the shot blasting machine to remove any dust particles and unwanted material from the core as per the WI/SOP
- PC13. measure the final core and compare with the dimensions as prescribed in the work order and engineering drawing

Perform mould making related operations

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

- PC14. instruct the casting operator for pouring the sand and additives into die and turning the valves of machines of additives and sand into the die
- PC15. adjust the temperature, pressure and other parameters as per the output mould requirement
- PC16. start the pressing machine and perform pressing operation to prepare the mould
- PC17. monitor the mould making process parameters by reading the various gauges and correct them if not within standards
- PC18. prepare the mould box (combination of core and mould with a metal jacket on it) for casting of metal
- PC19. ensure that the two halves of the mould box do not move while pouring operations of the molten metal are in process
- PC20. measure the final mould pattern and compare with the dimensions as prescribed in the work order and engineering drawing

Perform casting activities

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

- PC21. instruct the casting operator for pouring the molten metal into the mold at the right temperature from the refractory ladle
- PC22. maintain down sprue always full during pouring as per the process mentioned in the work instructions/ SOPs
- PC23. monitor the casting process parameters by reading the various gauges and correct them if not within standards
- PC24. pull out the entire mould with solidified metal from the machine
- PC25. use hammer to remove the sand and obtain the metal casting after a lapse of definite time
- PC26. trim the cast to remove fins, flashes and excess metal from the surface to provide accurate shape to the cast
- PC27. support the operator in removing any dirt, sand, excess metal etc. from the casted workpiece
- PC28. measure the final casted piece and compare with the dimensions as prescribed in the work order and engineering drawing
- PC29. shape the metal casting, if parts are not still as per the given measurements

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1. relevant standards and procedures followed in the company
- KU2. different types of sand making processes and associated equipment
- KU3. different parameters pertinent to sand making process like quantity of additives, Sand properties- GCS, Compatibility, Clay and moisture percentage, Squeeze pressure, metal temperature, inoculation addition, cooling time etc. and their impact on output
- KU4. properties of sand and other additives
- KU5. different types equipment for core making
- KU6. different parameters pertinent to core making process like Temperature, Pressure etc.
- KU7. different types of paints to be used for painting the core
- KU8. different types equipment for mould making
- KU9. different parameters pertinent to mould making process like Temperature, Pressure etc

- KU10. different types of casting processes
- KU11. Standard Operating Procedures (SOP) recommended by OEM for using tools and equipment required during casting operations
- KU12. how to read dials/ indicators of casting machine to ensure machine is working properly
- KU13. different mechanisms to perform fettling and trimming of the cast basis the size of cast and runners & risers on the surfaces
- KU14. different types of tools such as swing frame or pedestal grinders, chipping tools, hammers, hand saws, pneumatic or electrical tools etc.
- KU15. required for manual fettling
- KU16. safety requirements during the casting work

Generic Skills (GS)

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

- GS1. read and interpret drawings, work instructions, equipment manuals and process documents
- GS2. communicate the process requirements to the supervisor and co-workers
- GS3. attentively listen and comprehend the information given by the lead technician/team members
- GS4. write work related information in English/regional language
- GS5. recognise a workplace problem and take suitable action
- GS6. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently
- GS7. plan and organise work according to the work requirements
- GS8. complete the assigned tasks with minimum supervision
- GS9. report to the supervisor or deal with a colleague individually, depending on the type of concern

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform sand making related operations</i>	5	8	-	5
PC1. instruct the casting operator for pouring the sand into mixer and turning the valves of machines to regulate speed and quantity of the sand	2	2	-	1
PC2. feed the additives in the mixer in right quantities as mentioned in the Work Instructions/ SOPs	1	2	-	1
PC3. monitor the sand feeding and mixing process parameters by reading the various gauges and correct them if not within standards	1	2	-	1
PC4. check the quality of output sand in terms of grain compressive strength etc. and send the same for further processing, in case there are any inconsistencies identified	1	2	-	2
<i>Perform core making related operations</i>	9	18	-	7
PC5. instruct the casting operator for pouring the sand and additives into die and turning the valves of machines of additives and sand into the die	1	2	-	1
PC6. adjust the temperature, pressure and other parameters as per the core's requirement	1	2	-	1
PC7. monitor the core making process parameters by reading the various gauges and correct them if not within standards	1	2	-	1
PC8. ensure proper hardening of the core by creating hot vapor within the core making process	1	2	-	-
PC9. support the operator in removing the output core carefully from the machine at the end of the core making cycle time	1	2	-	1
PC10. instruct operator to prepare the water based paint and dip the core into paint tank till the same is coated with paint properly	1	2	-	1
PC11. put the painted core into heater/combustion zone for hardening	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. use ths shot blasting machine to remove any dust particles and unwanted material from the core as per the WI/SOP	1	2	-	1
PC13. measure the final core and compare with the dimensions as prescribed in the work order and engineering drawing	1	2	-	1
<i>Perform mould making related operations</i>	7	9	-	4
PC14. instruct the casting operator for pouring the sand and additives into die and turning the valves of machines of additives and sand into the die	1	2	-	-
PC15. adjust the temperature, pressure and other parameters as per the output mould requirement	1	1	-	1
PC16. start the pressing machine and perform pressing operation to prepare the mould	1	1	-	1
PC17. monitor the mould making process parameters by reading the various gauges and correct them if not within standards	1	1	-	-
PC18. prepare the mould box (combination of core and mould with a metal jacket on it) for casting of metal	1	2	-	1
PC19. ensure that the two halves of the mould box do not move while pouring operations of the molten metal are in process	1	1	-	-
PC20. measure the final mould pattern and compare with the dimensions as prescribed in the work order and engineering drawing	1	1	-	1
<i>Perform casting activities</i>	9	15	-	4
PC21. instruct the casting operator for pouring the molten metal into the mold at the right temperature from the refractory ladle	1	2	-	1
PC22. maintain down sprue always full during pouring as per the process mentioned in the work instructions/ SOPs	1	2	-	1
PC23. monitor the casting process parameters by reading the various gauges and correct them if not within standards	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. pull out the entire mould with solidified metal from the machine	1	2	-	-
PC25. use hammer to remove the sand and obtain the metal casting after a lapse of definite time	1	2	-	-
PC26. trim the cast to remove fins, flashes and excess metal from the surface to provide accurate shape to the cast	1	2	-	1
PC27. support the operator in removing any dirt, sand, excess metal etc. from the casted workpiece	1	1	-	-
PC28. measure the final casted piece and compare with the dimensions as prescribed in the work order and engineering drawing	1	1	-	-
PC29. shape the metal casting, if parts are not still as per the given measurements	1	2	-	1
NOS Total	30	50	-	20

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3215
NOS Name	Perform various casting operations
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Casting Operation
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed On	31/08/2021
Next Review Date	31/08/2024
NSQC Approval Date	31/08/2021

ASC/N3216: Perform post-casting activities

Description

This NOS unit is about conducting inspection of casted pieces and post-inspection activities such as repairing, segregation of correct pieces, cleaning etc.

Scope

The scope covers the following :

- Perform shot blasting process
- Perform inspection of finished goods
- Perform post-inspection activities
- Perform batch quality approval procedure

Elements and Performance Criteria

Perform shot blasting process

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

- PC1. clean the shot blasting machine by using air pressure blast to remove any dust particles and unwanted material
- PC2. check the shot blasting machine and its components for defects before use
- PC3. load the work pieces on shot blasting machine and place the same securely on the designated slot/space as indicated in the WI
- PC4. start the machine and remove the surface imperfections from both sides of the workpiece as per the WI
- PC5. ensure that machine is in the moving position till the cycle time for both sides cycle is achieved as per the WI/ SOP
- PC6. remove the workpieces carefully from the machine and load them into the designated trolley

Perform inspection of finished goods

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

- PC7. check the work pieces as per the work instructions for product quality
- PC8. support the operator in comparing the texture, color, surface properties, hardness and strength with the given product specifications
- PC9. note down the observations of the basic inspection process and identify pieces which are as per the specified standards

Perform post-inspection activities

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

- PC10. rectify minor defects like excess slag, shape deformation, sharp edges, rough surfaces, grooves, holes etc. by fettling, chipping, cutting, sawing, filling, shearing, hammering etc.
- PC11. ensure that operator is segregating, tagging and storing the completed pieces in to appropriate categories and maintaining records of each category as per WI/SOP
- PC12. check the machine operations for any malfunctions/ defects in the component and inform the supervisor/ maintenance team for correction

PC13. ensure that tools, casting apparatus and shot blasting machine are cleaned and stored properly as per the organisational guidelines after completion of all activities

PC14. dispose scrap or waste material into the disposal area in accordance with the company's policies and environmental regulations

Perform batch quality approval procedure

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

PC15. provide first and last work piece from each batch to the lab for quality check on its composition, soundness, metallography/grain structure etc.

PC16. obtain batch clearance from the lab

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. relevant standards and procedures followed in the company

KU2. shot blasting process

KU3. basic process followed for inspection of the pieces

KU4. how to use measurement instruments like rulers, Vernier calipers, micrometer, weighing scale, gauges and other inspection equipment

KU5. various type of defects in casted products

KU6. how to check defects in the completed workpiece

KU7. post-casting processes like inspection, cleaning, maintenance etc

KU8. methods for cutting, shearing, hammering, drilling to repair pieces with minor defects

KU9. methods of storage and tagging of final product

KU10. how to collect and store consumables, tools etc. as per organisational procedures

Generic Skills (GS)

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

GS1. read and interpret drawings, work instructions, equipment manuals and process documents

GS2. communicate the process requirements to the supervisor and co-workers

GS3. attentively listen and comprehend the information given by the lead technician/team members

GS4. write work related information in English/regional language

GS5. recognise a workplace problem and take suitable action

GS6. analyse and apply the information gathered from observation, experience, reasoning or communication to act efficiently

GS7. plan and organise work according to the work requirements

GS8. complete the assigned tasks with minimum supervision

GS9. report to the supervisor or deal with a colleague individually, depending on the type of concern

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Perform shot blasting process</i>	12	19	-	7
PC1. clean the shot blasting machine by using air pressure blast to remove any dust particles and unwanted material	2	3	-	1
PC2. check the shot blasting machine and its components for defects before use	2	4	-	1
PC3. load the work pieces on shot blasting machine and place the same securely on the designated slot/space as indicated in the WI	2	3	-	1
PC4. start the machine and remove the surface imperfections from both sides of the workpiece as per the WI	2	3	-	2
PC5. ensure that machine is in the moving position till the cycle time for both sides cycle is achieved as per the WI/ SOP	2	3	-	1
PC6. remove the workpieces carefully from the machine and load them into the designated trolley	2	3	-	1
<i>Perform inspection of finished goods</i>	6	9	-	3
PC7. check the work pieces as per the work instructions for product quality	2	3	-	1
PC8. support the operator in comparing the texture, color, surface properties, hardness and strength with the given product specifications	2	3	-	1
PC9. note down the observations of the basic inspection process and identify pieces which are as per the specified standards	2	3	-	1
<i>Perform post-inspection activities</i>	9	16	-	8
PC10. rectify minor defects like excess slag, shape deformation, sharp edges, rough surfaces, grooves, holes etc. by fettling, chipping, cutting, sawing, filling, shearing, hammering etc.	2	3	-	2

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. ensure that operator is segregating, tagging and storing the completed pieces in to appropriate categories and maintainaing records of each category as per WI/SOP	2	3	-	1
PC12. check the machine operations for any malfunctions/ defects in the component and inform the supervisor/ maintenance team for correction	2	4	-	2
PC13. esure that tools, casting apparatus and shot blasting machine are cleaned and stored properly as per the organisational guidelines after completion of all activities	2	3	-	2
PC14. dispose scrap or waste material into the disposal area in accordance with the company's policies and environmental regulations	1	3	-	1
<i>Perform batch quality approval procedure</i>	3	6	-	2
PC15. provide first and last work piece from each batch to the lab for quality check on its composition, soundness, metallography/grain structure etc.	1	3	-	1
PC16. obtain batch clearance from the lab	2	3	-	1
NOS Total	30	50	-	20

National Occupational Standards (NOS) Parameters

NOS Code	ASC/N3216
NOS Name	Perform post-casting activities
Sector	Automotive
Sub-Sector	Manufacturing
Occupation	Casting Operation
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed On	31/08/2021
Next Review Date	31/08/2024
NSQC Approval Date	31/08/2021

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

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 the proportion of marks for Theory and Skills Practical for each PC.
2. The assessment for the theory part will be based on the knowledge bank of questions created by the SSC.
3. Assessment will be conducted for all compulsory NOS, and where applicable, on the selected elective/option NOS/set of NOS.
4. Individual assessment agencies will create unique question papers for the theory part for each candidate at each examination/training center (as per assessment criteria below).
5. Individual assessment agencies will create unique evaluations for skill practical for every student at each examination/ training center based on these criteria.
6. In case of unsuccessful completion, the trainee may seek reassessment on the Qualification Pack.

Minimum Aggregate Passing % at QP Level : 70

(Please note: Every Trainee should score a minimum aggregate passing percentage as specified above, to successfully clear the Qualification Pack assessment.)

Assessment Weightage

Compulsory NOS

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
ASC/N9803.Organize work and resources (Manufacturing)	50	30	-	20	100	15
ASC/N9802.Interact effectively with colleagues, customers and others	50	30	-	20	100	10
ASC/N3214.Prepare for casting process operations	30	50	-	20	100	25
ASC/N3215.Perform various casting operations	30	50	-	20	100	25
ASC/N3216.Perform post-casting activities	30	50	-	20	100	25
Total	190	210	-	100	500	100

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
PPE	Personal Protective Equipment
PwD	Person with Disability
SOP	Standard Operating Practices

Glossary

Sector	Sector is a conglomeration of different business operations having similar business and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
Sub-sector	Sub-sector is derived from a further breakdown based on the characteristics and interests of its components.
Occupation	Occupation is a set of job roles, which perform similar/ related set of functions in an industry.
Job role	Job role defines a unique set of functions that together form a unique employment opportunity in an organisation.
Occupational Standards (OS)	OS specify the standards of performance an individual must achieve when carrying out a function in the workplace, together with the Knowledge and Understanding (KU) they need to meet that standard consistently. Occupational Standards are applicable both in the Indian and global contexts.
Performance Criteria (PC)	Performance Criteria (PC) are statements that together specify the standard of performance required when carrying out a task.
National Occupational Standards (NOS)	NOS are occupational standards which apply uniquely in the Indian context.
Qualifications Pack (QP)	QP comprises the set of OS, together with the educational, training and other criteria required to perform a job role. A QP is assigned a unique qualifications pack code.
Unit Code	Unit code is a unique identifier for an Occupational Standard, which is denoted by an 'N'
Unit Title	Unit title gives a clear overall statement about what the incumbent should be able to do.
Description	Description gives a short summary of the unit content. This would be helpful to anyone searching on a database to verify that this is the appropriate OS they are looking for.
Scope	Scope is a set of statements specifying the range of variables that an individual may have to deal with in carrying out the function which have a critical impact on quality of performance required.
Knowledge and Understanding (KU)	Knowledge and Understanding (KU) are statements which together specify the technical, generic, professional and organisational specific knowledge that an individual needs in order to perform to the required standard.

Organisational Context	Organisational context includes the way the organisation is structured and how it operates, including the extent of operative knowledge managers have of their relevant areas of responsibility.
Technical Knowledge	Technical knowledge is the specific knowledge needed to accomplish specific designated responsibilities.
Core Skills/ Generic Skills (GS)	Core skills or Generic Skills (GS) are a group of skills that are the key to learning and working in today’s world. These skills are typically needed in any work environment in today’s world. These skills are typically needed in any work environment. In the context of the OS, these include communication related skills that are applicable to most job roles.
Electives	Electives are NOS/set of NOS that are identified by the sector as contributive to specialization in a job role. There may be multiple electives within a QP for each specialized job role. Trainees must select at least one elective for the successful completion of a QP with Electives.
Options	Options are NOS/set of NOS that are identified by the sector as additional skills. There may be multiple options within a QP. It is not mandatory to select any of the options to complete a QP with Options.