सत्यमेव जयते
GOVERNMENT OF INDIA
MINISTRY OF SKILL DEVELOPMENT
& ENTREPRENEURSHIP

Qualification Pack

Transforming the skill landscape

Milling Technician

Electives: Milling of cereals/ Milling of pulses

QP Code: FIC/Q1002

Version: 2.0

NSQF Level: 4

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Contents

FIC/Q1002: Milling Technician

Brief Job Description

The Milling Technician is responsible for carrying out operations required for milling of a variety of grains and production of different flours including monitoring of equipment, performance, maintenance of process parameters and undertaking preventive maintenance in compliance with the Standard Operating Procedures of the organisation.

Personal Attributes

The job requires the individual to have the ability to plan, organize and prioritize tasks in the workplace. The individual must possess reading, writing, computing and communication skills with a problem-solving attitude. The individual should be physically fit, must have a good stamina to stand for long hours during work and should be able to handle pressure at workplace.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. FIC/N9026: Prepare for production
2. FIC/N1005: Grain Milling
3. FIC/N9901: Implement health and safety practices at the workplace
4. FIC/N9902: Work effectively in an organisation
5. SGJ/N1702: Optimize resource utilization at workplace

Electives*(mandatory to select at least one):*

Elective 1: Milling of cereals

This elective is about milling of rice and wheat by following processes and different types of machineries

1. FIC/N1028: Milling of cereals

Elective 2: Milling of pulses

This elective is about milling of pulses by following processes and different types of machineries

1. FIC/N1027: Milling of pulses

Qualification Pack (QP) Parameters

Sector	Food Processing
Sub-Sector	Food Grain Milling
Occupation	Processing
Country	India
NSQF Level	4
Aligned to NCO/ISCO/ISIC Code	NCO-2004/ 8273.90
Minimum Educational Qualification & Experience	12th Class with 1 Year of experience relevant experience OR 10th Class with 3 Years of experience relevant experience OR 10th Class (and 2 years course in relevant stream) with 1 Year of experience relevant experience OR 10th Class + I.T.I (2 years) with 1 Year of experience relevant experience
Minimum Level of Education for Training in School	
Pre-Requisite License or Training	NA
Minimum Job Entry Age	20 Years
Last Reviewed On	30/12/2021
Next Review Date	28/12/2024
Deactivation Date	28/12/2024
NSQC Approval Date	30/12/2021
Version	2.0
Reference code on NQR	2021/FI/FICSI/04801
NQR Version	1

FIC/N9026: Prepare for production

Description

This NOS unit is about performing various tasks prior to production in the food processing industry.

Scope

The scope covers the following :

- Plan for production
- Clean and maintain work area, machineries, and tools for production
- Organize for production

Elements and Performance Criteria

Plan for production

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

PC1. identify work requirements by obtaining instructions from the supervisor. Instructions: process chart, product flow chart, formulation, chart, etc.

PC2. plan and prioritize tasks as per work schedule.Tasks: inspect, clean, maintain, verify, etc.

PC3. estimate manpower and material requirements as per work requirement. Material: raw materials and packaging materials

PC4. ensure required quantity of raw materials, packaging materials, equipment, and manpower for production

PC5. plan capacity utilization of machinery with respect to the processing time, production order, and batch size for each product

Clean and maintain work area, machineries, and tools for production

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

PC6. clean and maintain the work area as per organizational procedures

PC7. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards

PC8. dispose of the waste material at designated place safely. Waste material: hazardous waste, food waste, packaging waste, etc.

PC9. inspect the tools, equipment, and machinery to ascertain suitability for use

PC10. report information such as faulty tools and equipment to the concerned authority

Organize for production

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

PC11. organize tools and equipment

PC12. receive and organize production materials appropriately. Production materials: raw materials, packaging materials, etc.

PC13. allot responsibilities/work to the assistants and helpers

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. production planning process
KU2. analysis and interpretation of various process charts, product flow charts, etc.
KU3. resource management process
KU4. procedure to estimate manpower and raw material
KU5. capacity utilization calculation
KU6. organizational policies and SOP on cleanliness
KU7. operating procedure and general maintenance of food production machineries
KU8. waste management procedures
KU9. methods to inspect tools, equipment and machinery
KU10. procedure to allot work or responsibility to the team

Generic Skills (GS)

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

GS1. read and interpret organizational policies, SOP, production charts, etc.
GS2. communicate effectively with subordinates as well as supervisors
GS3. plan and prioritize various tasks
GS4. be always punctual and courteous
GS5. organize all process/equipment manuals to access information easily
GS6. discuss task lists, schedules, and activities with the senior/supervisor

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Plan for production	**11**	**25**	**-**	**-**
PC1. identify work requirements by obtaining instructions from the supervisor. Instructions: process chart, product flow chart, formulation, chart, etc.	3	6	-	-
PC2. plan and prioritize tasks as per work schedule.Tasks: inspect, clean, maintain, verify, etc.	2	5	-	-
PC3. estimate manpower and material requirements as per work requirement. Material: raw materials and packaging materials	2	4	-	-
PC4. ensure required quantity of raw materials, packaging materials, equipment, and manpower for production	2	5	-	-
PC5. plan capacity utilization of machinery with respect to the processing time, production order, and batch size for each product	2	5	-	-
Clean and maintain work area, machineries, and tools for production	**14**	**32**	**-**	**-**
PC6. clean and maintain the work area as per organizational procedures	3	7	-	-
PC7. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards	3	7	-	-
PC8. dispose of the waste material at designated place safely. Waste material: hazardous waste, food waste, packaging waste, etc.	3	7	-	-
PC9. inspect the tools, equipment, and machinery to ascertain suitability for use	3	6	-	-
PC10. report information such as faulty tools and equipment to the concerned authority	2	5	-	-
Organize for production	**5**	**13**	**-**	**-**
PC11. organize tools and equipment	2	7	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. receive and organize production materials appropriately. Production materials: raw materials, packaging materials, etc.	2	4	-	-
PC13. allot responsibilities/work to the assistants and helpers	1	2	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N9026
NOS Name	Prepare for production
Sector	Food Processing
Sub-Sector	Generic
Occupation	Production
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

FIC/N1005: Grain Milling

Description

This NOS unit is about producing different types of products from various grains using the machineries as per the specifications and standards of the organization.

Scope

The scope covers the following :

- Pre-processing of grains for milling
- Processing of grains
- Post production cleaning and regular maintenance of equipment

Elements and Performance Criteria

Pre-processing of grains for milling

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

PC1. ensure all equipment are cleaned, free from infestation and working properly

PC2. • calibrate the automatic measuring scales with the standard weight and measures
• Controls: weight, screens, sizes, sieves, RPM, time, etc.

PC3. • set controls for automatic measuring scales in continuous process to transfer measured quantity of food grains for milling
• Controls: weight, screens, sizes, sieves, rpm, time, etc.

PC4. check cleaning and effectiveness of magnets and see they are appropriately installed. and also do calibration of metal detector by dash

PC5. adjust and control speed of screw or chain conveyor and the motor to maintain flow rate of the material

PC6. check condition of bucket elevator, chain conveyor, screw conveyor for any damage

PC7. ensure proper lubrication of machine parts done with food grade lubricants

PC8. adjust and control speed of screw, chain conveyor by gear of rpm motor attached with it to maintain flow rate of material to and from each processing machines to maintain production requirements and achieving continuous processing

PC9. inspect screens/sieves periodically if any damage. Cleaning & inspection for effective grading and sieving of grains based on size and grade

PC10. stop process machines in case of any breakdown/ non confirmatory or emergency with proper approval, attend breakdown/repairs/faults if required with maintenance team and ensure immediate maintenance to reduce downtime, for targeted line efficiency to meet production target

PC11. check all sensors attached are in working condition to maintain the flow rate

PC12. set controls of blowers or suction fan to remove light impurities and dust particles from screens and sieves

PC13. check there is no leakage in blower or suction fan

PC14. • adjust the speed of the separator, aspirator, etc. to remove light weight impurities from grains
• Impurities: dust, soil, chaff, twigs, broken grain, insects, etc.

PC15. inspect fumigated raw material for absence of any live infestation in it

PC16. collect in process samples and transfer to quality lab for in process test

PC17. transfer the grains to the de-stoner machine to remove stones and prepare the grains for washing

PC18. • set the controls for water bath and set the time of the conditioner for soaking, conditioning and tempering of grains for further processing
• Controls: water level, temp, inflow and outflow rate etc.

PC19. adjust temperature, pressure and speed of dryer to maintain required moisture in grains

PC20. adjust valves to control the speed of the dryer to regulate amount of grain (par boiled grain) conveyed into dryer

PC21. • set parameters of husker to remove husk from the grain by adjusting the rollers (of rubber roll huskers) and setting the clearance between the rollers
• Parameters: roller speed, clearance, emery size, etc.

PC22. adjust speed of the aspirator fan to separate de-husked grains

PC23. control the stream of air passing through cylinder to cool the grain and to blow off the bran

PC24. grade the processed grain based on length by controlling the rotation of the cylinders

PC25. adjust the speed of the sifter and use proper sieve size to remove the broken grains and transfer them to the grinder for milling

PC26. check band sealer, temperature indicator of FFS machine

Processing of grains

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

PC27. • clean the received grains to remove the impurities by using a winnowing machine
• impurities: chaff, soil, dirt, etc

PC28. grade the desired grains as per the desired size

PC29. transfer the grains into a decorticator/de-husker to remove the hull from the grain

PC30. transfer grain into the de-stoner respectively to remove stones from the grain

PC31. collect sample of the processed grain and transfer to quality lab for analysis

PC32. store the desired grain for further processing

Post production cleaning and regular maintenance of equipment

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

PC33. follow legal metrology Act, 2009 for establishing the weights and measures as per the standards

PC34. select the packaging materials as per the standard sop of the organization

PC35. • evaluate the packaging materials on the parameters set by the organization
• Parameters: artwork, layers, details etc.

PC36. provide information such as the product name, brand, size, net weight, count, manufacturer, supplier, batch code, date of packing, date of expiry, allergens and country of origin etc

PC37. start conveyors and elevators to transfer finished products to packing machine

PC38. • fill the packaging material with the feed as per the standard operating practices
• Packaging material: HDPE, LDPE, jute bags, cartons, etc.

PC39. operate packaging/bagging machinery by setting controls like batch code, date coding and filling quantity, printing mark, sealer temp and pressure etc

PC40. check the weight of the packed/bagged product to ensure its conformance to standards

PC41. pass the final packed product through metal detector to ensure safety of product

PC42. collect sample of finished product and transfer to quality lab for analysis and ensure it's conformance as per specification

PC43. dispatch product as per company requirement and system

PC44. document and maintain record on production, process details and the types of finished products produced

PC45. • production records: raw material used, products produced, production sequence, equipment and machinery details, efficiency and capacity utilization of equipment, breakdown and downtime of the equipment, material losses
• Process details: Process flow chart
• Finished products: rice flour, wheat flour and pulses
• Records: batch number, time of packing, date of manufacture, date of expiry, other label detail primary and secondary and tertiary packaging materials for all finished products, SKUs,

PC46. discard the unapproved/ waste samples

PC47. ensure periodic(daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following SOP/suppliers manual

PC48. clean work area (cleaning agent and sanitizers); machineries, equipment and tools using industry approved cleaning procedures (such as dismantling, hammering, pressurised dry air cleaning, Cleaning out of Place)

PC49. collect machine refraction generated from each process like husk, dust, sticks, foreign grains following organizational waste disposal SOP procedure

PC50. attend minor repairs/faults of all machines

PC51. plan for equipment fumigation as per SOP defined by organization from government certified fumigation agency

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. about fumigation and fumigant

KU2. types of raw materials (various grains), quality parameter (physical and chemical) of raw material and products obtained from each raw materials

KU3. basic operating principles of equipment used in rice mills, such as de-stoner, separator, aspirator, blower, husker, splitter, whitener, polisher, grinder, sortex and sifter

KU4. various process involved in rice milling

KU5. calibration procedures and usability of standard weights and measures

KU6. types of screens and sieves used in milling machines

KU7. light weight impurities removal method

KU8. washing and drying methods

KU9. de-husking and splitting of grainds

KU10. techniques followed for peeling of bran from de-husked rice

KU11. length wise grading of the processed rice

KU12. different sieves for removing different size of broken grains

KU13. operating techniques of different grinders

KU14. consistency of the finished yield

KU15. sampling procedure as per SOP of organization and identify the finished products criteria with standard parameters

KU16. types of packing machines and packing materials used for grain mill products

KU17. contamination/food safety hazards associated with the grain cleaning process and related control measures

KU18. cleaning procedure of all the equipment and machinery used in rice milling process

KU19. how to use hand sanitizers, disinfectants for cleaning working area and its storing chemical as per MSDS

KU20. the organizational standard and procedure for disposal of waste as per SOP

KU21. type of FFS packaging machine its operation and maintenance, how to adjust and change B.No, MFG, price in it

KU22. working of the ink jet or ribbon type printers

KU23. checking printing effectiveness on pouches, bags and different types of printing erros and test procedure to rectify these errors

KU24. food safety and hygiene as per FSSAI schedule IV

KU25. control of OPRP and CCP

KU26. able to do machine efficiency calculation and to get line efficiency

KU27. elements of food fraud, food defence and different types of PRPs

Generic Skills (GS)

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

GS1. read and interpret organizational policies, Standard Operating Procedure, Process manuals, etc.

GS2. communicate with others effectively

GS3. plan and prioritize tasks to maximize productivity

GS4. basic arithmetic operations

GS5. be punctual and courteous

GS6. read equipment manuals and process documents to understand the equipment operation and process requirement

GS7. able to do machine efficiency calculation to maintain line efficiency

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Pre-processing of grains for milling	**17.5**	**38**	**-**	**-**
PC1. ensure all equipment are cleaned, free from infestation and working properly	-	-	-	-
PC2. • calibrate the automatic measuring scales with the standard weight and measures • Controls: weight, screens, sizes, sieves, RPM, time, etc.	-	-	-	-
PC3. • set controls for automatic measuring scales in continuous process to transfer measured quantity of food grains for milling • Controls: weight, screens, sizes, sieves, rpm, time, etc.	-	-	-	-
PC4. check cleaning and effectiveness of magnets and see they are appropriately installed. and also do calibration of metal detector by dash	-	-	-	-
PC5. adjust and control speed of screw or chain conveyor and the motor to maintain flow rate of the material	-	-	-	-
PC6. check condition of bucket elevator, chain conveyor, screw conveyor for any damage	-	-	-	-
PC7. ensure proper lubrication of machine parts done with food grade lubricants	-	-	-	-
PC8. adjust and control speed of screw, chain conveyor by gear of rpm motor attached with it to maintain flow rate of material to and from each processing machines to maintain production requirements and achieving continuous processing	-	-	-	-
PC9. inspect screens/sieves periodically if any damage. Cleaning & inspection for effective grading and sieving of grains based on size and grade	-	-	-	-
PC10. stop process machines in case of any breakdown/ non confirmatory or emergency with proper approval, attend breakdown/repairs/faults if required with maintenance team and ensure immediate maintenance to reduce downtime, for targeted line efficiency to meet production target	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. check all sensors attached are in working condition to maintain the flow rate	-	-	-	-
PC12. set controls of blowers or suction fan to remove light impurities and dust particles from screens and sieves	-	-	-	-
PC13. check there is no leakage in blower or suction fan	-	-	-	-
PC14. • adjust the speed of the separator, aspirator, etc. to remove light weight impurities from grains • Impurities: dust, soil, chaff, twigs, broken grain, insects, etc.	-	-	-	-
PC15. inspect fumigated raw material for absence of any live infestation in it	-	-	-	-
PC16. collect in process samples and transfer to quality lab for in process test	-	-	-	-
PC17. transfer the grains to the de-stoner machine to remove stones and prepare the grains for washing	-	-	-	-
PC18. • set the controls for water bath and set the time of the conditioner for soaking, conditioning and tempering of grains for further processing • Controls: water level, temp, inflow and outflow rate etc.	-	-	-	-
PC19. adjust temperature, pressure and speed of dryer to maintain required moisture in grains	-	-	-	-
PC20. adjust valves to control the speed of the dryer to regulate amount of grain (par boiled grain) conveyed into dryer	-	-	-	-
PC21. • set parameters of husker to remove husk from the grain by adjusting the rollers (of rubber roll huskers) and setting the clearance between the rollers • Parameters: roller speed, clearance, emery size, etc.	-	-	-	-
PC22. adjust speed of the aspirator fan to separate de-husked grains	-	-	-	-
PC23. control the stream of air passing through cylinder to cool the grain and to blow off the bran	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. grade the processed grain based on length by controlling the rotation of the cylinders	-	-	-	-
PC25. adjust the speed of the sifter and use proper sieve size to remove the broken grains and transfer them to the grinder for milling	-	-	-	-
PC26. check band sealer, temperature indicator of FFS machine	-	-	-	-
Processing of grains	**3**	**7**	**-**	**-**
PC27. • clean the received grains to remove the impurities by using a winnowing machine • impurities: chaff, soil, dirt, etc	-	-	-	-
PC28. grade the desired grains as per the desired size	-	-	-	-
PC29. transfer the grains into a decorticator/de-husker to remove the hull from the grain	-	-	-	-
PC30. transfer grain into the de-stoner respectively to remove stones from the grain	-	-	-	-
PC31. collect sample of the processed grain and transfer to quality lab for analysis	-	-	-	-
PC32. store the desired grain for further processing	-	-	-	-
Post production cleaning and regular maintenance of equipment	**9.5**	**25**	**-**	**-**
PC33. follow legal metrology Act, 2009 for establishing the weights and measures as per the standards	-	-	-	-
PC34. select the packaging materials as per the standard sop of the organization	-	-	-	-
PC35. • evaluate the packaging materials on the parameters set by the organization • Parameters: artwork, layers, details etc.	-	-	-	-
PC36. provide information such as the product name, brand, size, net weight, count, manufacturer, supplier, batch code, date of packing, date of expiry, allergens and country of origin etc	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC37. start conveyors and elevators to transfer finished products to packing machine	-	-	-	-
PC38. • fill the packaging material with the feed as per the standard operating practices • Packaging material: HDPE, LDPE, jute bags, cartons, etc.	-	-	-	-
PC39. operate packaging/bagging machinery by setting controls like batch code, date coding and filling quantity, printing mark, sealer temp and pressure etc	-	-	-	-
PC40. check the weight of the packed/bagged product to ensure its conformance to standards	-	-	-	-
PC41. pass the final packed product through metal detector to ensure safety of product	-	-	-	-
PC42. collect sample of finished product and transfer to quality lab for analysis and ensure it's conformance as per specification	-	-	-	-
PC43. dispatch product as per company requirement and system	-	-	-	-
PC44. document and maintain record on production, process details and the types of finished products produced	-	-	-	-
PC45. • production records: raw material used, products produced, production sequence, equipment and machinery details, efficiency and capacity utilization of equipment, breakdown and downtime of the equipment, material losses • Process details: Process flow chart • Finished products: rice flour, wheat flour and pulses • Records: batch number, time of packing, date of manufacture, date of expiry, other label detail primary and secondary and tertiary packaging materials for all finished products, SKUs,	-	-	-	-
PC46. discard the unapproved/ waste samples	-	-	-	-
PC47. ensure periodic(daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following SOP/suppliers manual	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC48. clean work area (cleaning agent and sanitizers); machineries, equipment and tools using industry approved cleaning procedures (such as dismantling, hammering, pressurised dry air cleaning, Cleaning out of Place)	-	-	-	-
PC49. collect machine refraction generated from each process like husk, dust, sticks, foreign grains following organizational waste disposal SOP procedure	-	-	-	-
PC50. attend minor repairs/faults of all machines	-	-	-	-
PC51. plan for equipment fumigation as per SOP defined by organization from government certified fumigation agency	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N1005
NOS Name	Grain Milling
Sector	Food Processing
Sub-Sector	Food Grain Milling
Occupation	Processing-Food Grain Milling (including oilseeds)
NSQF Level	4
Credits	TBD
Version	2.0
Last Reviewed Date	30/12/2021
Next Review Date	28/12/2024
NSQC Clearance Date	30/12/2021

FIC/N9901: Implement health and safety practices at the workplace

Description

This unit is about following health and safety procedures at the workplace.

Scope

The scope covers the following :

- Ensure food safety and personal hygiene
- Follow safety measures to avoid accidents
- Follow emergency procedures
- Manage infection control

Elements and Performance Criteria

Ensure food safety and personal hygiene

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

PC1. follow relevant practices to avoid cross contamination at all stages of food processing operations

PC2. follow organisational procedures for handling items that may cause allergic reactions

PC3. follow Good Manufacturing Practices (GMP) at the workplace. Good Manufacturing Practices: location and layout (ergonomics), cleaning and sanitation, equipment and containers, pest control, facilities (lighting, water supply, drainage and waste disposal, air quality and ventilation), food storage, transportation, and distribution (Source: Schedule IV, FSSAI Licensing and Registration, 2011)

PC4. follow Good Hygiene Practices (GHP) at the workplace appropriately. Good Hygiene Practices: use of gloves, hairnets, masks, ear plugs, goggles, shoes etc; washing hands regularly; treating injuries such as cuts, boils, skin infections and grazes; preventive health check-ups ; getting vaccinated whenever required. (Source: Schedule IV, FSSAI Licensing and Registration, 2011)

Follow safety measures to avoid accidents

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

PC5. use protective clothing/equipment for specific tasks and work conditions

PC6. identify job-site hazardous work and possible causes of risk or accident at the workplace

PC7. deal with hazards safely and appropriately to ensure safety of self and others as per organisational protocol

PC8. use various types of fire extinguishers effectively

PC9. respond promptly and appropriately to an accident situation or medical emergency

PC10. provide cardio-pulmonary resuscitation (CPR) as per the requirement (e.g. cardiac arrest)

Follow emergency procedures

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

PC11. follow workplace emergency and evacuation procedures

PC12. use safe methods to free a person from electrocution

PC13. administer appropriate first aid to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning etc.

Manage infection control

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

PC14. use appropriate disinfectants to disinfect the work area and equipment as per organisational protocol

PC15. ensure personal hygiene by washing hands regularly using alcohol based sanitisers and wearing personal protective equipment (PPE)

PC16. report illness of self and others to the supervisor or concerned authority

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. meaning of hazards and risks

KU2. possible causes of risk, hazard or accident in the workplace

KU3. where to find all the general health and safety equipment in the workplace

KU4. health and safety policy and procedures of the organization

KU5. health and safety hazards commonly present in the work environment

KU6. work practices and precautions used to control and prevent risks, hazards and accidents

KU7. applicable standards and regulations as listed in The Food Safety and Standards Act, 2006

KU8. importance of each personal protective equipment used such as eye protection, hard hats, gloves apron, rubber boots, etc.

KU9. importance of ensuring personal hygiene at the workplace

KU10. ways to prevent cross contamination at the workplace

KU11. importance of storing food at specified temperatures

KU12. various dangers associated with the use of electrical and other equipment

KU13. preventive and remedial actions to be taken in the case of exposure to toxic materials

KU14. various causes of fire and the ways to prevent them

KU15. techniques of using the different fire extinguishers

KU16. procedure followed for providing cardio-pulmonary resuscitation (CPR) to the affected

KU17. rescue techniques applied during a fire hazard

KU18. various types of safety signs and what they mean

KU19. workplace emergency and evacuation procedures

KU20. appropriate basic first aid treatment relevant to the condition e.g. shock, electrical shock, bleeding, breaks to bones, minor burns, resuscitation, poisoning, eye injuries

KU21. potential injuries and ill health conditions associated with incorrect manual handing

KU22. safe lifting and carrying practices

KU23. safe practices to be followed for ensuring sanitisation of self and work area

KU24. procedure for storing the sanitising materials appropriately

Generic Skills (GS)

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

GS1. write an accident/incident report in local language or English

GS2. read and comprehend basic content to read labels, charts, signages, symbols and product manuals

GS3. communicate with coworkers appropriately in order to clarify instructions and other issues

GS4. make appropriate decisions pertaining to the concerned area of work regarding the work objective, span of authority, responsibility, laid down procedure and guidelines

GS5. plan and organize the work schedule, work area, tools, equipment and materials for improved productivity

GS6. identify probable solutions to the problems in hand and evaluate them

GS7. seek official and authorised sources of help and guidance to resolve problems that cannot be solved at one's level of authority

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Ensure food safety and personal hygiene	**7**	**19**	**-**	**-**
PC1. follow relevant practices to avoid cross contamination at all stages of food processing operations	1	4	-	-
PC2. follow organisational procedures for handling items that may cause allergic reactions	1	4	-	-
PC3. follow Good Manufacturing Practices (GMP) at the workplace. Good Manufacturing Practices: location and layout (ergonomics), cleaning and sanitation, equipment and containers, pest control, facilities (lighting, water supply, drainage and waste disposal, air quality and ventilation), food storage, transportation, and distribution (Source: Schedule IV, FSSAI Licensing and Registration, 2011)	3	7	-	-
PC4. follow Good Hygiene Practices (GHP) at the workplace appropriately. Good Hygiene Practices: use of gloves, hairnets, masks, ear plugs, goggles, shoes etc; washing hands regularly; treating injuries such as cuts, boils, skin infections and grazes; preventive health check-ups ; getting vaccinated whenever required. (Source: Schedule IV, FSSAI Licensing and Registration, 2011)	2	4	-	-
Follow safety measures to avoid accidents	**11**	**24**	**-**	**-**
PC5. use protective clothing/equipment for specific tasks and work conditions	2	4	-	-
PC6. identify job-site hazardous work and possible causes of risk or accident at the workplace	2	4	-	-
PC7. deal with hazards safely and appropriately to ensure safety of self and others as per organisational protocol	2	4	-	-
PC8. use various types of fire extinguishers effectively	2	4	-	-
PC9. respond promptly and appropriately to an accident situation or medical emergency	1	4	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. provide cardio-pulmonary resuscitation (CPR) as per the requirement (e.g. cardiac arrest)	2	4	-	-
Follow emergency procedures	**6**	**12**	**-**	**-**
PC11. follow workplace emergency and evacuation procedures	2	4	-	-
PC12. use safe methods to free a person from electrocution	2	4	-	-
PC13. administer appropriate first aid to victims in case of cuts, bleeding, burns, choking, electric shock, poisoning etc.	2	4	-	-
Manage infection control	**6**	**15**	**-**	**-**
PC14. use appropriate disinfectants to disinfect the work area and equipment as per organisational protocol	3	7	-	-
PC15. ensure personal hygiene by washing hands regularly using alcohol based sanitisers and wearing personal protective equipment (PPE)	1	4	-	-
PC16. report illness of self and others to the supervisor or concerned authority	2	4	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N9901
NOS Name	Implement health and safety practices at the workplace
Sector	Food Processing
Sub-Sector	Generic
Occupation	Generic
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

FIC/N9902: Work effectively in an organisation

Description

This unit is about working effectively with others.

Scope

The scope covers the following :

- Communicate effectively
- Work in a team effectively
- Respect diversity

Elements and Performance Criteria

Communicate effectively

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

PC1. obtain complete information and instructions from designated personnel

PC2. reciprocate understanding and seek clarifications whenever required

PC3. provide information accurately and clearly

PC4. use inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive

Work in a team effectively

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

PC5. plan tasks to be performed as per priority and need

PC6. consult with and assist others to maximize effectiveness and efficiency at work

PC7. escalate problems and grievances beyond own scope to the concerned authority

PC8. take appropriate action to resolve conflicts at the workplace

Respect diversity

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

PC9. maintain a gender-neutral behaviour with everyone at the workplace

PC10. empathise with People with Disabilities (PwD) and offer help, if required

PC11. recognise and report incidents of harassment and discrimination to appropriate authority

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. organizational quality procedures and processes associated with work

KU2. standards, policies, and procedures followed in the organization relevant to employment, harassment, discrimination and performance conditions

KU3. reporting structure, inter-dependent functions, lines, and procedures applicable at the workplace

KU4. different types of harassment and discrimination based on gender, disability, caste, religion, and culture
KU5. components of effective communication and its importance
KU6. importance of teamwork in organizational and individual success
KU7. importance of ethics and discipline for professional success
KU8. how to express and address grievances appropriately and effectively
KU9. importance and ways of managing interpersonal conflict effectively
KU10. different types of disabilities and the challenges faced by persons with disability (PwD)
KU11. laws, acts and provisions defined for PwD
KU12. importance of gender sensitivity and equality
KU13. legislations, grievance redressal mechanisms, and penalties against harassment in the workplace

Generic Skills (GS)

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

GS1. communicate information, doubts and concerns about work related matters in local language or Hindi/English
GS2. read and interpret information given in local language or Hindi/English
GS3. establish priorities and deadlines in consultation with other and record them
GS4. be punctual
GS5. listen to others concerns and doubts carefully and address them
GS6. be courteous

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Communicate effectively	**8**	**13**	**-**	**-**
PC1. obtain complete information and instructions from designated personnel	2	3	-	-
PC2. reciprocate understanding and seek clarifications whenever required	2	3	-	-
PC3. provide information accurately and clearly	2	3	-	-
PC4. use inclusive language (verbal, non-verbal and written) that is gender, disability and culturally sensitive	2	4	-	-
Work in a team effectively	**8**	**14**	**-**	**-**
PC5. plan tasks to be performed as per priority and need	2	4	-	-
PC6. consult with and assist others to maximize effectiveness and efficiency at work	2	3	-	-
PC7. escalate problems and grievances beyond own scope to the concerned authority	2	3	-	-
PC8. take appropriate action to resolve conflicts at the workplace	2	4	-	-
Respect diversity	**6**	**12**	**-**	**-**
PC9. maintain a gender-neutral behaviour with everyone at the workplace	2	4	-	-
PC10. empathise with People with Disabilities (PwD) and offer help, if required	2	4	-	-
PC11. recognise and report incidents of harassment and discrimination to appropriate authority	2	4	-	-
NOS Total	**22**	**39**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N9902
NOS Name	Work effectively in an organisation
Sector	Food Processing
Sub-Sector	Generic
Occupation	Generic
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	24/02/2022
Next Review Date	24/02/2025
NSQC Clearance Date	24/02/2022

SGJ/N1702: Optimize resource utilization at workplace

Description

This unit is about adopting sustainable practices and optimizing use of resources, especially material, energy and waste, in day-to-day operations at work

Scope

The scope covers the following :

- Material conservation practices
- Energy/electricity conservation practices
- Effective waste management/recycling practices

Elements and Performance Criteria

Material conservation practices

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

PC1. identify ways to optimize usage of material including water in various tasks/activities/processes

PC2. check for spills/leakages in various tasks/activities/processes

PC3. plug spills/leakages and escalate to appropriate authority if unable to rectify

PC4. carry out routine cleaning of tools, machines and equipment

Energy/electricity conservation practices

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

PC5. identify ways to optimize usage of electricity/energy in various tasks/activities/processes

PC6. check if the equipment/machine is functioning normally before commencing work and rectify wherever required

PC7. report malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment

PC8. ensure electrical equipment and appliances are properly connected and turned off when not in use

Effective waste management/recycling practices

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

PC9. identify recyclable and non-recyclable, and hazardous waste generated

PC10. segregate waste into different categories

PC11. dispose non-recyclable waste appropriately

PC12. deposit recyclable and reusable material at identified location

PC13. follow processes specified for disposal of hazardous waste

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. potential hazards, risks and threats based on the nature of work
KU2. layout of the workstation and electrical and thermal equipment used
KU3. organizations procedures for minimizing waste
KU4. efficient and inefficient utilization of material and water
KU5. ways of efficiently managing material and water in the process
KU6. basics of electricity and prevalent energy efficient devices
KU7. ways to recognize common electrical problems
KU8. common practices of conserving electricity
KU9. usage of different colours of dustbins
KU10. categorization of waste into dry, wet, recyclable, non-recyclable and items of single-use plastics
KU11. waste management and methods of waste disposal
KU12. common sources of pollution and ways to minimize it

Generic Skills (GS)

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

GS1. record data on waste disposal at workplace
GS2. complete statutory documents relevant to safety and hygiene
GS3. read Standard Operating Practices (SOP) documents
GS4. communicate with colleagues on the significance of greening of jobs
GS5. make timely decisions for efficient utilization of resources
GS6. complete tasks efficiently and accurately within stipulated time
GS7. work with supervisors/team members to carry out work related tasks
GS8. identify cause and effect of greening of jobs

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Material conservation practices	**4**	**8**	**-**	**-**
PC1. identify ways to optimize usage of material including water in various tasks/activities/processes	1	2	-	-
PC2. check for spills/leakages in various tasks/activities/processes	1	2	-	-
PC3. plug spills/leakages and escalate to appropriate authority if unable to rectify	1	2	-	-
PC4. carry out routine cleaning of tools, machines and equipment	1	2	-	-
Energy/electricity conservation practices	**4**	**8**	**-**	**-**
PC5. identify ways to optimize usage of electricity/energy in various tasks/activities/processes	1	2	-	-
PC6. check if the equipment/machine is functioning normally before commencing work and rectify wherever required	1	2	-	-
PC7. report malfunctioning (fumes/sparks/emission/vibration/noise) and lapse in maintenance of equipment	1	2	-	-
PC8. ensure electrical equipment and appliances are properly connected and turned off when not in use	1	2	-	-
Effective waste management/recycling practices	**5**	**10**	**-**	**-**
PC9. identify recyclable and non-recyclable, and hazardous waste generated	1	2	-	-
PC10. segregate waste into different categories	1	2	-	-
PC11. dispose non-recyclable waste appropriately	1	2	-	-
PC12. deposit recyclable and reusable material at identified location	1	2	-	-
PC13. follow processes specified for disposal of hazardous waste	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
NOS Total	**13**	**26**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	SGJ/N1702
NOS Name	Optimize resource utilization at workplace
Sector	Green Jobs
Sub-Sector	Other Green Jobs
Occupation	Resource Optimization
NSQF Level	3
Credits	TBD
Version	1.0
Last Reviewed Date	10/08/2022
Next Review Date	27/01/2026
NSQC Clearance Date	27/01/2022

FIC/N1028: Milling of cereals

Description

This unit is about milling of rice and wheat by following processes and different types of machineries as per the specifications and standards of the organization.

Scope

The scope covers the following :

- Milling of rice
- Milling of wheat
- Post-production cleaning and regular maintenance of equipment

Elements and Performance Criteria

Milling of rice

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

PC1. set the controls for water bath to soak paddy for 8-12 hours for obtaining par boiled rice

PC2. maintain the temperature and pressure of the steam by adjusting the valves of the water bath

PC3. allow steam to pass through soaked rice to gelatinize the starch

PC4. • set controls of the dryer to achieve the desired moisture content of parboiled rice
• Controls: temperature, air speed, etc.

PC5. remove the husk from the parboiled rice

PC6. transfer brown rice through water polisher

PC7. adjust the speed of RO water and air moving in water polisher

PC8. fix, replace & inspect the polisher rollers periodically to ensure uniformity in the product specifications

PC9. transfer polished rice through whitener for whitening of rice

PC10. transfer the white rice into the hopper to allow specific quantity of paddy into processing machineries for milling

PC11. ensure evenly spreading of grains over entire length of the grinding roller to get consistent grinding and quality product

PC12. operate the roller mill to reduce the size of processed grain

PC13. adjust the clearance between each rollers of mill by turning wheels or by setting controls according to grain size and hardness

PC14. adjust the speed to obtain fineness and to achieve maximum yield

PC15. remove chaff and inspect the yield

PC16. transfer the milled rice to quality lab for further analysis

PC17. store the milled rice for further processing

Milling of wheat

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

PC18. check chipping of chakki stones of chakki and ensure proper replacement with new one after regular interval

PC19. check water flow addition rate in dampener to moisten wheat for further removal of bran, dust adhered to wheat

PC20. transfer wheat into the dampener to condition it with water for easy removal of bran during milling of wheat

PC21. pass wheat through scourer and check aleron layer and germ layer are removed from wheat resulting in colour improvement of final product

PC22. pass clean and tempered wheat through chakki for grinding

PC23. adjust pressure between chipped stones of chakki and speed of motor attached to chakki to get desired quantity of wheat

PC24. • pass clean and tempered wheat through series of breaking rolls to get desired product
• Products: dalia, sooji, maida and bran as by product.

PC25. adjust gap between rollers to get stable grinding

PC26. send the wheat flour to quality lab for further analysis

PC27. store the wheat flour for further processing

Post-production cleaning and regular maintenance of equipment

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

PC28. clean work area (cleaning agent and sanitizers); machineries, equipment and tools using industry approved cleaning procedures (such as dismantling, hammering, pressurised dry air cleaning, cleaning out of place)

PC29. respond quickly to malfunctions, seek assistance as needed to ensure equipment is completely operational to reuse

PC30. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the SOP or following suppliers' instruction/manual

PC31. follow safety regulations while handling and operating equipment

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. about fumigation and fumigant

KU2. types of raw materials (various types of wheat), quality parameter (physical and chemical) of raw material and products obtained from it and different use of these products

KU3. basic operating principles of equipment used in wheat mills, such as real machine, separator, destoner, gravity selector, cockle cylinder, dampener, scourer, emery roller, aspirator, blower, entoleter, chakki, roll body, plant sifter, rebolter

KU4. various process involved in wheat milling

KU5. calibration procedures and usability of standard weights and measures

KU6. types of screens and sieves used in milling machines

KU7. light weight impurities removal method

KU8. calculation of addition of required quantity of water in wheat to get desired moisture in final product and easy removal of bran, aleuron layer and germ

KU9. different factors involved in improvement of color of finished product

KU10. adjustment of pressure between chakki stones to get desired granulation of finished product

KU11. how to adjust gap between two rollers of reduction/break rolles and between chakki

KU12. typical equipment faults and related causes, including signs and symptoms of faulty equipment

KU13. supplier/manufacturer instruments for operation and maintenance of machine

KU14. how to fill record and annexures as per SOP and company standards

KU15. sampling procedure of raw material, semi-finished product and finished product

KU16. type of FFS packaging machine its operation and maintenance, how to adjust and change B.NO, MFG, price in it

KU17. different types of printing machine performing printing by ink jet or ribbon type.

KU18. checking printing effectiveness on pouches and bags and different types of printing errors and test procedure to rectify these errors

KU19. food safety and hygiene as per FSSAI Schedule IV

KU20. control of OPRP and CCP

KU21. able to do machine efficiency calculation and to get line efficiency

KU22. elements of food fraud food defence and different types of PRP

Generic Skills (GS)

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

GS1. read and able to do interpretation of Standard operating procedures, standard test procedures, annexures, organization standards and policy

GS2. good communicator, active listener and team leadership.

GS3. able to plan, prioritize and sequence task to increase machine efficiency and hence increasing productivity

GS4. can do arithmetic operation

GS5. read equipment manuals and process documents to understand the equipment operation and process requirement

GS6. dismantling of machine as per equipment manual for cleaning and fumigation

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Milling of rice	**18**	**41**	**-**	**-**
PC1. set the controls for water bath to soak paddy for 8-12 hours for obtaining par boiled rice	-	-	-	-
PC2. maintain the temperature and pressure of the steam by adjusting the valves of the water bath	-	-	-	-
PC3. allow steam to pass through soaked rice to gelatinize the starch	-	-	-	-
PC4. • set controls of the dryer to achieve the desired moisture content of parboiled rice • Controls: temperature, air speed, etc.	-	-	-	-
PC5. remove the husk from the parboiled rice	-	-	-	-
PC6. transfer brown rice through water polisher	-	-	-	-
PC7. adjust the speed of RO water and air moving in water polisher	-	-	-	-
PC8. fix, replace & inspect the polisher rollers periodically to ensure uniformity in the product specifications	-	-	-	-
PC9. transfer polished rice through whitener for whitening of rice	-	-	-	-
PC10. transfer the white rice into the hopper to allow specific quantity of paddy into processing machineries for milling	-	-	-	-
PC11. ensure evenly spreading of grains over entire length of the grinding roller to get consistent grinding and quality product	-	-	-	-
PC12. operate the roller mill to reduce the size of processed grain	-	-	-	-
PC13. adjust the clearance between each rollers of mill by turning wheels or by setting controls according to grain size and hardness	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC14. adjust the speed to obtain fineness and to achieve maximum yield	-	-	-	-
PC15. remove chaff and inspect the yield	-	-	-	-
PC16. transfer the milled rice to quality lab for further analysis	-	-	-	-
PC17. store the milled rice for further processing	-	-	-	-
Milling of wheat	**10**	**21**	**-**	**-**
PC18. check chipping of chakki stones of chakki and ensure proper replacement with new one after regular interval	-	-	-	-
PC19. check water flow addition rate in dampener to moisten wheat for further removal of bran, dust adhered to wheat	-	-	-	-
PC20. transfer wheat into the dampener to condition it with water for easy removal of bran during milling of wheat	-	-	-	-
PC21. pass wheat through scourer and check aleron layer and germ layer are removed from wheat resulting in colour improvement of final product	-	-	-	-
PC22. pass clean and tempered wheat through chakki for grinding	-	-	-	-
PC23. adjust pressure between chipped stones of chakki and speed of motor attached to chakki to get desired quantity of wheat	-	-	-	-
PC24. • pass clean and tempered wheat through series of breaking rolls to get desired product • Products: dalia, sooji, maida and bran as by product.	-	-	-	-
PC25. adjust gap between rollers to get stable grinding	-	-	-	-
PC26. send the wheat flour to quality lab for further analysis	-	-	-	-
PC27. store the wheat flour for further processing	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Post-production cleaning and regular maintenance of equipment	**2**	**8**	**-**	**-**
PC28. clean work area (cleaning agent and sanitizers); machineries, equipment and tools using industry approved cleaning procedures (such as dismantling, hammering, pressurised dry air cleaning, cleaning out of place)	-	-	-	-
PC29. respond quickly to malfunctions, seek assistance as needed to ensure equipment is completely operational to reuse	-	-	-	-
PC30. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the SOP or following suppliers' instruction/manual	-	-	-	-
PC31. follow safety regulations while handling and operating equipment	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N1028
NOS Name	Milling of cereals
Sector	Food Processing
Sub-Sector	Food Grain Milling
Occupation	Processing-Food Grain Milling (including oilseeds)
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2021
Next Review Date	28/12/2024
NSQC Clearance Date	30/12/2021

FIC/N1027: Milling of pulses

Description

This unit is about milling of pulses by following processes and different types of machineries as per the specifications and standards of the organization.

Scope

The scope covers the following :

- Pre-processing of pulses for milling
- Carry out wet milling of pulses
- Carry out dry milling of pulses
- Post-production cleaning and regular maintenance of equipment

Elements and Performance Criteria

Pre-processing of pulses for milling

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

PC1. • grade the pulses into various fractions based on physical, chemical characteristics and biological factors
• Physical characteristics: size, shape, moisture content, color, texture, foreign matter, etc.
• Chemical characteristics: composition, odour, flavor, free fatty acid (rancidity), etc.
• Biological factors: germination, insect infestation, insect damage, etc.

PC2. • ensure the equipment required for pulses processing is clean and ready to be used
• Equipment: splitter, polisher, mill, etc.

PC3. • set controls for the splitter machines to split or separate de-husked grains
• Controls: rotation of the rotary blades

PC4. transfer the clean pulses to the processing area for further processing

Carry out wet milling of pulses

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

PC5. move the cleaned pulses to abrasive roller machine for scratching of seed to facilitate the entry of water during soaking / conditioning (pitting) process

PC6. • attune the controls for water bath and set the time of the conditioner to 4-12 hrs for soaking of pulses for further processing
• Controls: water level, temp, inflow, and outflow rate, etc.

PC7. mix the steeped pulses with red earth for 12-16 hours through a process called heaping

PC8. dry the heaped pulse in the sun for 2-4 days to keep the moisture content to about 10-12 %

PC9. remove the red earth from the dried pulse by sieving and move the pulses to the husker

PC10. • set controls for the splitter machine(s) to split / separate de-husked pulses
• Controls: rotation of the rotary blades
• Splitter machines: roller mills, under runner disk sheller, attrition mill, elevator and hard surface, impact sheller, etc.

PC11. • competently operate polisher machines to peel off the bran from pulses
• Polisher machines: cylindrical hard rubber roll, leather belts or emery cone polisher, screw conveyors, oil/water treating machine, etc.

Carry out dry milling of pulses

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

PC12. • move the cleaned pulses to the husker to remove husk from the pulses by adjusting the roller parameters (of rubber roll huskers) and setting the clearance between the rollers
• Parameters: roller speed, clearance, emery size, etc.

PC13. adjust the speed of the aspirator fan to separate de-husked pulses and remove husk

PC14. move the cleaned pulses to abrasive roller machine for scratching of seed to facilitate the entry of oil during soaking / conditioning (pitting) process

PC15. • attune the controls for water bath and set the time of the conditioner for soaking, conditioning, and tempering of pulses for further processing
• controls: water level, temp, inflow, and outflow rate, etc.

PC16. • determine the moisture content and adjust controls of dryer to maintain required moisture in pulses
• controls: temperature, pressure, speed, valves etc

PC17. transfer the dried pulse to the splitter machine carefully

PC18. • set controls for the splitter machine(s) to split / separate de-husked dried pulses
• Controls: rotation of the rotary blades
• Splitter machines: roller mills, under runner disk sheller, attrition mill, elevator and hard surface, impact sheller, etc.

PC19. • operate polisher machines to peel off the bran from dried pulses
• Polisher machines: cylindrical hard rubber roll, leather belts or emery cone polisher, screw conveyors, oil/water treating machine, etc.

PC20. monitor the stream of air passed from suction fan or blower to cool the pulses and to blow off the bran from pulses

PC21. adjust the speed of the sifter and use proper sieve size to remove the broken pulses

Post-production cleaning and regular maintenance of equipment

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

PC22. clean work area (cleaning agent and sanitizers); machineries, equipment and tools using industry approved cleaning procedures (such as dismantling, hammering, pressurised dry air cleaning, cleaning out of place).

PC23. respond quickly to malfunctions, seek assistance as needed to ensure equipment is completely operational to reuse

PC24. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the SOP or following suppliers' instruction/manual

PC25. follow safety regulations while handling and operating equipment

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. basic operating principles of pre-milling and pulses milling equipment, its components, operating capacities, applications

KU2. calibration procedures and usability of standard weights and measures used in the process

KU3. types of screens and sieves used in pulse milling machines
KU4. significance of using cleaners and graders based on combination of aspiration and shaking / reciprocating flat screens
KU5. impact of pitting process with the complete functioning of abrasive roller machine
KU6. implication of soaking, condition and tempering of pulses
KU7. typical equipment faults and related causes, including signs and symptoms of faulty equipment and early warning signs of potential problems
KU8. supplier/manufacturers instructions for operating and maintaining the machines used in pulse milling
KU9. handling mechanically heated air dryers, either batch type or continuous flow type and the temperature of heated air for drying
KU10. process of passing whole grain for dehusking and/or splitting after water treatment. Use of aspirator for separating husk and powder produced during milling
KU11. different ways of polishing such as, nylon polish, oil/water polish, etc.
KU12. effectiveness of polishing in providing uniform look and shine to pulses
KU13. efficacy of grinding rollers in ensuring the fineness of pulses
KU14. capacitance of the grinders and rollers as per the size and hardness of pulses
KU15. how to report information to the concerned personnel
KU16. contamination/food safety risks associated with the cleaning process and related control measures
KU17. cleaning procedure of all the equipment and machinery used in pulse milling process
KU18. sampling procedure and identify the finished products criteria with standard parameters
KU19. how to identify the variance in characteristics in the finished products as per desired standards
KU20. basic mathematics to calculate and check the consistency of the yield
KU21. types of packing machine and packaging material used for pulse milling
KU22. how to use sanitizers, disinfectants, and its storing methods
KU23. collect machine refraction generated from each process like husk, dust, sticks, foreign grains following organizational waste disposal SOP procedure
KU24. dismantling of machine as per equipment manual for cleaning and fumigation
KU25. type of FFS packaging machine its operation and maintenance, how to adjust and change B.NO, MFG, price in it.
KU26. different types of printing machine performing printing by ink jet or ribbon type.
KU27. checking printing effectiveness on pouches and bags and different types of printing errors and test procedure to rectify these errors
KU28. food safety and hygiene as per FSSAI Schedule IV
KU29. control of OPRP and CCP
KU30. able to do machine efficiency calculation and to get line efficiency
KU31. elements of food fraud food defence and different types of PRP

Generic Skills (GS)

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

GS1. read and interpret organizational policies, standard operating procedure, process manual, etc.
GS2. communicate effectively with team members and supervisors
GS3. plan, prioritize and sequence tasks to maximize productivity
GS4. basic arithmetic operations
GS5. dismantling of machine as per equipment manual for cleaning and fumigation
GS6. able to plan, prioritize and sequence task to increase machine efficiency and hence increasing productivity

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Pre-processing of pulses for milling	**10**	**12**	**-**	**-**
PC1. • grade the pulses into various fractions based on physical, chemical characteristics and biological factors • Physical characteristics: size, shape, moisture content, color, texture, foreign matter, etc. • Chemical characteristics: composition, odour, flavor, free fatty acid (rancidity), etc. • Biological factors: germination, insect infestation, insect damage, etc.	-	-	-	-
PC2. • ensure the equipment required for pulses processing is clean and ready to be used • Equipment: splitter, polisher, mill, etc.	-	-	-	-
PC3. • set controls for the splitter machines to split or separate de-husked grains • Controls: rotation of the rotary blades	-	-	-	-
PC4. transfer the clean pulses to the processing area for further processing	-	-	-	-
Carry out wet milling of pulses	**7**	**21**	**-**	**-**
PC5. move the cleaned pulses to abrasive roller machine for scratching of seed to facilitate the entry of water during soaking / conditioning (pitting) process	-	-	-	-
PC6. • attune the controls for water bath and set the time of the conditioner to 4-12 hrs for soaking of pulses for further processing • Controls: water level, temp, inflow, and outflow rate, etc.	-	-	-	-
PC7. mix the steeped pulses with red earth for 12-16 hours through a process called heaping	-	-	-	-
PC8. dry the heaped pulse in the sun for 2-4 days to keep the moisture content to about 10-12 %	-	-	-	-
PC9. remove the red earth from the dried pulse by sieving and move the pulses to the husker	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. • set controls for the splitter machine(s) to split / separate de-husked pulses • Controls: rotation of the rotary blades • Splitter machines: roller mills, under runner disk sheller, attrition mill, elevator and hard surface, impact sheller, etc.	-	-	-	-
PC11. • competently operate polisher machines to peel off the bran from pulses • Polisher machines: cylindrical hard rubber roll, leather belts or emery cone polisher, screw conveyors, oil/water treating machine, etc.	-	-	-	-
Carry out dry milling of pulses	**11**	**29**	**-**	**-**
PC12. • move the cleaned pulses to the husker to remove husk from the pulses by adjusting the roller parameters (of rubber roll huskers) and setting the clearance between the rollers • Parameters: roller speed, clearance, emery size, etc.	-	-	-	-
PC13. adjust the speed of the aspirator fan to separate de-husked pulses and remove husk	-	-	-	-
PC14. move the cleaned pulses to abrasive roller machine for scratching of seed to facilitate the entry of oil during soaking / conditioning (pitting) process	-	-	-	-
PC15. • attune the controls for water bath and set the time of the conditioner for soaking, conditioning, and tempering of pulses for further processing • controls: water level, temp, inflow, and outflow rate, etc.	-	-	-	-
PC16. • determine the moisture content and adjust controls of dryer to maintain required moisture in pulses • controls: temperature, pressure, speed, valves etc	-	-	-	-
PC17. transfer the dried pulse to the splitter machine carefully	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC18. • set controls for the splitter machine(s) to split / separate de-husked dried pulses • Controls: rotation of the rotary blades • Splitter machines: roller mills, under runner disk sheller, attrition mill, elevator and hard surface, impact sheller, etc.	-	-	-	-
PC19. • operate polisher machines to peel off the bran from dried pulses • Polisher machines: cylindrical hard rubber roll, leather belts or emery cone polisher, screw conveyors, oil/water treating machine, etc.	-	-	-	-
PC20. monitor the stream of air passed from suction fan or blower to cool the pulses and to blow off the bran from pulses	-	-	-	-
PC21. adjust the speed of the sifter and use proper sieve size to remove the broken pulses	-	-	-	-
Post-production cleaning and regular maintenance of equipment	**2**	**8**	**-**	**-**
PC22. clean work area (cleaning agent and sanitizers); machineries, equipment and tools using industry approved cleaning procedures (such as dismantling, hammering, pressurised dry air cleaning, cleaning out of place).	-	-	-	-
PC23. respond quickly to malfunctions, seek assistance as needed to ensure equipment is completely operational to reuse	-	-	-	-
PC24. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment following the SOP or following suppliers' instruction/manual	-	-	-	-
PC25. follow safety regulations while handling and operating equipment	-	-	-	-
NOS Total	**30**	**70**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N1027
NOS Name	Milling of pulses
Sector	Food Processing
Sub-Sector	Food Grain Milling
Occupation	Processing-Food Grain Milling (including oilseeds)
NSQF Level	4
Credits	TBD
Version	1.0
Last Reviewed Date	30/12/2021
Next Review Date	28/12/2024
NSQC Clearance Date	30/12/2021

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

1. Criteria for assessment for each Qualification Pack will be created by the Sector Skill Council. Each Element/ 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 Element/ PC.

2. The assessment for the theory part will be based on 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 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. To pass the Qualification Pack assessment, every trainee should score the Recommended Pass % aggregate for the QP.

7. 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
FIC/N9026.Prepare for production	30	70	-	-	100	20
FIC/N1005.Grain Milling	30	70	-	-	100	35
FIC/N9901.Implement health and safety practices at the workplace	30	70	-	-	100	10
FIC/N9902.Work effectively in an organisation	22	39	-	-	61	10
SGJ/N1702.Optimize resource utilization at workplace	13	26	-	-	39	5
Total	**125**	**275**	**-**	**-**	**400**	**80**

Elective: 1 Milling of cereals

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
FIC/N1028.Milling of cereals	30	70	-	-	100	20
Total	**30**	**70**	**-**	**-**	**100**	**20**

Elective: 2 Milling of pulses

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
FIC/N1027.Milling of pulses	30	70	-	-	100	20
Total	**30**	**70**	**-**	**-**	**100**	**20**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training

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.