Food Fortification Associate

Electives: Fortified Rice/ Fortified Oil/ Fortified Salt/ Fortified Milk

QP Code: FIC/Q1012

Version: 1.0

NSQF Level: 4

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FIC/Q1012: Food Fortification Associate

Brief Job Description

A Food Fortification Associate is responsible for producing fortified staple foods (i.e. edible oil, rice, wheat flour, salt and milk) by using various tools and equipment as per the standard operating procedures of the organization to achieve uniform quality product with consistent output.

Personal Attributes

An Associate must have the ability to plan, organize, prioritize the work. The individual must possess reading, writing, communication and problem-solving skills. In addition, the individual must be able to apply basic mathematical calculations, handle pressure, practice personal and professional hygiene.

Applicable National Occupational Standards (NOS)

Compulsory NOS:

1. FIC/N9026: Plan for Fortified Food Production
2. FIC/N1042: Carry out production of fortified flour
3. FIC/N9906: Apply food safety guidelines in Food Processing
4. DGT/VSQ/N0101: Employability Skills (30 Hours)

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

Elective 1: Fortified Rice

This unit is about producing fortified rice kernels by the method of extrusion and then blending it by using different machineries to produce fortified rice as per the specifications and standards of the organization.

1. FIC/N1043: Carry Production of Fortified Rice

Elective 2: Fortified Oil

This unit is about producing fortified edible oil as per the specifications and standards of the organization.

1. FIC/N1044: Carry out production of fortified edible oil

Elective 3: Fortified Salt

This unit is about producing fortified salt by using different machineries as per the specifications and standards of the organization.

1. FIC/N1045: Carry out production of fortified salt

Elective 4: Fortified Milk

This unit is about producing fortified milk by using different machineries as per the specifications and standards of the organization.

1. FIC/N2031: Carry out production of fortified milk

Qualification Pack (QP) Parameters

Sector	Food Processing
Sub-Sector	Food Grain Milling
Occupation	Processing-Food Grain Milling (including oilseeds)
Country	India
NSQF Level	4
Credits	28
Aligned to NCO/ISCO/ISIC Code	NCO-2015/8160.0700
Minimum Educational Qualification & Experience	12th Class (pass) OR Completed 2nd year of the 3-year diploma after 10 (in relevant field) OR 10th grade pass with 2 Years of experience of relevant experience OR Previous relevant Qualification of NSQF Level (3) with 3 Years of experience in relevant field
Minimum Level of Education for Training in School	12th Class
Pre-Requisite License or Training	NA
Minimum Job Entry Age	18 Years
Last Reviewed On	NA
Next Review Date	NA
NSQC Approval Date	

Version	1.0

Remarks:

NA

FIC/N9026: Plan for Fortified Food 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
- 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

Organize for production

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

PC6. organize tools and equipment

PC7. receive and organize production materials appropriately. Production materials: raw materials, packaging materials, etc.

PC8. 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	**21**	**33**	**-**	**13**
PC1. identify work requirements by obtaining instructions from the supervisor. Instructions: process chart, product flow chart, formulation, chart, etc.	5	7	-	3
PC2. plan and prioritize tasks as per work schedule.Tasks: inspect, clean, maintain, verify, etc.	3	6	-	2
PC3. estimate manpower and material requirements as per work requirement. Material: raw materials and packaging materials	5	8	-	3
PC4. ensure required quantity of raw materials, packaging materials, equipment, and manpower for production	4	6	-	2
PC5. plan capacity utilization of machinery with respect to the processing time, production order, and batch size for each product	4	6	-	3
Organize for production	**9**	**17**	**-**	**7**
PC6. organize tools and equipment	3	6	-	3
PC7. receive and organize production materials appropriately. Production materials: raw materials, packaging materials, etc.	3	6	-	2
PC8. allot responsibilities/work to the assistants and helpers	3	5	-	2
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N9026
NOS Name	Plan for Fortified Food Production
Sector	Food Processing
Sub-Sector	Generic
Occupation	Production
NSQF Level	3
Credits	1
Version	3.0
Next Review Date	NA

FIC/N1042: Carry out production of fortified flour

Description

This unit is about producing fortified flour by using different machineries as per the specifications and standards of the organization.

Scope

The scope covers the following :

- This Unit/task covers tha following-
- Prepare work area, tools and equipment for production
- Prepare raw matetial for Production
- Perform Milling of wheat flour
- Perform production of wheat flour preblend
- Perform production of fortified wheat flour
- Monitor losses during fortification process
- Ensure proper storage and packaging of fortified flour

Elements and Performance Criteria

Prepare for production

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

PC1. clean and maintain the work area as per organizational procedures

PC2. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards

PC3. • dispose of the waste material at designated place safely
• Waste material: hazardous waste, food waste, packaging waste, etc.

PC4. inspect the tools, equipment, and machinery to ascertain suitability for use

PC5. check cleaning and effectiveness of magnets of measuring scales and see they are appropriately installed and also do calibration of metal detector by dash

PC6. report information such as faulty tools and equipment to the concerned authority

Prepare raw materials for production

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

PC7. • procure food grade vitamin and mineral premix
• premix: Iron, folic acid, Vitamin B12 etc.

PC8. procure wheat to prepare for fortification process by checking the specification limit

PC9. • ensure the obtained wheat meets the specified parameters and standards
• Parameters: shelf life, cooking quality, etc.

PC10. discard the raw material which does not meet the standards

PC11. ensure the obtained premix meets the standards set by FSSAI

PC12. • arrange and store the ingredients properly in a designated area
• Ingredients: wheat grain, food grade vitamin and mineral premix

Perform milling of wheat flour

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

PC13. • set controls for automatic measuring scales in continuous process to transfer measured quantity of wheat for milling
• Controls: weight, screens, sizes, sieves, rpm, time, etc.

PC14. check condition of bucket elevator, chain conveyor, screw conveyor for any damage

PC15. ensure proper lubrication of machine parts done with food grade lubricants

PC16. 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

PC17. check all sensors attached are in working condition to maintain the flow rate

PC18. set controls of blowers or suction fan to remove light impurities and dust particles from screens and sieves

PC19. • adjust the speed of the separator, aspirator, etc. to remove light weight impurities from grains
• Impurities: dust, soil, chaff, twigs, broken grain, insects, etc.

PC20. transfer the grains to the de-stoner machine to remove stones and prepare the grains for washing

PC21. • 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.

PC22. adjust temperature, pressure and speed of dryer to maintain required moisture in grains

PC23. adjust valves to control the speed of the dryer to regulate amount of grain (par boiled grain) conveyed into dryer

PC24. • 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.

PC25. adjust speed of the aspirator fan to separate de-husked grains

PC26. control the stream of air passing through cylinder to cool the grain and to blow off the bran

PC27. grade the processed grain based on length by controlling the rotation of the cylinders

PC28. adjust the speed of the sifter and use proper sieve size to remove the broken grains and transfer them to the grinder for milling

PC29. grade the desired grains into wheat flour as per the desired size

PC30. collect sample of the processed wheat flour and transfer to quality lab for analysis

PC31. store the wheat flour for further processing

Perform production of wheat flour preblend

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

PC32. transfer some milled wheat flour into a mixer/blender by using conveyors or organisational specified procedure for the mixing process

PC33. feed the premix into hopper and start the rotating screw type volumetric feeder for transferring the required quantity for premix into mixer/blender for mixing with wheat flour

PC34. • set the parameters of volumetric feeder for mixing process
• parameters: motor speed, feed screw speed etc.

PC35. monitor mixing process to achieve required result throughout the process

PC36. pack the wheat flour preblend and store it by following organisational procedures

PC37. • send the sample to quality lab for analysis
• analysis: nutritional content, colour, impurities etc.

Perform production of fortified wheat flour

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

PC38. transfer the milled wheat flour and preblend into big mixer/blender by using conveyors or organisational specified procedure for the mixing process

PC39. start the mixer/blender and allow the milled wheat flour and preblend to mix properly

PC40. collect the samples of fortified wheat flour after mixing process

PC41. • send the sample to quality lab for analysis
• analysis: moisture, nutritional content, (vitamin and mineral in premix) kernel size, colour etc.

Monitor losses during extrusion

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

PC42. monitor the process loss by controlling the factors affecting stability during the fortification process

PC43. ensure the mixture is properly blended during mixing to avoid any loss

Ensure proper storage and packaging of fortified flour

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

PC44. start conveyors and elevators to transfer finished products to packing machine

PC45. • fill the packaging material with the feed as per the standard operating practices
• Packaging material: HDPE, LDPE, cartons, etc.

PC46. operate packaging/bagging machinery by setting controls like batch code, date coding and filling quantity, printing mark, sealer temp and pressure etc

PC47. perform shelf-life study of fortified wheat flour to maintain its shelf stability

PC48. report any non-conformity in the process to the higher authority

PC49. • ensure the mandatory information are printed on the label of the bag
• Information: Name, Net weight, name of supplier, production date, list of ingredients in descending order, country of origin, lot identification, storage instructions, '+F' logo, etc.

PC50. store the fortified wheat flour under ventilated and hygienic conditions for further transportation

PC51. store the tools and materials used for production safely in designated places

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. policies and procedures related to fortified wheat flour production

KU2. types of vitamin and mineral premix

KU3. tasks to be performed and processes involved in wheat flour fortification production

KU4. types of tools, equipment and machinery used in fortified wheat flour production

KU5. technique for perform wheat grain milling

KU6. process of blending and different types of blending

KU7. process of checking the feeding system

KU8. types of volumetric feeder and their parameters

KU9. optimal conditions required for mixing the premix and wheat flour

KU10. different tests performed to check the quality

KU11. different losses during production and how to overcome them

KU12. procedure for storing, packing and labelling the fortified wheat flour and the materials used in the process

KU13. instances that need to be reported to the concerned personnel and the methods used

KU14. Food Safety and Standards Authority of India (FSSAI) guidelines for production, packaging, labelling, storing, handling fortified wheat flour and raw material

KU15. procedure to store the tools, equipment and materials used for production safely

KU16. procedure to maintain the tools, equipment and materials used for fortified wheat flour production

KU17. how to coordinate with vendors for vitamin and mineral premix transportation and delivery

KU18. safe disposal of waste and unwanted materials at the workplace

Generic Skills (GS)

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

GS1. note the raw materials used for production and the finished products produced

GS2. note the readings of the process parameters and necessary information to fill the process chart

GS3. note down observations (if any) related to the process

GS4. write information documents to internal departments/ internal teams

GS5. note down the data for ERP or as required by the organization

GS6. read and interpret the process required for producing various types of products

GS7. read and interpret and process flowcharts for all products produced

GS8. read equipment manuals and process documents to understand the equipment operations

GS9. read internal information documents sent by internal teams

GS10. discuss task lists, schedules, and activities with the higher authority

GS11. effectively communicate with the team members

GS12. question the higher authority to understand the nature of the problem and to clarify

GS13. note down the information gathered from the higher authority

GS14. attentively listen and comprehend the information given by the speaker

GS15. communicate clearly with the internal team and cross-department team on the issues

GS16. plan and organize the work order and jobs received from the higher authority

GS17. organize raw materials and packagin materials required for making fortified rice

GS18. plan and prioritize work based on the instructions received from the higher authority

GS19. plan to utilize time and equipment effectively

GS20. organize all process / equipment manuals to access information easily

GS21. support higher authority in solving problems by detailing out problems

GS22. discuss the possible solutions with the higher authority for problem-solving

GS23. apply information about maintenance processes & knowledge about tools

GS24. use common sense and make judgments on a day-to-day basis

GS25. use reasoning skills to identify and resolve basic problems

GS26. use intuition to detect any potential problems which could arise during operations

GS27. use acquired knowledge of the process for identifying and handling issues

GS28. Identify critical points in daily tasks and apply control measures to solve the issue

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for production	**4**	**6**	**-**	**1**
PC1. clean and maintain the work area as per organizational procedures	-	1	-	-
PC2. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards	1	1	-	-
PC3. • dispose of the waste material at designated place safely • Waste material: hazardous waste, food waste, packaging waste, etc.	-	1	-	-
PC4. inspect the tools, equipment, and machinery to ascertain suitability for use	1	1	-	1
PC5. check cleaning and effectiveness of magnets of measuring scales and see they are appropriately installed and also do calibration of metal detector by dash	1	1	-	-
PC6. report information such as faulty tools and equipment to the concerned authority	1	1	-	-
Prepare raw materials for production	**7**	**7**	**-**	**4**
PC7. • procure food grade vitamin and mineral premix • premix: Iron, folic acid, Vitamin B12 etc.	1	1	-	1
PC8. procure wheat to prepare for fortification process by checking the specification limit	1	1	-	1
PC9. • ensure the obtained wheat meets the specified parameters and standards • Parameters: shelf life, cooking quality, etc.	1	2	-	1
PC10. discard the raw material which does not meet the standards	1	1	-	-
PC11. ensure the obtained premix meets the standards set by FSSAI	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. • arrange and store the ingredients properly in a designated area • Ingredients: wheat grain, food grade vitamin and mineral premix	2	1	-	1
Perform milling of wheat flour	**19**	**30**	**-**	**15**
PC13. • set controls for automatic measuring scales in continuous process to transfer measured quantity of wheat for milling • Controls: weight, screens, sizes, sieves, rpm, time, etc.	1	2	-	1
PC14. check condition of bucket elevator, chain conveyor, screw conveyor for any damage	1	1	-	-
PC15. ensure proper lubrication of machine parts done with food grade lubricants	1	2	-	1
PC16. 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	1	2	-	1
PC17. check all sensors attached are in working condition to maintain the flow rate	1	2	-	1
PC18. set controls of blowers or suction fan to remove light impurities and dust particles from screens and sieves	1	1	-	1
PC19. • adjust the speed of the separator, aspirator, etc. to remove light weight impurities from grains • Impurities: dust, soil, chaff, twigs, broken grain, insects, etc.	1	3	-	1
PC20. transfer the grains to the de-stoner machine to remove stones and prepare the grains for washing	1	2	-	1
PC21. • 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.	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC22. adjust temperature, pressure and speed of dryer to maintain required moisture in grains	1	2	-	1
PC23. adjust valves to control the speed of the dryer to regulate amount of grain (par boiled grain) conveyed into dryer	1	1	-	1
PC24. • 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.	1	2	-	1
PC25. adjust speed of the aspirator fan to separate de-husked grains	1	1	-	1
PC26. control the stream of air passing through cylinder to cool the grain and to blow off the bran	1	1	-	1
PC27. grade the processed grain based on length by controlling the rotation of the cylinders	1	1	-	1
PC28. adjust the speed of the sifter and use proper sieve size to remove the broken grains and transfer them to the grinder for milling	1	2	-	1
PC29. grade the desired grains into wheat flour as per the desired size	1	1	-	-
PC30. collect sample of the processed wheat flour and transfer to quality lab for analysis	1	1	-	-
PC31. store the wheat flour for further processing	1	1	-	-
Perform production of wheat flour preblend	**6**	**11**	**-**	**2**
PC32. transfer some milled wheat flour into a mixer/blender by using conveyors or organisational specified procedure for the mixing process	1	2	-	-
PC33. feed the premix into hopper and start the rotating screw type volumetric feeder for transferring the required quantity for premix into mixer/blender for mixing with wheat flour	1	2	-	1
PC34. • set the parameters of volumetric feeder for mixing process • parameters: motor speed, feed screw speed etc.	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC35. monitor mixing process to achieve required result throughout the process	1	2	-	-
PC36. pack the wheat flour preblend and store it by following organisational procedures	1	2	-	-
PC37. • send the sample to quality lab for analysis • analysis: nutritional content, colour, impurities etc.	1	1	-	-
Perform production of fortified wheat flour	**2**	**5**	**-**	**1**
PC38. transfer the milled wheat flour and preblend into big mixer/blender by using conveyors or organisational specified procedure for the mixing process	-	1	-	-
PC39. start the mixer/blender and allow the milled wheat flour and preblend to mix properly	1	2	-	1
PC40. collect the samples of fortified wheat flour after mixing process	1	1	-	-
PC41. • send the sample to quality lab for analysis • analysis: moisture, nutritional content, (vitamin and mineral in premix) kernel size, colour etc.	-	1	-	-
Monitor losses during extrusion	**2**	**3**	**-**	**1**
PC42. monitor the process loss by controlling the factors affecting stability during the fortification process	1	2	-	1
PC43. ensure the mixture is properly blended during mixing to avoid any loss	1	1	-	-
Ensure proper storage and packaging of fortified flour	**7**	**14**	**-**	**5**
PC44. start conveyors and elevators to transfer finished products to packing machine	1	1	-	-
PC45. • fill the packaging material with the feed as per the standard operating practices • Packaging material: HDPE, LDPE, cartons, etc.	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC46. operate packaging/bagging machinery by setting controls like batch code, date coding and filling quantity, printing mark, sealer temp and pressure etc	1	2	-	1
PC47. perform shelf-life study of fortified wheat flour to maintain its shelf stability	1	2	-	1
PC48. report any non-conformity in the process to the higher authority	-	1	-	-
PC49. • ensure the mandatory information are printed on the label of the bag • Information: Name, Net weight, name of supplier, production date, list of ingredients in descending order, country of origin, lot identification, storage instructions, '+F' logo, etc.	1	2	-	1
PC50. store the fortified wheat flour under ventilated and hygienic conditions for further transportation	1	2	-	1
PC51. store the tools and materials used for production safely in designated places	1	2	-	-
NOS Total	**47**	**76**	**-**	**29**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N1042
NOS Name	Carry out production of fortified flour
Sector	Food Processing
Sub-Sector	Food Grain Milling
Occupation	Processing-Food Grain Milling (including oilseeds)
NSQF Level	4
Credits	5
Version	1.0
Next Review Date	NA

FIC/N9906: Apply food safety guidelines in Food Processing

Description

This unit covers the essential components of food safety, Good Manufacturing Practices (GMP), and personal hygiene in the food industry. It emphasizes the importance of individuals working in the food industry in protecting the health and well-being of consumers by following food safety protocols and procedures and ensuring the production of safe and high-quality food products.

Scope

The scope covers the following :

- Apply personal hygiene and follow Good Manufacturing practices at the workplace.
- Implement Food Safety and pre-requisite programs (PRP) at the workplace.

Elements and Performance Criteria

Apply personal hygiene and follow Good Manufacturing practices at workplace

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

PC1. PC1. follow a site relevant documented procedure for Personal Hygiene and Visitor/ Contractor rules.

PC2. PC2. follow work instructions at levels of employees inside a food manufacturing site and ensure that the relevant instructions are well communicated and being followed at the fixed timelines.

PC3. PC3. ensure timely participate and carry out the relevant training and awareness sessions on personal hygiene, GMP, and related topics.

PC4. PC4.ensure timely medical examination from a prescribed and authorized doctor and comply with the guidelines of Schedule IV as described in Food Safety Standard Authority of India (FSSAI) guidelines.

PC5. PC5. fill in data in the daily monitoring checklist related to personal hygiene, food safety, and GMP.

PC6. • PC6. follow a site-relevant documented procedure and area-wise work instructions for Good Manufacturing Practices (GMP) to be followed on the site.
• procedure: Hand washing requirements, Gowning & De gowning protocols, cleaning, and sanitation of employee lockers, follow the protocols as laid down in the different categories of processing areas like Low Risk, High Risk, High Care areas, etc.

PC7. PC7. follow all validated Do’s & Don’ts inside a food manufacturing firm.

PC8. PC8. follow man and materials movement throughout the production facility, to restrict unwanted hazards to cross-contaminate the products which are being manufactured in the facility.

PC9. PC9. refer to the process flow charts, HACCP summary plan, and critical process parameters in each and respective areas of the production line.

PC10. PC10. identify the material requirements such as manufacturing equipments, Utensils, and other processing aids, cleaning chemicals, and cleaning work instructions in all the relevant areas of the manufacturing facility. Also, a special focus shall be given to Allergens and their risks. Wherever required, the allergen requirements shall be separately addressed.

PC11. PC11. ensure to properly tag and number all the equipment, machinery, tools, and other processing aids to keep proper traceability of the product being manufactured and handled at the site.

PC12. PC12. follow and implement all training and awareness guidelines in the manufacturing area and regularly participate in training effectiveness for evaluation.

PC13. PC13. participate in audits and address the aspects of Good Manufacturing Procedures, personal hygiene, and food safety.

PC14. PC14. ensure the record keeping and documentation such as Daily Monitoring Sheets, Batch Traceability Records, machine records, product parameters, process control parameters, etc.

Implement food safety practices at the workplace

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

PC15. PC15. maintain updated facilities, equipment, and tool and design requirements to minimize the risks associated with the products being handled at the site.

PC16. PC16. follow the instruction in the raw and packaging materials warehouse and ensure receiving material parameters match all the laid requirements. parameters: Incoming vehicles Visual report, storage, and handling requirements, hazardous and non-hazardous goods, allergens, cross-contamination risks, Quarantine, Accepted & rejected goods, monitoring temperature and humidity, etc.

PC17. PC17. follow FSSAI Schedule IV requirements related to Pest Control, Cleaning, and Sanitation, Utilities, Waste Disposal, Prevention of Cross-Contamination, allergen management, corrective action, preventive actions, food operation control etc.

PC18. PC18. ensure timely check of the critical control points and product parameters.

PC19. PC19. record keeping and documentation such as daily monitoring sheets, cleaning sheets, parameters, etc.

PC20. PC20. report any food safety and GMP issue to the supervisor, if any.

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. importance of personal hygiene, GMP, visitors & contractor's rules. Associated risk in case of deviation from the standard policies and how the requirement is linked with the site's FSSAI License.

KU2. KU2. importance of training and work instruction delivered by the supervisors.

KU3. KU3. importance of filling the records and checklists, formats and how to ensure that the timely and effective completion is achieved.

KU4. KU4. knowledge of trainings and skills required to perform in food processing premises.

KU5. KU5. understand FSSAI Schedule IV requirements of food handlers and PRPs within the processing area

KU6. KU6. importance of timely medical examinations and awareness of communicable diseases

KU7. Understanding of Do's & Don'ts, intellect mindset to understand the visual illustrations

KU8. KU8. understanding about Site Zoning plans.

KU9. KU9. awareness of layout which would help to demarcate the defined movements of RM, PM, FG, and wastes generated during the processing of goods. This one lays a framework to launch Good Manufacturing Practices (GMP) successfully and effectively on site.

KU10. KU10. understand the manufacturing process, product parameters and process control parameters such as CCPs

KU11. KU11. understanding about Hazard Analysis and Critical Control Points (HACCP)

KU12. KU12. understanding about Allergens and their types and controls to monitor effective handling of allergen raw materials on site.

KU13. KU13. basic understanding of traceability and mock recall

KU14. KU14. awareness about Internal & external Audits

KU15. KU15. understanding for RCA CAPA, cleaning and sanitation

KU16. KU16. awareness about record keeping and data monitoring in various sheets as per organizational requirement

Generic Skills (GS)

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

GS1. GS1. read and comprehend basic content to read labels, charts, signages, symbols and product manuals

GS2. GS2. communicate with coworkers appropriately to clarify instructions and other issues

GS3. GS3. plan and organize the work schedule, work area, tools, equipment, and materials for improved productivity

GS4. GS4. plan and prioritize tasks as per work requirements

GS5. GS5. always be punctual and courteous

GS6. GS6. good observations and intellect mindset

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Apply personal hygiene and follow Good Manufacturing practices at workplace	**22**	**44**	**-**	**6**
PC1. PC1. follow a site relevant documented procedure for Personal Hygiene and Visitor/ Contractor rules.	2	4	-	-
PC2. PC2. follow work instructions at levels of employees inside a food manufacturing site and ensure that the relevant instructions are well communicated and being followed at the fixed timelines.	2	4	-	2
PC3. PC3. ensure timely participate and carry out the relevant training and awareness sessions on personal hygiene, GMP, and related topics.	2	4	-	-
PC4. PC4.ensure timely medical examination from a prescribed and authorized doctor and comply with the guidelines of Schedule IV as described in Food Safety Standard Authority of India (FSSAI) guidelines.	2	4	-	-
PC5. PC5. fill in data in the daily monitoring checklist related to personal hygiene, food safety, and GMP.	2	4	-	-
PC6. • PC6. follow a site-relevant documented procedure and area-wise work instructions for Good Manufacturing Practices (GMP) to be followed on the site. • procedure: Hand washing requirements, Gowning & De gowning protocols, cleaning, and sanitation of employee lockers, follow the protocols as laid down in the different categories of processing areas like Low Risk, High Risk, High Care areas, etc.	2	4	-	2
PC7. PC7. follow all validated Do’s & Don’ts inside a food manufacturing firm.	1	2	-	1
PC8. PC8. follow man and materials movement throughout the production facility, to restrict unwanted hazards to cross-contaminate the products which are being manufactured in the facility.	2	4	-	-
PC9. PC9. refer to the process flow charts, HACCP summary plan, and critical process parameters in each and respective areas of the production line.	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC10. PC10. identify the material requirements such as manufacturing equipments, Utensils, and other processing aids, cleaning chemicals, and cleaning work instructions in all the relevant areas of the manufacturing facility. Also, a special focus shall be given to Allergens and their risks. Wherever required, the allergen requirements shall be separately addressed.	2	4	-	-
PC11. PC11. ensure to properly tag and number all the equipment, machinery, tools, and other processing aids to keep proper traceability of the product being manufactured and handled at the site.	1	2	-	-
PC12. PC12. follow and implement all training and awareness guidelines in the manufacturing area and regularly participate in training effectiveness for evaluation.	1	2	-	-
PC13. PC13. participate in audits and address the aspects of Good Manufacturing Procedures, personal hygiene, and food safety.	1	2	-	-
PC14. PC14. ensure the record keeping and documentation such as Daily Monitoring Sheets, Batch Traceability Records, machine records, product parameters, process control parameters, etc.	1	2	-	-
Implement food safety practices at the workplace	**8**	**16**	**-**	**4**
PC15. PC15. maintain updated facilities, equipment, and tool and design requirements to minimize the risks associated with the products being handled at the site.	2	4	-	-
PC16. PC16. follow the instruction in the raw and packaging materials warehouse and ensure receiving material parameters match all the laid requirements. parameters: Incoming vehicles Visual report, storage, and handling requirements, hazardous and non-hazardous goods, allergens, cross-contamination risks, Quarantine, Accepted & rejected goods, monitoring temperature and humidity, etc.	1	2	-	1
PC17. PC17. follow FSSAI Schedule IV requirements related to Pest Control, Cleaning, and Sanitation, Utilities, Waste Disposal, Prevention of Cross-Contamination, allergen management, corrective action, preventive actions, food operation control etc.	2	4	-	2

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC18. PC18. ensure timely check of the critical control points and product parameters.	1	2	-	-
PC19. PC19. record keeping and documentation such as daily monitoring sheets, cleaning sheets, parameters, etc.	1	2	-	1
PC20. PC20. report any food safety and GMP issue to the supervisor, if any.	1	2	-	-
NOS Total	**30**	**60**	**-**	**10**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N9906
NOS Name	Apply food safety guidelines in Food Processing
Sector	Food Processing
Sub-Sector	Generic
Occupation	Generic
NSQF Level	3
Credits	1
Version	1.0
Last Reviewed Date	NA
Next Review Date	23/06/2026
NSQC Clearance Date	23/06/2023

DGT/VSQ/N0101: Employability Skills (30 Hours)

Description

This unit is about employability skills, Constitutional values, becoming a professional in the 21st Century, digital, financial, and legal literacy, diversity and Inclusion, English and communication skills, customer service, entrepreneurship, and apprenticeship, getting ready for jobs and career development.

Scope

The scope covers the following :

- Introduction to Employability Skills
- Constitutional values - Citizenship
- Becoming a Professional in the 21st Century
- Basic English Skills
- Communication Skills
- Diversity & Inclusion
- Financial and Legal Literacy
- Essential Digital Skills
- Entrepreneurship
- Customer Service
- Getting ready for Apprenticeship & Jobs

Elements and Performance Criteria

Introduction to Employability Skills

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

PC1. understand the significance of employability skills in meeting the job requirements

Constitutional values – Citizenship

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

PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices

Becoming a Professional in the 21st Century

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

PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.

Basic English Skills

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

PC4. speak with others using some basic English phrases or sentences

Communication Skills

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

PC5. follow good manners while communicating with others

PC6. work with others in a team

Diversity & Inclusion

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

PC7. communicate and behave appropriately with all genders and PwD

PC8. report any issues related to sexual harassment

Financial and Legal Literacy

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

PC9. use various financial products and services safely and securely

PC10. calculate income, expenses, savings etc.

PC11. approach the concerned authorities for any exploitation as per legal rights and laws

Essential Digital Skills

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

PC12. operate digital devices and use its features and applications securely and safely

PC13. use internet and social media platforms securely and safely

Entrepreneurship

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

PC14. identify and assess opportunities for potential business

PC15. identify sources for arranging money and associated financial and legal challenges

Customer Service

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

PC16. identify different types of customers

PC17. identify customer needs and address them appropriately

PC18. follow appropriate hygiene and grooming standards

Getting ready for apprenticeship & Jobs

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

PC19. create a basic biodata

PC20. search for suitable jobs and apply

PC21. identify and register apprenticeship opportunities as per requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. need for employability skills

KU2. various constitutional and personal values

KU3. different environmentally sustainable practices and their importance

KU4. Twenty first (21st) century skills and their importance

KU5. how to use basic spoken English language

KU6. Do and dont of effective communication

KU7. inclusivity and its importance

KU8. different types of disabilities and appropriate communication and behaviour towards PwD

KU9. different types of financial products and services

KU10. how to compute income and expenses

KU11. importance of maintaining safety and security in financial transactions

KU12. different legal rights and laws
KU13. how to operate digital devices and applications safely and securely
KU14. ways to identify business opportunities
KU15. types of customers and their needs
KU16. how to apply for a job and prepare for an interview
KU17. apprenticeship scheme and the process of registering on apprenticeship portal

Generic Skills (GS)

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

GS1. communicate effectively using appropriate language
GS2. behave politely and appropriately with all
GS3. perform basic calculations
GS4. solve problems effectively
GS5. be careful and attentive at work
GS6. use time effectively
GS7. maintain hygiene and sanitisation to avoid infection

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Introduction to Employability Skills	1	1	-	-
PC1. understand the significance of employability skills in meeting the job requirements	-	-	-	-
Constitutional values – Citizenship	1	1	-	-
PC2. identify constitutional values, civic rights, duties, personal values and ethics and environmentally sustainable practices	-	-	-	-
Becoming a Professional in the 21st Century	1	3	-	-
PC3. explain 21st Century Skills such as Self-Awareness, Behavior Skills, Positive attitude, self-motivation, problem-solving, creative thinking, time management, social and cultural awareness, emotional awareness, continuous learning mindset etc.	-	-	-	-
Basic English Skills	2	3	-	-
PC4. speak with others using some basic English phrases or sentences	-	-	-	-
Communication Skills	1	1	-	-
PC5. follow good manners while communicating with others	-	-	-	-
PC6. work with others in a team	-	-	-	-
Diversity & Inclusion	1	1	-	-
PC7. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC8. report any issues related to sexual harassment	-	-	-	-
Financial and Legal Literacy	3	4	-	-
PC9. use various financial products and services safely and securely	-	-	-	-
PC10. calculate income, expenses, savings etc.	-	-	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
Essential Digital Skills	**4**	**6**	**-**	**-**
PC12. operate digital devices and use its features and applications securely and safely	-	-	-	-
PC13. use internet and social media platforms securely and safely	-	-	-	-
Entrepreneurship	**3**	**5**	**-**	**-**
PC14. identify and assess opportunities for potential business	-	-	-	-
PC15. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
Customer Service	**2**	**2**	**-**	**-**
PC16. identify different types of customers	-	-	-	-
PC17. identify customer needs and address them appropriately	-	-	-	-
PC18. follow appropriate hygiene and grooming standards	-	-	-	-
Getting ready for apprenticeship & Jobs	**1**	**3**	**-**	**-**
PC19. create a basic biodata	-	-	-	-
PC20. search for suitable jobs and apply	-	-	-	-
PC21. identify and register apprenticeship opportunities as per requirement	-	-	-	-
NOS Total	**20**	**30**	**-**	**-**

National Occupational Standards (NOS) Parameters

NOS Code	DGT/VSQ/N0101
NOS Name	Employability Skills (30 Hours)
Sector	Cross Sectoral
Sub-Sector	Professional Skills
Occupation	Employability
NSQF Level	2
Credits	1
Version	1.0
Last Reviewed Date	31/01/2024
Next Review Date	31/01/2027
NSQC Clearance Date	31/01/2024

FIC/N1043: Carry Production of Fortified Rice

Description

This unit is about producing fortified rice kernels by the method of extrusion and then blending it by using different machineries to produce fortified rice as per the specifications and standards of the organization.

Scope

The scope covers the following :

- This unit/task covers the following
- Prepare work area, tools and equipment for production
- Prepare raw materials for production
- Perform production of fortified rice kernels
- Perform production of blended fortified rice
- Monitor losses during extrusion
- Ensure proper storage and packaging of fortified rice

Elements and Performance Criteria

Prepare for production

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

PC1. clean and maintain the work area as per organizational procedures

PC2. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards

PC3. • dispose of the waste material at designated place safely
• Waste material: hazardous waste, food waste, packaging waste, etc.

PC4. inspect the tools, equipment, and machinery to ascertain suitability for use

PC5. report information such as faulty tools and equipment to the concerned authority

Prepare raw materials for production

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

PC6. • identify food grade vitamin and mineral premix
• premix: Vitamin B12, Iron, folic acid

PC7. procure broken rice after rice milling to prepare for fortification process by checking the specification limit

PC8. • ensure the obtained rice meets the parameters as per standards of normal rice
• Parameters: strong to sustain shelf life, cooking quality, etc.

PC9. pass the broken rice through a vibro separator to check the presence of foreign material as well as through magnets to assure absence of any magnetic particles

PC10. discard the raw material which does not meet the standards

PC11. ensure the obtained premix meets the standards set by FSSAI

PC12. • arrange and store the ingredients properly in a designated area
• Ingredients: Rice, food grade vitamin and mineral premix, FSSAI approved acid regulators and emulsifiers, potable water

Perform production of fortified rice kernels

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

PC13. transfer the approved broken rice into a pulverizer to grind it further to a desired size

PC14. • sieve the broken rice to check the standard particle size and removal of foreign particles
• standard particle size: 150 µm

PC15. ensure the moisture content of broken rice before the mixing process should be in a range 11-12%

PC16. mix the vitamin and mineral premix with the broken rice in a flour mixer layer by layer

PC17. transfer the mixture into a preconditioner to add steam into the mixture for partial gelatinization of starch

PC18. transfer the mixture into a feeding hopper with a screw conveyor or manually to incorporate water in it

PC19. monitor the temperature and moisture content of the mixture in the hopper with a temperature moisture detector gun

PC20. transfer the moist fortified flour into a twin-screw extruder for partial cooking and extruding rice shaped kernels

PC21. ensure the main, feeding and cutting motor works properly in maintaining the shape and size of the kernels

PC22. • monitor the extrusion parameters to achieve consistency throughout the process
• parameters: Feed rate, temperature and rotation speed of motor

PC23. measure the length, thickness and width of the extruded kernel to match the specification

PC24. cool the extruded kernels to remove moisture and temperature in a vibratory pan conveyor

PC25. transfer the extruded fortified kernels into five layered dryer through a pneumatic line or manually to reduce the moisture content of fortified rice kernels to 11-12%

PC26. maintain the temperature parameter of the vibratory dryer

PC27. transfer the fortified rice kernels from the dryer into a vibro separator to check and remove any clumps and extraneous matter

PC28. pass the kernels through a permanent bar magnet to check the presence of metal in fortified rice kernels

PC29. • send the sample to quality lab for analysis
• analysis: moisture, nutritional content, (vitamin and mineral in premix) kernel size, colour etc.

Perform production of blended fortified rice

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

PC30. fill one hopper with fortified rice kernel and other with normal rice for batch blending

PC31. ensure the dosing system feeds the fortified rice kernel to normal rice in a designated ratio or as required to meet the fortified rice specification

PC32. set the combination of dosing parameters of a vibratory feeder in a continuous blending process

PC33. ensure the helical ribbon blender blends the mixture to produce homogenous fortified rice

PC34. ensure the steps of blending are performe just prior to packaging the fortified rice

PC35. • send the sample of finished product to quality lab to check quality parameters
• parameters: moisture content, texture, broken kernels, organoleptic quality, pesticide residue, etc.

Monitor losses during extrusion

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

PC36. • monitor the process loss by controlling the factors affecting stability during the fortification process
• process loss: applied heat, humidity during heating, drying steps, presence, or absence of air

PC37. monitor the stability of fortified rice during storage by using antioxidant for stabilization of vitamin A

PC38. ensure the mixture is properly blended during mixing to avoid washing loss

PC39. monitor the loss of water-soluble vitamins during cooking process by using FSSAI approved Emulsifiers

Ensure proper storage and packaging of fortified rice

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

PC40. dispose the rejected batch safely following the standard practice of the organization

PC41. pack the fortified rice in two-layer bag with inner layer of poly lining or equivalent packaging material

PC42. ensure the packed bag passes the butt drop and flat drop test

PC43. perform shelf-life study of fortified rice to maintain its shelf stability

PC44. report any non-conformity in the process to the higher authority

PC45. • ensure the mandatory information are printed on the label of the bag
• Information: Name, Net weight, name of supplier, production date, list of ingredients in descending order, country of origin, lot identification, storage instructions, '+F' logo, etc.

PC46. store the fortified rice under dry, ventilated, and hygienic conditions for further transportation

PC47. store the tools and materials used for production safely in designated places

PC48. maintain the tools, equipment and materials used for production as per standard practices

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. policies and procedures related to fortified rice production

KU2. types of vitamin and mineral premix

KU3. tasks to be performed and processes involved in fortification production

KU4. types of tools, equipment and machinery used in fortified rice production

KU5. method to measure parameters like antioxidants, emulsifiers, premix, etc.

KU6. various signs of damaged kernels and their inspection techniques

KU7. technique for performing hot or cold extrusion

KU8. process of blending and different types of blending

KU9. importance of preconditioning of kernels

KU10. different types of fortification like dusting and coating

KU11. instruments used for monitoring temperature and moisture content of rice

KU12. process of checking the dosing system

KU13. types of dryer and their parameters

KU14. optimal conditions required for drying the fortified kernels

KU15. different tests performed to check the quality

KU16. different losses during production and how to overcome them

KU17. procedure for storing, packing and labelling the fortified rice and the materials used in the process

KU18. instances that need to be reported to the concerned personnel and the methods used

KU19. types of information that is documented and the organisational practices for documenting them

KU20. Food Safety and Standards Authority of India (FSSAI) guidelines for production, packaging, labelling, storing, handling fortified rice and raw material

KU21. procedure to store the tools, equipment and materials used for production safely

KU22. procedure to maintain the tools, equipment and materials used for fortified rice production

KU23. how to coordinate with vendors for vitamin and mineral premix transportation and delivery

KU24. which matter to be reported to the higher authority and when

KU25. safe disposal of waste and unwanted materials at the workplace

KU26. SOP to record the information (such as type of FRK produced, its characteristics, batches produced, quantity to be dispatched, etc.) as required in the job

Generic Skills (GS)

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

GS1. note the raw materials used for production and the finished products produced

GS2. note the readings of the process parameters and necessary information to fill the process chart

GS3. note down observations (if any) related to the process

GS4. write information documents to internal departments/ internal teams

GS5. note down the data for ERP or as required by the organization

GS6. read and interpret the process required for producing various types of products

GS7. read and interpret and process flowcharts for all products produced

GS8. read equipment manuals and process documents to understand the equipment operations

GS9. read internal information documents sent by internal teams

GS10. discuss task lists, schedules, and activities with the higher authority

GS11. effectively communicate with the team members

GS12. question the higher authority to understand the nature of the problem and to clarify

GS13. Note down the information gathered from the higher authority

GS14. attentively listen and comprehend the information given by the speaker

GS15. communicate clearly with the internal team and cross-department team on the issues

GS16. plan and organize the work order and jobs received from the higher authority

GS17. organize raw materials and packaging materials required for making fortified rice

GS18. plan and prioritize work based on the instructions received from the higher authority

GS19. plan to utilize time and equipment effectively

GS20. organize all process / equipment manuals to access information easily

GS21. support higher authority in solving problems by detailing out problems

GS22. discuss the possible solutions with the higher authority for problem-solving

GS23. apply information about maintenance processes & knowledge about tools

GS24. use common sense and make judgments on a day-to-day basis
GS25. use reasoning skills to identify and resolve basic problems
GS26. use intuition to detect any potential problems which could arise during operations
GS27. use acquired knowledge of the process for identifying and handling issues
GS28. Identify critical points in daily tasks and apply control measures to solve the issue

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for production	**3**	**5**	**-**	**1**
PC1. clean and maintain the work area as per organizational procedures	-	1	-	-
PC2. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards	1	1	-	-
PC3. • dispose of the waste material at designated place safely • Waste material: hazardous waste, food waste, packaging waste, etc.	-	1	-	-
PC4. inspect the tools, equipment, and machinery to ascertain suitability for use	1	1	-	1
PC5. report information such as faulty tools and equipment to the concerned authority	1	1	-	-
Prepare raw materials for production	**8**	**9**	**-**	**4**
PC6. • identify food grade vitamin and mineral premix • premix: Vitamin B12, Iron, folic acid	1	1	-	1
PC7. procure broken rice after rice milling to prepare for fortification process by checking the specification limit	1	2	-	-
PC8. • ensure the obtained rice meets the parameters as per standards of normal rice • Parameters: strong to sustain shelf life, cooking quality, etc.	1	1	-	1
PC9. pass the broken rice through a vibro separator to check the presence of foreign material as well as through magnets to assure absence of any magnetic particles	1	2	-	1
PC10. discard the raw material which does not meet the standards	1	1	-	-
PC11. ensure the obtained premix meets the standards set by FSSAI	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. • arrange and store the ingredients properly in a designated area • Ingredients: Rice, food grade vitamin and mineral premix, FSSAI approved acid regulators and emulsifiers, potable water	2	1	-	1
Perform production of fortified rice kernels	**17**	**28**	**-**	**15**
PC13. transfer the approved broken rice into a pulverizer to grind it further to a desired size	1	2	-	1
PC14. • sieve the broken rice to check the standard particle size and removal of foreign particles • standard particle size: 150 µm	1	1	-	1
PC15. ensure the moisture content of broken rice before the mixing process should be in a range 11-12%	1	1	-	-
PC16. mix the vitamin and mineral premix with the broken rice in a flour mixer layer by layer	1	2	-	1
PC17. transfer the mixture into a preconditioner to add steam into the mixture for partial gelatinization of starch	1	2	-	1
PC18. transfer the mixture into a feeding hopper with a screw conveyor or manually to incorporate water in it	1	2	-	1
PC19. monitor the temperature and moisture content of the mixture in the hopper with a temperature moisture detector gun	1	1	-	1
PC20. transfer the moist fortified flour into a twin-screw extruder for partial cooking and extruding rice shaped kernels	1	3	-	1
PC21. ensure the main, feeding and cutting motor works properly in maintaining the shape and size of the kernels	1	1	-	1
PC22. • monitor the extrusion parameters to achieve consistency throughout the process • parameters: Feed rate, temperature and rotation speed of motor	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC23. measure the length, thickness and width of the extruded kernel to match the specification	1	2	-	1
PC24. cool the extruded kernels to remove moisture and temperature in a vibratory pan conveyor	1	1	-	1
PC25. transfer the extruded fortified kernels into five layered dryer through a pneumatic line or manually to reduce the moisture content of fortified rice kernels to 11-12%	1	2	-	1
PC26. maintain the temperature parameter of the vibratory dryer	1	1	-	-
PC27. transfer the fortified rice kernels from the dryer into a vibro separator to check and remove any clumps and extraneous matter	1	2	-	1
PC28. pass the kernels through a permanent bar magnet to check the presence of metal in fortified rice kernels	1	2	-	1
PC29. • send the sample to quality lab for analysis • analysis: moisture, nutritional content, (vitamin and mineral in premix) kernel size, colour etc.	1	1	-	1
Perform production of blended fortified rice	**6**	**11**	**-**	**2**
PC30. fill one hopper with fortified rice kernel and other with normal rice for batch blending	1	2	-	-
PC31. ensure the dosing system feeds the fortified rice kernel to normal rice in a designated ratio or as required to meet the fortified rice specification	1	2	-	1
PC32. set the combination of dosing parameters of a vibratory feeder in a continuous blending process	1	2	-	1
PC33. ensure the helical ribbon blender blends the mixture to produce homogenous fortified rice	1	2	-	-
PC34. ensure the steps of blending are performe just prior to packaging the fortified rice	1	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC35. • send the sample of finished product to quality lab to check quality parameters • parameters: moisture content, texture, broken kernels, organoleptic quality, pesticide residue, etc.	1	1	-	-
Monitor losses during extrusion	**4**	**7**	**-**	**3**
PC36. • monitor the process loss by controlling the factors affecting stability during the fortification process • process loss: applied heat, humidity during heating, drying steps, presence, or absence of air	1	2	-	1
PC37. monitor the stability of fortified rice during storage by using antioxidant for stabilization of vitamin A	1	2	-	1
PC38. ensure the mixture is properly blended during mixing to avoid washing loss	1	1	-	-
PC39. monitor the loss of water-soluble vitamins during cooking process by using FSSAI approved Emulsifiers	1	2	-	1
Ensure proper storage and packaging of fortified rice	**7**	**15**	**-**	**5**
PC40. dispose the rejected batch safely following the standard practice of the organization	1	1	-	-
PC41. pack the fortified rice in two-layer bag with inner layer of poly lining or equivalent packaging material	1	2	-	1
PC42. ensure the packed bag passes the butt drop and flat drop test	1	2	-	1
PC43. perform shelf-life study of fortified rice to maintain its shelf stability	1	2	-	1
PC44. report any non-conformity in the process to the higher authority	-	1	-	-
PC45. • ensure the mandatory information are printed on the label of the bag • Information: Name, Net weight, name of supplier, production date, list of ingredients in descending order, country of origin, lot identification, storage instructions, '+F' logo, etc.	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC46. store the fortified rice under dry, ventilated, and hygienic conditions for further transportation	1	2	-	1
PC47. store the tools and materials used for production safely in designated places	-	2	-	-
PC48. maintain the tools, equipment and materials used for production as per standard practices	1	1	-	-
NOS Total	**45**	**75**	**-**	**30**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N1043
NOS Name	Carry Production of Fortified Rice
Sector	Food Processing
Sub-Sector	Food Grain Milling
Occupation	Processing-Food Grain Milling (including oilseeds)
NSQF Level	4
Credits	5
Version	1.0
Next Review Date	NA

FIC/N1044: Carry out production of fortified edible oil

Description

This unit is about producing fortified edible oil as per the specifications and standards of the organization.

Scope

The scope covers the following :

- This unit/task covers the following
- Prepare for production
- Prepare raw materials for production
- Perform production of preblend
- Perform production of fortified oil
- Monitor losses during fortification process
- Ensure proper storage and packaging of fortified oil

Elements and Performance Criteria

Prepare for production

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

PC1. clean and maintain the work area as per organizational procedures

PC2. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards

PC3. inspect the tools, equipment, and machinery to ascertain suitability for use

PC4. report information such as faulty tools and equipment to the concerned authority

Prepare raw materials for production

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

PC5. • procure vitamin premix required for fortified edible oil production
• premix: Vitamin A and D

PC6. procure the good quality edible oil to prepare for fortification process

PC7. ensure that the oil should contain a sufficient amount of antioxidants, either added or naturally

PC8. discard the raw material which does not meet the standards

PC9. ensure the obtained premix meets the standards set by FSSAI

PC10. • arrange and store the ingredients properly in a designated area
• Ingredients: edible oil,, vitamin premix, water, aliquot oil

Perform production of pre-blend

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

PC11. heat the vitamin premix in a water bath between 40o to 450 Celsius for 10-15 minutes

PC12. maintain the temperature of water bath during heating process

PC13. fill some edible oil into a stainless-steel bucket for mixing process

PC14. pour the heated vitamin premix in stainless steel bucket having edible oil in prescribed amounts for the mixing process

PC15. add the aliquot oil in stainless steel bucket as antioxidant

PC16. mix the aliquot oil, heated vitamin premix and edible oil properly by using manual or automatic methods for preparing preblend

PC17. ensure that the full quantity of the premix available is used

PC18. • send the sample to quality lab for analysis
• analysis: nutritional content, colour, impurities etc.

Perform production of fortified oil

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

PC19. add the preblend to oil tanks having agitators or circulation system via pipeline or manually for mixing process

PC20. ensure that the dosing system feeds the preblend in specified ratios as required to meet the fortified oil specification

PC21. • set the parameters of circulation system for efficient mixing
• parameters: rotation speed, time of rotation etc.

PC22. mix the preblend and oil mixture in tanks for 30-40 minutes

PC23. ensure the steps of mixing are performed just prior to packaging

PC24. • send the sample of finished product to quality lab to check quality parameters
• parameters: texture, quality, impurities, vitamin content, stability etc.

Monitor losses during fortification process

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

PC25. • monitor the process loss by controlling the factors affecting stability during the fortification process
• process loss: applied heat, humidity during heating, presence or absence of air

PC26. monitor the stability of fortified oil during storage by using antioxidant for stabilization of vitamin A

PC27. monitor the loss of water-soluble vitamins during cooking process by using FSSAI approved Emulsifiers

Ensure proper storage and packaging of fortified oil

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

PC28. dispose the rejected batch safely following the standard practice of the organization

PC29. pack the fortified oil in plastic containers that protect it from direct sunlight

PC30. perform shelf-life study of fortified oil to maintain its shelf stability

PC31. report any non-conformity in the process to the higher authority

PC32. • ensure the mandatory information are printed on the label of the packing
• Information: Name, Net weight, name of supplier, production date, list of ingredients in descending order, country of origin, lot identification, storage instructions, '+F' logo, etc.

PC33. store the fortified oil under dry and hygienic conditions for further transportation

PC34. store the tools and materials used during production safely at designated places

PC35. maintain the tools, equipment and materials used for production as per standard practices

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. policies and procedures related to fortified oil production

KU2. types of vitamin premix
KU3. tasks to be performed and processes involved in fortification production
KU4. types of tools, equipment and machinery used in fortified oil production
KU5. method to measure parameters like antioxidants, emulsifiers, premix, etc.
KU6. process of preparing preblend for oil fortification
KU7. importance of adding antioxidant in the preblend
KU8. different methods of oil fortification like batch and and continuous processing
KU9. types of circulation system and their parameters
KU10. optimal conditions required for mixing the fortified oil
KU11. different tests performed to check the quality
KU12. different losses during production and how to overcome them
KU13. procedure for storing, packing and labelling the fortified oil and the materials used in the process
KU14. instances that need to be reported to the concerned personnel and the methods used
KU15. types of information that is documented and the organisational practices for documenting them
KU16. Food Safety and Standards Authority of India (FSSAI) guidelines for production, packaging, labelling, storing, handling fortified oil and raw material
KU17. procedure to store the tools, equipment and materials used for production safely
KU18. procedure to maintain the tools, equipment and materials used for fortified rice production
KU19. how to coordinate with vendors for vitamin and mineral premix transportation and delivery
KU20. safe disposal of waste and unwanted materials at the workplace

Generic Skills (GS)

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

GS1. note the raw materials used for production and the finished products produced
GS2. note the readings of the process parameters and necessary information to fill the process chart
GS3. note down observations (if any) related to the process
GS4. write information documents to internal departments/ internal teams
GS5. note down the data for ERP or as required by the organization
GS6. read and interpret the process required for producing various types of products
GS7. read and interpret and process flowcharts for all products produced
GS8. read equipment manuals and process documents to understand the equipment operations
GS9. read internal information documents sent by internal teams
GS10. discuss task lists, schedules, and activities with the higher authority
GS11. effectively communicate with the team members
GS12. question the higher authority to understand the nature of the problem and to clarify
GS13. note down the information gathered from the higher authority
GS14. attentively listen and comprehend the information given by the speaker
GS15. communicate clearly with the internal team and cross-department team on the issues

GS16. plan and organize the work order and jobs received from the higher authority
GS17. organize raw materials and packaging materials required for making fortified rice
GS18. plan and prioritize work based on the instructions received from the higher authority
GS19. plan to utilize time and equipment effectively
GS20. organize all process / equipment manuals to access information easily
GS21. support higher authority in solving problems by detailing out problems
GS22. discuss the possible solutions with the higher authority for problem-solving
GS23. apply information about maintenance processes & knowledge about tools
GS24. use common sense and make judgments on a day-to-day basis
GS25. use reasoning skills to identify and resolve basic problems
GS26. use intuition to detect any potential problems which could arise during operations
GS27. use acquired knowledge of the process for identifying and handling issues
GS28. Identify critical points in daily tasks and apply control measures to solve the issue

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for production	**3**	**4**	**-**	**1**
PC1. clean and maintain the work area as per organizational procedures	-	1	-	-
PC2. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards	1	1	-	-
PC3. inspect the tools, equipment, and machinery to ascertain suitability for use	1	1	-	1
PC4. report information such as faulty tools and equipment to the concerned authority	1	1	-	-
Prepare raw materials for production	**6**	**8**	**-**	**4**
PC5. • procure vitamin premix required for fortified edible oil production • premix: Vitamin A and D	1	1	-	-
PC6. procure the good quality edible oil to prepare for fortification process	1	2	-	1
PC7. ensure that the oil should contain a sufficient amount of antioxidants, either added or naturally	1	2	-	1
PC8. discard the raw material which does not meet the standards	1	1	-	-
PC9. ensure the obtained premix meets the standards set by FSSAI	1	1	-	1
PC10. • arrange and store the ingredients properly in a designated area • Ingredients: edible oil,, vitamin premix, water, aliquot oil	1	1	-	1
Perform production of pre-blend	**7**	**12**	**-**	**6**
PC11. heat the vitamin premix in a water bath between 40o to 450 Celsius for 10-15 minutes	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. maintain the temperature of water bath during heating process	1	1	-	-
PC13. fill some edible oil into a stainless-steel bucket for mixing process	1	1	-	1
PC14. pour the heated vitamin premix in stainless steel bucket having edible oil in prescribed amounts for the mixing process	1	2	-	1
PC15. add the aliquot oil in stainless steel bucket as antioxidant	1	1	-	1
PC16. mix the aliquot oil, heated vitamin premix and edible oil properly by using manual or automatic methods for preparing preblend	1	3	-	2
PC17. ensure that the full quantity of the premix available is used	-	1	-	-
PC18. • send the sample to quality lab for analysis • analysis: nutritional content, colour, impurities etc.	1	1	-	-
Perform production of fortified oil	**5**	**9**	**-**	**3**
PC19. add the preblend to oil tanks having agitators or circulation system via pipeline or manually for mixing process	1	2	-	-
PC20. ensure that the dosing system feeds the preblend in specified ratios as required to meet the fortified oil specification	1	1	-	1
PC21. • set the parameters of circulation system for efficient mixing • parameters: rotation speed, time of rotation etc.	1	2	-	1
PC22. mix the preblend and oil mixture in tanks for 30-40 minutes	1	2	-	1
PC23. ensure the steps of mixing are performed just prior to packaging	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. • send the sample of finished product to quality lab to check quality parameters • parameters: texture, quality, impurities, vitamin content, stability etc.	-	1	-	-
Monitor losses during fortification process	**3**	**4**	**-**	**2**
PC25. • monitor the process loss by controlling the factors affecting stability during the fortification process • process loss: applied heat, humidity during heating, presence or absence of air	1	2	-	1
PC26. monitor the stability of fortified oil during storage by using antioxidant for stabilization of vitamin A	1	1	-	1
PC27. monitor the loss of water-soluble vitamins during cooking process by using FSSAI approved Emulsifiers	1	1	-	-
Ensure proper storage and packaging of fortified oil	**6**	**13**	**-**	**4**
PC28. dispose the rejected batch safely following the standard practice of the organization	1	1	-	-
PC29. pack the fortified oil in plastic containers that protect it from direct sunlight	1	2	-	1
PC30. perform shelf-life study of fortified oil to maintain its shelf stability	1	2	-	1
PC31. report any non-conformity in the process to the higher authority	-	1	-	-
PC32. • ensure the mandatory information are printed on the label of the packing • Information: Name, Net weight, name of supplier, production date, list of ingredients in descending order, country of origin, lot identification, storage instructions, '+F' logo, etc.	1	2	-	1
PC33. store the fortified oil under dry and hygienic conditions for further transportation	1	2	-	1
PC34. store the tools and materials used during production safely at designated places	-	2	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC35. maintain the tools, equipment and materials used for production as per standard practices	1	1	-	-
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N1044
NOS Name	Carry out production of fortified edible oil
Sector	Food Processing
Sub-Sector	Food Grain Milling
Occupation	Processing-Food Grain Milling (including oilseeds)
NSQF Level	4
Credits	5
Version	1.0
Next Review Date	NA

FIC/N1045: Carry out production of fortified salt

Description

This unit is about producing fortified salt by using different machineries as per the specifications and standards of the organization.

Scope

The scope covers the following :

- This unit/task covers the following
- Prepare for production
- Prepare raw materials for production
- Perform production of pre-blend
- Perform production of fortified salt
- Monitor losses during fortification process
- Ensure proper storage and packaging of fortified salt

Elements and Performance Criteria

Prepare for production

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

PC1. clean and maintain the work area as per organizational procedures

PC2. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards

PC3. inspect the tools, equipment, and machinery to ascertain suitability for use

PC4. report information such as faulty tools and equipment to the concerned authority

Prepare raw materials for production

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

PC5. procure the iron and iodine premix for the salt fortification process

PC6. procure the raw salt to prepare for salt fortification process

PC7. • ensure the obtained salt meets the parameters as per standards of normal salt
• Parameters: shelf life, cooking quality, etc.

PC8. discard the raw material which does not meet the standards

PC9. ensure the obtained premix meets the standards set by FSSAI

PC10. • arrange and store the ingredients properly in a designated area
• Ingredients: raw salt, iron and iodine premix, stabilizer i.e. sodium hexametaphosphate (SHMP), soya stearin etc.

Perform production of pre-blend

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

PC11. receive the raw salt through the conveyors in production area

PC12. spray water on the raw salt while travelling on conveyors for cleaning and washing the foreign particle, impurities etc.

PC13. transfer the raw salt in a grinding machine and grind it into small size

PC14. sieve the grinded salt to obtain required size of salt granules

PC15. transfer some portion of grinded salt in the prescribed amounts into a blender for mixing process

PC16. add iron and iodine premix, sodium hexametaphosphate (SHMP) and soya stearin in the blender

PC17. mix the salt, iron and iodine premix, sodium hexametaphosphate (SHMP) and soya stearin in blender properly to prepare the preblend

PC18. ensure that all the ingredients mix with the salt properly

PC19. • send the sample to quality lab for analysis
• analysis: nutritional content, impurities etc.

Perform production of fortified salt

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

PC20. transfer the grinded raw salt in continuous mixers for mixing the preblend with it

PC21. add the preblend in continuous mixer for efficient mixing with the grinded raw salt

PC22. mix the salt and preblend properly for 10-15 minutes to obtain double fortified salt

PC23. monitor mixing process to achieve required homogeneity of the fortified salt throughout the process

PC24. pass the fortified salt to dryer for drying process through conveyor

PC25. • send the sample of finished product to quality lab to check quality parameters
• parameters: stability, quality, iodine and iron content, impurities etc.

Monitor losses during fortification process

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

PC26. • monitor the process loss by controlling the factors affecting stability during the fortification process
• process loss: humidity, drying steps

PC27. monitor the stability of fortified salt during storage

Ensure proper storage and packaging of fortified salt

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

PC28. dispose the rejected batch safely following the standard practice of the organization

PC29. pack the fortified salt in prescribed packing that protect it from sunlight and excess humidity

PC30. perform shelf-life study of fortified salt to maintain its shelf stability

PC31. report any non-conformity in the process to the higher authority

PC32. • ensure the mandatory information are printed on the label of the packing
• Information: Name, Net weight, name of supplier, production date, list of ingredients in descending order, country of origin, lot identification, storage instructions, '+F' logo, etc.

PC33. store the fortified salt under dry and hygienic conditions for further transportation

PC34. store the tools and materials used during production safely in designated places

PC35. maintain the tools, equipment and materials used for production as per standard practices

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. policies and procedures related to fortified rice production

KU2. tasks to be performed and processes involved in fortification production

KU3. types of tools, equipment and machinery used in fortified salt production
KU4. NIN technology and Micronutrient Initiative technology
KU5. process of making preblend for salt fortification
KU6. importance of soya stearin in DFS
KU7. instruments used for monitoring moisture content in salt
KU8. types of dryer and their parameters
KU9. optimal conditions required for drying the salt
KU10. different tests performed to check the quality
KU11. different losses during production and how to overcome them
KU12. procedure for storing, packing and labelling the fortified salt and the materials used in the process
KU13. instances that need to be reported to the concerned personnel and the methods used
KU14. types of information that is documented and the organisational practices for documenting them
KU15. Food Safety and Standards Authority of India (FSSAI) guidelines for production, packaging, labelling, storing, handling fortified salt
KU16. procedure to store the tools, equipment and materials used for production safely
KU17. procedure to maintain the tools, equipment and materials used for fortified rice production
KU18. safe disposal of waste and unwanted materials at the workplace

Generic Skills (GS)

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

GS1. note the raw materials used for production and the finished products produced
GS2. note the readings of the process parameters and necessary information to fill the process chart
GS3. note down observations (if any) related to the process
GS4. write information documents to internal departments/ internal teams
GS5. note down the data for ERP or as required by the organization
GS6. read and interpret the process required for producing various types of products
GS7. read and interpret and process flowcharts for all products produced
GS8. read equipment manuals and process documents to understand the equipment operations
GS9. read internal information documents sent by internal teams
GS10. discuss task lists, schedules, and activities with the higher authority
GS11. effectively communicate with the team members
GS12. question the higher authority to understand the nature of the problem and to clarify
GS13. note down the information gathered from the higher authority
GS14. attentively listen and comprehend the information given by the speaker
GS15. communicate clearly with the internal team and cross-department t
GS16. plan and organize the work order and jobs received from the higher authority
GS17. organize raw materials and packaging materials required for making fortified rice
GS18. plan and prioritize work based on the instructions received from the higher authority

GS19. plan to utilize time and equipment effectively
GS20. organize all process / equipment manuals to access information easily
GS21. support higher authority in solving problems by detailing out problems
GS22. discuss the possible solutions with the higher authority for problem-solving
GS23. apply information about maintenance processes & knowledge about tools
GS24. use common sense and make judgments on a day-to-day basis
GS25. use reasoning skills to identify and resolve basic problems
GS26. use intuition to detect any potential problems which could arise during operations
GS27. use acquired knowledge of the process for identifying and handling issues
GS28. Identify critical points in daily tasks and apply control measures to solve the issue

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for production	**3**	**4**	**-**	**1**
PC1. clean and maintain the work area as per organizational procedures	-	1	-	-
PC2. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards	1	1	-	-
PC3. inspect the tools, equipment, and machinery to ascertain suitability for use	1	1	-	1
PC4. report information such as faulty tools and equipment to the concerned authority	1	1	-	-
Prepare raw materials for production	**6**	**8**	**-**	**4**
PC5. procure the iron and iodine premix for the salt fortification process	1	1	-	1
PC6. procure the raw salt to prepare for salt fortification process	1	2	-	-
PC7. • ensure the obtained salt meets the parameters as per standards of normal salt • Parameters: shelf life, cooking quality, etc.	1	2	-	1
PC8. discard the raw material which does not meet the standards	1	1	-	-
PC9. ensure the obtained premix meets the standards set by FSSAI	1	1	-	1
PC10. • arrange and store the ingredients properly in a designated area • Ingredients: raw salt, iron and iodine premix, stabilizer i.e. sodium hexametaphosphate (SHMP), soya stearin etc.	1	1	-	1
Perform production of pre-blend	**8**	**14**	**-**	**6**
PC11. receive the raw salt through the conveyors in production area	1	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. spray water on the raw salt while travelling on conveyors for cleaning and washing the foreign particle, impurities etc.	1	2	-	1
PC13. transfer the raw salt in a grinding machine and grind it into small size	1	2	-	1
PC14. sieve the grinded salt to obtain required size of salt granules	1	2	-	1
PC15. transfer some portion of grinded salt in the prescribed amounts into a blender for mixing process	1	2	-	1
PC16. add iron and iodine premix, sodium hexametaphosphate (SHMP) and soya stearin in the blender	1	1	-	1
PC17. mix the salt, iron and iodine premix, sodium hexametaphosphate (SHMP) and soya stearin in blender properly to prepare the preblend	1	2	-	1
PC18. ensure that all the ingredients mix with the salt properly	-	1	-	-
PC19. • send the sample to quality lab for analysis • analysis: nutritional content, impurities etc.	1	1	-	-
Perform production of fortified salt	**5**	**8**	**-**	**4**
PC20. transfer the grinded raw salt in continuous mixers for mixing the preblend with it	1	1	-	-
PC21. add the preblend in continuous mixer for efficient mixing with the grinded raw salt	1	1	-	1
PC22. mix the salt and preblend properly for 10-15 minutes to obtain double fortified salt	1	2	-	1
PC23. monitor mixing process to achieve required homogeneity of the fortified salt throughout the process	1	1	-	1
PC24. pass the fortified salt to dryer for drying process through conveyor	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC25. • send the sample of finished product to quality lab to check quality parameters • parameters: stability, quality, iodine and iron content, impurities etc.	-	1	-	-
Monitor losses during fortification process	**2**	**3**	**-**	**1**
PC26. • monitor the process loss by controlling the factors affecting stability during the fortification process • process loss: humidity, drying steps	1	2	-	1
PC27. monitor the stability of fortified salt during storage	1	1	-	-
Ensure proper storage and packaging of fortified salt	**6**	**13**	**-**	**4**
PC28. dispose the rejected batch safely following the standard practice of the organization	1	1	-	-
PC29. pack the fortified salt in prescribed packing that protect it from sunlight and excess humidity	1	2	-	1
PC30. perform shelf-life study of fortified salt to maintain its shelf stability	1	2	-	1
PC31. report any non-conformity in the process to the higher authority	-	1	-	-
PC32. • ensure the mandatory information are printed on the label of the packing • Information: Name, Net weight, name of supplier, production date, list of ingredients in descending order, country of origin, lot identification, storage instructions, '+F' logo, etc.	1	2	-	1
PC33. store the fortified salt under dry and hygienic conditions for further transportation	1	2	-	1
PC34. store the tools and materials used during production safely in designated places	-	2	-	-
PC35. maintain the tools, equipment and materials used for production as per standard practices	1	1	-	-
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N1045
NOS Name	Carry out production of fortified salt
Sector	Food Processing
Sub-Sector	Food Grain Milling
Occupation	Processing-Food Grain Milling (including oilseeds)
NSQF Level	4
Credits	5
Version	1.0
Next Review Date	NA

FIC/N2031: Carry out production of fortified milk

Description

This unit is about producing fortified milk by using different machineries as per the specifications and standards of the organization.

Scope

The scope covers the following :

- This unit/task covers the following
- Prepare for production
- Prepare raw materials for production
- Perform production of milk preblend
- Perform production of fortified milk
- Monitor losses during fortification process
- Ensure proper storage and packaging of fortified milk

Elements and Performance Criteria

Prepare for production

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

PC1. clean and maintain the work area as per organizational procedures

PC2. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards

PC3. inspect the tools, equipment, and machinery to ascertain suitability for use

PC4. report information such as faulty tools and equipment to the concerned authority

Prepare raw materials for production

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

PC5. • procure food grade vitamin premix
• premix: Vitamin A and D

PC6. procure the raw milk to prepare fortified milk

PC7. check and conform the quality of milk through chemical parameters (CoB, MBRT, Urea and other test etc) and by verifying the quality report

PC8. discard the raw material which does not meet the standards

PC9. ensure the obtained premix meets the standards set by FSSAI

PC10. • arrange and store the ingredients properly in a designated area
• Ingredients: milk, vitamin premix

Perform production of milk preblend

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

PC11. heat the vitamin premix in a water bath between 40 to 45 degree Celsius and keep shaking the premix in between

PC12. mix aliquot of chilled milk and vitamin premix in the prescribed amount in a blender/mixer for mixing process by following organisational process

PC13. set the homogenizer and open valves to pass milk and premix through homogenizer for homogenization process and to produce milk preblend

PC14. monitor the mixing process to achieve required homogeneity throughout the process

PC15. • send the sample to quality lab for analysis
• analysis: nutritional content, colour, impurities etc.

Perform production of fortified milk

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

PC16. receive milk from the raw material storage area/holding tanks

PC17. add milk preblend in the milk tank having bulk milk in the specified quantity

PC18. allow the milk and preblend to mix properly by blending or stirring the mixture in milk tank

PC19. set and control metering devices to allow measured volume of milk for processing

PC20. open valves to pass measured quantity of milk through filter to remove sediment

PC21. adjust controls of the separator (like speed of spinner/agitator), and open valves to allow the milk to pass through the separator to separate cream from milk (skim milk)

PC22. set the homogenizer for required fat level in milk, and open valves to pass milk through homogenizer to produce standardized milk

PC23. set steam pressure and temperature of the pasteurizer, turn valves to allow steam, observe pressure and temperature, and open valves to allow milk into pasteurizer for pasteurization of milk

PC24. turn valve to circulate refrigerant through coils of the chilling tank to cool the fortified milk until packing

PC25. in continuous and fully automated process, set controls in PLC to allow milk to pass through filter to remove sediments, through separator to separate cream from milk, through homogenizer to produce standardized milk, pasteurizer to pasteurize milk and chilling tank to cool milk

PC26. • send the sample of finished product to quality lab to check quality parameters
• parameters: stability, quality, vitamin content, impurities etc.

Monitor losses during fortification process

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

PC27. • monitor the process loss by controlling the factors affecting stability during the fortification process
• process loss: applied heat, humidity during heating

PC28. monitor the stability of fortified milk during storage

Ensure proper storage and packaging of fortified milkEnsure proper storage and packaging of fortified milk

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

PC29. check the quality of fortified milk during various stages of process to conform its quality to organisation standards

PC30. load the packaging material in packaging machine, set the packaging machine for volume, weight, batch/date code etc and start packaging machine to pack milk

PC31. perform shelf-life study of fortified milk to maintain its shelf stability

PC32. report any non-conformity in the process to the higher authority

PC33. • ensure the mandatory information are printed on the label of the bag
• Information: Name, Net weight, name of supplier, production date, list of ingredients in descending order, country of origin, lot identification, storage instructions, '+F' logo, etc.

PC34. store the fortified milk under appropriate and hygienic conditions for further transportation
PC35. store the tools and materials used for production safely in designated places
PC36. maintain the tools, equipment and materials used for production as per standard practices

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

KU1. policies and procedures related to fortified milk production
KU2. types of vitamin A and D premix
KU3. tasks to be performed and processes involved in fortification production
KU4. types of tools, equipment and machinery used in fortified milk production
KU5. process of making premix for milk fortification
KU6. types of raw material (milk of various animals) and its products
KU7. production process, process parameters and product formulation for all types of products produced
KU8. types of machineries used in processing and machineries used in the organisation
KU9. handling all machineries
KU10. quality parameters, basic food microbiology and quality assessment based on physical parameters
KU11. different tests performed to check the quality
KU12. different losses during production and how to overcome them
KU13. procedure for storing, packing and labelling the fortified milk and the materials used in the process
KU14. instances that need to be reported to the concerned personnel and the methods used
KU15. types of information that is documented and the organisational practices for documenting them
KU16. Food Safety and Standards Authority of India (FSSAI) guidelines for production, packaging, labelling, storing, handling fortified milk
KU17. procedure to store the tools, equipment and materials used for production safely
KU18. procedure to maintain the tools, equipment and materials used for fortified milk production
KU19. safe disposal of waste and unwanted materials at the workplace

Generic Skills (GS)

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

GS1. note the raw materials used for production and the finished products produced
GS2. note the readings of the process parameters and necessary information to fill the process chart
GS3. note down observations (if any) related to the process
GS4. write information documents to internal departments/ internal teams
GS5. note down the data for ERP or as required by the organization
GS6. read and interpret the process required for producing various types of products

GS7. read and interpret and process flowcharts for all products produced
GS8. read equipment manuals and process documents to understand the equipment operations
GS9. read internal information documents sent by internal teams
GS10. discuss task lists, schedules, and activities with the higher authority
GS11. effectively communicate with the team members
GS12. question the higher authority to understand the nature of the problem and to clarify
GS13. note down the information gathered from the higher authority
GS14. attentively listen and comprehend the information given by the speaker
GS15. communicate clearly with the internal team and cross-department team on the issues
GS16. plan and organize the work order and jobs received from the higher authority
GS17. organize raw materials and packaging materials required for making fortified milk
GS18. plan and prioritize work based on the instructions received from the higher authority
GS19. plan to utilize time and equipment effectively
GS20. organize all process / equipment manuals to access information easily
GS21. support higher authority in solving problems by detailing out problems
GS22. discuss the possible solutions with the higher authority for problem-solving
GS23. apply information about maintenance processes & knowledge about tools
GS24. use common sense and make judgments on a day-to-day basis
GS25. use reasoning skills to identify and resolve basic problems
GS26. use intuition to detect any potential problems which could arise during operations
GS27. use acquired knowledge of the process process for identifying and handling issues
GS28. Identify critical points in daily tasks and apply control measures to solve the issue

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
Prepare for production	**3**	**4**	**-**	**1**
PC1. clean and maintain the work area as per organizational procedures	-	1	-	-
PC2. clean and maintain the machines and tools and sanitize them as per the organization's specifications and standards	1	1	-	-
PC3. inspect the tools, equipment, and machinery to ascertain suitability for use	1	1	-	1
PC4. report information such as faulty tools and equipment to the concerned authority	1	1	-	-
Prepare raw materials for production	**5**	**7**	**-**	**4**
PC5. • procure food grade vitamin premix • premix: Vitamin A and D	1	1	-	1
PC6. procure the raw milk to prepare fortified milk	1	1	-	-
PC7. check and conform the quality of milk through chemical parameters (CoB, MBRT, Urea and other test etc) and by verifying the quality report	1	2	-	1
PC8. discard the raw material which does not meet the standards	-	1	-	-
PC9. ensure the obtained premix meets the standards set by FSSAI	1	1	-	1
PC10. • arrange and store the ingredients properly in a designated area • Ingredients: milk, vitamin premix	1	1	-	1
Perform production of milk preblend	**5**	**8**	**-**	**4**
PC11. heat the vitamin premix in a water bath between 40 to 45 degree Celsius and keep shaking the premix in between	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC12. mix aliquot of chilled milk and vitamin premix in the prescribed amount in a blender/mixer for mixing process by following organisational process	1	2	-	1
PC13. set the homogenizer and open valves to pass milk and premix through homogenizer for homogenization process and to produce milk preblend	1	2	-	1
PC14. monitor the mixing process to achieve required homogeneity throughout the process	1	1	-	1
PC15. • send the sample to quality lab for analysis • analysis: nutritional content, colour, impurities etc.	1	1	-	-
Perform production of fortified milk	**10**	**15**	**-**	**6**
PC16. receive milk from the raw material storage area/holding tanks	1	1	-	-
PC17. add milk preblend in the milk tank having bulk milk in the specified quantity	1	1	-	-
PC18. allow the milk and preblend to mix properly by blending or stirring the mixture in milk tank	1	2	-	1
PC19. set and control metering devices to allow measured volume of milk for processing	1	1	-	1
PC20. open valves to pass measured quantity of milk through filter to remove sediment	1	1	-	-
PC21. adjust controls of the separator (like speed of spinner/agitator), and open valves to allow the milk to pass through the separator to separate cream from milk (skim milk)	1	1	-	1
PC22. set the homogenizer for required fat level in milk, and open valves to pass milk through homogenizer to produce standardized milk	1	2	-	1
PC23. set steam pressure and temperature of the pasteurizer, turn valves to allow steam, observe pressure and temperature, and open valves to allow milk into pasteurizer for pasteurization of milk	1	2	-	1

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC24. turn valve to circulate refrigerant through coils of the chilling tank to cool the fortified milk until packing	1	1	-	-
PC25. in continuous and fully automated process, set controls in PLC to allow milk to pass through filter to remove sediments, through separator to separate cream from milk, through homogenizer to produce standardized milk, pasteurizer to pasteurize milk and chilling tank to cool milk	1	2	-	1
PC26. • send the sample of finished product to quality lab to check quality parameters • parameters: stability, quality, vitamin content, impurities etc.	-	1	-	-
Monitor losses during fortification process	**2**	**3**	**-**	**1**
PC27. • monitor the process loss by controlling the factors affecting stability during the fortification process • process loss: applied heat, humidity during heating	1	2	-	-
PC28. monitor the stability of fortified milk during storage	1	1	-	1
Ensure proper storage and packaging of fortified milkEnsure proper storage and packaging of fortified milk	**5**	**13**	**-**	**4**
PC29. check the quality of fortified milk during various stages of process to conform its quality to organisation standards	1	1	-	-
PC30. load the packaging material in packaging machine, set the packaging machine for volume, weight, batch/date code etc and start packaging machine to pack milk	1	2	-	1
PC31. perform shelf-life study of fortified milk to maintain its shelf stability	1	2	-	1
PC32. report any non-conformity in the process to the higher authority	-	1	-	-

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC33. • ensure the mandatory information are printed on the label of the bag • Information: Name, Net weight, name of supplier, production date, list of ingredients in descending order, country of origin, lot identification, storage instructions, '+F' logo, etc.	1	2	-	1
PC34. store the fortified milk under appropriate and hygienic conditions for further transportation	1	2	-	1
PC35. store the tools and materials used for production safely in designated places	-	2	-	-
PC36. maintain the tools, equipment and materials used for production as per standard practices	-	1	-	-
NOS Total	**30**	**50**	**-**	**20**

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N2031
NOS Name	Carry out production of fortified milk
Sector	Food Processing
Sub-Sector	Dairy Products
Occupation	Processing-Dairy Products
NSQF Level	4
Credits	5
Version	1.0
Next Review Date	NA

Assessment Guidelines and Assessment Weightage

Assessment Guidelines

Assessment will be based on the concept of Independent Assessors empanelled with Assessment Agencies, identified, selected, trained and certified on Assessment techniques. These assessors would be aligned to assess as per the laid down criteria.

Assessment Agency would conduct assessment only at the training centres of Training Partner or designated testing centers authorized by FICSI.

Ideally, the assessment will be a continuous process comprising of three distinct steps:

A. Mid- term assessment

B. Term / Final Assessment

Each National Occupational Standard (NOS) in the respective QPs will be assigned weightage. Therein each Performance Criteria in the NOS will be assigned marks for theory and / or practical based on relative importance and criticality of function.

This will facilitate preparation of question bank / paper sets for each of the QPs. Each of these papers sets / question bank so created by the Assessment Agency will be validated by the industry subject matter experts through FICSI, especially with regard to the practical test and the defined tolerances, finish, accuracy etc.

The following tools are proposed to be used for final assessment:

i. Written Test: This will comprise of

(i) True / False Statements

(ii) Multiple Choice Questions

(iii) Matching Type Questions.

Online system for this will be preferred.

ii. Practical Test: This will comprise a test job to be prepared as per project briefing following appropriate working steps, using necessary tools, equipment and instruments. Through observation it will be possible to ascertain candidate's aptitude, attention to details, quality consciousness etc. The end product will be measured against the pre-decided MCQ filled by the Assessor to gauge the level of his skill achievements.

iii. Structured Interview: This tool will be used to assess the conceptual understanding and the behavioural aspects as regards the job role and the specific task at hand. Assessment will be based on the concept of Independent Assessors empanelled with Assessment

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.Plan for Fortified Food Production	30	50	-	20	100	10
FIC/N1042.Carry out production of fortified flour	47	76	-	29	152	35
FIC/N9906.Apply food safety guidelines in Food Processing	30	60	-	10	100	10
DGT/VSQ/N0101.Employability Skills (30 Hours)	20	30	-	-	50	10
Total	**127**	**216**	**-**	**59**	**402**	**65**

Elective: 1 Fortified Rice

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
FIC/N1043.Carry Production of Fortified Rice	45	75	-	30	150	35
Total	**45**	**75**	**-**	**30**	**150**	**35**

Elective: 2 Fortified Oil

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
FIC/N1044.Carry out production of fortified edible oil	30	50	-	20	100	35
Total	**30**	**50**	**-**	**20**	**100**	**35**

Elective: 3 Fortified Salt

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
FIC/N1045.Carry out production of fortified salt	30	50	-	20	100	35
Total	**30**	**50**	**-**	**20**	**100**	**35**

Elective: 4 Fortified Milk

National Occupational Standards	Theory Marks	Practical Marks	Project Marks	Viva Marks	Total Marks	Weightage
FIC/N2031.Carry out production of fortified milk	30	50	-	20	100	35
Total	**30**	**50**	**-**	**20**	**100**	**35**

Acronyms

NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualifications Pack
TVET	Technical and Vocational Education and Training
NOS	National Occupational Standard(s)
NSQF	National Skill Qualification Framework
QP	Qualification Pack
TVET	Technical and Vocational Education and Training
NOS	National Occupational Standard(s)
NSQF	National Skills Qualifications Framework
QP	Qualification Pack
TVET	Technical and Vocational Education and Training
MLF	Malolactic Fermentation
TA	Titratable Acid
pH	Power of Hydrogen
FSSAI	Food Safety and Standards Authority of India
GMPs	Good Manufacturing Practices
HACCP	Hazard Analysis Critical Control Point
VACCP	Vulnerability Assessment Critical Control Points
TACCP	Threat Assessment Critical Control Points
RCA	Root Cause Analysis
CAPA	Corrective Action Preventive Action
PPE	Personal Protective Equipment
CPR	Cardio-Pulmonary Resuscitation
GHP	Good Hygiene Practices

SOPs	Standard Operating Procedures
PwD	People with Disabilities

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.
Sector	Sector is a conglomeration of different business operations having similar businesses and interests. It may also be defined as a distinct subset of the economy whose components share similar characteristics and interests.
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