

National Occupational Standards

Introduction to Ketchup Processing & Packaging

Unit Code: FIC/N0212

Version: 1.0

NSQF Level: 3

Food Industry Capacity & Skill Initiative || Shriram Bharatiya Kala Kendra, 3rd floor, 1, Copernicus Marg, Mandi House, New Delhi
Delhi 110001 || email:santosh@ficsi.in

National Occupational Standards

Description

This OS is about processing fruits and vegetables to make ketchup by receiving, checking raw material quality, sorting, pulping, pasteurizing, cooking, juice extracting, clarifying, filtering, sampling for quality analysis, cooling, packaging and storing.

Scope

The scope covers the following :

- Prepare ketchup
- Food Safety
- Employability skills

Elements and Performance Criteria

Processing of Ketchup

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

- PC1.** estimate manpower and material requirements as per work requirement
- PC2.** ensure the required quantity of raw materials, packaging materials, equipment, and manpower for production
- PC3.** plan capacity utilization of machinery for the processing time, production order, and batch size
- PC4.** inspect the tools, equipment, and machinery to ascertain suitability for use
- PC5.** organize tools and equipment before starting the process
- PC6.** pump measured the quantity of tomato pulp/puree from the holding tank/ container into the cooking kettle
- PC7.** set temperature, pressure, stirrer speed, etc. of the cooking kettle, set mixing time, cooking time, cooking temperature, etc, open valves to admit steam through the kettle or light burner to heat tomato paste to the required temperature and thickness with continuous stirring to avoid sticking /scorching or stir manually
- PC8.** monitor pressure and temperature gauge and adjust controls to achieve the specified temperature to cook tomato paste
- PC9.** measure ingredients such as sugar, salt, spice powder, vinegar, etc. required for the batch, by referring to the formulation chart, and add as per sequence into the tomato pulp/puree in the kettle following sop and continue cooking
- PC10.** observe the cooking process and check the quality of the cooked product through feel, consistency, and test the viscosity using a viscometer to ensure completeness of the cooking process
- PC11.** check the quality of the cooked product through physical parameters such as colour, appearance, texture, taste, etc., sample and transfer to the quality lab for analysis and conformance to standards
- PC12.** start the pump or open the valve to transfer product into the filling tank of the packaging machine, or tilt the kettle or scoop contents out of the kettle into the container, manually transfer into the hopper of the filling machine for packaging, or manually filling hot product in packagin

National Occupational Standards

Post-production activities

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

- PC13.** clean the work area, types of machinery, equipment, and tools using approved cleaning agents and sanitizers
- PC14.** attend to minor repairs/faults of all machines (if any)
- PC15.** ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment, following the SOP or following suppliers' instructions/manuals
- PC16.** ensure that all equipment surfaces that come into contact with food are thoroughly cleaned and sanitized using CIP methods, with no visible residues or contamination
- PC17.** follow the prescribed CIP protocols, including the correct sequence of cleaning steps, appropriate use of cleaning agents, and adherence to specified times and temperatures

Food safety practices

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

- PC18.** follow Good Manufacturing Practices (GMP) at the workplace
- PC19.** follow Good Hygiene Practices (GHP) at the workplace appropriately
- PC20.** ensure proper tagging and numbering of all the equipment, machinery, tools, and other processing aids to keep proper traceability of the product being manufactured and handled at the site
- PC21.** ensure record keeping and documentation such as Daily Monitoring Sheets, Batch Traceability Records, machine records, product parameters, process control parameters, etc.
- PC22.** 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.
- PC23.** report any food safety and GMP issues to the supervisor, if any

Entrepreneurial Skills

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

- PC24.** understand the significance of employability skills in meeting the job requirements
- PC25.** identify constitutional values, civic rights, duties, personal values and ethics, and environmentally sustainable practices
- PC26.** 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.
- PC27.** speak with others using some basic English phrases or sentences
- PC28.** follow good manners while communicating with others
- PC29.** work with others in a team
- PC30.** communicate and behave appropriately with all genders and PwD
- PC31.** report any issues related to sexual harassment
- PC32.** use various financial products and services safely and securely
- PC33.** calculate income, expenses, savings etc.
- PC34.** approach the concerned authorities for any exploitation as per legal rights and laws
- PC35.** operate digital devices and use their features and applications securely and safely
- PC36.** use the internet and social media platforms securely and safely
- PC37.** identify and assess opportunities for potential business

National Occupational Standards

- PC38.** identify sources for arranging money and associated financial and legal challenges
- PC39.** identify different types of customers
- PC40.** identify customer needs and address them appropriately
- PC41.** follow appropriate hygiene and grooming standards
- PC42.** create a basic biodata
- PC43.** search for suitable jobs and apply
- PC44.** identify and register apprenticeship opportunities as per the requirement

Knowledge and Understanding (KU)

The individual on the job needs to know and understand:

- KU1.** methods to inspect tools, equipment and machinery
- KU2.** how to carry out processes such as peeling and slicing without damaging the fruits and vegetables
- KU3.** sorting and grading the fruits and vegetables based on their size, shape, colour, appearance, etc.
- KU4.** inspection techniques to detect spoilages, damaged fruits and vegetables and the procedure followed to discard them appropriately
- KU5.** food laws and regulations applicable to product packaging and labelling and the information to be printed on the packet labels
- KU6.** different types of packaging material to be used for the packaging of Ketchup
- KU7.** Product Promotion Techniques
- KU8.** branding guidelines
- KU9.** need for employability skills
- KU10.** different environmentally sustainable practices and their importance
- KU11.** different types of financial products and services
- KU12.** importance of maintaining safety and security in financial transactions
- KU13.** how to operate digital devices and applications safely and securely

Generic Skills (GS)

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

- GS1.** maintain work-related notes and records
- GS2.** read the relevant guides and literature to get the latest information about the field of work
- GS3.** communicate clearly and politely
- GS4.** perform basic calculations
- GS5.** listen attentively to understand the instructions being given
- GS6.** identify solutions to work-related issues
- GS7.** plan and prioritize tasks to ensure timely completion
- GS8.** make quick decisions in case of an emergency

National Occupational Standards

Assessment Criteria

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
<i>Processing of Ketchup</i>	15	40	-	5
PC1. estimate manpower and material requirements as per work requirement	-	-	-	-
PC2. ensure the required quantity of raw materials, packaging materials, equipment, and manpower for production	-	-	-	-
PC3. plan capacity utilization of machinery for the processing time, production order, and batch size	-	-	-	-
PC4. inspect the tools, equipment, and machinery to ascertain suitability for use	-	-	-	-
PC5. organize tools and equipment before starting the process	-	-	-	-
PC6. pump measured the quantity of tomato pulp/puree from the holding tank/ container into the cooking kettle	-	-	-	-
PC7. set temperature, pressure, stirrer speed, etc. of the cooking kettle, set mixing time, cooking time, cooking temperature, etc, open valves to admit steam through the kettle or light burner to heat tomato paste to the required temperature and thickness with continuous stirring to avoid sticking /scorching or stir manually	-	-	-	-
PC8. monitor pressure and temperature gauge and adjust controls to achieve the specified temperature to cook tomato paste	-	-	-	-
PC9. measure ingredients such as sugar, salt, spice powder, vinegar, etc. required for the batch, by referring to the formulation chart, and add as per sequence into the tomato pulp/puree in the kettle following sop and continue cooking	-	-	-	-
PC10. observe the cooking process and check the quality of the cooked product through feel, consistency, and test the viscosity using a viscometer to ensure completeness of the cooking process	-	-	-	-

National Occupational Standards

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC11. check the quality of the cooked product through physical parameters such as colour, appearance, texture, taste, etc., sample and transfer to the quality lab for analysis and conformance to standards	-	-	-	-
PC12. start the pump or open the valve to transfer product into the filling tank of the packaging machine, or tilt the kettle or scoop contents out of the kettle into the container, manually transfer into the hopper of the filling machine for packaging, or manually filling hot product in packagin	-	-	-	-
<i>Post-production activities</i>	5	10	-	2
PC13. clean the work area, types of machinery, equipment, and tools using approved cleaning agents and sanitizers	-	-	-	-
PC14. attend to minor repairs/faults of all machines (if any)	-	-	-	-
PC15. ensure periodic (daily/weekly/monthly/quarterly/half yearly/annual) maintenance of all machines and equipment, following the SOP or following suppliers' instructions/manuals	-	-	-	-
PC16. ensure that all equipment surfaces that come into contact with food are thoroughly cleaned and sanitized using CIP methods, with no visible residues or contamination	-	-	-	-
PC17. follow the prescribed CIP protocols, including the correct sequence of cleaning steps, appropriate use of cleaning agents, and adherence to specified times and temperatures	-	-	-	-
<i>Food safety practices</i>	5	10	-	3
PC18. follow Good Manufacturing Practices (GMP) at the workplace	-	-	-	-
PC19. follow Good Hygiene Practices (GHP) at the workplace appropriately	-	-	-	-

National Occupational Standards

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC20. ensure proper tagging and numbering of all the equipment, machinery, tools, and other processing aids to keep proper traceability of the product being manufactured and handled at the site	-	-	-	-
PC21. ensure record keeping and documentation such as Daily Monitoring Sheets, Batch Traceability Records, machine records, product parameters, process control parameters, etc.	-	-	-	-
PC22. 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.	-	-	-	-
PC23. report any food safety and GMP issues to the supervisor, if any	-	-	-	-
<i>Entrepreneurial Skills</i>	5	-	-	-
PC24. understand the significance of employability skills in meeting the job requirements	-	-	-	-
PC25. identify constitutional values, civic rights, duties, personal values and ethics, and environmentally sustainable practices	-	-	-	-
PC26. 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.	-	-	-	-
PC27. speak with others using some basic English phrases or sentences	-	-	-	-
PC28. follow good manners while communicating with others	-	-	-	-
PC29. work with others in a team	-	-	-	-
PC30. communicate and behave appropriately with all genders and PwD	-	-	-	-
PC31. report any issues related to sexual harassment	-	-	-	-

National Occupational Standards

Assessment Criteria for Outcomes	Theory Marks	Practical Marks	Project Marks	Viva Marks
PC32. use various financial products and services safely and securely	-	-	-	-
PC33. calculate income, expenses, savings etc.	-	-	-	-
PC34. approach the concerned authorities for any exploitation as per legal rights and laws	-	-	-	-
PC35. operate digital devices and use their features and applications securely and safely	-	-	-	-
PC36. use the internet and social media platforms securely and safely	-	-	-	-
PC37. identify and assess opportunities for potential business	-	-	-	-
PC38. identify sources for arranging money and associated financial and legal challenges	-	-	-	-
PC39. identify different types of customers	-	-	-	-
PC40. identify customer needs and address them appropriately	-	-	-	-
PC41. follow appropriate hygiene and grooming standards	-	-	-	-
PC42. create a basic biodata	-	-	-	-
PC43. search for suitable jobs and apply	-	-	-	-
PC44. identify and register apprenticeship opportunities as per the requirement	-	-	-	-
NOS Total	30	60	-	10

National Occupational Standards

National Occupational Standards (NOS) Parameters

NOS Code	FIC/N0212
NOS Name	Introduction to Ketchup Processing & Packaging
Sector	Food Processing
Sub-Sector	
Occupation	Processing-Fruits and Vegetables
NSQF Level	3
Credits	3
Minimum Job Entry Age	16
Minimum Educational Qualification & Experience	10th grade pass OR 8th Class pass with 3 Years of experience in Food Processing OR Previous relevant Qualification of NSQF Level 2.5 with 1.5 years of experience in Food Processing OR Previous relevant Qualification of NSQF Level 2 with 3 Years of experience in Food Processing
Version	1.0
Last Reviewed Date	18/02/2025
Next Review Date	18/02/2028
NSQC Clearance Date	18/02/2025
Reference code on NQR	NG-03-FI-03748-2025-V1-FICSI
NQR Version	1.0
CCN Category	1