

Control processing to produce ice cream

Overview

This standard covers the skills and knowledge needed for you to produce ice cream in food and drink manufacture and/or supply operations. Knowing how to produce the correct specification of ice cream is important to the production of a final product that adheres to regulatory food safety and organisational quality and yield specifications.

The raw material could be from a variety of sources (e.g. milk from sheep, goat, cow and buffalo).

You will need to know how to prepare equipment to produce ice cream and control the ice cream making process. You must also know how to adhere to regulatory standards and standard operating procedures. You must be able to apply your skills and knowledge within food safety regulations and any relevant international industry codes especially when referring to HACCP, TACCP and VACCP.

This standard is for you if you work in food and drink manufacture and/or supply operations and are involved in producing ice cream.

Control processing to produce ice cream

Performance criteria

You must be able to:

1. prepare relevant upstream pasteurisation, separation, mixing/blending and standardisation equipment for efficient preparation of milk and raw materials to produce the ice cream recipe
2. prepare to control ice cream processing equipment and associated compliance documentation
3. use the correct personal protective equipment
4. check organisational standard operating procedures and product recipes relating to the production of ice cream
5. check that all necessary plant, equipment, plans for production, ingredients and services are available and fit for use
6. check documentation to ensure plant is ready for use
7. start up and control dairy processing equipment within the limits of your responsibility
8. work at a pace suitable to meet the production plan
9. make adjustments to equipment to maintain organisational product specifications
10. take representative samples for testing adhering to organisational sampling plan within the limits of your responsibility
11. evaluate faults for impact on product and processing equipment operations within the limits of your responsibility
12. make dairy product available to next stage of processing or packaging
13. prepare for changeover of product recipe or packaging in line with organisational requirements
14. prepare to handover process on shift changeover in line with organisational requirements
15. deal with product waste in line with legislation and organisational requirements
16. liaise with relevant personnel to prepare plant for shutdown
17. process and route interphase product
18. establish and maintain effective spoken, written and electronic communication with relevant people
19. complete the necessary documentation and process to organisational requirements

Control processing to produce ice cream

Knowledge and understanding

You need to know and understand:

1. the food safety aspects of the production of ice cream and related products including HACCP, TACCP and VACCP
2. the dairy science underpinning ice cream production
3. the health and safety aspects associated with the process
4. how ice cream is classified and the key differences between dairy ice cream, cream ice and milk ice
5. the regulations relating to the composition requirements for different types of ice cream
6. the regulations relating to the heat treatment and storage of ice cream for sale
7. organisational specifications and equipment standard operating procedures relating to ice cream production
8. the effect of incorporating different amounts of air on how light the final product tastes
9. the key differences between equipment and processes in large and small scale craft production ice cream producing environments.
10. the effect of heat treatment, homogenisation, cooling, ageing and freezing on the final ice cream product quality and yield
11. the effect of mix composition, the amount of air incorporated (overrun) into the ice cream and the type of freezer on the freezing temperature
12. why freezing must take place quickly and its effect on ice crystal formation and the smoothness of the final ice cream product
13. the term "overrun" and its importance to ice cream specifications, quality yield and the economic value of the final ice cream product
14. why it is important to control storage temperature of ice cream
15. common faults found in ice cream and how they occur
16. how to maintain communication with relevant people when producing ice cream
17. how to control product temperature when storing and processing dairy products and ingredients used when making ice cream
18. why and how to control equipment to ensure the ice cream meets organisational final product quality, yield and productivity specifications
19. how to adjust ice cream processing in response to product quality tests
20. what the actions are to address variations in intake milk/whey fat levels, type of fat, environmental factors including seasonality and temperature
21. common sources of contamination during processing, how to avoid these and what might happen if this is not done
22. how to deal with product that can be re-cycled or re-worked
23. the hygienic design of ice cream plant
24. how the manufacture process and support operations use digital technologies rather than paper based systems to monitor and control production

Control processing to produce ice cream

Developed by	Improve
Version Number	3
Date Approved	30 Mar 2023
Indicative Review Date	30 Mar 2028
Validity	Current
Status	Original
Originating Organisation	Improve
Original URN	IMPDY107
Relevant Occupations	Food Preparation Trades, Manufacturing Technologies, Process Operatives, Process, Plant and Machine Operatives
Suite	Dairy
Keywords	Dairy; ice; cream; produce; food; drink; yield; quality; ingredients