
Overview

This standard covers the formation of sugar crystals and how their growth is controlled and used in the manufacture of confectionery. You also need to know how the process of inversion works, why it is used and understand the principles of the Maillard reaction.

This standard is about physically changing the properties of a product through organic or physical processes. It details the skills required to start up, run and shut down equipment, as well as being able to take action should operating problems occur. It is also about working to product specifications and production schedules. Complying with and understanding health and safety, food safety and organisational requirements are essential features of this standard.

This standard is for you if you require an understanding of the crystallisation and inversion of sugars during confectionery manufacture.

Performance criteria

You must be able to:

Prepare for crystallisation

1. prepare for crystallisation in accordance with the legal or regulatory requirements, the organisational health and safety, hygiene and environmental standards and instructions
2. check product specifications at the right time
3. set up equipment according to specification
4. check that material for crystallisation is available and fit for use
5. check that services meet requirements
6. start up the plant and check that it is running to specification
7. take action in response to operating problems
8. maintain communication in accordance with organisational requirements

Carry out crystallisation

9. carry out crystallisation in accordance with the legal or regulatory requirements, the organisational health and safety, hygiene and environmental standards and instructions
10. use equipment and check that it is supplied with materials and services
11. achieve the required output to the correct specification
12. check the product is transferred to the next stage in the manufacturing operation
13. take action in response to operating problems within the limits of your responsibility
14. maintain communication in accordance with organisational requirements

Finish crystallisation

15. finish crystallisation in accordance with the legal or regulatory requirements, the organisational health and safety, hygiene and environmental standards and instructions
16. check the specifications to time shut down
17. shut down equipment in accordance with organisational procedures
18. deal with items that can be re-cycled or reworked
19. dispose of waste in line with organisational requirements

-
20. make equipment ready for future use after completion of the process
 21. maintain communication in accordance with organisational requirements
 22. complete all necessary documentation in line with organisational requirements

Knowledge and understanding

You need to know and understand:

1. what the legal or regulatory requirements, the organisational health and safety, hygiene and environmental standards and instructions are and what may happen if they are not followed
2. the potential food safety risks and control procedures associated with sugar crystallisation and inversion processes
3. the purpose and importance of crystallisation
4. how sugar crystals are formed and how the process is controlled to achieve the required amount and size
5. what relevance agitation and degree of super-saturation has on the crystallisation process
6. the process involved in inversion and methods of production
7. why invert sugar is used
8. what are the characteristics of invert sugars
9. what happens when reducing sugars are heated in the presence of protein
10. the uses of the Maillard reaction
11. what equipment and tools to use and their correct condition
12. what materials to use and in what quantity
13. how to obtain and interpret the relevant process or ingredient specification
14. what recording, reporting and communication is needed and how to carry this out and the reasons why it is important to do so
15. what action to take when the process specification is not met
16. how to carry out the necessary pre start checks and why it is important to do so
17. how to follow the start up procedures for crystallisation and why it is important to do so
18. how to obtain the necessary resources for crystallisation
19. how to follow work instructions and why it is important to do so
20. common sources of contamination during processing, how to avoid these and what might happen if this is not done
21. how to operate, regulate and shut down the relevant equipment
22. when it is necessary to seek assistance and how to seek it
23. how to follow the relevant process control procedures and why it is important to do so
24. what the limits of your own authority and competence are and why it is important to work within them

-
- 25. how to deal with items that can be re-cycled or re-worked
 - 26. how to dispose of waste
 - 27. how to make equipment ready for future use

Developed by	NSAFD
Version Number	2
Date Approved	January 2019
Indicative Review Date	January 2023
Validity	Current
Status	Original
Originating Organisation	Improve
Original URN	IMPSC203K
Relevant Occupations	Process Operatives; Process, Plant and Machine Operatives; Plant and Machine Operatives; Manufacturing technologies
Suite	Sweet Confectionery
Keywords	Crystallisation; confectionery; sugars; super-saturation
