

## Overview

This standard is about the principles of freezing methods in food technology.

This standard is for you if you require a broad understanding of freezing technology and its effects on plant and animal tissues. You need to understand the physics of freezing and the importance of the thermal arrest period. You need to know the most effective means and methods of freezing food materials to produce the product quality required. You also need to know how the cold chain operates to support product quality and food safety.

## Performance criteria

You must be able to:      See  
IMPPO210S Control temperature reduction in food manufacture

## Knowledge and understanding

You need to know and understand:

- 1 how freezing acts as a preservation method for foods; the inhibition of microbial growth, retarding of enzyme and active chemicals
- 2 how freezing affects the storage life of foods by causing deterioration and dehydration
- 3 the process of freezing in foods; ice crystal formation, the concentration of dissolved substances, temperature requirements and tempering
- 4 the effect of freezing on plant cell material
- 5 the definition and importance of the Thermal Arrest Period to food product quality; large and small ice crystal formation
- 6 the effect of freezing on animal tissue
- 7 the meaning of the term Quick-freezing
- 8 the definition of the term Deep-freezing as defined by the International Institute of Refrigeration
- 9 how products can be Individually Quick Frozen (IQF) and the advantages of this method for vegetables and fruits
- 10 the use and functionality of the Immersion-freezing method in food technology
- 11 the use and functionality of the Plate freezing method on food technology
- 12 the use and functionality of the Blast freezer method in food technology
- 13 the use and functionality of Fluidised bed freezers in food technology
- 14 the use and functionality of Cryogenic freezers in food technology
- 15 the use and functionality of Liquid Carbon Dioxide freezers in food technology
- 16 how the principle of the cold chain works in the distribution of frozen foods from production to storage to wholesale distribution to retail sales and consumer use
- 17 the profile of freezing temperature maintenance across the cold chain

## Principles of freezing methods in food technology

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