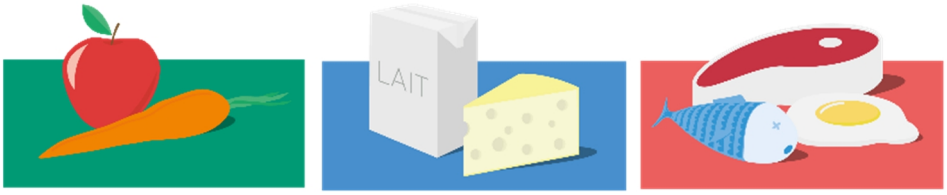
3.2.3

The cold chain

COLD

Cold is a well known means of preserving food, but it has only been used on a wide scale since the 19th century.

Cold plays its most major role in the long-distance transportation of food. It means that consumers have access to products which were not available before, such as fresh fruit and vegetables, dairy products and meat.



In the United States the first railway wagons chilled with natural ice appeared in 1880. Then boats fitted with cold storage rooms appeared. Rather than using natural ice, we very quickly looked for a way to create a cold atmosphere artificially. As a result, techniques for artificially making a cold environment developed from the middle of the 19th century. Such techniques use air, water, or gas such as ammonia to produce cold.

WHAT IS THE DIFFERENCE BETWEEN FREEZING AND DEEP-FREEZING?

Freezing and deep-freezing are two preserving techniques using cold to lower the temperature of food. What is the difference between these two techniques?

Freezing gradually lowers temperature. Water within the food is then transformed into large ice crystals. These crystals alter the texture and flavour of food.

Deep-freezing, on the other hand, chills food quickly. This means that the water within food crystallises very finely, and this reduces cell destruction, meaning that food retains its texture and flavour.

Be careful! Once food has been deep-frozen, it needs to be stored at a temperature which is lower or equal to -18°C. This temperature must be maintained all the way through the factory until the supermarket freezer. Only this process can guarantee the quality of the preserved product. Hence, refrigerated vehicles are needed for the transportation of deep-frozen food.

Keywords > Maintaining a low temperature

THE COLD CHAIN

You may be wondering if this is what is meant by the cold chain. You are right. The cold chain refers to the stages needed in the production of frozen food, such as conditioning, transportation and storage. Throughout these stages, food needs to be maintained below a certain temperature. Bacterial development can only be avoided by respecting the cold chain.

WHY SHOULD WE NEVER REFREEZE FOOD?

You may be wondering about one last question: Why should we never refreeze food? The answer is linked to the cold chain. When this chain is broken, this means that the product has been exposed to higher temperatures than it should have been. This break in the chain leads to rapid bacterial development and the shelf life of the food is shortened. When food is thawed out, it may be very dangerous health-wise to refreeze it. As soon as food has thawed, certain germs can start to develop. If these germs are ingested, they can cause food poisoning. This is the case with salmonella, staphylococcus and listeria. This can be fatal for people with lowered immune defences such as babies, pregnant women and elderly or sick people. Never take the risk of refreezing food!

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