9.4 Vacuum packaging (VP) SOP



Vacuum packaging (VP) and modified atmosphere packaging (MAP) can increase the shelf-life of chilled foods by limiting the growth of microorganisms. However, under certain circumstances, a bacterium called non-proteolytic Clostridium botulinum (C. botulinum) may grow in the absence of oxygen. This bacterium is able to grow and produce a harmful toxin at temperatures of 3°C and above.

It is important that VP chilled foods have appropriate controls in place to minimise the risk of this organism growing and producing harmful levels of toxin.

The absence of oxygen increases the probability of clostridium botulinum toxins being formed without the food showing any signs of spoilage to the consumer. Therefore it is possible for the product to contain lethal levels of toxin whilst it still looks and smells acceptable to eat.

The law requires that high risk foods are given a use by date rather than a best before date. High risk foods are those which are ready to eat without further processing such as cooking and which are capable of supporting the growth of bacteria.

Assuming that all food safety hazards have been controlled during production, the length of time that a vacuum packed ready to eat product will remain safe to eat is dependant on a number of factors. Current guidance suggests that the fundamental controlling factor in determining shelf-life is storage temperature, and that other controlling factors can extend the shelf life further.

Vacuum packed products stored at 8°C or less, with a shelf-life of 10 days or less, are considered to have minimal risk from clostridium botulinum and do not require any additional controlling factors.

Key controls :

- Separate RTE and non RTE equipment including vacuum packers
- Fully cooked above 75°C (less than 10 days shelf life)
- Minimum heat treatment of 90°C for 10 minutes or equivalent (over 10 days shelf life)
- Chilled below 8°C or less within 90 mins
- Stored below 5°C or less
- Temperature records
- Effective cleaning procedures
- Prevention of cross contamination

Carry out an assessment of controls

For vacuum packed products stored longer than 10 days at 8°C or less, the maximum shelf life should be determined based on the other controlling factors used. Other controlling factors include:

a) minimum heat treatment of 90°C for 10 minutes or equivalent

b) pH of 5 or less throughout the food

c) salt levels of 3.5% throughout the aqueous phase of the food

d) water activity of 0.97 or less throughout the food

e) a combination of the above factors a-e.

For shelf-lives greater than 10 days your documented food safety management system must be able to validate that such controls are in place and effective. It may be necessary to carry out end of shelf life testing to demonstrate this. This would involve storing the product under the required conditions before having it analysed at an accredited microbiological laboratory.

Poor quality foods should not be vacuum packed in an attempt to extend their shelf-life, nor should vacuum packing be used as a means of preserving left over food.

Do's and Dont's

Never use the same vacuum packing machine for raw and ready-to-eat foods. If you are doing both you must have a separate vacuum packer for each food.

Vacuum packing a product more than once should be avoided, as it becomes impossible to assess the shelf-life of the product.

During storage and preparation, the temperature of the food should be kept as low as possible, legally below 8°C and ideally below 5°C.

Ready to eat foods must be segregated from raw foods to prevent cross-contamination.

After cooking, meats should be covered, cooled rapidly and placed under refrigeration as soon as possible.

The type of bag or pouch used for vacuum packing must be suitable for its intended purpose, some lower quality bags can allow oxygen to permeate through to the product. Bags should be stored in an area where they are not at risk from airborne contamination. For example they should not be stored in an open butchery area.

Positioning of the vacuum packing machine is important as it may also be at risk of contamination.

Good personal hygiene and hand washing must be followed when vacuum packing, including handling equipment and the bags.

The vacuum packing machine must be thoroughly cleaned and disinfected before use and after.

Ensure the vacuum packing machine is in good working order and has regular maintenance checks.

After packing, the integrity of the heat seal should be checked on every bag. It is critical that a realistic shelf-life is applied to each product. In most cases this should be a maximum of 10 days, unless your risk assessment demonstrates otherwise.

Labelling and use-by date coding is important to ensure correct stock rotation and to provide information for customers. You should ensure that customers are aware of the limitations of vacuum packed products. Particularly the storage temperature requirements and the use-by date.

Staff who carry out vacuum packing must be suitably trained and competent to implement all of your food safety procedures.

Once opened, the shelf life of the food is 2 days maximum or less based on supplier instructions.