

SECTION 2 - OPERATIONAL STANDARDS

OS/21: Sous vide cooking

1.0 Introduction

- 1.1 A method of cooking in vacuum sealed pouches at lower temperatures for longer periods of time, however can present significant potential food safety risks and therefore must be adequately controlled.
- 1.2 Raw food is placed into pouches, sealed in a vacuum and subsequently food is cooked using precisely controlled heated methods, which maintains the integrity of ingredients and therefore produces foods with enhanced flavours.

2.0 Important aspects of sous vide cooking

- 2.1 Vacuum packing creates an anaerobic (oxygen-free) environment and for this reason high standards of food safety and food hygiene must be maintained to prevent the presence and growth of pathogenic bacteria such as; *Clostridium botulinum*, *Listeria monocytogenes*, *Salmonella spp.* etc.
- 2.2 Food cooked at low temperatures for extended periods of time may cause pathogenic bacteria to multiply rapidly, especially when exposed to temperatures within the 'danger zone' (5°C - 63°C), thus presenting a risk to the end consumer.
- 2.3 Once food has been cooked it must either be served immediately or chilled down rapidly and stored appropriately.

3.0 Equipment

- 3.1 Specialist equipment must be used, including vacuum packer, water bath, pouches and digital food thermometer.
- 3.2 All equipment must be clean, maintained in good working order and calibrated on a regular basis, where appropriate.

4.0 Pre-requisite to sous vide cooking

- 4.1 Prior to undertaking sous-vide cooking a flow chart must be completed which must identify all aspects of the time/temperature cooking combination, any processes applied to the dish and the purchasing specification. Refer to **HAZ/05: Sous vide flowchart**.
- 4.2 Time/temperature cooking combinations must not compromise the health and well-being of the end consumer. Campden BRI advises that a core temperature of not less than 60°C for 45 minutes should be used for foods cooked under vacuum conditions.
- 4.3 Where there is a need to cook products to ensure the destruction of *Listeria monocytogenes*, *Salmonella*, *E. coli* 0157 or other vegetative pathogens then the food business operator will need to prove that the cooking process will enable food to reach a 'core' temperature for the recommended time to ensure the food is safe to consume. Such temperatures would be:
 - 60°C for 45 minutes;
 - 65°C for 10 minutes;
 - 70°C for 2 minutes;
 - 75°C for 30 seconds; or
 - 80°C for 6 seconds

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- 4.4 If high-risk dishes are not going to achieve the lowest minimum ‘core’ temperature or equivalent as listed above the food business operator must verify safe methods. This could be achieved by having foods microbiologically tested.
- 4.5 A cooking trial must be undertaken for each specific dish to ensure that the time/temperature combination along with any processes applied do not render the food unsafe to eat.
- 4.6 Once it has been identified that a specific dish is safe to eat then there must be no deviation from the time/temperature combination, processes applied and the purchase specification.

5.0 The work area

- 5.1 Ensure that any sources of extraneous contamination (bacterial and physical) have been removed
- 5.2 Ensure that the work surface has been sanitised and remove any chemicals that may give rise to contamination.

6.0 Ingredients

- 6.1 Only high quality fresh ingredients should be used for this type of cooking as any off-flavours due to spoilage may be amplified.
- 6.2 Using fresh ingredients will assure a lower food spoilage bacteria count on commencement of chilled storage and ultimately the finished product will enjoy a longer refrigerated shelf life.
- 6.3 It is safer to use solid, not minced or punctured, pieces of meat, poultry, and fish. When food is punctured it becomes critical that, not only the surface, but the core of the food attains the correct time/temperature combination to allow for pasteurisation.
- 6.4 Prior to use all food must be stored in line with appropriate food safety procedures and at a temperature that does not exceed 3°C.

7.0 Preparation and cooking of food

- 7.1 All preparation and pre-cooking of food must be carried out in accordance with the appropriate food safety procedures. Refer **OS/05: Preparation of food** and **OS/06: Cooking of food**.

8.0 Sealing food pouches

- 8.1 Food must be decanted into a clean, appropriate food pouch and sealed in line with the appropriate procedure. Refer to **OS/18: Vac-packing of food**.

9.0 Storage of filled, sealed food pouches

- 9.1 All filled food pouches must be identified with a ‘production’ and ‘use-by’ date.
- 9.2 All sealed food pouches which are to be held in chilled storage must be stored at a temperature no higher than 3°C and must not have a shelf-life longer than 72 hours.
- 9.3 All sealed food pouches which are to be held in frozen storage must be frozen down to a temperature of -18°C by the quickest possible means and maintained at that temperature for the duration of storage, the latter of which must not exceed 2 months.

10.0 Cooking of food

- 10.1 Pre-set the water bath thermostat to the correct cooking temperature. It would be deemed ‘best-practice’ to set the thermostat 2.5 degrees higher than the required target temperature in order to achieve the correct ‘core’ temperature.

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- 10.2 Once the required temperature has been attained place the sealed food pouch into the water bath. Do not overload the water bath with food pouches as this can lead to uneven cooking. Food must be completely submerged during the cooking process.
- 10.3 If a food pouch balloons and floats to the surface it may well indicate a failed seal, the temperature is too hot and steam has formed within the pouch, or there may be a pinhole. In the event this happens the pouch must be discarded as the adequate transference of heat and effective pasteurisation can be brought into question.
- 10.4 Any leakage into the water bath should be addressed with immediate effect and the water changed.
- 10.5 Regular monitoring must be carried out to ensure that the correct water bath temperature and final core cooking temperature of the food are maintained. Time/temperature combinations are based on the temperature of food at the centre which is critical to food safety.
- 10.6 Time/temperature combinations and replenishing of the water at the end of each and every service must be documented on the appropriate control sheet. Refer to **TM/13: Sous vide cooking**.
- 10.7 On completion of cooking the core temperature of the food must be taken. There may be a need to rest and/or sear cooked meats/poultry in order to get a good finish and texture prior to service.

11.0 Post-cook chilling

- 11.1 If food is not to be consumed with immediate effect then there will be a need to chill it rapidly, this can be done by immersing food pouches into an ice bath e.g. ½ ice and ½ cold water.
- 11.2 Subsequent chilled/frozen storage must be in line with **Section 9** of this food safety procedure.

Version	Date of issue	Author	Endorsed by
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