

Firstly they need to consider whether the seafood will be hot or cold smoked, Hot smoking will typically result in a product that is classed as cooked / ready to eat. Cold smoking is usually for products such as cod/haddock which will require further cooking. The exception to this is cold smoked salmon which may be eaten without further cooking.

Cold smoked salmon that is destined for consumption without further cooking has to be frozen prior to cooking. However this doesn't apply to farmed salmon.

Legal / micro requirements

Below is a document summarising the key legal requirements for micro-criteria and temperature control. This doesn't go into great detail but clarifies the key requirements for different types of products. There's no specific legal requirement for cold smoked products but there are for hot smoked products.

HACCP

If producing a hot smoked product businesses will need to adopt a HACCP based system to deal with production, packing etc.

Business licensing

Because we're dealing with RTE foods, notably of animal origin there may be an issue with the registration of the premises. For example, if you are setting up a business to sell to the public through retail then you will need to register your business premises. Best advice on this is to contact the local EHO for clarification.

Shelf life & safety

This is highly variable depending on a number of factors including the extent of smoking, salt levels, storage temperature, type of fish, packaging type etc. For typical chilled/smoked foods, between 6 to 10 days is a rule of thumb.

However this can be extended with a heavier salt content, heavier smoke etc. Higher salt levels are what gives cold smoke salmon it's longer shelf life.

The Food Standards Agency have produced a useful guide to vac / modified atmosphere cooking in respect of control of Clostridium botulinum.

<http://www.food.gov.uk/multimedia/pdfs/publication/vacpacguide.pdf> This is something that would need to be considered as part of the business operations and testing

The Chilled Foods Association has guidance on shelf life of ready to eat foods (applied to hot smoked products). Essentially this reiterates the need for the food manufacturer to undertake testing to ensure that, by the end of shelf-life, the ready to eat food should still be within statutory limits. Obviously this relates only to the ready to eat products -

<http://www.chilledfood.org/new-ready-to-eat-foods-shelf-life-guidance-22-march-2010>

Useful guide for small retailers (from Powys Council) -

http://www.powys.gov.uk/uploads/media/small_retailers_vaccum_packing.pdf

Other legislation

One thing to consider with smoked products is contaminants legislation – this is a complex issue and I won't go into detail here. However here's a link to Seafish's B2B site and the legislation Department's contaminants page -

<http://www.seafish.org/b2b/subject.asp?p=79>

Of particular interest should be the PAH's.

Storage temperature – the attached summarises the legal requirements but ideally the storage temperatures should be less than 4degC.

Other¹ online training – there's a basic training course on modified atmosphere and vacuum packaging from the Food Standards Agency. I don't know if the customer can register to use it but going through each module gives some very useful basics -

<http://vacuumpackingtraining.food.gov.uk/introduction/>

Packaging

Modified atmosphere packaging (MAP) is usually used for cold smoked products i.e. cod, haddock. Vacuum packaging is more typically used for hot-smoked products i.e. mackerel

In terms of equipment suppliers it very much depends on the scale of what the customer is looking for (and we aren't allowed to recommend companies/services). Again there are a number of complexities – what packaging do you want to use, gauge of plastic required, rigidity of plastic etc.

Links to websites;

- PPMA – represents packaging and packaging equipment manufacturers
- Link to vac packaging equipment suppliers -
<http://www.ppma.co.uk/indexes/ukPkgMembers.asp?subId=337&Id=120>
- Here's their main search page (for searching for other machinery such as MAP) -
<http://www.ppma.co.uk/indexes/ukpkg.asp>
- For info on plastic / films, best thing to do is try and find local suppliers and talk through things with them. Search for 'vacuum pouches' or 'plastic trays', 'plastic film'.
Manufacturers of equipment can also help point people in the right direction.

This is a complicated subject and there's a lot of questions to be considered. This general response seeks to answer some of those questions.

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¹ In addition to Seafish's seafood smoking eLearning programme (www.seafoodacademy.org)

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Legal requirements associated with chilled foods and fishery products.

Key points are summarised below.

Temperature control

Legislation	Requirements
Statutory Instrument 2006/14 of the Food Hygiene Regulations (England) 2006	Standard requirements for England, Wales and Northern Ireland stipulate that food likely to support the growth of pathogenic micro-organisms or formation of toxins must be kept at a temperature of 8°C or below. This relates to the temperature of the food itself. It applies to foods including raw material and ingredients, at all stages of preparation, processing, transport, storage and display for sale within the manufacture, retail and catering sectors
Regulation 853/2004 of the European Parliament and of the Council of 29 April 2009 – specific hygiene rules for foods of animal origin.	Section VIII – Fishery products, Chapter VII – Storage of fishery products states that ‘fresh fishery products, thawed unprocessed fishery products and cooked and chilled products from crustaceans and molluscs must be maintained at a temperature approaching that of melting ice. There is no legal definition of this temperature but in fish technology terms this is 0 to 2°C

For species of fish affected by histamine temperatures should not be >4°C for more than four hours after initial chilling (Bremer *et al* 2003).

Microbiological requirements - Commission Regulation No 2073/2005 on the microbiological criteria for foodstuffs

Microbiological indicator	Products	Permitted levels
Salmonella	cooked crustaceans and molluscan shellfish and live bivalves	absence in 25g
E-coli	Shelled & shucked products of cooked crustaceans & molluscan shellfish	Mean =1cfu/g Max =10 cfu/g
Coagulase positive staphylococci	Shelled & shucked products of cooked crustaceans & molluscan shellfish	Mean =100 cfu/g Max =1000cfu/g
<i>Listeria monocytogenes</i>	Ready to eat foods only	At end of shelf life should not exceed 100 cfu/g. Absence in 25g prior to despatch from the processor
Salmonella	Live bivalve molluscs	Absence in 25g

E.coli	Live bivalve molluscs	230 MPN/100g of flesh and intra-valvular liquid
Histamine	Fishery products associated with a high amount of histamine	Mean =100mg/kg Max =200mg/kg

Health Protection Agency *Guidelines for assessing the microbiological safety of ready to eat foods* (Draft for consultation to 20/02/09) were used to interpret the results of some of the microbiological tests;

Microbiological indicator	Limits (All units in cfu/g)
Staphylococcus	>10 ⁴ and 20 - ≤10 ⁴ is unsatisfactory <20 is satisfactory
E-coli	Detected – unsatisfactory Not detected – satisfactory
Listeria	>10 ² and 10 - ≤10 ² is unsatisfactory <10 is satisfactory

Freshness quality - Total Volatile Base Nitrogen (TVBN) test - Commission Regulation no 2074/2005 – implementing measures for certain products

<http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2005R2074:20081028:EN:PDF>

Species	Prescribed limits
1. Sebastes spp.	25 mg/100g
Helicolenus dactylopterus	
Sebastichthys capensis.	
2. Species belonging to the Pleuronectidae family (with the exception of halibut: Hippoglossus spp.).	30 mg/100g
3. Salmo salar	35 mg/100g
species belonging to the Merlucciidae family	
species belonging to the Gadidae family.	