



Factsheet - Cooling of cooked meats

Slow cooling after cooking of large joints of meats or meat products represents a hazard because it may result in the growth of micro-organisms* which could include pathogenic bacteria*, spore formers* and toxin forming species*. This fact sheet summarises advice formulated following extensive research by the Camden & Chorleywood Food Research Association¹:

Bacteria may be present in cooked meats as a result of:

1. failure of the cooking process to achieve adequate temperatures to kill bacteria
2. survival and subsequent growth of heat resistant spores
3. post cooking contamination

Three critical stages of cooling are identified – from final cooking temperature down to 50°C, from 50 to 12°, and 12 to 5°C. The period of time that food remains in the band 40°C to 15°C is critical in terms of controlling bacterial growth.

For a typical **uncured** cooked meat product made from good quality raw materials under hygienic conditions and with sound process controls, it is suggested that the following limitations for cooling time from completion of the cooking process should apply:

Cooling times (hours)	Good practice	Maximum
Uncured products		
Down to 50°C	1	2.5
From 50°C to 12°C	6	6
From 12°C to 5°C	1	1.5
Total	8	10

For **cured** products these times may safely be increased by about 25% if necessary i.e.

Cooling times (hours)	Good Practice	Maximum
Cured products		
Down to 50°C	1.25	3.25
From 50°C to 12°C	7.5	7.5
From 12°C to 5°C	1.25	1.75
Total	10	12.5

Continued overleaf

If the product may contain high levels of spores (for instance if it contains significant levels of herbs and spices throughout the product) **the above cooling times may not be safe and advice should be sought.**

If a product is reheated as part of the process, i.e. to obtain a superficially smoked or roasted product the total cooling time for both parts of the cooking process should not exceed the times given above.

Cooking and cooling in a sealed container will minimise the risk of post cooking contamination, but may slow down the cooling process. Where cooling rates are satisfactory the product should be kept in the container. If cooling is slowed down, the product should be removed from the container after the **exterior** of the product has fallen to 5°C.

This advice is given to assist butchers and other small scale cooked meat producers and caterers to comply with the law. Failure to meet the requirements stated is not in itself an offence, and cooked meats producers should determine themselves whether the methods of cooling they are currently using achieve the rates of cooling indicated. Advice on improving cooling times should be sought if these rates cannot be achieved.

While slow cooling is a potential hazard, and the above guidance should be followed, the greater hazard is that of post cooking contamination: during the cooling process or during storage, wrapping, display or sale of the finished product.

Further information and advice can be obtained from the Commercial team at the address at the top of the page. Queries can also be e-mailed to environmental.health@wychavon.gov.uk

* *Bacteria – simple life forms with one cell*

Micro-organisms – small life forms such as bacteria and viruses

Spore – protective coating formed by some bacteria to help them survive cooking or drying

Toxin – a poison produced by some bacteria and moulds

Pathogenic – disease causing

¹ Identification and Prevention of Hazards associated with Slow Cooling of Hams and other large Cooked Meats and Meat Products, Camden & Chorleywood Food Research Association, 1998

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