Food Safety
AUTHORITY OF IRELAND

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Advice for Caterers on Serving Burgers that are Safe to Eat

- Cook minced meat burgers fully to ensure they are safe to eat. Caterers should not serve, offer or advertise undercooked or 'pink' burgers.
- Fully cooked means cooked to a temperature of 75°C in the core (i.e. thickest part) of the food, or to an equivalent temperature-time combination provided in this factsheet.
- Colour is not a reliable indicator of thorough cooking
- Failure to serve minced meat burgers that are safe to eat can make people seriously ill and leave a food business operator open to legal action.

Everybody running a food business has the same legal obligation – to sell or serve food that is safe to eat. When cooking and serving minced meat burgers, cook them fully to guarantee any harmful microorganisms present, e.g. bacteria, are destroyed.

What is the difference in risk between cooking minced meat burgers and steak (or other whole cuts of meat)?

Microbial contamination is usually present on the exposed surface of a steak and other whole cuts of meat while the internal muscle is largely sterile. When meat is minced, microorganisms that are on the surface of the meat become mixed throughout. This is why minced meat burgers have to be cooked thoroughly, but beef steaks may be cooked rare, once the surfaces have been cooked.

Producing minced meat burgers that are safe to eat

As a food business operator, you are obliged by law to have in place, a food safety management system based on hazard analysis and critical control point (HACCP) principles. This means having procedures in place to identify the hazards in food and eliminate or reduce them to an acceptable level. As part of your food safety management system, you must have evidence that your procedures are valid and effective.

Hazard identification in the case of raw minced meat is straightforward. The raw meat can be contaminated with microorganisms such as Shiga toxin-producing *Escherichia coli* (STEC) and *Salmonella* that can cause serious illness. For example, STEC can cause kidney failure or death, particularly in vulnerable groups such as children under 5 years of age or the elderly.

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A study carried out in Ireland in 2013 showed that raw minced beef burgers and minced beef samples from retail and catering premises were contaminated with STEC and *Salmonella*. STEC was detected in 2.5% of samples and *Salmonella* in 0.1% of samples[1].

Therefore, to ensure that minced meat burgers are safe to eat, they should be cooked to a core temperature of 75°C or an equivalent temperature-time combination provided in the table below. In HACCP terms, the cooking step is the critical control point (CCP) and 75°C is the critical limit. To ensure that the cooking method achieves this temperature, regular checks should be carried out on the core temperature of minced meat burgers using a sanitised probe thermometer, as colour alone is not a reliable indicator. Any deviation from thorough cooking is legally considered as a significant change to your activities and must be notified to the Health Service Executive.

What is considered an 'equivalent cook' to 75°C for beef burgers?

In 2018, the FSAI published an opinion from its Scientific Committee[2] which includes a table of equivalent temperature-time combinations for thorough cooking of beef burgers.

Table of equivalent core temperature-time-cooking combinations for thorough cooking of beef burgers

Beef Burger Core Temperature (°C)	Time Beef Burger Must be Held at the Core Temperature (hours, minutes and seconds)
60	1 hour, 32 minutes, 50 seconds
61	1 hour, 3 minutes, 15 seconds
62	43 minutes, 5 seconds
63	29 minutes, 21 seconds
64	20 minutes
65	13 minutes, 38 seconds
66	9 minutes, 17 seconds
67	6 minutes, 19 seconds
68	4 minutes, 19 seconds
69	2 minutes, 56 seconds
70	2 minutes
71	1 minute, 22 seconds
72	56 seconds
73	38 seconds
74	26 seconds
75	18 seconds* (see footnote below)

*The guidance in this factsheet to cook to a core temperature of 75°C, rather than precisely 75°C for 18 seconds, is on the basis that 18 seconds is such a short time that once it had been confirmed that the core temperature is at 75°C it is reasonable to assume that 75°C for 18 seconds has been reached.

[1] Food Safety Authority of Ireland (2013) *Study on Microbiological Safety of Raw Minced Beef and Beef Burgers on Retail Sale in Ireland*

[2] Food Safety Authority of Ireland (2018) *An Investigation of the Most Appropriate z-value to be used in Calculating 'Equivalent Cooks' for Beef Burgers in Food Business Establishments* https://www.fsai.ie/WorkArea/DownloadAsset.aspx?id=16111

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Deviations from 75°C or equivalent temperature-time provided in this factsheet

You are required to demonstrate, as part of a documented food safety management system, that any deviation from thorough cooking is scientifically valid i.e. will achieve **≥6 log reduction of pathogens** to ensure the production of safe food. Scientific validation is very complex and requires technical microbiological expertise in order to ensure that a robust study is designed. Reliance on cooking methods which have not been scientifically validated to produce safe minced meat burgers, carries a serious risk of making people sick. Your environmental health officer will require you to produce your scientific validation. Failure to do this leaves you open to legal action.

Customer requests for undercooked minced meat burgers and disclaimer notices on menus

Customer requests for undercooked, rare or medium minced meat burgers:

- Do not exempt you from your duty to sell safe food or from potential prosecution, and
- Must not be facilitated unless you have scientifically valid procedures incorporated in your food safety management system

Placing a disclaimer notice on a menu which advises of the dangers of consuming undercooked minced meat burgers does not exempt you from your obligation under food law to serve only safe food.