



Guidance Document for Nitrate/Nitrite Sampling of Meat Products

The use of sodium and potassium nitrates and nitrites in cured meat products must comply with the provisions set out in Regulation 1333/2008/EC as amended on food additives. This Regulation has been transposed into Irish legislation by S.I. No. 330 of 2015.

EC Regulation 1333/2008/EC.pdf

All sampling referred to in this document that is intended for official control purposes should only be carried out by an authorised officer and should only be undertaken under requisition from, or by arrangement with, the Public Analyst Laboratories (PALs) in Dublin, Cork or Galway. Local authority samples and Department of Agriculture, Food and the Marine samples should also be sent to the PALs for analysis.

Official control samples must be accompanied by the completed National Sample Submission Form (NSSF) available from the relevant laboratory (PAL Dublin, PAL Cork and PAL Galway) and a separate form must be completed for each sample. For derogated products, the appropriate product derogation category as set out in **Appendix I** should be clearly stated on the form.

Note:

PALs will be only able to process samples during designated weeks. They do not have the facilities to store samples sent early or process samples that are sent in late. PAL Dublin, Cork and Galway can accept follow-up samples for testing at any time.

The Environmental Health Service (EHS) and the PALs agree a programme of sampling and testing of cured meats and brines each year as part of the National Chemical Food Sampling Programme.

The veterinary inspector will be notified by the local authority veterinary service in advance, of the number of samples to send and the dates these should be submitted.

Controls on nitrate and nitrite in cured meat products are based on the in-going amount of the additives unless there is a specific derogation contained in the legislation for that particular product which permits levels to be based on residual amounts in the product.

The following process should be followed to determine whether a particular product is compliant with the requirements of Regulation 1333/2008/EC as amended and should be read in conjunction with that legislation.

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1. Determine whether there is a Derogation for the Product

Non-derogated products

Non-derogated products are:

- Meat products which are cured by an injection process, possibly followed by a short period of immersion curing (for less than three days)
- Dry cure products which are dry cured for less than four days are also considered to be non-derogated
- Sterilised meat products ($F_0^1 > 3.00$) are also considered to be non-derogated products and should meet the criteria laid down in Annex II to Regulation 1333/2008/EC
- Cure-in-the-bag products are injected with curing solution, and not immersed, therefore this type of product is considered to be a non-derogated product and falls under the general meat products category (08.3.1 or 08.3.2)
- Cured tongue which is not pre-cooked

Maximum levels for nitrates and nitrites in non-derogated products are listed under food categories 8.2, 8.3.1 and 8.3.2 of Regulation 1333/2008/EC. The use of sodium and potassium nitrate is only permitted in non heat-treated meat products but nitrate may be present in some heat-treated meat products resulting from the natural conversion of nitrites to nitrates in a low-acid environment.

Derogated products

These are meat products which are produced by 'traditional' curing processes and for which derogations were initially provided for in Directive 2006/52/EC. Derogated products are only believed to be about 2% of the Irish market. These products have now been transferred to Regulation 1333/2008 where they are listed in italics under Annex II to the Regulation and more specifically under food category 8.3.4, i.e. "Traditionally cured meat products with specific provisions concerning nitrites and nitrates". Due to the traditional nature of these products, they are considered to be particular Member State national products. In such products, the maximum limits for both nitrates and nitrites relate to the maximum **residual levels** permitted in the finished product at the end of the production process. Typically, the product is cured by injection with curing solution followed by immersion in brine, or by immersion only, for three days or more. Starter cultures may also be used, e.g. those produced following natural regeneration of the brine, or by use of commercial cultures. An example of a traditional Irish product listed in the legislation is Wiltshire bacon. This traditional immersion cured product is regulated under food category 8.3.4.1 of the regulation.

There are also certain traditional dry cured products which are dry cured for more than four days. The dry curing process involves dry application of curing mixture containing nitrites and/or nitrates, salt and other components to the surface of the meat followed by a period of stabilisation/maturation. Derogation provisions are also included for these under food category 8.3.4.2 of Regulation 1333/2008.

¹ This F_0 value is the time in minutes at the reference temperature of 121°C required to provide the equivalent lethal heat dose necessary for the appropriate *Clostridium botulinum* spore destruction order to obtain minimum health protection or commercial sterility of the product.

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Derogated products must meet the definitions and amounts outlined in the Restrictions/Exceptions column of Regulation 1333/2008/EC, as well as the footnotes outlined in the tables under the general food category 8.3.4 of the regulation. The details of these products are set out in Appendix I to this guidance. Products failing to comply with these requirements are considered to be non-derogated products. The legislative limits for non-derogated products are outlined in annex II of the regulation and more specifically under food categories 8.2 (meat preparations), 8.3.1 (non heat-treated meat products) and 8.3.2 (heat-treated meat products) of the legislation.

Note:

The notes in the Restrictions/Exceptions column to the legislation specify in detail the production method used for the preparation of the derogated products. When interpreting the legislation, the information contained in Annex II of Regulation 1333/2008 for each specific product should be read in conjunction with the general description for the type of product in question. Attention should also be given to the various footnotes accompanying the maximum levels laid down for the specific products in question.

For example, in order to meet the specifications for Wiltshire bacon, the product would need to comply with: the description in the general heading of food category 8.3.4.1 for traditional immersion cured meat products, i.e. would need to be immersed in a curing solution containing nitrites and/or nitrates, salt and other components and the manufacturing process for Wiltshire bacon as laid down in the first two rows of the **Restrictions/Exceptions column** for food category 8.3.4.1, i.e. “meat is injected with curing solution followed by immersion curing for 3 to 10 days. The immersion brine solution also includes microbiological starter cultures”. In addition, the footnotes accompanying the maximum levels laid down for nitrites (39), and nitrates (39) and (59) in Wiltshire cured bacon need to be adhered to, e.g. footnote 39 states that the maximum levels are based on the “maximum residual amount, residue level at the end of the production process”

and

footnote 59 states that “Nitrates may be present in some heat-treated meat products resulting from natural conversion of nitrites to nitrates in a low acid environment”.

This product may also undergo further treatment, e.g. smoking, cooking at the end of the curing process.

See **Appendices II** and **III** for examples of process flow diagrams for derogated products (Wiltshire cured bacon/ham and dry cured bacon/ham).

‘Similar products’

Regulation 1333/2008/EC contains the words “*and similar products*” beside many, but not all, of the food categories for which derogations have been granted, i.e. 8.3.4.1, 8.3.4.2 and 8.3.4.3. There is no definition in the legislation of what is meant by the term ‘similar products’ but they are described in recital 5 of the old Directive 2006/52/EC as “*products which are not specifically named in the Directive, but which are traditionally produced in a similar manner*” and they, can if necessary, be categorised in accordance with articles 19 and 28 of Regulation 1333/2008/EC. **In the case of ‘similar products’, the production methods described in the Restrictions/Exceptions column to food categories 8.3.4.1, 8.3.4.2 and 8.3.4.3 under Part E of Annex II to the Regulation should be used to decide whether a product is similar or not.** For example, if there is another ‘traditional’ Irish product which is produced in a similar way to one of the products named in the Regulation when the production methods are compared, then this product could be considered a ‘similar product’ and therefore, would be subject to the same maximum level as the named product.

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2. Determine Compliance with Legislative Limits for Nitrate/Nitrite

Note:

The levels stated in Regulation 1333/2008/EC are for the sodium salts of nitrate and nitrite. The conversion factors below must be used if potassium salts are used:

- To convert sodium nitrite to potassium nitrite: multiply by 1.23
- To convert sodium nitrate to potassium nitrate: multiply by 1.19

e.g. the maximum amount of sodium nitrite which can be added to meat products in general is 150 mg/kg, which is equivalent to 185mg/kg potassium nitrite. Also, the maximum amount of sodium nitrate which can be added to non heat-treated meat products is 150mg/kg, which is equivalent to 179mg/kg potassium nitrate.

Sampling of non-derogated products

Controls for non-derogated products (food categories 8.2, 8.3.1 and 8.3.2) are based on in-going amounts and therefore it is appropriate to sample and analyse the brine used in the production of the product. The variables considered most important in ensuring compliance with legislation are the volume of brine injected into the cuts of meat being cured, and the size of the individual cuts, with the largest injection volume/smallest cut of meat being deemed to be most at risk of non-compliance. Therefore, these parameters should also be assessed when undertaking sampling.

Please refer to **Appendix IV**: Completion of the NSSF - Section "Nitrates and Nitrites in Cured Meats".

Test the brine using the following protocol:

Gently mix the brine to ensure the brine is homogenous.

1. Take a minimum of 250ml of freshly made up brine before injection commences. Brine samples must be submitted in screw cap jars or bottles (similar to those used for sampling for microbiological analysis).
2. Brine samples must be stored under refrigerated conditions and protected from light², and forwarded to the laboratory as soon as possible after sampling, in a sealed insulated container. Brine samples should not be frozen.
3. Determine target injection rate in conjunction with the food business operator for particular cuts of meat taking account of the smallest cuts available at the time of sampling as these are most at risk of being non-compliant.
4. Select at least three of the smallest individual pieces of meat and weigh them individually prior to injection with brine.
5. Weigh the same portions again following injection with brine by the food business operator.

² Nitrate levels are known to deplete in the presence of light as nitrate gets converted into amino acids and proteins. As a result, samples should be protected from light.

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The following examples show how the in-going amount of nitrate or nitrite can be calculated.

Example 1:

Weight of meat before injection	= 1kg
Weight of meat after injection	= 1.5kg
Weight of brine added	= 0.5kg
Analysed concentration of NO ₂ in brine	= 270mg/kg (lab result)
Therefore in-going amount of NO ₂	=
<u>Analysed concⁿ of brine (mg/kg) x weight of brine added (kg)</u>	= $\frac{270 \times 0.5}{1.5} = 90\text{mg/kg}$
Weight of the meat after injection (kg)	1.5
Therefore in-going amount of NO ₂	= 90mg/kg Compliant sample

Example 2:

Weight of meat before injection	= 0.4kg
Weight of meat after injection	= 1.2kg
Weight of brine added	= 0.8kg
Analysed concentration of NO ₂ in brine	= 255mg/kg (lab result)
Therefore in-going amount of NO ₂	=
<u>Analysed concⁿ of brine (mg/kg) x weight of brine added (kg)</u>	= $\frac{255 \times 0.8}{1.2} = 170\text{mg/kg}$
Weight of the meat after injection (kg)	1.2
Therefore in-going amount of NO ₂	= 170mg/kg Non-compliant sample

The average of the determined concentrations of nitrate/nitrite in the (at least) three pieces of meat should be used when determining whether the manufacturer's process results in production of compliant product.

Maximum in-going amounts for non-derogated products

	Non heat-treated processed meat	Heat-treated processed meat
Nitrite	150mg/kg	150mg/kg
Nitrate	150mg/kg	Not allowed

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For non-derogated dry cured products, samples of the dry cure mix should be taken and cuts of meat weighed before addition and after application of the cure.

Cure-in-the-bag products are injected with curing solution and are not immersed. Therefore, it is possible to accurately regulate the in-going amount of curing solution used for these types of products. As a result, these products fall under the general meat product categories (08.3.1 or 08.3.2) and not in the derogations for traditional immersion cured meat products.

Sampling of derogated products

Controls for derogated products are based on residual rather than in-going amounts and therefore, it is appropriate that end product is sampled and analysed.

Based on testing product for residual amounts:

1. The sample must be taken at the point of sale/dispatch
2. The minimum weight of the sample for analysis should be 400g
3. Samples should be taken as a cross section from the middle of the piece being tested. Samples must not be chopped, minced etc
4. Samples should be placed in a sealed container, vacuum packed if possible or in sealed plastic bags
5. Samples must be stored under refrigerated conditions and forwarded to the laboratory in a sealed insulated container as soon as possible after sampling. Samples of meat product can also be frozen for transfer to the laboratory

Follow-up in the event of non-compliant product being identified

In all cases where non-compliant product is identified, whether for derogated or non-derogated product, the result should be followed up with the food business operator to determine the reason for the breach and to agree remedial action to address the problem. The result should be notified to the Rapid Alert Team of the Food Safety Authority of Ireland (FSAI) (rapidalert@fsai.ie) and if needed, advice can also be sought from the FSAI on appropriate follow-up measures.

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Appendix 1

Non-derogated Meat Product Categories

08.2 Meat preparations as defined by Regulation (EC) No 853/2004

E number	Name	Maximum level (mg/l or mg/kg as appropriate)	Footnotes	Restrictions/Exceptions
E249-250	Nitrites	150	(7)	Only <i>lomo de cerdo adobado</i> , <i>pincho moruno</i> , <i>careta de cerdo adobada</i> , <i>costilla de cerdo adobada</i> , <i>Kasseler</i> , <i>Bräte</i> , <i>Surfleisch</i> , <i>toorvorst</i> , <i>šašlôkk</i> , <i>ahjupraad</i> , <i>kiełbasa surowa biała</i> , <i>kiełbasa surowa metka</i> , and <i>tatar wołowy (danie tatarskie)</i>

(7): Maximum amount that may be added during manufacturing, expressed as NaNO₂ or NaNO₃

08.3 Meat products

08.3.1 Non heat-treated meat products

E number	Name	Maximum level (mg/l or mg/kg as appropriate)	Footnotes	Restrictions/Exceptions
E249-250	Nitrites	150	(7)	
E251-252	Nitrates	150	(7)	

(7): Maximum amount that may be added during manufacturing, expressed as NaNO₂ or NaNO₃

08.3.2 Heat-treated meat products

E number	Name	Maximum level (mg/l or mg/kg as appropriate)	Footnotes	Restrictions/Exceptions
E249-250	Nitrites	150	(7) (59)	Except sterilised meat products (Fo > 3,00)
E249-250	Nitrites	100	(7) (58) (59)	Only sterilised meat products (Fo > 3,00)

(7): Maximum amount that may be added during manufacturing, expressed as NaNO₂ or NaNO₃

(58): Fo-value 3 is equivalent to 3 minutes heating at 121°C (reduction of the bacterial load of one billion spores in each 1,000 cans to one spore in a thousand cans)

(59): Nitrates may be present in some heat-treated meat products resulting from natural conversion of nitrites to nitrates in a low-acid environment

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Derogated Meat Product Categories

08.3.4 Traditionally cured meat products with specific provisions concerning nitrites and nitrates

08.3.4.1 Traditional immersion cured products (meat products cured by immersion in a curing solution containing nitrites and/or nitrates, salt and other components)

E number	Name	Maximum level (mg/l or mg/kg as appropriate)	Footnotes	Restrictions/Exceptions
E249-250	Nitrites	175	(39)	Only Wiltshire bacon and similar products: Meat is injected with curing solution followed by immersion curing for 3 to 10 days. The immersion brine solution also includes microbiological starter cultures
E251-252	Nitrates	250	(39) (59)	Only Wiltshire bacon and similar products: Meat is injected with curing solution followed by immersion curing for 3 to 10 days. The immersion brine solution also includes microbiological starter cultures
E249-250	Nitrites	100	(39)	Only Wiltshire ham and similar products: Meat is injected with curing solution followed by immersion curing for 3 to 10 days. The immersion brine solution also includes microbiological starter cultures
E251-252	Nitrates	250	(39) (59)	Only Wiltshire ham and similar products: Meat is injected with curing solution followed by immersion curing for 3 to 10 days. The immersion brine solution also includes microbiological starter cultures
E251-252	Nitrates	250	(39) (59)	Only Wiltshire ham and similar products: Meat is injected with curing solution followed by immersion curing for 3 to 10 days. The immersion brine solution also includes microbiological starter cultures
E249-250	Nitrites	175	(39)	Only Entremeada, entrecosto, chispe, orelheira e cabeca (salgados), toucinho fumado and similar products: Immersion cured for 3 to 5 days. Product is not heat-treated and has a high water activity
E251-252	Nitrates	250	(39) (59)	Only Entremeada, entrecosto, chispe, orelheira e cabeca (salgados), toucinho fumado and similar products: Immersion cured for 3 to 5 days. Product is not heat-treated and has a high water activity
E249-250	Nitrites	50	(39)	Only cured tongue: Immersion cured for at least 4 days and pre-cooked
E251-252	Nitrates	10	(39) (59)	Only cured tongue: Immersion cured for at least 4 days and pre-cooked
E249-250	Nitrites	150	(7)	Only kylmäsavustettu poronliha/kallrökt renkött: Meat is injected with curing solution followed by immersion curing. Curing time is 14 to 21 days followed by maturation in cold-smoke for 4 to 5 weeks

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08.3.4 Traditionally cured meat products with specific provisions concerning nitrites and nitrates

08.3.4.1 Traditional immersion cured products (meat products cured by immersion in a curing solution containing nitrites and/or nitrates, salt and other components)

E number	Name	Maximum level (mg/l or mg/kg as appropriate)	Footnotes	Restrictions/Exceptions
E251-252	Nitrates	300	(7)	Only kylmäsavustettu poronliha/kallrökt renkött: Meat is injected with curing solution followed by immersion curing. Curing time is 14 to 21 days followed by maturation in cold-smoke for 4 to 5 weeks
E249-250	Nitrites	150	(7)	Only bacon, filet de bacon and similar products: Immersion cured for 4 to 5 days at 5 to 7°C, matured for typically 24 to 40 hours at 22°C, possibly smoked for 24 hrs at 20 to 25°C and stored for 3 to 6 weeks at 12 to 14°C
E251-252	Nitrates	250	(7) (40) (59)	Only bacon, filet de bacon and similar products: Immersion cured for 4 to 5 days at 5 to 7°C, matured for typically 24 to 40 hours at 22°C, possibly smoked for 24hrs at 20 to 25°C and stored for 3 to 6 weeks at 12 to 14°C.
E249-250	Nitrites	50	(39)	Only rohschinken, nassgepökelt and similar products: Curing time depending on the shape and weight of meat pieces for approximately 2 days/kg followed by stabilisation/maturation
E251-252	Nitrates	250	(39)	Only rohschinken, nassgepökelt and similar products: Curing time depending on the shape and weight of meat pieces for approximately 2 days/kg followed by stabilisation/maturation

(7): Maximum added amount, expressed as NaNO₂ or NaNO₃

(39): Maximum residual amount, residue level at the end the production process, expressed as NaNO₂ or NaNO₃

(40): Without added nitrites

(59): Nitrates may be present in some heat-treated meat products resulting from natural conversion of nitrites to nitrates in a low-acid environment

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08.3.4.2 Traditional dry cured products (dry curing process involves dry application of curing mixture containing nitrites and/or nitrates, salt and other components to the surface of the meat followed by a period of stabilisation/maturation)

E number	Name	Maximum level (mg/l or mg/kg as appropriate)	Footnotes	Restrictions/Exceptions
E249-250	Nitrites	175	(39)	Only dry cured bacon and similar products: Dry curing followed by maturation for at least 4 days
E251-252	Nitrates	250	(39) (59)	Only dry cured bacon and similar products: Dry curing followed by maturation for at least 4 days
E249-250	Nitrites	100	(39)	Only dry cured ham and similar products: Dry curing followed by maturation for at least 4 days
E251-252	Nitrates	250	(39) (59)	Only dry cured ham and similar products: Dry curing followed by maturation for at least 4 days
E251-252	Nitrates	250	(39) (59)	Only jamon curado, paleta curada, lomo embuchado y cecina and similar products: Dry curing with a stabilisation period of at least 10 days and a maturation period of more than 45 days
E249-250	Nitrites	100	(39)	Only presunto, presunto da pa and paio do lombo and similar products: Dry cured for 10 to 15 days followed by a 30 to 45-day stabilisation period and a maturation period of at least 2 month
E251-252	Nitrates	250	(39) (59)	Only presunto, presunto da pa and paio do lombo and similar products: Dry cured for 10 to 15 days followed by a 30 to 45-day stabilisation period and a maturation period of at least 2 months
E251-252	Nitrates	250	(39) (40) (59)	Only jambon sec, jambon sel and other similar dried cured products: Dry cured for 3 days + 1 day/kg followed by a 1-week post-salting period and an ageing/ripening period of 45 days to 18 months
E249-250	Nitrites	50	(39)	Only rohschinken, trockengepökelt and similar products: Curing time depending on the shape and weight of meat pieces for approximately 10 to 14 days followed by stabilisation/maturation
E251-252	Nitrates	250	(39) (59)	Only rohschinken, trockengepökelt and similar products: Curing time depending on the shape and weight of meat pieces for approximately 10 to 14 days followed by stabilisation/maturation

(39): Maximum residual amount, residue level at the end the production process, expressed as NaNO₂ or NaNO₃

(40): Without added nitrites

(59): Nitrates may be present in some heat-treated meat products resulting from natural conversion of nitrites to nitrates in a low-acid environment

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08.3.4.3 Other traditionally cured products (immersion and dry cured processes used in combination or where nitrite and/or nitrate is included in a compound product or where the curing solution is injected into the product prior to cooking)

E number	Name	Maximum level (mg/l or mg/kg as appropriate)	Footnotes	Restrictions/Exceptions
E249-250	Nitrites	50	(39)	Only rohschinken, trocken-/nasgepökelt and similar products: Dry curing and immersion curing used in combination (without injection of curing solution). Curing time depending on the shape and weight of meat pieces for approximately 14 to 35 days followed by stabilisation/maturation
E251-252	Nitrates	250	(39) (59)	Only rohschinken, trocken-/nasgepökelt and similar products: Dry curing and immersion curing used in combination (without injection of curing solution). Curing time depending on the shape and weight of meat pieces for approximately 14 to 35 days followed by stabilisation/maturation
E249-250	Nitrites	50	(39)	Only jellied veal and brisket: Injection of curing solution followed, after a minimum of 2 days, by cooking in boiling water for up to 3 hours
E251-252	Nitrates	10	(39) (59)	Only jellied veal and brisket: Injection of curing solution followed, after a minimum of 2 days, by cooking in boiling water for up to 3 hours
E251-252	Nitrates	300	(40) (7)	Only rohwürste (salami and kantwurst): Product has a minimum 4-week maturation period and a water/protein ratio of less than 1,7
E251-252	Nitrates	250	(40) (7) (59)	Only Salchichon y chorizo tradicionales de larga curacion and similar products: Maturation period of at least 30 days
E249-250	Nitrites	180	(7)	Only vysočina, selský salám, turistický trvanlivý salám, poliDan, herkules, lovecký salám, dunjaská klobása, paprikás and similar products: Dried product cooked to 70°C followed by 8 to 12-day drying and smoking process. Fermented product subject to 14 to 30-day three-stage fermentation process followed by smoking
E251-252	Nitrates	250	(40) (7) (59)	Only saucissons sec and similar products: Raw fermented dried sausage without added nitrites. Product is fermented at temperatures in the range of 18 to 22°C or lower (10 to 12 °C) and then has a minimum ageing/ripening period of 3 weeks. Product has a water/protein ratio of less than 1,7

(7): Maximum added amount, expressed as NaNO₂ or NaNO₃

(39): Maximum residual amount, residue level at the end the production process

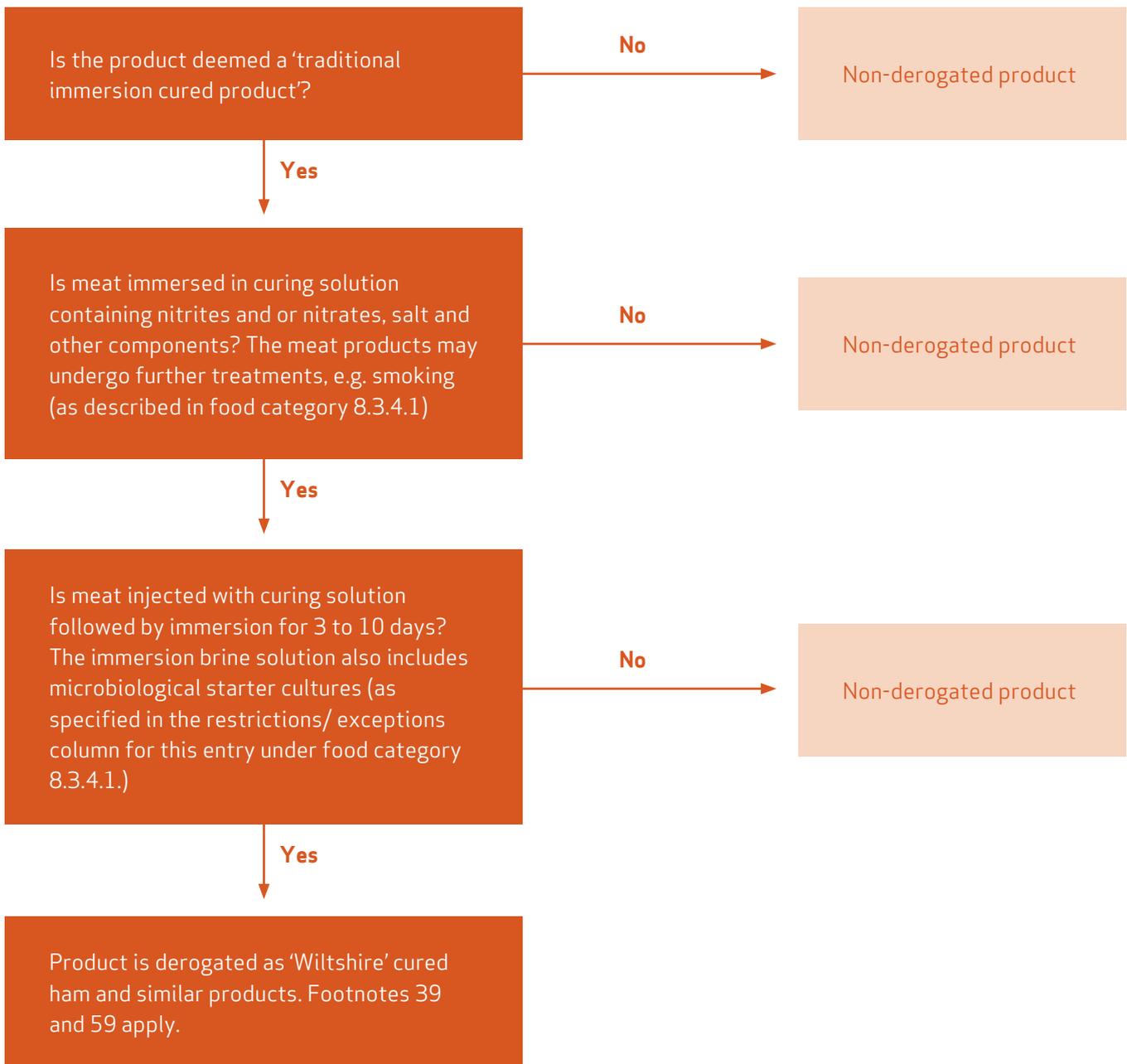
(40): Without added nitrites

(59): Nitrates may be present in some heat-treated meat products resulting from natural conversion of nitrites to nitrates in a low-acid environment

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Appendix II

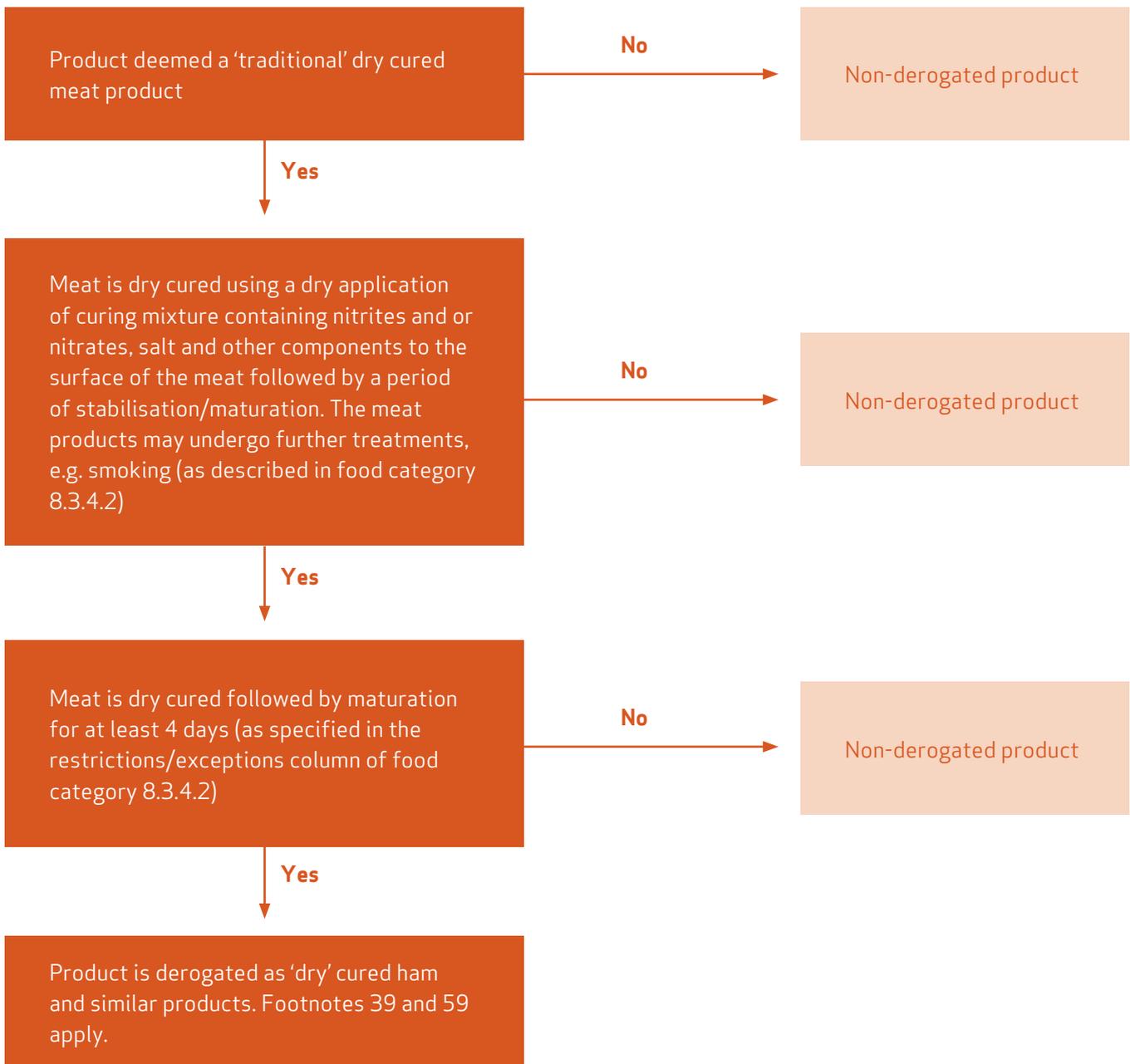
Process Flow Diagram for Wiltshire Ham and Similar Products in accordance with Regulation 1333/2008



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Appendix III

Process Flow Diagram for Dry Cured Ham and 'Similar Products' in Accordance with Regulation 1333/2008



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Appendix IV

Explanatory Notes for Completion of the National Sample Submission Form (NSSF) - Section “Nitrates and Nitrites in Cured Meats”

This section gives details of the nature of the sample submitted, along with the category of product (as defined in Regulation 1333/2008/EC) into which the product is deemed to fall.

How do I determine whether a product is considered to be a non-derogated product or derogated product under Regulation 1333/2008?

Directive 95/2/EC, as it was originally adopted, laid down maximum residual levels for nitrates and nitrites in various meat products. By contrast, Directive 2006/52/EC amended Directive 95/2/EC and introduced the principle recommended in the EFSA opinion of 2003, which concluded that it is the added rather than the residual amounts of these additives that contribute to the inhibitory activity against *C. botulinum*. Therefore, in Directive 2006/52/EC, a maximum in-going amount for potassium and sodium nitrite (E249 and E250) of 150mg/kg was established for meat products in general, and 100mg/kg as an in-going amount for these additives in sterilised meat products.

This same principle as well as the levels for nitrates was transferred to the new Additives Regulation (Regulation 1333/2008/EC) and, in the case of potassium nitrate (E251) and sodium nitrate (E252), a general maximum in-going amount of 150mg/kg has also been established for non heat-treated meat products. Heat-treated meat products are no longer permitted to contain nitrates. This restriction was based on the EFSA opinion which indicated that nitrates per se have no direct activity against *C. botulinum*, rather they are converted by certain bacteria to nitrite during long periods of curing and therefore, effectively act as a reservoir for nitrite production. In its proposal, the Commission considered that the use of nitrate would therefore, not be necessary in products which have been heat-treated, to the extent that any bacteria have been destroyed (in such conditions, the nitrate could not reduce to nitrite and would therefore be redundant).

Specific derogations are provided for certain traditional meat products where it is not possible to control in-going amounts of nitrate or nitrite because of the nature of the traditional manufacturing process used in their preparation. In such products, which are identified and described in Part E of Annex II under food category 8.3.4 to the Regulation, controls are based on residual amounts.

See following examples:

- Traditional immersion cured meat products: Wiltshire bacon, Wiltshire ham and similar products
- Traditional dry cured meat products: dry cured bacon, dry cured ham and similar products

How do I decide whether a product is heat-treated or not within the meaning set out in Regulation 1333/2008/EC?

Regulation 1333/2008/EC permits nitrate to be added to non heat-treated products. The use of nitrate is not considered necessary in products which have been heat-treated “to the extent that any bacteria have been destroyed”. It follows therefore, that the relevance of any heat treatment and the use of nitrates needs to take into account the stage at which the heat treatment is applied and the effectiveness of any heat treatment in eliminating micro-organisms that could convert the nitrate to nitrite, the form which is effective against *Clostridium botulinum*. For example, a piece of bacon or ham is cooked before consumption (and possibly before purchase); however, this level of heat treatment could not be considered to negate the need for nitrates at the earlier stages of preparation. Cooked bacon and ham should therefore be classified as non heat-treated products.

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For example, a piece of bacon or ham is cooked before consumption (and possibly before purchase). However, this level of heat treatment could not be considered to negate the need for nitrates at the earlier stages of preparation. Cooked bacon and ham should therefore be classified as non heat-treated products.

Permitted levels of nitrates will depend on whether the product in question falls into the general (non heat-treated) meat product category or into one of the derogated categories.

Products that should be considered as heat-treated include many products which are cooked after canning, for example:

- Canned cooked ham
- Canned cooked tongue

If a product can be considered to be derogated from standard controls, how do I decide which category it falls into?

During the negotiations of the legislation Ireland sought and received derogations for controls to be based on residual amounts of two types of traditionally produced products. These were the 'Wiltshire cured bacon and ham' and 'dry cured bacon and ham'. These products are unique to Ireland and the UK where they serve well established, traditional consumer markets. In both of these cases, maximum residual levels at the end of the production process apply for nitrate and nitrite, and the levels are the same as those that were previously permitted in Directive 95/2/EC for such products. Through consultation with the Irish meat industry, it has been revealed that these two products will only represent about 2% of the Irish market.

In order to meet the criteria for the derogated products, which include Wiltshire cured bacon and ham, and dry cured bacon and ham, the manufacturing process described in the Restrictions/Exceptions column and the applicable footnotes in the traditional meat food category (8.3.4) under annex II, Part E of Regulation 1333/2008/EC need to be met.

In addition, the term 'similar products' in the Regulation is meant to cover products which are not specifically named in the Regulation, but which are traditionally produced in the same manner and comply with the manufacturing/processing criteria listed in the footnotes. This provision was intended to cover products which may have been omitted from the Regulation when it was originally drawn up. In terms of whether a product is similar or not, it was foreseen that this would be decided on a case-by-case basis. In addition, it was foreseen in the Regulation that if interpretation issues arose or problems were identified in deciding whether a product fell in under a certain category or not then they would be dealt with in accordance with articles 19 and 28 of Regulation 1333/2008/EC. This basically means that the issue would be referred to the Standing Committee in Brussels where an opinion would be delivered on whether the product could be deemed as a 'similar product' or not.

Other meat products which are not mentioned or described in the Annex are considered to fall under the general meat products category where the maximum amount of nitrite or nitrate permitted is based on the in-going amount.