

Summary of the legal requirements for the production of Mechanically Separated Meat (MSM); November 2012

This summary is primarily intended to assist food business operators (FBOs) of establishments approved to produce MSM and to their official controllers. It does not go into the details on labelling requirements for the final consumer.

MSM PRODUCTION	Observations/Comments
<p>Definition/Approval <i>Regulation 853/2004 Article 4 and Annex I point 1.14</i></p>	<ul style="list-style-type: none"> • “Mechanically separated meat or MSM means the product obtained by removing meat from flesh-bearing bones after boning or from poultry carcasses, using mechanical means resulting in the loss or modification of muscle fibre structure.” • Establishment must be approved for MSM production.
<p>Raw material (bones from poultry/pigs) <i>Paragraph 3, CHAPTER II, SECTION V, ANNEX III, of Regulation (EC) 853/2004</i></p>	<ul style="list-style-type: none"> • Raw material, both for deboning and MSM production, must have originated from establishments approved for the handling of fresh meat. The following must not be used; <ul style="list-style-type: none"> - Poultry (the feet, neck skin and head) and , - Pigs (the bones of the head, feet, tails, femur, tibia, fibula humerus, radius, and ulna).
<p>MSM produced using the techniques that do not alter the structure of the bones and Calcium content is not significantly higher than that of minced meat.</p> <p>“Subtype I MSM “ (for the purpose of this summary)</p> <p><i>Paragraph 3, CHAPTER III, SECTION V, ANNEX III, of Regulation (EC) 853/2004</i></p> <p><i>And CHAPTER IV: LABELLING</i></p>	<ul style="list-style-type: none"> • Raw material for deboning (i.e. bone in carcass meat) from an on-site slaughterhouse must not be more than seven days old; otherwise raw material for deboning must be no more than five days old. However, poultry carcasses must be no more than three days old. The ages specified above refer to the time elapsed after slaughter during before which the deboning must have been carried out. • Mechanical separation must take place immediately after deboning. • If this subtype of MSM is not used (i.e. incorporated into another product) immediately after being obtained, it must be wrapped or packaged and then chilled to a temperature of not more than 2 °C, or frozen to -18 °C. These temperatures must be maintained during storage and transport. • If this subtype of MSM complies with the food safety microbiological criteria (see below), it can be used in preparations that are clearly not intended to be consumed without undergoing heat treatment and in meat products. • Wrapped and packaged product (MSM), when placed on the wholesale market, must be accurately described on the packaging and on the commercial document/delivery note in accordance with the traceability requirements of Regulation (EU) 931/2011. • Packages for final consumers containing this subtype of MSM must include in the ingredient list that MSM has been used and must bear a notice that such products should be cooked before consumption, for example in not ready-to-eat burgers and sausages.

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<p>MSM produced by different production techniques than the above</p> <p><i>“Subtype II MSM” (for the purpose of this summary)</i></p> <p><i>Paragraph 4, CHAPTER III, SECTION V, ANNEX III, of Regulation (EC) 853/2004</i></p> <p><i>And CHAPTER IV: LABELLING</i></p>	<ul style="list-style-type: none">• Raw material for deboning (i.e. bone in carcase meat) from an on-site slaughterhouse must not be more than seven days old, and no more than five days old if sourced from other slaughterhouses /cutting plants, and for all poultry carcasses three days. The ages specified above refer to the time elapsed after slaughter during before which the deboning must have been carried out.• If mechanical separation is carried out later, then the bones must be stored and transported at the temperature of not more than 2 °C or not more than - 18 °C if frozen.• Flesh bearing bones obtained from frozen carcasses must not be re-frozen.• If MSM is not used (i.e. incorporated into another product) within 1 hour of being obtained, then it must be chilled immediately to a temperature of not more than 2 °C, or frozen to -18 °C.• If after chilling MSM is not processed within 24 hours it must be frozen within 12 hours of production and must reach internal temperature of not more then - 18 °C within six hours.• Frozen MSM must be wrapped and packaged and must not be stored more than three months at -18 °C. This temperature must be maintained during storage and transport.• This subtype of MSM must not be re-frozen after thawing.• This subtype of MSM may be used only to manufacture heat treated meat products in establishments approved in accordance with this regulation, for example in ready-to-eat meat products e.g. cooked sausages and canned meat.• Wrapped and packaged product (MSM), when placed on the wholesale market, must be accurately described on the packaging and on the commercial document/delivery note in accordance with the traceability requirements of Regulation (EU) 931/2011.• Packages for final consumers containing this subtype of MSM must include in the ingredient list that MSM has been used. However, there is no need to include that the product must be cooked before consumption because this type of MSM can only be used in ready to eat products.
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Calcium content and Microbiological criteria:	
Microbiological food safety and process hygiene criteria are laid down for MSM and are the same as for Minced Meat to be eaten cooked from species other than poultry.	
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<p>Calcium content not to exceed 0.1 % (= 100mg/100 g or 1000 ppm)</p> <p><i>Article 4 (ANNEX IV) of Regulation (EC) No 2074/2005, supplementing Article 11(2) of Regulation (EC) 853/2004</i></p>	<p>The Calcium content can be determined by any internationally standardised method. The method specifically standardised for Calcium determination in MSM is AOAAC (Association of American Analytical Chemists) method 983.19. This is a simple titration method of the acid digested MSM with EDTA (ethylene diamine tetra-acetate). It is more usual for Calcium to be determined by atomic absorption spectroscopy (AAS), and provided this or any other method gives equivalent results, then it can be used.</p> <p>Sampling frequency – depends on the product specification e.g. raw material supplier, process applied e.g pressure, customer requirements. Suggested frequency, as required by customers, or quarterly, or when there is a change of supplier and/or the raw material, or process changes.</p>
<p>Sampling plan for microbiological criteria</p> <p><i>Point 1.7, Chapter 1, AND 2.1.7 of Chapter 2 , ANNEX I of Regulation (EC 2073/2005</i> <i>And</i> <i>Article 5</i> Etc...</p>	<p>There are Food Safety and Process hygiene criteria for MSM:</p> <ul style="list-style-type: none"> • Food Safety Criteria are for <i>Salmonella</i> spp. • Process Hygiene Criteria are for <i>E.Coli</i> and Aerobic Colony Count (ACC) <p>5 samples of at least 50 g each must be taken from one batch of MSM at least once a week from each producing establishment and sent as separate samples to the laboratory for analysis (50g is needed to enable the laboratory to have sufficient material for testing).</p>
<p>Tests used</p> <p><i>Point 1.5 and 1.7, Chapter 1, ANNEX I of Regulation (EC) 2073/2005</i> <i>And</i> <i>Article 5</i></p>	<p>Each of the five samples should be tested for</p> <ul style="list-style-type: none"> • <i>Salmonella</i> spp. in 10g using method EN/ISO 6579: the criterion is absence in each of the 5 x 10g samples. • ACC using method EN/ ISO 4833: the criterion is all five samples must be less than 5×10^6 and at least 3 samples must be less than 5×10^5 • <i>E. Coli</i> using method EN/ISO 16649-1 the criterion is all five samples must be less than 500cfu/g and at least 3 samples must be less than 50 cfu/g. <p>Laboratories undertaking testing for food businesses are not required to be accredited however they must be able to satisfy the Competent Authority that they can produce reliable results, and accreditation to EN/ISO 17025 is one way of providing the required evidence. As a minimum, laboratories undertaking testing should take part and achieve satisfactory results in relevant proficiency testing schemes.</p> <p>The 5 x 10g samples can be pooled in the laboratory and tested for <i>Salmonella</i> spp. as one 50g sample (as described in standard EN/ISO 6579) providing the laboratory can demonstrate no major loss of sensitivity.</p> <p>Alternative laboratory methods can be used if validated against the</p>

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	<p>reference EN/ISO method following EN/ISO 16140 and if a “kit” certified. The FBO should have copies of the validation and certification certificates that are available from the “kit” supplier.</p> <p>Other sampling and testing can be used for the process hygiene criteria if they provide, to the satisfaction of the competent authority, at least equivalent guarantees.</p> <p>Further information on alternatives can be provided by the FSA Hygiene and Microbiology Division, if required.</p>
<p>Interpretation of results and corrective action</p>	<p>Acceptable microbiological criteria for MSM are in the section above.</p> <p>Weekly microbiological results should be recorded as a trend. Where the criteria are met (which for salmonella is absence in 5 x 10g samples) the product produced maybe used in meat preparations intended to be eaten cooked e.g. burgers and sausages These meat preparations also have microbiological criteria which are additionally required to be met which for salmonella are absence in 5 x 10 g for meat species other than poultry and absence in 5 x 25 g for poultry. It should be noted that the sample size for poultry MSN (5x 10g) and meat preparations made from poultry meat containing MSN (5 x 25g) are different . Consistent failure of batches of MSM to meet the criteria (e.g. 2 consecutive weeks or 2 positives in a 4 week period) would require all MSM produced by that establishment to be submitted to further processing by a treatment eliminating the hazard in question. If following corrective action the criteria is met for 4 consecutive weeks MSM produced in the establishment can be used in meat preparations to be eaten cooked.</p> <p>When a batch tested is to be used for other purposes than originally intended due to not meeting the <i>Salmonella spp.</i> criteria then the process should be a heat treatment process within procedures based on HACCP principles and undertaken only in an establishment approved in accordance with Regulation (EU) 853/2004.</p> <p>When a batch fails to meet the food safety criteria the batch must be not be placed on the wholesale market or must be withdrawn from the wholesale market and a review of the food safety management procedures must be carried out.</p> <p>Consistent failure to meet the food safety criteria will require all products and not just the batches in question to be heat treated. Failure to meet the process hygiene criteria requires a review of the hygienic processing conditions including the quality and storage conditions of the raw materials and the cleanliness of the processing equipment. Failure to meet the process hygiene criteria does not mean the batch or the MSN produced by the establishment cannot be placed on the market or used in meat preparations to be eaten cooked. However persistent failure is an indication of ineffective food safety management /HACCP procedures that could eventually result in the approval to operate being withdrawn.</p>

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Further reading - the source of information

From Regulation (EC) 853/2004, as amended (a link to the Regulation is at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2004R0853:20100715:EN:PDF>)

Recital 20: gives the general principles/purpose of the legislation, as regards MSM and what it includes.

Annex I, point 1.14: gives the definition of MSM

Section V, Annex III: sets out the requirements for production establishments, the requirements for raw material, hygiene during and after production, and labelling

From Regulation (EC) 2073/2005, as amended (a link to the Regulation is at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2005R2073:20071227:EN:PDF>)

Article 4: Testing against criteria

Article 7.3 regarding unsatisfactory test results in respect of the *Salmonella* criterion for MSM made using the techniques referred to in paragraph 3, Chapter III, in Section V of Annex III to Regulation (EC) No 853/2004.

Annex

Chapter 1 (Food Safety Criteria), paragraph 1.7

Chapter 2 (Process Hygiene Criteria), paragraph 2.1.7

Chapter 3 regarding sampling frequencies and small quantities

From Regulation (EC) 2074/2005, (a link to the Regulation is at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2005R2074:20090101:EN:PDF>)

Annex IV: Introduces a calcium content/level for MSM made using techniques that do not alter the structure of the bones used and where the calcium content is not significantly higher than that of minced meat. The calcium level has been set at: not exceeding 0,1 % (=100 mg/100 g or 1 000 ppm) of fresh product; as determined by a standardised international method.

Meat Industry Guide (MIG) (a link to Part Two, Chapter 12 of the MIG is at: <http://www.food.gov.uk/multimedia/pdfs/migparttwo0710.pdf#page=347>)

Pages 20 – 25 of Chapter 12 give guidance on the legislative requirements regarding the production of MSM.

Pages 26 – 28 of Chapter 12 give guidance on the labelling of minced meat, meat preparations and MSM.

Part Three, Chapter 2 gives general guidance of Microbiological Criteria, including some bits on MSM (a link to this section is at: <http://www.food.gov.uk/multimedia/pdfs/migpartthree0710.pdf#page=53>)

Guidance on sampling and micro-testing is also at: <http://www.ukmeat.org/> see the section on Processed Meats

All food business operators should also make sure they are compliant with Regulation (EC) 852/2004 (a link to this Regulation is at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=CONSLEG:2004R0852:20081028:EN:PDF>)

From Regulation (EC) 931/2011 on Traceability (accurate description of product on commercial documents)

http://www.fsai.ie/uploadedFiles/Legislation/Food_Legislation_Links/General_Principles_of_Food_Law/Reg931_2011.pdf