

Underground Meats HACCP Plan: Not Cooked, Shelf Stable

1. Process Step	2.Food Safety Hazard	3.Reasonably Likely to Occur	4.Basis of Reasonably Likely To Occur	5 .If Yes in Column 3, What Measures Could Be Applied to Prevent, Eliminate, or Reduce the Hazard to an Acceptable Level?	6. Critical Control Point	7. Sources
1. Receiving and 6. Storage – Packaging materials	Biological- Pathogen Contamination	No	Receiving and Storage SOP makes hazard unlikely.			
	Chemical- Chemical contamination	No	Receiving and Storage SOP makes hazard unlikely			
	Physical- Damage to packing materials, Foreign Materials	No	Receiving and Storage SOP makes hazard unlikely			
2. Receiving Raw Meat	Biological- Presence of vegetative pathogens: Salmonella, Listeria monocytogenes, Staphylococcus aureus.	Yes	Raw Meat is a known source of pathogens	Hazard controlled at subsequent CCPs of Fermenting and Drying		
	Presence of sporeforming pathogens: Clostridium perfringens, Clostridium botulinum	Yes	Raw Meat is a known source of pathogens	Hazard controlled at subsequent CCPs of Fermenting and Drying		
	Chemical- None					
	Physical- Foreign Materials	No	Receiving and Storage SOP makes Hazard Unlikely			

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3. Receiving of Restricted and Unrestricted Non-Meat Ingredients	Biological- Starter Cultures and Mold Spores could die	No	Cultures and Mold are stored in accordance with the manufacturers recommendations			
	Chemical- none					
	Physical- Foreign objects	No	Receiving and Storage SOP makes hazard unlikely			
4. Storage (Frozen/Refrigerated) Raw Meat	Biological- Pathogen growth	No	Cooler/Freezer temperature records show hazard is not likely to occur. Product is stored at or below 41F			
	Chemical- None					
	Physical- None					
5. Storage of Restricted and Unrestricted Non-Meat Ingredients	Biological- Starter Cultures and Mold Spores could die	No	Cultures and Mold are stored in accordance with manufacturers recommendations			
	Physical- None					
	Chemical- None					
7. Tempering of Frozen/Raw meat	Biological- Pathogen Growth	No	Pathogen growth is unlikely because tempering/thawing is done in a cooler.			
	Physical- None					
	Chemical- None					

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8. Weighing Restricted and Unrestricted non-meat Ingredients	Biological- Insufficient nitrite level could allow the growth of spore-forming pathogens	No	Sodium Nitrite is added at 100-200ppm with the addition of starter cultures to ferment to a pH of 4.8			Puolanne, E. 1977. Effects of reduced addition of nitrate and nitrite on the properties of dry sausage. Journal of the Scientific Agricultural Society of Finland. 49(1) 1-106
	Physical- None					
	Chemical- Excess Nitrite	No	Pre-blended nitrite is used, not a hazard based upon AMI paper (Borchert & Cassens, 1998)			Borchert, L.L. and R.G. Cassens, 1998. Chemical hazard analysis for sodium nitrite in meat curing. American Meat Institute Foundation Paper
	Spice mix may contain allergens	No	Operational SSOP prevents cross-contamination of allergens			
9. Weighing Raw Meat	Biological- Presence of Pathogens	Yes	Raw meat is a known source of pathogens	Hazard controlled at subsequent CCPs of Fermenting and Drying		
	Physical- None					
	Chemical- None					

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10. Combine Ingredients/Processing	Biological -Presence of pathogens	Yes	Raw meat is a known source of pathogens	Hazard controlled at subsequent CCPs of Fermenting and Drying		
	Physical - None					
	Chemical - Potential allergen contamination	No	Operational SSOP prevents cross-contamination of allergens			
11. Preparing Starter Cultures, Casings, Mold Spores	Biological - Starter Cultures and Molds may be rendered ineffective	No	Cultures and Molds are prepared using distilled water per the manufacturer's recommendations.			
	Physical - None					
	Chemical - None					

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12. Raw Batter Salmonella Sampling	Biological- Batter may test positive for Salmonella.	Yes	Raw meat is a known source of pathogens	Meat will be sourced from a USDA certified and HACCP run slaughter facility. Any positive batches will be destroyed.	1B	FSIS Salmonella Compliance Guidelines for Small and Very Small Meat and Poultry Establishments that produce RTE Products. September 2012
	Physical- None					
	Chemical- None					
13. Mold Application	Biological- Formation of harmful Molds	No	Mold 600 is applied to outcompete and prevent unwanted mold growth from occurring			The role of moulds in the ripening process of salami. L. Grazia et al. Food Microbiology, 1986, 3, 19-25
	Physical- none					
	Chemical-none					
13. Fermenting	Biological- Outgrowth of Staphylococcus aureus and Clostridium spp.	No	Lactic acid starter culture is added, product is fermented to a PH of 4.8 or below within 1200 degree hours.		2B	Good Manufacturing Practices for Fermented Dry and Semi-Dry Sausage Products, American Meat Institute Foundation, 1997.
	Outgrowth of Salmonella, Listeria	No	The Product is fermented to a PH of 4.8 or below using commercially produced Starter Culture, and dried to a water activity of .85 or below			A.C.S. Porto-Fett et al./ Food Microbiology 25 (2008) 793-801 K. K. Nightingale, H. Thippareddi, R.K. Phebus, J. L. Marsden, and A. L. Nutsch. 2006. Validation of a Traditional Italian-Style Salami Manufactureing Process for Control of Salmonella and Listeria monocytogenes. <i>Journal of Food Protection</i> . 69: 794-800
	Physical- None					
	Chemical- None					

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14. Drying/Curing	Biological- Growth of Staph aureus, Salmonella, Trichina	No	The product is dried to a water activity of .85 or below in a temperature/humidity controlled environment.		3B	Good Manufacturing Practices for Fermented Dry and Semi-Dry Sausage Products, American Meat Institute Foundation, 1997. Borneman, D.L., S.C. Ingham, and C. Ane. 2009. Predicting Growth / No-Growth of <i>Staphylococcus aureus</i> on Vacuum-Packaged Ready-To-Eat Meats. <i>Journal of Food Protection</i>. 72: 539-548 K. K. Nightingale, H. Thippareddi, R.K. Phebus, J. L. Marsden, and A. L. Nutsch. 2006. Validation of a Traditional Italian-Style Salami Manufactureing Process for Control of Salmonella and Listeria monocytogenes. <i>Journal of Food Protection</i>. 69: 794-800
	Physical- None					
	Chemical- None					
15. Slicing and Peeling	Biological- Outgrowth of Listeria Monocytogenes, and Salmonella contamination from raw product.	No	Sanitation SOP is followed and environmental testing is done monthly on all RTE room surfaces/equipment .Product is prepared in a separate RTE room			
	Physical- None					
	Chemical- None					

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16. Packaging & Labeling	Biological- None					
	Physical- None					
	Chemical- None					
17. Storage of Finished Product	Biological- None					
	Physical- None					
	Chemical- None					
18. Delivery and Shipping	Biological- none					
	Physical- none					
	Chemical- none					

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CCP# and location	Critical Limits	Monitoring Procedures and Frequency	HACCP Records	Verification Procedures and Frequency	Corrective Actions
1B Raw Batter Salmonella Sampling	Only product with negative results from Salmonella testing will be released.	Each batch of product will be tested. A total of (5) 75g samples will be sent in for each batch. These samples will be compiled from (15) 25g samples taken throughout the batch.	Batch Sheet Containing: -CCP Monitoring Form -Lab Test Results -Sampling Date	Staff will be monitored taking a sample for every batch. A review of records will be done each week by staff.	Any batch that tests positive for Salmonella will be destroyed. Establishment will segregate all products that do not fall within the critical limits until appropriate disposition is determined based on the nature of the deviation, time, A_w , and PH of product.
2B Fermenting	Using Bactoform F-RM-52 in conjunction with B-LC-20 the product is fermented to a PH of 4.8 or below within 1200 degree hours	Establishment designee will test the PH of 5 pieces of each Lot which is uniform in size and shape at the beginning of fermentation and throughout the fermentation process until a PH of 4.8 is reached. Staff will calculate degree hours to ensure Critical Limits are met.	Batch Sheet Containing: -CCP Monitoring Form -Fermentation Log -PH calibration -Corrective Actions	Staff will be monitored taking a PH test at least once per week. Staff will calibrate the PH meter for each lot being tested. A review of records will be done each Week by staff	Establishment will identify to the best of their ability the cause of the deviation and prevent reoccurrence, If a deviation from a critical limit occurs, the establishment owner or designee is responsible for corrective action protocol as stated in 9 CFR 417.3. The cause of the deviation will be identified and eliminated. The CCP will be under control after the corrective action is take.
2B Drying/Curing	Product will dry in a temperature/humidity controlled environment, the water activity will be monitored and recorded until a_w of .85 or below is reached.	A_w will be monitored through the use of a water activity meter throughout the drying process. 5 samples from each lot will be taken randomly to ensure even drying across the lot until a_w of .85 or below is reached. Drying room temperature/humidity will be monitored daily by staff.	Batch Sheet Conaining: -CCP Monitoring Form -Water Activity Log -Corrective actions -Drying/Curing temp/humidity log	Staff will be monitored taking water activity at least once per week. Staff will calibrate the water activity meter in accordance with the manufacturers recommendations. Records will be reviewed each week by staff.	

*See attached document on FSIS compliance for Lm and Salmonella at Underground Meats.

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Underground Meats Plan for FSIS Salmonella Compliance

To meet the requirements set forth by FSIS for Salmonella Underground Meats will use option 5 as outlined in the FSIS compliance guideline for Salmonella. The parameters for the Raw Batter Testing program at Underground Meats are listed below.

- Each batch of product will have 15 samples weighing 25g each taken.
- Each test will consist of 5 composite samples weighing 75g each.
- Product will be tested at Covance Microbiology labs and released or condemned depending on the test results.

Underground Meats Plan for FSIS Listeria Compliance

To meet the requirements set forth by FSIS for Listeria Underground Meats will use alternative 3 to control Listeria through the use of sanitation SOPs and testing.

- All food contact surfaces in the RTE room will be sanitized using Oasis 146 Multi-Quat Sanitizer.
- Once a month all FCS in the RTE room will be tested for Lm according to FSIS compliance guidelines for very small plants.
- In the case that any FCS results in a positive reading for Lm, all product that may have come in contact with that surface will be held and tested for Lm.
- Product testing procedures consist of compiling 15 or more samples to generate a 325g composite sample for Lm testing. Product will be released or condemned depending on test results.