Fully Cooked, Not Shelf Stable
Product Description

Product Name: Smoked Sausage
Hot dogs

Intended Use of Product: Reheated by end-user

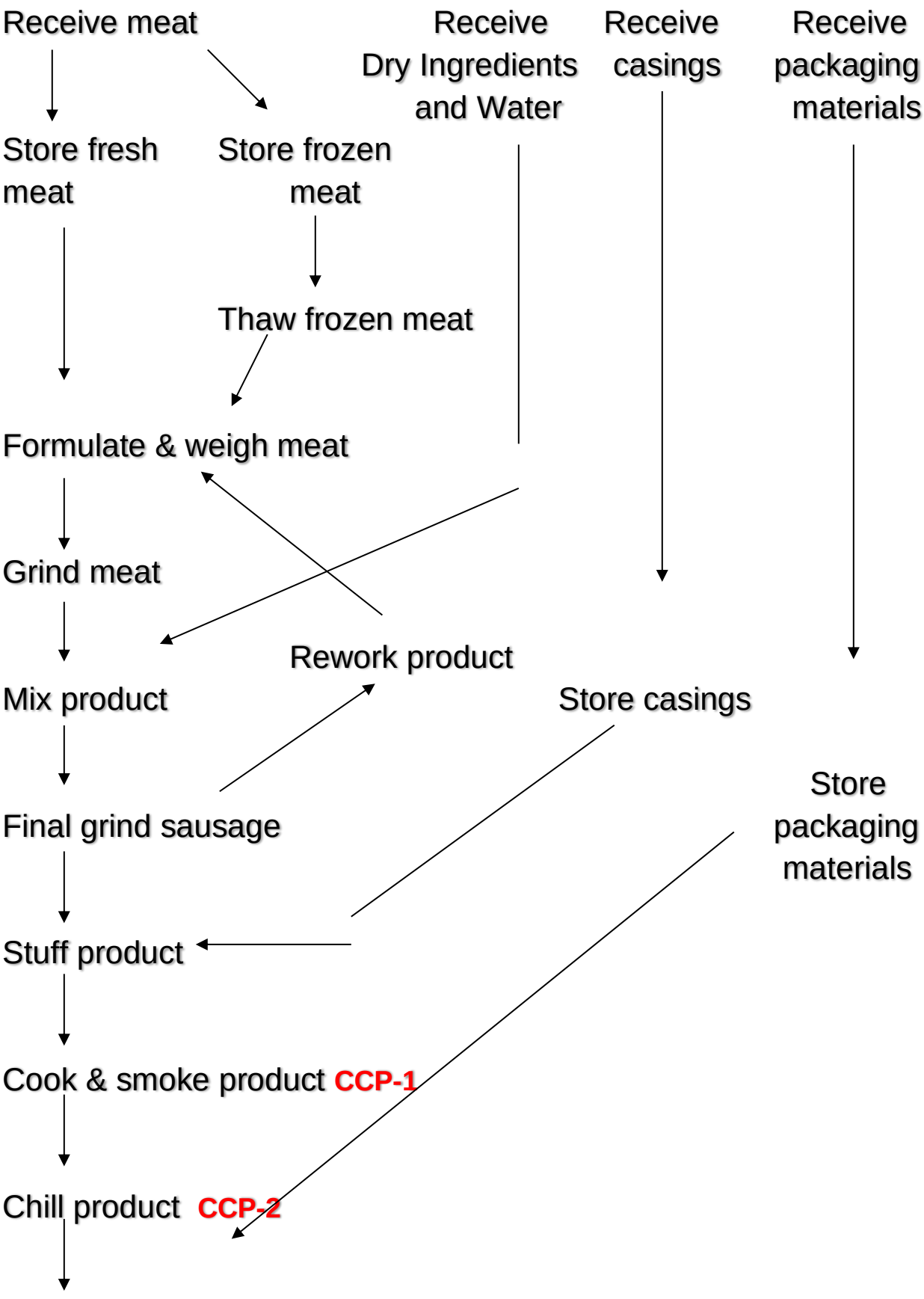
Type of packaging: Vacuum packaging.

Length of Shelf-Life: 2 months not frozen, 6 months frozen

Where will it be sold? Retail sales to general public. Wholesale sales to restaurants.

Labelling Instructions: Keep Refrigerated

Fully Cooked, Not Shelf Stable Process
Flow Chart Example



Package product

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Store packaged product

Fully Cooked, Not Shelf Stable Example
HACCP Form A

Process Step	Potential Hazards	Reasonably likely to occur?	Justification for decision made in previous column	Preventive Measures	CCP?
1. Receive meat	B-pathogen contamination P- needles, shot C-none identified	Yes No	Pathogens may be present on incoming meat. Hazard not likely to occur, based upon company history, suppliers letter of guarantee, and no reported incidence of these hazards has occurred between January 1, 1996 to March 15, 2012. (GMP 1)	Lethality step	No, controlled at a later step
2. Store fresh meat	B- pathogen growth C-none identified P-none identified	No	Cooler temperature records show hazard not likely to occur (GMP 2) based upon Minimum, optimal and maximum growth reference information in ARS Pathogen Modeling Program.		
3. Store frozen meat	B-none identified P-none identified C-none identified				
4. Thaw frozen meat	B - pathogen growth C-none identified P-none identified	Yes	Product temperature increase into danger zone is likely to occur during thawing process.	Maximum water temperature of 70ºF while thawing and lethality step.	No, controlled at a later step
5. Receive Dry Ingredients	P-foreign materials C-none identified B-none identified	No	Hazard not likely to occur, based upon plant history, and suppliers' letters of guarantee (GMP 3)		
6. Receive water as ingredient	B – Pathogen contamination P – None Identified C – None Identified	No	Hazard not likely to occur, because water lines installed per city/county code requirements, water tested by city/county _____ and certificate on file.		

7. Formulate & weigh meat	B -pathogen growth B_6-pathogen contamination C_1-nitrite level	Yes No No	Product temperature increase is likely to occur during weighing. Hazard not likely to occur, based upon SSOP records Using premixed nitrite which is not a hazard base upon AMI paper (Borchert & Cassens, 1998)	Maintain raw meat temperature at 45ºF or below during weighing, and lethality step.	No, controlled at a later step
8. Coarse grind meat	B -pathogen growth B -pathogen contamination P -metal shavings P -bone chips C -cleaners & sanitizers	Yes No No No No	Grinding is likely to cause temperature rise in product. Hazard not likely to occur, based upon SSOP records. Hazard not likely to occur, based upon plant history, maintenance and re-inspection records. (GMP 4) Hazard not likely to occur, based upon plant history, re-inspection records (GMP 4), and bone eliminator in use Hazard not likely to occur, based upon SSOP records	Maintain raw meat temperature at 45ºF or below during grinding, and lethality step.	No, controlled at a later step
9. Rework Raw product	B -pathogen growth B -pathogen contamination C-none identified P-none identified	Yes No	Additional handling may cause temperature rise in product Hazard not likely to occur, based upon SSOP records.	Maintain reworked meat temperature at 45ºF or below, and lethality step.	No, controlled at a later step
10. Rework Cooked Product	B -pathogen growth B -pathogen contamination C-none identified P-none identified	Yes No	Additional handling may cause temperature rise in product Hazard not likely to occur, based upon plant history (GMP-5) and SSOP records.	Maintain reworked meat temperature at 45ºF or below, and lethality step.	No, controlled at a later step
11. Mix product	B -pathogen growth B -pathogen contamination C -cleaners & sanitizers P-none identified	Yes No No	Temperature rise during mixing may cause temperature rise in product Hazard not likely to occur, based upon SSOP records Hazard not likely to occur, based upon SSOP records	Maintain raw meat temperature at 45ºF or below during mixing, and lethality step.	No, controlled at a later step
12. Final grind sausage	B -pathogen growth	Yes	Temperature rise during grinding may cause temperature rise in product	Maintain raw meat temperature at	No,

	B -pathogen contamination P -metal shavings C-none identified	No No	Hazard not likely to occur, based upon SSOP records Hazard not likely to occur, based upon plant history, maintenance and re-inspection records (GMP 3 & 6)	45ºF or below during final grinding, and lethality step.	controlled at a later step
13. Receive casings	P -foreign materials C-none identified B-none identified	No	Hazard not likely to occur, based upon plant history, and suppliers' letters of guarantee (GMP 3)		
14. Store casings	P -foreign materials B -pathogen contamination C-none identified	No No	Hazard not likely to occur, based upon SSOP records Hazard not likely to occur, based upon SSOP records		
15. Stuff product	B –pathogen growth B -pathogen contamination P -foreign materials C -cleaners & sanitizers	Yes No No No	Temperature rise during stuffing may cause temperature rise in product Hazard not likely to occur, based upon SSOP records Hazard not likely to occur, based upon plant history Hazard not likely to occur, based upon SSOP records	Maintain raw meat temperature at 45ºF or below during final stuffing, and lethality step.	No, controlled at a later step
16. Cook & smoke product	B -pathogen survival C-none identified P-none identified	Yes	Pathogen survival could occur.	Final internal temperature to be at least 160°F.	CCP-1
17. Chill product	B -pathogen growth C-none identified P-none identified	Yes	*C. perfringens* could grow, after cooking if not chilled properly between 130 and 80ºF. *C. perfringens* not likely to grow between internal product temperatures of 80 & 40ºF	Internal temperature to be reduced from 130ºF to 80ºF in 1.5 hrs.	CCP-2
18. Receive packaging materials	P -foreign materials C-none identified B-none identified	No	Hazard not likely to occur, based upon letters of guarantee (GMP 3)		
19. Store packaging materials	B -pathogen contamination P -foreign materials C -none identified	No No	Hazard not likely to occur, based upon SSOP records Hazard not likely to occur, based upon SSOP records		

20. Package product	B -pathogen contamination C-none identified P-none identified	No	Hazard not likely to occur, based upon SSOP records, inclusion of sodium lactate and diacetate in formula (GMP 7).		
21. Store packaged product	B -pathogen growth C-none identified P-none identified	No	Hazard not likely to occur, based upon cooler temperature records (GMP 2)		

Good Manufacturing Practices

GMP -1 (Meat Receiving)
All refrigerated meat products are checked upon receiving to ensure that products are 40ºF or colder (specification agreed to by supplier), that boxes are intact and not soiled, and that product received fits company specifications. Temperature and quality observations at receiving, as well as rejected product actions, are recorded on GMP Form ABC.

GMP – 2 (Cooler Temperatures)
Temperatures are monitored and recorded for each refrigerated room, two times per day: at the beginning and end of processing shift. Cooler temperatures are averaged, and temperature ranges determined, over times (day, week, month) and by room, and correlated to product. Recorded on GMP Form XYZ

GMP – 3 (Non-Meat Letters)
Letters of guarantee for non-meat ingredient/material quality (pathogen content, proof of dry ingredient sterilization, free of metal and other physical contaminants) are to be received annually from suppliers and records of receipt of letters, as well as copies of letters, for each product are maintained on GMP Form 3, and stored in Non-Meat Ingredient Letter Notebook, in Lab office.

GMP – 4 (Reinspection)
Meat ingredients are emptied from boxes onto re-inspection table and evaluated for quality and composition, compared to specifications. Particular attention is paid to looking for presence of metal, bone, or other physical contaminants. Results of every re-inspection are recorded on GMP Form 4. Results are summarized at the end of each month and compared to results of the previous 12 months.

GMP – 5 (Cooked Rework)
All cooked products that are to be reworked are stored in their casing or packaging film, and sprayed with ozonated water before casing/film is removed from product at time of use as rework.

GMP – 6 (Metal)
Grinder knives and plates are labeled and kept together as originally purchased as pairs. Grinder knife and plate identification is recorded on Formulation Sheet. Knife wear and condition are checked daily by maintenance personnel and recorded on GMP Form LMN.

GMP-7 (Listeria Prevention)
Sodium lactate and diacetate are added to the product formula at a rate of 2.5%.

Literature Cited:

Borchert, L.L. and R. G. Cassens, 1998. Chemical hazard analysis for sodium nitrite in meat curing. American Meat Institute Foundation Paper. http://www.ag.ohio-state.edu/meatsci/borca2.htm

ARS Pathogen Modeling Program (PMP) 7.0 is accessible at http://www.arserrc.gov/mfs/PATHOGEN.HTM

Minimum, optimum and maximum growth temperatures of selected pathogens from ARS PMP 7.0 can be access at: www.ag.ohio-state.edu/~meatsci/ARSTemperatureGuide03.doc

Reassessed 7/18/10 Chris P. Bacon

Reassessed 7/25/09 Mike Robial

Reassessed 7/5/08 Frank Furter

Cooked Sausage Example
HACCP Form B

Process Step/CCP	Critical Limits	Monitoring Procedures				Corrective Action
		What	How	Frequency	Who	
CCP-1 Cooking	Final internal product temperature to be 160ºF or greater	Product internal temperature	Smokehouse chart recorder, equipped with calibrated internal probe, 2 probes placed in varying locations in smokehouse, locations recorded. Manually record final internal temperatures	End of each cycle	Smoke-house operator, trained designee or plant manager	Action will be taken to ensure: 1. The cause of the deviation is identified and eliminated; 2. The CCP will be under control after the corrective action is taken; 3. Measures to prevent recurrence are established, and 4. No product that is injurious to health or otherwise adulterated as a result of the deviation enters commerce.

CCP-2 Chilling cooked product	Meet upper chill guidelines of Appendix B: 130ºF to 80ºF in 1.5 hrs.	Cooked product time and temperature	Internal temperature decline documented using chart recorder. Manually record time to reach temperatures of 130 and 80ºF internal.	Each batch or lot.	Smoke-house operator, trained designee or plant manager	Action will be taken to ensure: 1. The cause of the deviation is identified and eliminated; 2. The CCP will be under control after the corrective action is taken; 3. Measures to prevent recurrence are established, and 4. No product that is injurious to health or otherwise adulterated as a result of the deviation enters commerce.

Cooked Sausage
HACCP Form C

Process Step/CCP	Verification Activities	Record keeping Activities
CCP-1 Cooking	Calibrate thermometers and house chart recorder – weekly by manager, supervisor, or trained designee; method* Daily verification of monitoring & corrective action records by manager, supervisor, or trained designee. Check the checker weekly by manager, supervisor, or trained designee. Reassess plan – annually by HACCP team.	Monitoring & Verification (meat temperatures) records – Form 101 Corrective action records – Form 101 Calibration records – Form 103b Track and trend records
CCP-2 Chilling	Daily verification of monitoring & corrective action records by manager, supervisor, or trained designee.	Monitoring & Verification (meat temperatures & times) records – Form 201 Corrective action records – Form 201 Calibration records – Form 203

	Check the checker – each batch by manager, supervisor, or trained designee. Reassess plan – annually by HACCP team.	Track and trend records

* Calibration method: Thermometers are calibrated using a dry block calibration unit, at 40ºF and 160ºF.