

Heat-Treated, Shelf-Stable Model

<b>HACCP PLAN</b>					
<b>PROCESS CATEGORY: Heat treated, shelf stable</b>					
<b>Product example: Snack Sticks, Summer Sausage, Jerky</b>					
<b>CCP# and Location</b>	<b>Critical Limits</b>	<b>Monitoring Procedures and Frequency</b>	<b>HACCP Records</b>	<b>Verification Procedures and Frequency</b>	<b>Corrective Actions</b>
<b>1B</b> Fermenting (Snack Sticks, Summer Sausage produced w/ a fermentation step)	pH ≤ 5.3 - achieved within one of the following time limits (based on a constant chamber temperature).  Constant Chamber <u>Temp (°F) Max Hrs</u>	Sausage maker or designee will take a product sample for pH measurement from each lot at the completion of the fermentation cycle. Before removal from fermentation, determine compliance with the critical limit time related to the specified fermentation chamber temperature. The pH is measured using SOP for Calibration of pH Meter and Product pH Measurement. The number of product pieces tested for pH will be determined based on lot size, product history, recent changes in formulation, previously observed variation, etc.	Fermentation Log  Corrective Action Log  Thermometer Calibration Log  pH Meter Calibration Log	Establishment owner or designee will review the Fermentation Log, Corrective Action Log, Thermometer Calibration Log, and pH Meter Calibration Log once per week.  Establishment owner or designee will calibrate all thermometers to a known standard monthly. Thermometers will be calibrated to ± 2° F or taken out of operation as stated in the SOP. Calibration actions are recorded in the Thermometer Calibration Log.  Establishment owner or designee will check the pH meter used for monitoring, to verify accuracy before	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 1. The cause of the deviation will be identified and eliminated. 2. The CCP will be under control after the corrective action is taken. 3. Measures to prevent recurrence will be established.
	75      80				
	80      60				
	85      48				
	90      33				
	95      28				
	100     25				
	105     20				
110     18					

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CCP# and Location	Critical Limits	Monitoring Procedures and Frequency	HACCP Records	Verification Procedures and Frequency	Corrective Actions
				each batch of product is produced. The SOP for calibration will be used and calibration will be accurate to $\pm 0.1$ . Calibration activities will be recorded in the pH Meter Calibration Log.  Establishment owner or designee will observe monitoring of temperature and pH at least once per month.	4. No product that is injurious to health or otherwise adulterated as a result of the deviation will be permitted to enter commerce.
2 B Heat Treatment (summer sausage, snack sticks with fermentation or acidification step)	Snack Sticks to be cooked to an internal temperature of at least 150°F for at least 72 seconds, or another <u>pre-determined</u> Appendix A temperature/time combination. Summer sausages to be cooked to a <u>pre-determined</u> Appendix A temperature/time combination. Note that less severe temperature/time combinations have been	Smokehouse operator or designee will take the internal temperature at appropriate times using a calibrated internal probe or thermometer and/or review smokehouse chart for each lot at completion of cooking cycle and before removal of product from smokehouse. The number of product pieces	Smokehouse/Product Temperature Log  Thermometer Calibration Log  Corrective Action Log	Establishment owner or designee will review Smokehouse/Product Temperature Log, Corrective Action Log, and Thermometer Calibration Log once per week.  Once per week the establishment owner or designee will observe the monitoring of process time	If a deviation from a critical limit occurs, the establishment owner or designee is responsible for corrective action protocol as stated in 9 CFR, 417.31. The cause of

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CCP# and Location	Critical Limits	Monitoring Procedures and Frequency	HACCP Records	Verification Procedures and Frequency	Corrective Actions
	validated for products with low pH. For more info contact Steve Ingham (608-265-4801 or scingham@wisc.edu)	monitored for temperature will be determined based on lot size, product history, recent changes in formulation, previously observed variation, etc.		and temperature.  Thermometer calibration will be done in accordance with the SOP for Calibration of Thermometer.	the deviation will be identified and eliminated. 2. The CCP will be under control after the corrective action is taken. 3. Measures to prevent recurrence are established. 4. No product that is injurious to health or otherwise adulterated as a result of the deviation will be permitted to enter commerce.

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CCP# and Location	Critical Limits	Monitoring Procedures and Frequency	HACCP Records	Verification Procedures and Frequency	Corrective Actions
<p>2 B Heat Treated (Jerky except Poultry)</p>	<p>Application of one of the processing schedules below:</p> <ol style="list-style-type: none"> <li>1. Set oven dry-bulb temperature to reach 170°F within 30 minutes, and then apply one of the following wet-bulb temperature spikes.                             <ol style="list-style-type: none"> <li>a. 125°F for 60 min.</li> <li>b. 130°F for 60 min.</li> <li>c. 135°F for 30 min.</li> <li>d. 140°F for 10 min.</li> </ol>                             Then dry to required dryness at 170 °F dry-bulb temperature.                         </li> <li>2. Process product at a chamber wet-bulb temperature and time combination at least equivalent to an Appendix A combination.</li> <li>3. Set oven dry-bulb temperature at 125°F and dry product until water activity is no lower than 0.86 (use pre-determined yield value that</li> </ol>	<p>Oven temperature will be monitored using calibrated smokehouse dry-bulb and wet-bulb thermometers.</p> <p>Process 3 requires Yield or <math>a_w</math> to be monitored with six strips of jerky per batch.</p>	<p>Smokehouse/Product Temperature and Yield Log</p> <p>Corrective Action Log</p> <p>Thermometer Calibration Log</p> <p>Results of yield and/or water activity testing. May be part of Smokehouse/Product Temperature and Yield Log</p>	<p>Smokehouse operator or designee will verify that the wet bulb wick is clean and the wet-bulb water well contains the appropriate amount of water prior to startup.</p> <p>Once per week, the establishment owner or designee will review the Smokehouse/Product Temperature Log, Corrective Action Log, Thermometer Calibration Log, and results of yield and water activity testing (if process 3 used and water activity not tested for each lot).</p> <p>Once per month the establishment owner or designee will observe the smokehouse operator or designee perform the</p>	<p>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</p> <ol style="list-style-type: none"> <li>1. The cause of the deviation will be identified and eliminated.</li> <li>2. The CCP will be under control after the corrective action is taken.</li> <li>3. Measures to prevent recurrence are established.</li> </ol>

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CCP# and Location	Critical Limits	Monitoring Procedures and Frequency	HACCP Records	Verification Procedures and Frequency	Corrective Actions
	<p>matches this water activity or measure water activity directly), then dry to required dryness at 170°F dry bulb temperature.</p> <p>4. Process product at a constant dry-bulb temperature of at least 180°F.</p> <p>5. Increase dry-bulb temperature to reach 170°F within 90 minutes, and then dry to required dryness at 170°F dry-bulb temperature.</p>			<p>monitoring activity.</p> <p>Twice per year (once during warm weather, once during cold weather) <math>a_w</math> will be tested to assure correlation between process schedule and yield, and acceptable <math>a_w</math> of 0.85 or less (0.88 or less if product is only packaged under oxygen-free conditions).</p>	<p>4. No product that is injurious to health or otherwise adulterated as a result of the deviation will be permitted to enter commerce.</p>

<b>HACCP PLAN</b> <b>PROCESS CATEGORY: Heat treated, shelf stable</b> <b>Product example: Snack Sticks, Summer Sausage, Jerky</b>					
CCP# and Location	Critical Limits	Monitoring Procedures and Frequency	HACCP Records	Verification Procedures and Frequency	Corrective Actions
	6. Increase dry-bulb temperature in smokehouse in 1-hour intervals at 120°F, 130°F, 140°F, and 170°F, then dry to required dryness at 170°F dry-bulb temperature.				

**Sign and date at initial acceptance, modification, or annual reassessment.**

Signed \_\_\_\_\_ Date \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

Signed \_\_\_\_\_ Date \_\_\_\_\_

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Smokehouse/Product Temperature Log for Red-Meat Jerky made using processing option 1.								
Product ID/Lot	Start wt. (6 pieces)	<u>Start</u> Time/ Dry-Bulb Temp <u>Start of Wet-Bulb Spike</u> Time/Wet-Bulb Temp.	<u>End of Wet-Bulb Spike</u> Time/Wet-BulbTemp. <u>End of Process</u> Time/Dry- Bulb Temp	Devn. from CL? (Y= Yes, N = No)	Monitoring of CCP Initials/Date	End wt. (same 6 pieces)	Yield	Pre-shipment Review Signature/Date
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**Verification Activities** (for up to three weeks) associated with these batches. Indicate Type of activity: DO = Direct Observation of CCP monitoring (monthly), CAL = thermometer calibration, or RR = Records Review (weekly).

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

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Smokehouse/Product Temperature Log for Red-Meat Jerky made using processing option 2.								
Product ID/Lot	Start wt. (6 pieces)	<u>Start</u> Time/Dry-Bulb Temp <u>Start of Appendix A</u> <u>Wet-Bulb</u> Time/Wet-Bulb Temp	<u>End of Appendix A</u> <u>Wet-Bulb</u> Time/Wet-Bulb Temp <u>End of Process</u> Time/Dry- Bulb Temp	Deviati on from CL? (Y = yes,N = no)	Monitoring of CCP Initials/Date	End wt. (same 6 pieces)	Yield	Pre-shipment Review Signature/Date
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**Verification Activities** (for up to three weeks) associated with these batches. Indicate Type of activity: DO = Direct Observation of CCP monitoring (monthly), CAL = thermometer calibration, or RR = Records Review (weekly).

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_



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Smokehouse/Product Temperature Log for Red-Meat Jerky made using processing option 3.							
Product ID/Lot	Start Time/ Dry-Bulb Temp	End of Preliminary Drying:  Time / Dry- Bulb / Yield*	Start of Heating: Time/Dry-Bulb	End of Process: Time/Dry- Bulb	Deviation from CL? (Y = yes, N = no)	Monitoring of CCP Initials/Date	Pre-shipment Review Signature/Date
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\* Yield has been previously related to water activity for this product formulation. See SOP for Product Yield and Water Activity, and .

**Verification Activities** (for up to three weeks) associated with these batches. Indicate Type of activity: DO = Direct observation of CCP monitoring (monthly), CAL = thermometer calibration, or RR = Records review (weekly).

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

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Smokehouse/Product Temperature Log for Red-Meat Jerky made using processing option 4.									
Product ID/Lot	Start wt. (6 pieces)	<u>Start</u> Time/Dry-Bulb Temp/Time reaching 180°F	<u>End of Process</u> Time/ Dry-Bulb Temp/ Time at 180°F or above	Devn. from CL? (Y = Yes, N = No)	Monitoring of CCP Initials/Date	End wt. (same 6 pieces)	Yield	Pre-shipment Review Signature/Date	
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**Verification Activities** (for up to three weeks) associated with these batches. Indicate Type of activity: DO = Direct observation of CCP monitoring (monthly), CAL = thermometer calibration, or RR = Records review (weekly).

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

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Smokehouse/Product Temperature Log for Red-Meat Jerky made using processing option 5.								
Product ID/Lot	Start wt. (6 pieces)	<u>Start</u> Time/ Dry-Bulb Temp/Time reaching 170°F	<u>End of process</u> Time/ Dry-Bulb Temp/ Time at 170° F or above	Devn. from CL? (Y = yes, N = no)	Monitoring of CCP Initials/Date	End wt. (same 6 pieces)	Yield	Pre-shipment Review Signature/Date
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**Verification Activities** (for up to three weeks) associated with these batches. Indicate Type of activity: DO = Direct observation of CCP monitoring (monthly), CAL = thermometer calibration, or RR = Records review (weekly).

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

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Smokehouse/Product Temperature Log for Red-Meat Jerky made using processing option 6.							
Prod. ID/Lot	Start Wt. (6 pieces)	Time and Dry-Bulb Temp at start of each of 4 "steps" and at end of 4 <sup>th</sup> "step"	Devn. from CL? (Y = yes, N = no)	Monitoring of CCP Initials/Date	End wt. (same 6 pieces)	Yield	Pre-shipment Review Signature/Date
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**Verification Activities** (for up to three weeks) associated with these batches. Indicate Type of activity: DO = Direct Observation of CCP monitoring (monthly), CAL = thermometer calibration, or RR = Records Review (weekly).

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

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01/26/06 Version; Supersedes all other versions

<b>Smokehouse/Product Temperature Log for Summer Sausage, Snack Sticks</b>					
Product ID/Lot	Start of Appendix A process Time/ Product Temp.	End of Process Time / Product Temp.	Deviation from CL? (Y = yes, N = no)	Monitoring of CCP Initials/Date	Pre-shipment Review Signature/Date
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**Verification Activities** (for up to three shifts) associated with these batches. Indicate Type of activity: DO = Direct observation of CCP monitoring (weekly), CAL = thermometer calibration, or RR = Records review (every shift).

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

Type of activity: \_\_\_\_\_  
 Result (✓ = acceptable): \_\_\_\_\_  
 Date/Time: \_\_\_\_\_  
 Initials: \_\_\_\_\_

### Fermentation Log

Critical Limit: pH ≤ 5.3 within the time limit listed (below) for the fermentation chamber temperature.

Date	Product ID	Chamber Temperature (°F)	Time In	Time Out	pH*	Time Limit (hours)	Monitor Initials	Verification	
								Activity**/Date/Initial/Time (✓ = Acceptable)	Comments/Results

Constant Chamber Temperature (°F)	75°F	80°F	85°F	90°F	95°F	100°F	105°F	110°F
Maximum Hours to pH ≤ 5.3	80	60	48	33	28	25	20	18

**Instructions:** Enter the appropriate chamber temperature under Chamber Temperature. If the chamber temperature lies between two values, select the next highest value. Enter the corresponding time limit in the Time Limit column. The time limit is the maximum time allowed for the pH to fall to 5.3 or lower. These values you entered will serve as the control values. Record requested information. **Do not remove the product from the fermentation stage until the product pH is equal to or less than 5.3.** Time and temperature may be recorded directly on the log, or taken from a chart recorder.

\* pH meter is checked against known standard at the beginning of each Lot. See SOP.  
 \*\* DO = Direct Observation of CCP monitoring, CAL = pH meter calibration, RR = Records Review.

### Corrective Action Log

Product:		Lot ID:	
Date / Time:		Responsible Person:	
Deviation:			
Cause of Deviation:			
Cause of Deviation Eliminated By:			
CCP Under Control After Corrective Actions Taken:			
Preventative Measures:			
Product Disposition:			

Verification by (Records Review) and Date: \_\_\_\_\_



## pH Meter Calibration Log

			pH meter actual reading*				
Date	Time	Meter ID	4.0 pH buffer	7.0 pH buffer	Accept / Unacceptable	Corrective Actions Taken	Initials

\*If "✓" is entered, it indicates that reading was either 4.0 or 7.0, corresponding to the column heading value. Alternatively, enter the actual value, e.g. 4.0 or 7.0.

<b>Thermometer Calibration Log</b>							
<b>Date</b>	<b>Time</b>	<b>Test Therm. ID#</b>	<b>Reference Therm. Reading</b>	<b>Test Therm. Reading</b>	<b>Adjustments Required (yes/no)</b>	<b>Comments</b>	<b>Initials</b>

Thermometers intended for measuring higher temperature items, such as cooked product, will be calibrated in hot water, while those used for taking lower temperatures will be calibrated in ice water. All thermometers will be calibrated within + or - 2 degrees F.

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