

Mussels

Generic HACCP Plan

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1. Product Description

Aquatic Product Raw Material:	Mussels (<i>Modiolus</i> spp., <i>Mytilus</i> spp., and/or <i>Perna canaliculus</i>)
Raw material harvest Area:	California, Oregon, Washington, Alaska
Raw material received:	Directly from harvester
Finished Product:	Live mussels
Food additives, ingredients, processing aids:	None
Shipping:	Shipped in the firm's refrigerated trucks
Intended use:	Consumed raw, steamed, or fully cooked
Intended consumers:	General public

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2. Flow Diagram

Receiving	Live shellstock are received directly from harvester in tagged bags. The mussels are harvested from approved waters. No aquaculture drugs are used.
Raw material storage	Mussels are processed immediately or stored dry in mechanically refrigerated coolers maintained below 50°F (10°C)
Declumping	Mussels are declumped mechanically or by hand
Washing	Mussels are washed with clean water
Culling/Grading	Dead and broken mussels are removed by hand. Mussels are hand graded by size. No food additives, ingredients, or processing aids are used.
Packaging/Labeling	Mussels are placed in bags, and the bags are tagged.

Finished Product Cooling/Storage Mussels are cooled and stored in mechanically refrigerated coolers which are maintained below 50°F (10°C)

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Ship Live mussels are shipped in refrigerated trucks and held below 50°F (10°C) during distribution

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3. Potential Hazards

1. **Potential species-related hazards for aquacultured mussels:** (FDA's Draft Hazards and Controls Guide)
 - a. Chemical contamination
 - b. Natural toxins
 - c. Food and color additives
 - d. Aquaculture drugs
 - e. Pathogens
2. **Potential process-related hazards for aquacultured mussels:** (FDA's Draft Hazards and Controls Guide)
 - a. Temperature abuse during raw material storage (pathogen growth)
 - b. Temperature abuse during processing (pathogen growth)
 - c. Temperature abuse during final cooling (pathogen growth)
 - d. Temperature abuse during finished product storage (pathogen growth)
 - e. Temperature abuse during shipping (pathogen growth)
 - f. Metal inclusion
 - g. Food and color additives

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4. Hazard Analysis Worksheet

(1) Ingredient/ Processing Step	(2) Potential Hazard Introduced or Controlled	(3) Is the Potential Hazard Significant (Reasonably Likely to Occur - Yes/No)	(4) Justification for Inclusion or Exclusion as a Significant Hazard (Consider the likelihood that the hazard would or would not be introduced, or intensified, or a hazard from a previous step can be controlled	(5) Preventive Measure(s) for the significant Hazard from Column 3 (Existing plus additional, if needed)	(6) Critical Control Point (Yes/No)
Receiving	BIOLOGICAL Pathogens	Yes	Pathogens may occur in the harvest area	Approved harvest area, proper product identification	Yes
	CHEMICAL Chemical contamination	Yes	Contamination with pesticides, toxic elements,	Approved harvest area, proper	Yes

				radioactivity, and industrial chemicals has not occurred in the harvest area, but is a potential hazard.	product identification	
	CHEMICAL					
	Natural toxins	Yes		Natural toxins have occurred in the harvest area and are reasonably likely to occur again	Approved harvest area, proper product identification, (batch certification, if required)	Yes
	CHEMICAL					
	Food and color additives	No		No food or color additives are used	N/A	No
	CHEMICAL					
	Aquaculture drugs	No		No aquaculture drugs are used	N/A	No
	PHYSICAL					
	None	No		N/A	N/A	No
Raw material storage	BIOLOGICAL					
	Pathogen growth	Yes		Pathogen growth may occur during temperature abuse	Proper storage temperature	Yes
	CHEMICAL					
	None	No		N/A	N/A	No
	PHYSICAL					
	None	No		N/A	N/A	No
Declumping	BIOLOGICAL					
	None	No		N/A	N/A	No
	CHEMICAL					
	None	No		N/A	N/A	No
	PHYSICAL					
	Metal inclusion	No		Metal inclusion is not a potential problem in manual processing and is not reasonably likely to occur during mechanical processing	N/A	No
Washing	BIOLOGICAL					
	Pathogen growth	No		Exposure to temperatures above 50°F (10°C) is minimal. Total exposure to temperatures above 50°F (10°C) is evaluated at finished product storage.	N/A	No
	CHEMICAL					
	None	No		N/A	N/A	No
	PHYSICAL					
	None	No		N/A	N/A	No

Culling/Grading	BIOLOGICAL				
	Pathogen growth	No	Exposure to temperatures above 50°F (10°C) is minimal. Total exposure to temperatures above 50°F (10°C) is evaluated at finished product storage.	N/A	No
	CHEMICAL				
	Food and color additives	No	No food or color additives are used	N/A	No
	PHYSICAL				
	None	No	N/A	N/A	No
Packaging/Labeling	BIOLOGICAL				
	Pathogen growth	No	Exposure to temperatures above 50°F (10°C) is minimal. Total exposure to temperatures above 50°F (10°C) is evaluated at finished product storage.	N/A	No
	CHEMICAL				
	None	No	N/A	N/A	No
	PHYSICAL				
	None	No	N/A	N/A	No
Finished product storage	BIOLOGICAL				
	Pathogen growth	Yes	Temperature abuse is unlikely to occur during final product cooling. Temperature abuse may occur during finished product storage. Total exposure to temperatures above 50°F (10°C) can be evaluated at this step.	Proper storage temperature, limited exposure to temperatures above 50°F (10°C)	Yes
	CHEMICAL				
	None	No	N/A	N/A	No
	PHYSICAL				
	None	No	N/A	N/A	No
Shipping	BIOLOGICAL				
	Pathogen growth	Yes	Temperature abuse may occur during shipping.	Proper storage temperature	Yes
	CHEMICAL				
	None	No	N/A	N/A	No
	PHYSICAL				
	None	No	N/A	N/A	No

Reviewed by:

Date:

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5. HACCP Plan Form

(1) Critical Control Point (CCP)	(2) Hazard	(3) Critical Limits of the Preventive Measures	Monitoring				(8) Corrective Actions	(9) Records	(10) Verification
			(4) What	(5) How	(6) Frequency	(7) Who			
Receiving	Chemical contamination	Mussels must not be harvested from areas closed due to chemical contamination	Shellfish tag	Visual	Each lot or batch	Harvest supervisor	Reject products that fail to meet critical limits	Shellfish tag	Daily record review
	Natural toxins	Mussels must not be harvested from areas closed due to contamination with natural toxins	Shellfish tag	Visual	Each lot or batch	Harvest supervisor	Reject products that fail to meet critical limits	Shellfish tag	Daily record review
		Mussels must be certified toxin-free (if required by a shellfish control agency).	Certificate	Visual	Each lot or batch	Harvest supervisor	Reject products that fail to meet critical limits	Certificate, if required	Daily record review
	Pathogens	Mussels must not be harvested from areas closed due to contamination with pathogens	Shellfish tag	Visual	Each lot or batch	Harvest supervisor	Reject products that fail to meet critical limits	Shellfish tag	Daily record review
Raw Material Storage	Pathogen growth	Storage temperatures do not exceed 50°F (10°C)	Temperature	Temperature recorder	Continuous	Shellstock supervisor	Adjust thermostat	Recorder chart	Daily record review; thermometer calibration
Finished Product Storage	Pathogen growth	Storage temperatures do not exceed 50°F (10°C)	Temperature	Temperature recorder	Continuous	Shellstock supervisor	Adjust thermostat	Recorder chart	Daily record review; thermometer calibration
		Total exposure of mussels to temperatures above 50°F (10°C) does not exceed 4 hours	Temperature	Temperature recorder	Continuous	Shellstock supervisor	Destroy	Recorder chart	Daily record review; thermometer calibration
Shipping	Pathogen growth	Storage temperatures do not exceed 50°F (10°C)	Temperature	Temperature log	Every 2 hours	Driver	Adjust thermostat	Temperature log	Daily record review; thermometer calibration

Reviewed by:

Date:

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The author is Robert J. Price, Extension Specialist, Seafood Products, Food Science & Technology, University of California, Davis, CA 95616-8598

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