



FOOD SAFETY PLAN FOR 10% HOT FILL JUICE BEVERAGE

Disclaimer: This food safety plan is intended to be used as a guide. Each facility should review their ingredients and in-process steps to implement preventive controls to ensure food safety as mandated by the FDA Food Safety Modernization Act (FSMA).

Resource: Food Safety Preventive Controls Alliance (FSPCA) – [Preventive Controls for Human Food](#), First Edition - 2016

Table of Contents

Product Description	3
Flow Diagram	4
Process Narrative	5
Bulk receiving	5
Dry ingredient receiving	5
Refrigerated/frozen ingredient receiving	5
Liquid ingredient receiving	5
Packaging receiving	5
Filtration and magnets	5
Bulk storage	5
Dry ingredient storage	5
Refrigerated/frozen ingredient storage	5
Liquid ingredient storage	5
Packaging storage	5
Bottle depalletizing	5
Bottle rinsers	5
Refrigerated/frozen ingredient thawing and staging	6
Preblending	6
Blending	6
Filtration and magnets	6
Pasteurizer	6
Filler	6
Capper	6
Lay Down/Inversion	6
Cooler	6
Labeler	6
Case packer and palletizer	6
Hazard Analysis	7
Process Preventive Controls	13
Supply-chain Preventive Controls	14
Allergen Preventive Controls	15
Sanitation Preventive Controls	17

Product Description

Product Name(s)	10% Hot Filled Juice Beverage
Product Description, including Important Food Safety Characteristics	This is a shelf stable juice beverage packed in a PET bottle. The product is pasteurized and the juice ingredients are processed according to the juice HACCP regulation.
Ingredients	Water, apple juice, white grape juice, liquid sucrose, natural beet juice, flavors, vitamin C, and citric acid
Packaging Used	32 oz. PET
Intended Use	Beverage
Intended Consumers	General public
Shelf Life	9 months
Labeling Instructions	Store in cool, dry place. Refrigerate after opening and consume within 10 days after opening.
Storage and Distribution	Ambient for shelf stable ingredients - Apple juice concentrate – frozen - White grape juice concentrate - aseptic

Process Narrative

Bulk receiving

Liquid sucrose is received and placed in bulk storage tanks until use.

Dry ingredient receiving

Vitamin C is received in bags or cartons. Citric acid is received in bags and drums.

Refrigerated/frozen ingredient receiving

Apple juice concentrate is received frozen in drums or aseptic in totes or drums. White grape juice concentrate is received in aseptic drums or totes. Juice concentrates may also be received refrigerated in bulk tankers.

Liquid ingredient receiving

Liquid beet juice color is received in pails. Liquid flavors are received in pails.

Packaging receiving

Receiving of 32 ounce PET bottles, caps, labels and corrugated shippers. Packaging materials are stored in a clean dry area.

Filtration and magnets

Bulk sucrose is filtered to remove foreign material and passes through magnets to detect metal objects.

Bulk storage

Liquid sucrose is generally stored at a temperature of 70 – 100°F.

Dry ingredient storage

Citric acid and vitamin C are stored in a clean, dry area at ambient temperature.

Refrigerated/frozen ingredient storage

Refrigerated ingredients are stored at refrigerated temperatures.

Frozen ingredients are stored at the appropriate temperature.

Liquid ingredient storage

Beet juice is stored in a cool dry area in tightly sealed containers. Flavors are stored under cool (50°-70°F), dry conditions in tightly sealed containers away from excessive heat and light.

Packaging storage

Packaging materials are stored in a clean, dry area at ambient temperature.

Bottle depalletizing

Bottles are removed from pallets and moved to the production line via a conveyor.

Bottle rinser

Bottles are rinsed with air to remove dust and small loose debris.

Refrigerated/frozen ingredient thawing and staging

Frozen ingredients should be thawed under refrigeration.

Preblending

Apple juice concentrate and white grape juice concentrate are blended.

Blending

All ingredients are combined, mixed and held in holding tanks.

Filtration and magnets

After blending, the beverage is passed through filters and magnets to remove any physical contaminants.

Pasteurizer

The juice beverage is pasteurized to kill/reduce pathogens.

Filler

After the pasteurizer, the juice beverage is filled hot into the PET bottle.

Capper

The cap is applied to the bottle at the capper. Steam is applied prior to capping.

Lay Down/Inversion

The filled bottle is inverted such that the hot liquid touches the cap to control spoilage organisms in the headspace cap.

Cooler

The filled bottled is cooled by passing through the cooling tunnel and showered with chlorinated water.

Labeler

The filled bottle is labeled appropriately.

Case packer and palletizer

The finished product is packed in cases and labeled appropriately. The cases are subsequently palletized and stored in a dry place at ambient temperature until shipped to a warehouse or customer.

Hazard Analysis

Hazard identification (column 2) considers those that may be present in the food because the hazard occurs naturally, the hazard may be unintentionally introduced, or the hazard may be intentionally introduced for economic gain.

B = Biological hazards including bacteria, viruses, parasites, and environmental pathogens

C = Chemical hazards including radiological hazards, food allergens, substances, such as pesticides and drug residues, natural toxins, decomposition, and unapproved food or color additives

P = Physical hazards include potentially harmful extraneous matter that may cause choking, injury or other adverse health effects

(1)	(2)	(3)	(4)	(5)	(6)
Ingredient/ processing step	Identify potential hazards introduced, controlled or enhanced at this step (1)	Are any potential food-safety hazards significant? (Yes/No)	Justify your decisions for column 3.	What preventive control measure(s) can be applied to significantly minimize or prevent the food safety hazard?	Is the preventive control applied at this step? (Yes/No)
Packaging Receiving	Biological - None				
	Chemical – None				
	Physical - None				
Ingredient Receiving Water	Biological - None				
	Chemical - None				
	Physical – None	No	No hazards expected when using a potable or municipal water source		

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Frozen Apple Juice Concentrate	Biological – vegetative pathogens, e.g., <i>Salmonella</i> , <i>E. coli</i> O157:H7, <i>Listeria</i> , <i>Cryptosporidium</i>	Yes	Untreated juice can contain pathogens.	The thermal process.	No
	Chemical – Inorganic arsenic	No	Not likely to present a hazard due to history of supplier conformance and low level of apple concentrate in the finished 10% juice beverage.		
	Chemical – Patulin	No	Not likely to present a hazard due to history of supplier conformance and low level of apple concentrate in the finished 10% juice beverage.		
	Chemical – Lead	No	Based on data from suppliers, lead is not HRPC given the low probability that the level of 50 ppb will be exceeded		No
	Chemical – Pesticide residues	No	Data show low incidence of pesticide residues in excess of tolerance and in instances when a tolerance is established, the low levels found do not present a health or safety issue		No
	Physical (metal, wood, plastic, glass)	Yes	Hard or sharp objects could be present in raw materials or be introduced during processing.	Preventive controls may vary from the use of metal detectors, x-ray machines or physically checking screens to assure they are not broken.	No

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White Grape Juice Concentrate	Biological – vegetative pathogens	Yes	Untreated juice can contain pathogens.	Thermal process controls the hazard.	No
	Chemical - Lead	No	Based on data from suppliers, lead is not HRPC given the low probability that the level of 50 ppb will be exceeded		No
	Chemical – Inorganic arsenic	No	Not likely to present a hazard due to history of supplier conformance and low level in the finished 10% juice beverage.		
	Physical (metal, wood, plastic, glass)	Yes	Hard or sharp objects could be present in raw materials or be introduced during processing.	Preventive controls may vary from the use of metal detectors, x-ray machines or physically checking screens to assure they are not broken	No
Vitamin C	Biological - None				
	Chemical - None				
	Physical – None				
Beet Juice Color (acidified and pH 3.9)	Biological – <i>C. botulinum</i> formation	Yes (shelf stable, single strength and acidified) No (frozen or refrigerated)	Potential for <i>C.</i> <i>botulinum</i> toxin formation if issue with acid addition process causes pH to exceed 4.6. <i>C. botulinum</i> cannot grow and produce toxins at refrigerated or frozen conditions so toxin formation is not HRPC.	Verify supplier has manufactured the beet juice in accordance with the acidified foods regulation. (Supply Chain Control)	No No
	Biological – vegetative pathogens	Yes	Untreated juice can contain pathogens.	Thermal process controls the hazard.	No
	Chemical – None				
	Physical – None				

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Liquid Sucrose	Biological – None				
	Chemical – None				
	Physical	Yes	Hard or sharp objects have the potential to be present in sucrose.	Controlled by the manufacturer of the juice beverage. Screens and magnets are used later in the process to control foreign objects.	No
Natural Flavors	Biological - None				
	Chemical - None				
	Physical - None				
Citric Acid	Biological – None				
	Chemical - None				
	Physical - None				
Storage	Biological – None				
	Chemical – None				
	Physical - None				
Blending	Biological – None	No	Environmental pathogens not likely due to GMP and sanitation. The heat step is applied later.		
	Chemical – None	No	GMPs and sanitation records.		
	Physical – None	No	Controlled by GMPs and screens later in the process		
Pasteurizer	Biological (pathogens)	Yes	pH 4.0 or less – time/ temperature of 190°F for 30 seconds Company must develop PCs depending on its specific process	Pasteurization	Yes
	Chemical – None				
	Physical – None				

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Bottle Washer	Biological – None				
	Chemical – None				
	Physical – None				
Screen	Biological – None				
	Chemical – None				
	Physical – hard or sharp objects	Yes	Intact screen removes foreign objects	Visual check to ensure the screen is intact. If a company has a metal detector, the metal detector could be the preventive control. Corrective Action Plan – Hold product if there is a breach in the screen and evaluate.	Yes
Filler	Biological – None	No	GMPs and sanitation address any concerns with environmental pathogens.		
	Chemical – None				
	Physical – None				
Capper	Biological – None	No	Unlikely introduction of environmental pathogens. GMPs and sanitation address any concerns with environmental pathogens.		
	Chemical – None				
	Physical – None				

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Bottle Inverter	Biological – None	No	Pathogens are controlled by GMPs. The inversion takes place to control spoilage microorganisms that are not associated with food safety.		
	Chemical – None				
	Physical – None				
Cooling Tunnel	Biological – None				
	Chemical – None	No	Periodic treatment of water with chlorine.		
	Physical – None				
Labeling	Biological – None				
	Chemical – None				
	Physical – None				
Case Packing/ Palletizer	Biological – None				
	Chemical – None				
	Physical – None				

Process Preventive Controls

Process Control(s)	Hazard(s)	Critical Limits	Monitoring				Corrective Action	Verification Activities	Records
			What	How	Frequency	Who			
Pasteurizer	Biological – vegetative pathogens, e.g., <i>Salmonella</i> , <i>E. coli</i> O157:H7, <i>Listeria</i> , <i>Cryptosporidium</i>	pH 4.0 or less – time/temperature of 190°F for 30 seconds	1. Temperature of juice 2. Flow rate	Temp Recorder Visual check of positive Displacement pump	Continuous monitoring with visual check hourly Daily	Pasteurizer Operator Pasteurizer operator	Juice is automatically diverted to the reserve tank and is pasteurized again after adjusting pasteurizer equipment (temperature or flow rate to achieve critical limits. If divert is not functional, then hold product for evaluation, and destruction or non-food use if confirmed to not meet critical limits.	Check the temp recorder against a thermometer daily. Calibrate the thermometer according to defined frequency. Test the flow rate and pump speed according to defined frequency. Review monitoring, corrective action, and verification records at defined frequency	Operator's Log. Recorder Temp. chart Calibration records for temp recorder and pump check
Screen	Foreign material	Screen is intact	Integrity of the screen	Visual	Daily	Production employee	Segregate product and rework to eliminate metal pieces, run product through metal detector, divert to nonfood use, or destroy AND Replace screen.	Review monitoring, corrective action and verification records at defined frequency	Screen integrity log Screen Calibration log

Supply-chain Preventive Controls Program

Determination of Verification Procedures – Audits

Verification activities: A 3rd party supplier audit by a qualified auditor is used to verify supply-chain control of the hazards listed in the table below. Additional verification activities may be conducted as identified in the table below.

Verification procedures: A copy of a 3rd party audit is requested from each supplier listed below on an annual basis. The audit date, auditory qualifications, audit procedures and audit results are reviewed. Follow up discussion with the supplier takes place, as necessary, to verify that any corrective actions mentioned in a report have been completed, with records maintained for this activity.

Records: A copy of audit reports and verification of corrective actions taken by the supplier are maintained on file by the Food Safety Team Leader.

Other Verification Procedures

Raw Material/ Ingredient	Hazard(s) Requiring a Supply-Chain- Applied Control	Preventive Control Applied by Supplier	Verification Activities	Verification Procedures	Acceptance Criteria
Beet Juice Color – Shelf Stable, Single Strength (acidified and pH 3.9)	Pathogens/ <i>C. botulinum</i> toxin formation	The supplier complies with acidified foods regulation	3 rd party audit	See above	See above

Approved Suppliers for Ingredients Requiring a Supply-chain-applied Control

Ingredient	Approved Supplier	Date of Approval	Hazard(s) requiring supply-chain- applied control	Verification Method	Verification Record
Beet Juice Color	Beets R Us Beet City, US	Insert	Compliance to acidified foods	Copy of 3 rd party audit	Copy of audit kept in file.

Receiving Procedures: For each shipment received, the receiving clerk uses the receiving database to identify required documentation then:

- verifies that the product is from an approved supplier
- verifies that each lot in the shipment is accompanied by a COA, if appropriate
- reviews each COA against acceptance criteria above, as appropriate, and
- documents the above in the Incoming Goods Log.

Allergen Preventive Controls

Allergen Controls	Hazard(s)	Criteria	Monitoring				Corrective Action	Verification	Records
			What	How	Frequency	Who			

Allergen Label Verification Listing	
Products	Allergen Statement
	Contains:
	Contains:

Alternate Format – Food Allergen Ingredient Analysis

The format below is an alternative for an allergen specific hazard analysis. If you choose to use a form like this, then there is no need to duplicate allergen considerations in your hazard analysis chart. Duplication of information in multiple forms can create extra work and may lead to inconsistencies. Some organizations may even choose to do an ingredient hazard analysis that considers not only allergens, but also other hazards. This may be a useful option for you.

How to Use the Chart

List all ingredients received in the facility. Identify allergens contained in each ingredient by reviewing ingredient labels or contacting the manufacturer. Any allergens listed in "May contain" or other precautionary labeling on ingredients should be listed in the last column and reviewed to determine if allergen labeling is needed on the finished product.

Raw Material Name	Supplier	Food Allergens in Ingredient Formulation								Allergens in Precautionary Labeling
		Egg	Milk	Soy	Wheat	Tree Nut (market name)	Peanut	Fish (market name)	Shellfish (market name)	

Production Line Allergen Assessment

Complete for each production line. Identify each allergen contained in each product produced on the line. Identify any allergens unique to a specific product, then indicate scheduling information (i.e., run unique allergens last) and allergen cleaning information (i.e., full allergen clean before running cheese or plain omelets after a biscuit run).

Product Name	Production Line	Intentional Allergens							
		Egg	Milk	Soy	Wheat	Tree Nut (market name)	Peanut	Fish (market name)	Shellfish (market name)

Scheduling Implications:

Allergen Cleaning Implications:

Sanitation Preventive Controls

Location	
Purpose	
Frequency	
Who	
Procedure	
Monitoring	
Corrections	
Records	
Verification	Date