

Hazard Analysis and Critical Control Points (HACCP)

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Hazard Analysis And Critical Control Points

Agenda

- * HACCP definition and history
- * Prerequisite programs
- * HACCP components
 - * Plan description
 - * Process flow diagram
 - * Seven principles
 - * Conduct hazard analysis
 - * Determine critical control points
 - * Establish critical limits
 - * Establish monitoring procedures
 - * Establish corrective action
 - * Establish verification procedures
 - * Establish record keeping and documentation procedures
- * Q&A

Hazard Analysis And Critical Control Points

What is HACCP?

- * HACCP is a systematic approach to the identification, evaluation, and control of food safety hazards (biological, chemical, and physical) throughout the production process to prevent the risk of foodborne illness or other safety concerns
- * HACCP is based on seven key principles
- * It should be used in conjunction with other food protection programs
- * Programs are mandatory for meat & poultry (USDA), seafood (FDA), and juice (FDA) and voluntary for all other food and beverage industries

History

- * HACCP was developed in the early 1960's as a collaborative effort between Pillsbury, NASA, and US Army Labs (Natick) to provide safe food for space expeditions
- * Its success propelled implementation across all Pillsbury commercial lines and the food industry in the early 70's

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Prerequisite Programs – Foundation for HACCP

- * Facility and equipment should be located, constructed and maintained according to sanitary design principles. Traffic control to minimize cross-contamination
- * Supplier control to ensure they are adhering to GMP's and food safety programs
- * Written specifications for all ingredients, products, and packaging materials
- * Procedures (including list of chemicals and dilution/use) for cleaning and sanitation of facility and equipment. Implementation of eight key FDA sanitation conditions 21 CFR, Part 123.11.
- * GMP's and personal hygiene
- * Chemical segregation and proper use of non-food chemicals in the facility
- * Proper conditions for receiving, storage and shipping
- * Traceability and recall programs
- * Pest control program

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Description of Product

- * General description of the food, ingredients, and processing methods
- * Method of distribution and distribution temperatures
- * Expected use (intended for general population or particular segment)
- * Primary and secondary packaging
- * Shelf life and format
- * Label instructions

PRODUCT DESCRIPTION

PROCESS CATEGORY: Fermented food pH < 4.6

PRODUCT: Kombucha. A beverage made from black, green, and/or pu-erh tea (*Camellia Sinensis*), evaporated cane juice solids, and filtered water that has been fermented (wild) by means of added culture and cellulose pellicle containing primarily yeast species and *Gluconoactobacter*.

COMMON NAME
FORM/INTENDED USE

Kombucha
Ready to drink refrigerated beverage to be consumed by general public

TYPE OF PACKAGE
☐ PRIMARY
☐ SECONDARY

16 fl oz glass bottle; PP closure w/PE foam liner; 2" shrink band
Corrugated shipper (re-shipper) containing 12 bottles

SHELF LIFE

4 months refrigerated
"Best Enjoyed By"; "DD (numeric date) MMM (alpha month) YYYY (numeric year)"

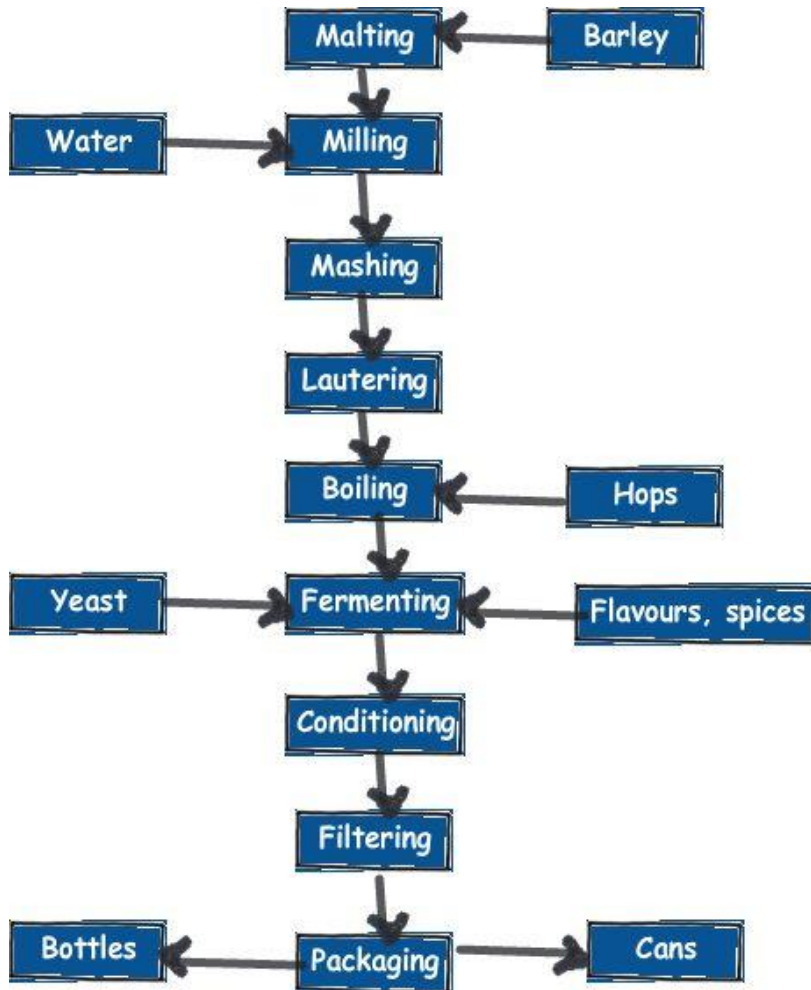
DISTRIBUTION

Wholesale to distributors or retailers via refrigerated transport

LABELING INSTRUCTIONS

Keep refrigerated; do not shake (naturally effervescent)

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Process flow diagram
(beer example)

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Seven Principles

1. Conduct a Hazard Analysis

- * Biological: Bacterial, viral or parasitic pathogens
- * Chemical: Chemical residues
- * Physical: Foreign matter, glass fragments, metal fragments

2. Identify Critical Control Points

- * A critical control point (CCP) is a point, step, or procedure in the manufacturing process at which control can be applied and as a result, a food safety hazard can be prevented, eliminated, or reduced to an acceptable level

3. Establish Critical Limits for each Critical Control Point

- * A critical limit is the maximum or minimum value to which a biological, chemical or physical hazard must be controlled at a CCP to prevent, eliminate, or reduce to an acceptable level

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Seven Principles

4. Establish Critical Control Point monitoring requirements

- * Monitoring activities are necessary to ensure that the process is under control at each CCP. Each monitoring procedure and its frequency needs to be listed in the HACCP plan.

5. Establish Corrective Action

- * Identify actions to be taken when monitoring indicates a deviation from an established critical limit.

6. Establish Verification Procedures and Schedule

- * Frequent reviews of plans, verification that its being followed correctly, and review of CCP monitoring and corrective action records

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Seven Principles

7. Establish record-keeping and documentation procedures

- * Facility must maintain HACCP plan and records documenting the monitoring of CCP's, critical limits, verification activities, and the handling of processing deviations.

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Example - Hazard Analysis

Process Step	Food Safety Hazard	Reasonably Likely to Occur?	Basis	If yes in Column 3, what measures could be applied to prevent, eliminate, or reduce the hazard to an acceptable level?	Critical Control Point
Batch Fermentation	Biological - Pathogens	Yes	Pathogens could potentially grow in this product if pH is not maintained below 4.6	Product is maintained at or below pH 4.5 at all times; finished product is \leq pH 3.3	3B
	Chemical - None				
	Physical - None				
Filtering	Biological - None				
	Chemical - None				
	Physical – Foreign matter (stainless steel) from in-line screen gasket	No	Gaskets to be visually inspected before and after every tank is filtered		
Packaging Materials – Receiving & Storage (glass bottles, closures, shrink bands, re-shippers)	Biological - None				
	Chemical - None				
	Physical – Foreign matter (glass)	Yes	Damage to glass bottles could result in glass inclusion	100% visual inspection of bottles prior to filling during label application	4P
Bottle filling & capping	Biological – None				
	Chemical – None				
	Physical – Foreign matter (glass)	Yes	Damage to glass bottles could result in glass inclusion	100% visual inspection of bottles prior to filling and capping during filling step	5P
Shrink banding & case packing	Biological – None				
	Chemical - None				
	Physical - None				
Refrigerated storage and distribution	Biological - None				
	Chemical - None				
	Physical - None				

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Example – CCP's

Critical Control Point	Critical Limits	Monitoring Procedures and Frequency	HACCP Records	Verification Procedures and Frequency	Corrective Action
3B Batch Fermentation	Must maintain pH < 4.6	Test pH of each batch of finished product prior to bottling	Batch sheets/finished product record Corrective action log	Batch sheets/finished product record will be verified and filed after each batch is bottled pH meter will be calibrated daily	If pH exceeds pH 4.5, or discard contents of tank
4P Packaging Receiving & Storage – glass bottles	No breakage, chips, nor cracks in glass containers	100% visual inspection of bottles during manual label application	Glass inspection record Corrective action log	Glass inspection record will be verified and filed after labeling bottles for each production run	Dispose of all broken or compromised glass bottles. Inspect others for fragments or similar defects.
5P Bottle Filling & Capping – glass bottles	No breakage, chips, nor cracks in glass containers	100% visual inspection of bottles during filling and manual capping	Glass inspection record Corrective action log	Glass inspection record will be verified and filed after filling and case packing for each production run	Dispose of all broken or compromised glass bottles. Inspect others for fragments or similar defects. Inspect bottling area of production room and remove any glass fragments.

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Example – CCP's Logs

pH Meter Calibration Log

Date	pH Meter	Calibrate to pH 2.0	Calibrate to pH 4.0	Technician Initials

CCP 4P and 5P - Glass Inspection Record

Date	Labeling 4P	Filling & Case Packing 5P	Quantity	Comments and/or Corrective Action

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Helpful guides and examples:

Key sanitation conditions

http://www.qualityassurancemag.com/Article.aspx?article_id=101570

HACCP plans

www.fda.gov/Food/GuidanceRegulation/HACCP/ucm2006801.htm

www.beercanada.com/beer-canadahaccp-food-safety-program

http://www.apiservices.com/articles/us/haccp_en.htm