

HACCP Generic Model: Pasteurized Honey

Introduction

Form 1.	Product Description
Form 2.	List of Product Ingredients and Incoming Materials
Form 3.	Process Flow Diagram
Form 4.	Plant Schematic
Form 5.	Biological Hazards
Form 6.	Chemical Hazards
Form 7.	Physical Hazards
Form 8.	Critical Control Points Determination
Form 3A.	Process Flow Diagram with CCPs
Form 5A.	Biological Hazards and Controls
Form 6A.	Chemical Hazards and Controls
Form 7A.	Physical Hazards and Controls
Form 9.	Hazards not controlled by Operator
Form 10.	HACCP Plan
Annexe	HACCP Records (exemples)



Introduction

This HACCP generic model was developed for honey packing establishments using a honey pasteurizing establishment packaging creamed honey in glass jars with painted metal lids. This model was developed with the assumption that all prerequisite programs are in place and comply with the requirements of [Agriculture and Agri-Food Canada](#).

The production line starts with honey in 50 gallon barrels being placed on a dump tank where the honey flows into the tank. Foreign debris is removed from the honey by a series of filters and a settling tank. The honey goes through a pasteurizer to destroy any yeasts present, to facilitate fine-mesh filtering, and to aid in mixing with the seed honey. The honey is packed into glass jars and capped mechanically with painted metal lids. It is stored under cool conditions to ensure the creaming of the honey.

Because of the pH level, the low water activity (a_w), the high sugar content, and the bacteriostatic composition of honey, very few biological hazards are associated with the product. Concern has been raised from one reported case of infant botulism in Canada in 1985, where a soother that was dipped in honey was found to contain 1,000 to 10,000 *Clostridium botulinum* spores/kg. It is reported that infant botulism can occur in infants up to 26 weeks of age and is caused by spores that germinate producing a toxin in the infant intestinal tract. Evidence suggests these spores are of a single serotype caused by a build-up of spores from a single source, contaminated dead bee larvae. Therefore, the contamination of the honey is likely to occur prior to extraction, and the honey producer has no control over this hazard. Physicians, public health nurses, and the school system are the key components in keeping the public informed of potential risks.

It is the opinion of the expert committee that the chemical and physical hazards that could exist are controllable. They are the result of the beekeeper's and the honey processor's production and handling practices; these hazards can generally be eliminated through the use of prerequisite programs. This includes the physical hazard of glass fragments. It was decided that, due to the traditional line speed and style of glass container, the hazard would be fully covered through prerequisite programs and

glass breakage procedures.



Form 1

Product Description

Product Name: Pasteurized Honey

1. Product Name(s)	Creamed Honey
2. Important Product Characteristics (a_w, pH, Salt, Preservatives,...)	Moisture Max: 18.5% pH 3.9 a _w 0.58 Hydrogen Peroxide 7-31 ppm (occurs naturally)
3. How it is to be used	Ready-to-eat
4. Packaging	Glass jars with metal lids
5. Shelf Life	Indefinite
6. Where it will be sold	Retail, institutions available to general population including vulnerable groups such as the elderly, infirm, and immuno-compromised
7. Labelling Instructions	None required for safety
8. Special Distribution Control	Fragile - Handle With Care

Date: _____

Approved by: _____



Form 2

List of Product Ingredients and Incoming Material

Product Name: Pasteurized Honey

Raw Product	Packaging Material	Returns
Raw Honey BCP	Glass Jars P Metal Lids CP	Returned Honey B

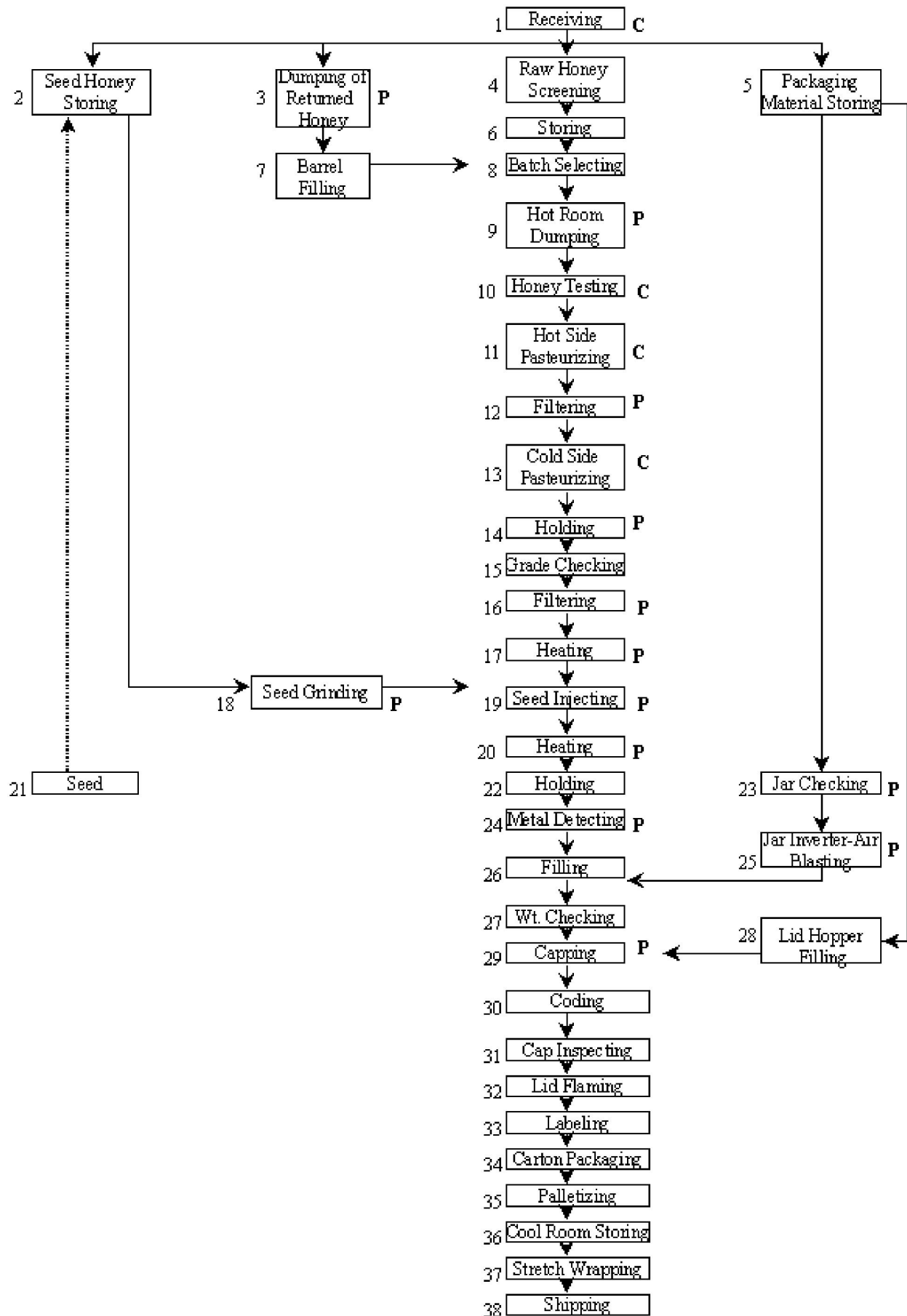
Seed Honey			
Seed Honey	BCP		

Date: _____

Approved by: _____



Form 3 - Process Flow Diagram Pasteurized Honey



Date: _____

Approved by: _____

**Form 4****Plant Schematic****Product Name: Pasteurized Honey**

This diagram should show both the product flow and the employee traffic patterns specific to the individual plant layout to identify potential areas of cross contamination

Date: _____**Approved by:** _____**Form 5****Biological Hazards****Product Name: Pasteurized Honey**

List all Biological Hazards related to Ingredients, Incoming Material, Processing, Product Flow, etc.

Identified Biological Hazards (Bacteria, Parasites, Viruses...)	Controlled at
Incoming Materials	
Raw Honey - Could contain <i>Clostridium botulinum</i> spores	
Returned Honey - Could contain <i>Clostridium botulinum</i> spores	
Seed Honey - Could contain <i>Clostridium botulinum</i> spores	

Date: _____**Approved by:** _____

**Form 6****Chemical Hazards****Product Name: Pasteurized Honey****List all Chemical Hazards related to Ingredients, Incoming Material, Processing, Product Flow, etc.**

Identified Chemical Hazards	Controlled at
Incoming Materials	
Raw Honey - Could contain antibiotic residues - Could contain phenol - Could be contaminated by chemical residues from barrels, with possibly unsafe liners or inner coatings (not listed)	
Metal Lids - Chemical contamination could result if interior coating or sealing compound is possibly unsafe (not listed)	
Seed Honey - Chemical contamination could result from pails having possibly unsafe interior coating (not listed)	
Process Steps	
#1 Receiving - Reception of possibly unsafe (not listed) materials (see above) or reception of lids, raw honey and seed honey from non-contract suppliers without specifications could result in honey contaminated with harmful chemical residues	
#10 Honey Testing - Lack of or inadequate testing of product batches could result in product with excessive Sulphathiazole and/or Phenol	
#11 Hot Side Pasteurizing - Could contain caustic soda residues	
#13 Cold Side Pasteurizing - Could contain caustic soda residues	

Date: _____**Approved by:** _____**Form 7****Physical Hazards****Product Name: Pasteurized Honey**

List all Physical Hazards related to Ingredients, Incoming Material, Processing, Product Flow, etc.

Identified Physical Hazards	Controlled at
Incoming Materials	
Raw Honey - Could contain metal and non-metal particles such as wood, stone, or glass	
Glass Jars - Could contain glass fragments	
Metal Lids - Could contain metal fragments	
Seed Honey - Could contain metal fragments	
Process Steps	
#3 Dumping of Returns - Could add glass fragments when returned product is emptied	
#9 Hot Room Dumping - Hazardous extraneous material from the barrel could be added during dumping	
#12 Filtering - A damaged filter could allow contamination of product with hazardous extraneous material	
#14 Holding - Hazardous extraneous material could fall into product in uncovered holding tank	
#16 Filtering - A damaged filter could allow contamination of product with hazardous extraneous material	
#17 Heating - Mixer blades could add metal fragments from abnormal contact or deterioration	
#18 Grinding - Auger could add metal fragments from abnormal contact or deterioration	
#19 Seed Injecting - Could add metal fragments from abnormal contact or deterioration of auger	
#20 Heating - Could add metal fragments from abnormal contact or deterioration	
#23 Jar Checking - Failure to detect abnormal or defective jars could result in glass fragments in product	
#24 Metal Detecting - Improper sensitivity could result in metal fragments in product	

#25 Jar Inverter/Air Blasting - Glass fragments could contaminate product if air pressure is not adequate	
#29 Capping - Glass chards from containers breaking by closing machine could contaminate product	

Date: _____

Approved by: _____

**Form 8****Critical Control Points (CCPs) Determination****Product Name: Pasteurized Honey**

Category and Identified Hazard Determine if fully controlled by Prerequisite Program(s) If YES = indicate Prerequisite Program and proceed to next identified hazard. If NO = proceed to question 1 (Q1)	Q1. Could a control measure(s) be used by the operator at any process step? If NO = not a CCP + identification on how this hazard will be controlled before and after the process + proceed to the next identified hazard If YES = description + next question (Q2)	Q2. Is it likely that contamination with the identified hazard could occur in excess of the acceptable level or could increase to an unacceptable level? If NO = not a CCP + proceed to the next identified hazard If YES = next question (Q3)	Q3. Is this process step specifically designed to eliminate/reduce the likely occurrence of the identified hazard to an acceptable level? If NO = next question (Q4) If YES = CCP + go to last column	Q4. Will a subsequent step eliminate the identified hazard or reduce likely occurrence to an acceptable level? If NO = CCP + go to last column If YES = not a CCP + identify subsequent step + proceed to the next identified hazard	CCP Number + proceed to next identified hazard
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Incoming Material: Raw Honey as Delivered

Biological <i>Clostridium botulinum</i> spores	No See Form 9				
Chemical Antibiotic residues	Yes Receiving	Yes	N/A	Yes Step #1, Receiving	
Chemical	Yes Supplier			Yes Step #10,	

Phenol & pesticides	specifications Product Testing	Yes	N/A	Product Testing	
Chemical Contamination from chemical residues, inner coating and liner of barrels	Yes Receiving	Yes	N/A	Yes Step #1, Receiving	
Physical Metal and non-metal such as wood, stone, glass	Yes Filtering	No Not likely to get through filter equipment			

Incoming Material: Returned Honey as delivered

Biological <i>Clostridium botulinum</i> spores	No See Form 9				
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Incoming Material: Seed Honey as delivered

Biological <i>Clostridium botulinum</i> spores	No See Form 9				
Chemical Non-listed coatings on pails container of seed honey	Yes Receiving	Yes	N/A	Yes Step #1, Receiving	
Physical Could contain metal fragments	Yes Metal Detecting	Yes	N/A	Yes Step #24, Metal Detecting	

Incoming Material: Glass Jars as delivered

Physical Non-metal (glass) fragments	Yes Air blasting/cleaning	Yes	N/A	Yes Step #25, Jar inverter/air blasting	
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Incoming Material: Metal Lids as delivered

Chemical Non listed interior coating,sealing compound	Yes Receiving	Yes	N/A	Yes Step #1, Receiving	
Physical Metal fragments	Yes Visual Inspection Supplier specifications	No			

Process Steps

Process Step: #1 Receiving

Chemical Reception of possibly unsafe (not listed) materials or reception of lids, raw honey and seed honey from non- contract suppliers without specifications could result in honey contaminated with harmful chemical residues	Yes Receiving	Yes	Yes		CCP-1C
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Process Step: #3 Dumping of Returns

Physical Non-metal (glass) Prerequisite programs					
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Process Step: #9 Hot Room Dumping

Physical Addition of					
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hazardous extraneous material					
Prerequisite programs					

Process Step: #10 Honey Testing

Chemical Lack of or inadequate testing could result in product containing sulphathiazole and/or phenol residues	Yes Product testing	Yes	Yes		CCP-2C
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Process Step: #11 Hot Side Pasteurizing

Chemical Caustic soda residues					
Prerequisite programs					

Process Step: #12 Filtering

Physical Metal fragments and non-metal (wood,glass,stones) A damaged filter could allow contamination of product with hazardous extraneous material					
Prerequisite programs					

Process Step: #13 Cold Side Pasteurizing

Chemical					
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Caustic soda residues					
Prerequisite programs					

Process Step: #14 Holding

Physical					
Fall of hazardous extraneous material					
Prerequisite programs					

Process Step: #16 Filtering

Physical					
Hazardous extraneous material (metal, wood, stone, glass)					
Prerequisite programs					

Process Step: #17 Heating

Physical	Yes	Yes	No	Yes	
Metal	Metal detecting			Metal detecting	

Process Step: #18 Grinding

Physical	Yes	Yes	No	Yes	
Metal	Metal detecting			Metal detecting	

Process Step: #19 Seed Injecting

Physical	Yes	Yes	No	Yes	
Metal	Metal detecting			Metal detecting	

Process Step: #20 Heating

Physical					
Metal from mixer blades	Yes Metal detecting	Yes	No	Yes Metal detecting	

Process Step: #23 Jar Checking

Physical					
Non-metal (glass) fragments	Yes Jar Inverter/air blaster	Yes	No	Yes Step #25, Jar Inverter/air blasting	

Process Step: #24 Metal Detecting

Physical					
Metal	Yes Metal detecting	Yes	Yes		CCP-3P

Process Step: #25 Jar Inverter, Air Blasting

Physical					
Glass fragments	Yes Air blasting	Yes	Yes		CCP-4P

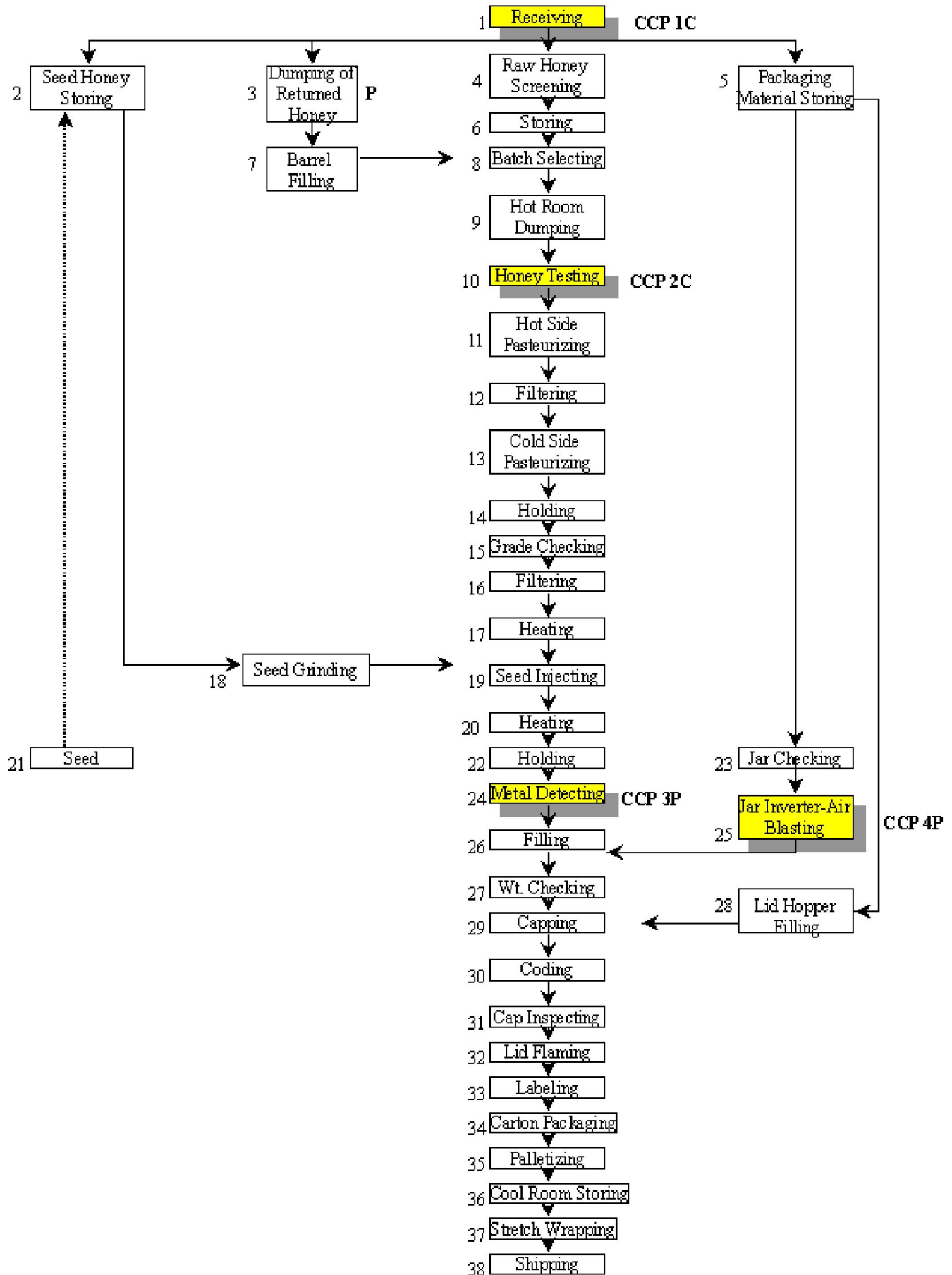
Process Step: #29 Capping

Physical					
Fragments of glass from breakage of glass bottles					
Prerequisite programs					

Date: _____

Approved by: _____

**Form 3A - Process Flow Diagram Pasteurized Honey**



Date: _____

Approved by: _____

**Form 5A****Biological Hazards and Controls****Product Name: Pasteurized Honey****List all Biological Hazards related to Ingredients, Incoming Material, Processing, Product Flow, etc.**

Identified Biological Hazards (Bacteria, Parasites, Viruses...)	Controlled at
Incoming Materials	
Raw Honey - Could contain <i>Clostridium botulinum</i> spores	See Form 9
Returned Honey - Could contain <i>Clostridium botulinum</i> spores	See Form 9
Seed Honey - Could contain <i>Clostridium botulinum</i> spores	See Form 9

Date: _____**Approved by:** _____**Form 6A****Chemical Hazards and Controls****Product Name: Pasteurized Honey****List all Chemical Hazards related to Ingredients, Incoming Material, Processing, Product Flow, etc.**

Identified Chemical Hazards	Controlled at
Incoming Materials	
Raw Honey - Could contain antibiotic residues - Could contain phenol - Could be contaminated by chemical residues from barrels, with possibly unsafe liners or inner coatings (not listed)	CCP-1C CCP-2C CCP-2C
Metal Lids - Chemical contamination could result if interior coating or sealing compound is possibly unsafe (not listed)	CCP-1C

Seed Honey - Chemical contamination could result from pails having possibly unsafe interior coating (not listed)	CCP-1C
Process Steps	
#1 Receiving - Reception of possibly unsafe (not listed) materials (see above) or reception of lids, raw honey and seed honey from non-contract suppliers without specifications could result in honey contaminated with harmful chemical residues	CCP-1C
#10 Honey Testing - Lack of or inadequate testing of product batches could result in product with excessive Sulphathiazole and/or Phenol	CCP-2C
#11 Hot Side Pasteurizing - Could contain caustic soda residues	Prerequisite programs (Sanitation, Personnel)
#13 Cold Side Pasteurizing - Could contain caustic soda residues	Prerequisite programs (Sanitation, Personnel)

Date: _____

Approved by: _____

**Form 7A****Physical Hazards and Controls****Product Name: Pasteurized Honey****List all Physical Hazards related to Ingredients, Incoming Material, Processing, Product Flow, etc.**

Identified Physical Hazards	Controlled at
Incoming Materials	
Raw Honey - Could contain metal and non-metal particles such as wood, stone, or glass	N/A Not likely to get through filter equipment
Glass Jars - Could contain glass fragments	CCP-4P
Metal Lids - Could contain metal fragments	N/A Not likely to occur
Seed Honey - Could contain metal fragments	CCP-3P
Process Steps	

#3 Dumping of Returns - Could add glass fragments when returned product is emptied	Prerequisite programs (Personnel, Premises)
#9 Hot Room Dumping - Hazardous extraneous material from the barrel could be added during dumping	Prerequisite programs (Equipment, Personnel, Transportation & Storage)
#12 Filtering - A damaged filter could allow contamination of product with hazardous extraneous material	Prerequisite programs (Equipment, Personnel)
#14 Holding - Hazardous extraneous material could fall into product in uncovered holding tank	Prerequisite programs (Sanitation, Equipment)
#16 Filtering - A damaged filter could allow contamination of product with hazardous extraneous material	Prerequisite programs (Equipment, Personnel)
#17 Heating - Mixer blades could add metal fragments from abnormal contact or deterioration	CCP-3P
#18 Grinding - Auger could add metal fragments from abnormal contact or deterioration	CCP-3P
#19 Seed Injecting - Could add metal fragments from abnormal contact or deterioration of auger	CCP-3P
#20 Heating - Could add metal fragments from abnormal contact or deterioration	CCP-3P
#23 Jar Checking - Failure to detect abnormal or defective jars could result in glass fragments in product	CCP-4P
#24 Metal Detecting - Improper sensitivity could result in metal fragments in product	CCP-3P
#25 Jar Inverter/Air Blasting - Glass fragments could contaminate product if air pressure is not adequate	CCP-4P
#29 Capping - Glass chards from containers breaking by closing machine could contaminate product	Prerequisite programs (Equipment including glass breakage procedures, Personnel)

Date: _____

Approved by: _____

**Form 9****Hazards not Controlled by Operator****Product Name: Pasteurized Honey****List all Biological, Chemical and Physical Hazards which are not Controlled by the Operator**

Identified Hazards	Indicate the way the Hazard could be Addressed (Cooking Instructions, Public Education, Use Before Date ...)
Incoming Materials	
Biological Hazard Raw honey, returned honey and seed honey could contain <i>Clostridium botulinum</i> spores	Public Education. There is no conclusive evidence that the <i>C.botulinum</i> spores are a hazard in honey. The medical community must recommend to new and expectant parents against the use of honey for infants under one year of age.

Date: _____**Approved by:** _____**Form 10****HACCP Plan****Product Name: Pasteurized Honey**

Process Step/Incoming Material: #1 Receiving
CCP/Hazard Number: CCP-1C

Hazard Description	Critical Limits	Monitoring Procedures	Deviation Procedures	Verification Procedure	HACCP Records
Reception of possibly unsafe materials (not listed) or reception of lids, raw honey and seed honey	Meets <i>Food and Drug</i>	Receiver to ensure raw honey is from producers with contractual specification regarding	Receiver will reject lot notify management	QC will review records review contract specifications	Supplier lists Contract specifications Lot receipt record

from non-contract suppliers could result in honey contaminated with harmful chemical residues	<i>Regulations</i> Listed suppliers and types of barrels	antibiotics Lids are from approved supplier Barrels and seed pails are correct type	and record rejected supplier.	and carry out periodic random antibiotic residue testing	Lot reject record Antibiotic test results Deviation record
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Process Step/Incoming Material: #10 Honey Testing
CCP/Hazard Number: CCP-2C

Hazard Description	Critical Limits	Monitoring Procedures	Deviation Procedures	Verification Procedure	HACCP Records
Excessive levels of Sulphathiazole and/or phenol residues	Meets <i>Food and Drug Regulations</i>	QC tests every batch	QC will notify production manager Batch will be held for retest and investigation by QC	QC will annually test in- house lab against control samples from a private lab and review testing procedures	Batch Production Records Batch Test Records Primary Test Record Deviation Record Verification Record

Process Step/Incoming Material: #22 Metal Detecting
CCP/Hazard Number: CCP-3P

Hazard Description	Critical Limits	Monitoring Procedures	Deviation Procedures	Verification Procedure	HACCP Records
Improper sensitivity resulting in metal fragments in product	No metal fragments	4 times/day line operator tests the detector as described in test manual	If metal detector faulty operator will notify management and will hold product since last satisfactory check and investigate Operator will recalibrate detector and notify QC	QC will check monitoring records weekly for: proper times proper procedures signed records	Monitoring record with responsible signatures and comments Metal detector deviation & action record Operation manager verification records with responsible signatures and

					comments
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Process Step/Incoming Material: #24 Jar Invertor/Air Blasting
CCP/Hazard Number: CCP-4P

Hazard Description	Critical Limits	Monitoring Procedures	Deviation Procedures	Verification Procedure	HACCP Records
Glass fragments in jars resulting from inadequate air pressure	No glass fragments Minimum air blast pressure of 30 psi required	Air gauge monitored 4 times/day by line operator Indicating light on when operating properly	If gauge reads < 30 psi operator will notify management, will stop line and hold product lot since last satisfactory check, operator will rework product, reset air pressure and notify QC	QC will check monitoring records weekly (times and signatures) and will calibrate gauge semi annually	Monitoring record with responsible signatures and comments Jar inverter/air blast deviation & action record with responsible signatures and comments Verification records with responsible signatures and comments

Date: _____

Approved by: _____



Jar Invertor Check Program - Form CCC-4P

Duty Performed by: Line Operator

Person Responsible for Compliance and Record Keeping: Production Supervisor

Date	Time	Test by:	Results	Date	Time	Test by:	Results

Metal Detector Check Program - Form CCC-3P

Duty Performed by: Line Operator

Person Responsible for Compliance and Record Keeping: Production Supervisor

Date	Product	
Time	Tested by	Results
9:55 AM		
11:55 AM		
2:40 PM		
3:55 PM		
Quantity of Product on hold		
Verification by:		

Date	Product	
Time	Tested by	Results
9:55 AM		
11:55 AM		
2:40 PM		
3:55 PM		
Quantity of Product on hold		
Verification by:		