

**SAMPLE DOCUMENTATION  
PRODUCTION OF DAIRY PRODUCTS IN FOOD SERVICE  
ESTABLISHMENTS**



Ministry of  
Health

**Important**

**Frozen Dairy Desserts: Ice cream, Gelato, Sherbet, Kulfi**

The Guidelines for the Production of Dairy Foods in Food Service Establishments Website is intended for restaurant stakeholders (owners, managers, chefs and kitchen staff) and environmental health officers (EHOs) inspecting food premises where dairy products are being made for immediate consumption, according to the British Columbia Milk Industry Act, Dairy Plant Exception Regulation (BC Reg. 224/2019) [https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/224\\_2019](https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/224_2019).

Section 2 of the DPER provides a specific exemption to a food premises that is using a freezing device to make frozen dairy products from a commercially prepared mix (e.g. ice cream mix, milkshake mix, “powdered” ice cream or soft serve mix). The addition of additional dairy ingredients is not contemplated in the intent of this section.

Minimal processing such as rehydrating the powdered mix (i.e. addition of water), and the addition of lower risk flavourings and inclusions added before or after freezing into molds or containers would be considered allowable under this section.

Food premises that do not meet the requirements of the DPER would be regulated as a dairy plant under the BC Milk Industry Act. Please visit the BC Centre For Disease Control web page for more information at:

<http://www.bccdc.ca/health-professionals/professional-resources/dairy-plant-licensing-inspection#Licensing>

## Production of Ice Cream in Food Service Establishment

**Ice cream** is a standardized product in Canada. It is defined in the Canadian Food and Drug Regulations (B.08.062) as the frozen food obtained by freezing an *ice cream mix*, with or without the incorporation of air. By regulation, ice cream must have 10% BF in the finished product which is achieved by blending milk and cream together. In the STANDARD RECIPE, 18% BF Coffee Cream is used to make a 13% BF ice cream. If cocoa or chocolate syrup, fruits, nuts or confections are added then the % BF level can be reduced to 8%. An easy method to calculate other butterfat contents is included in the Appendices (Pearson Square Method).



### STANDARD RECIPE

This example recipe will make a mix with approximately 13% BF in the finished product.

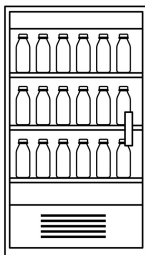
- 11.6 Kg Coffee Cream (18% BF)
- 675 g Skim Milk Powder
- 2.25 Kg Sugar
- 45 g Gelatin
- 375 g Pasteurized Liquid Whole Egg
- 75 mL Vanilla

### Equipment List

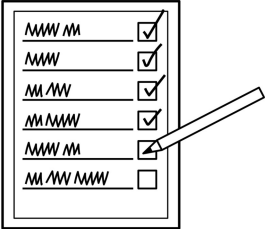

Kettle/Pot	Scale	Spoon	Whisk
Hand held mixer (robocoupe)	Ice cream maker/Freezing device	Thermometer	

## PROCESS BASED FOOD SAFETY PLAN

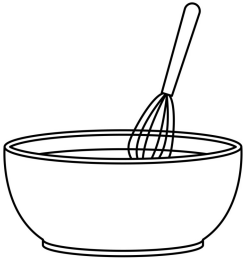
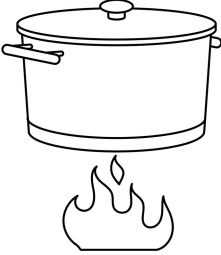
Step #	Process Step	Potential Hazards	Instructions and Outcomes
1	Purchase and refrigerate cream	<p><u>Biological</u></p> <p>Pathogen contamination due to using product that is past best before date.</p> <p>Pathogen growth due to time/temperature abuse.</p> <p>Pathogen contamination due to condensation falling onto/into uncovered product.</p>	<ul style="list-style-type: none"> <li>Purchase and use only pasteurized dairy ingredients from approved sources.</li> <li>Keep pasteurized dairy ingredients in original commercial packaging, as purchased, until use.</li> <li>Store at 4°C or colder.</li> </ul> <p style="text-align: center;"><b>Do not use products where the best before date has expired.</b></p>



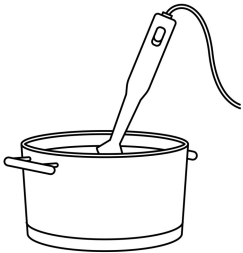
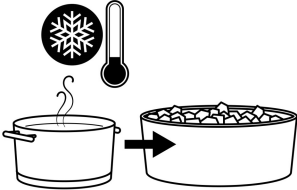
## PROCESS BASED FOOD SAFETY PLAN

Step #	Process Step	Potential Hazards	Instructions and Outcomes
2	Preoperational Checks  	<p><b><u>Biological</u></b> Pathogen contamination due to incomplete sanitation procedures.</p> <p><b><u>Chemical</u></b> Cross contamination due to improper separation of activities. Contamination with non-food chemicals due to residual cleaners or sanitizers. Contamination with non-food chemicals due to mishandling of sanitizer spray bottles during use or filling.</p>	<ul style="list-style-type: none"> <li>• Inspect, clean and sanitize designated work area.</li> <li>• Inspect equipment, utensils, and processing areas (clean and sanitized).</li> <li>• Use written recipe each time you make the product to ensure consistency of measurements and that all steps in the production process are followed.</li> <li>• Label the sanitizer spray bottles to indicate the content (non-food chemical)</li> </ul>
3	Stage Ingredients  	<p><b><u>Biological</u></b> Pathogen growth due to time/temperature abuse.  Pathogen contamination due to unsanitary equipment. Pathogen cross-contamination due to improper employee handling practices.</p> <p><b><u>Chemical</u></b> Contamination with non-food chemicals due to residual cleaners or sanitizers.</p> <p><b><u>Allergens</u></b> Allergen cross contamination due to improper preparation of ingredients.</p>	<p><b><i>Ice Cream</i></b> is a frozen dairy dessert made with high fat dairy ingredients, a source of dairy solids (skim milk powder), sweeteners, stabilizers and emulsifiers. Eggs are sometimes used in this product and thus allergen cross contamination must be considered when making this product. High risk ingredients such as raw eggs are not allowed to make ice cream at a food service establishment. Pasteurized liquid egg products must be used.</p>

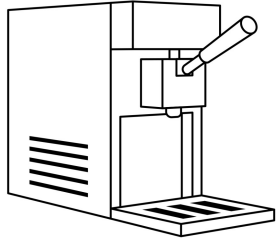
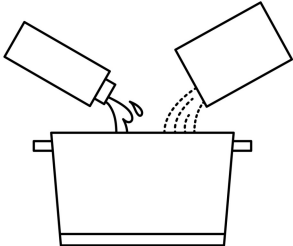
## PROCESS BASED FOOD SAFETY PLAN

Step #	Process Step	Potential Hazards	Instructions and Outcomes
4	Adjust Milk composition & Blend Ingredients  	<p><b><u>Biological</u></b>                      Pathogen contamination due to unsanitary equipment.                      Pathogen growth due to poor inventory control (use of FIFO)                      Pathogen contamination due to poor hygiene and improper handling by employees.                      Pathogen growth due to time/temperature abuse.</p> <p><b><u>Chemical</u></b>                      Contamination with non-food chemicals due to residual cleaners or sanitizers.</p> <p><b><u>Physical</u></b>                      Hazardous extraneous material contamination due to improper preparation of ingredients.</p>	<ul style="list-style-type: none"> <li>• Adjust milk composition to achieve the desired texture (i.e., add milk powder). See appendix for instructions of how to standardize milk using Pearson Square Method.</li> <li>• Blend milk ingredients and begin the heating step.</li> <li>• Disperse stabilizer in sugars. Slowly add dry ingredients to warm milk and cream portion of mix using a whisk. Ensure all ingredients are incorporated and continue heating.</li> </ul>
5	Cook  	<p><b><u>Biological</u></b>                      Pathogen growth due to improper heat treatment.                       Pathogen contamination due to poor hygiene and improper handling by employees.                      Pathogen contamination due to unsanitary equipment.                      Pathogen growth due to improper calibration of thermometer.</p> <p><b><u>Chemical</u></b>                      Contamination with non-food chemicals due to residual cleaners or sanitizers.</p>	<ul style="list-style-type: none"> <li>• Heat mix to desired temperature as per your recipe (reach temperature within 1 hour).</li> <li>• Examples: heat to 82°C for 10 minutes.</li> <li>• Stir constantly to avoid burning the ice cream mix. Use of double boiler or water bath is recommended.</li> <li>• Check temperature with clean and sanitized probe thermometer.</li> </ul>

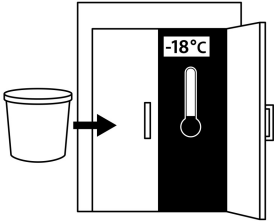
## PROCESS BASED FOOD SAFETY PLAN

Step #	Process Step	Potential Hazards	Instructions and Outcomes
6	Shear	<p><u>Biological</u></p> <p>Pathogen contamination due to poor hygiene and improper handling by employees.</p> <p>Pathogen growth due to time/temperature abuse.</p> <p><u>Chemical</u></p> <p>Contamination with non-food chemicals due to incomplete sanitation procedures.</p> <p><u>Allergens</u></p> <p>Contamination by allergens due to unsanitary equipment.</p>	<ul style="list-style-type: none"> <li>• A hand held blender is sufficient for this step in the process when making small batches of ice cream. The shearing step ensures that that dry ingredients are dispersed and that the fat globules are small and dispersed in the mix.</li> <li>• This step is after the heat treatment so it must be done with good sanitation to reduce the risk of post heat treatment contamination of the ice cream mix.</li> <li>• Sanitize the blender before use. This can be done in a chlorine sanitizer solution (200 ppm). Shake residual sanitizer from the hand held blender before submerging in ice cream mix.</li> </ul>
			
7	Cool/Age Mix	<p><u>Biological</u></p> <p>Pathogen growth due to time/temperature abuse.</p> <p>Pathogen growth due to cooler malfunction.</p> <p>Pathogen contamination due to poor hygiene and improper handling by employees.</p> <p>Pathogen contamination due to poorly maintained refrigeration equipment.</p> <p><u>Physical</u></p> <p>Hazardous extraneous material contamination due to dirt and debris falling into uncovered product.</p>	<p><b>CRITICAL CONTROL POINT (CCP1B)</b></p> <ul style="list-style-type: none"> <li>• Cool to 4°C. Use an ice bath or water in sink to remove initial heat.</li> <li>• Ensure proper cooling rate: Cool down to 20°C within 2 hours, and 20°C to 4°C within 4 hours. Total cooling time not to exceed 6 hours.</li> <li>• Allow mix to cool for at least two hours, preferably overnight. Aging the mix will allow the stabilizers to fully hydrate and the butterfat to solidify. This will improve the freezing properties and final product texture.</li> </ul>
			

## PROCESS BASED FOOD SAFETY PLAN

Step #	Process Step	Potential Hazards	Instructions and Outcomes
8	Freeze  	<p><b><u>Biological</u></b>            Pathogen contamination due to unsanitary equipment.            Pathogen contamination due to poor hygiene and improper handling by employees.</p> <p><b><u>Allergens</u></b>            Allergen cross contamination due to improper production scheduling.</p>	<ul style="list-style-type: none"> <li>• Flavouring such as vanilla can be added to mix prior to freezing. Pour cold flavoured mix into an ice cream maker, turn on the machine, and churn according to manufacturer's directions.</li> <li>• Ice cream may be served as soft serve ice cream at this point or transferred to freezer for hardening.</li> </ul>
9	Add flavours, fruit or other ingredients (if applicable)  	<p><b><u>Biological</u></b>            Pathogen contamination due to improper employee hygiene practices.            Pathogen contamination due to using flavouring ingredient that is contaminated (past code date, staged in a unhygienic manner).            Pathogen contamination due to unsanitary equipment.</p> <p><b><u>Allergens</u></b>            Allergen cross contamination due to improper separation of activities.            Contamination by allergens due to unsanitary equipment.            Allergen cross contamination due to improper employee handling practices.</p> <p><b><u>Physical</u></b>            Hazardous extraneous material contamination due to poorly prepared (staged) flavouring ingredient (pits, nut shells, packaging)</p>	<ul style="list-style-type: none"> <li>• These ingredients can be a source of contamination and may affect the food safety and shelf life stability of the product.</li> <li>• Ensure flavours, fruit and other added ingredients are a low microbial risk:               <ol style="list-style-type: none"> <li>1. Wash fruit</li> <li>2. Use cooked fruit preparations</li> <li>3. Add using sanitized supplementary utensils.</li> </ol> </li> <li>• Control nut allergen cross contamination between nut ingredients (e.g. cashews, pistachios and almonds). Clean area and utensils following four step sanitation procedure between nut containing products.</li> <li>• Ensure flavouring ingredients are within code. Use FIFO inventory control.</li> </ul>

## PROCESS BASED FOOD SAFETY PLAN

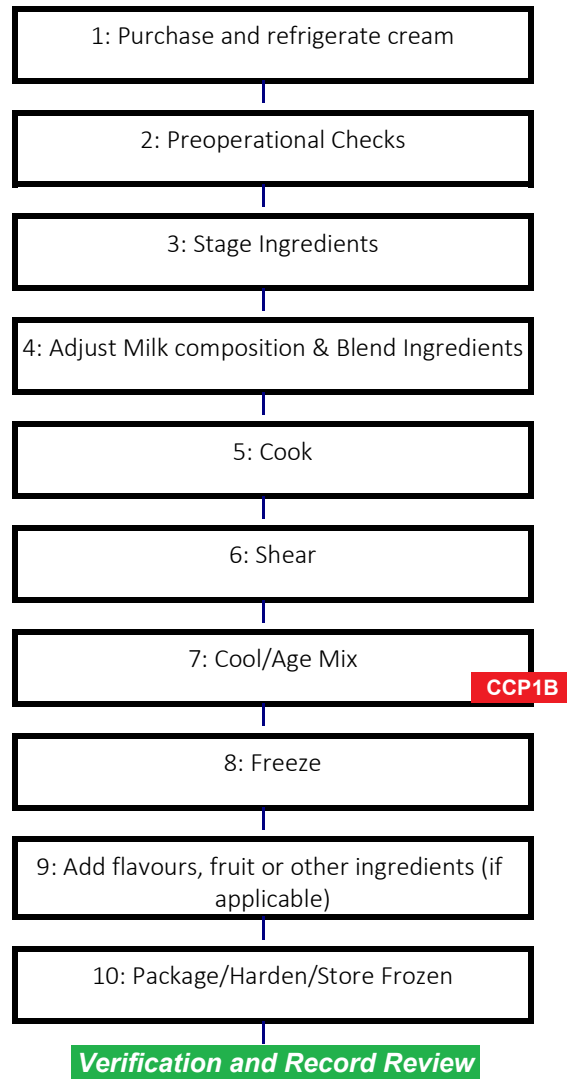
Step #	Process Step	Potential Hazards	Instructions and Outcomes
10	Package/Harden/Store Frozen  	<b>Biological</b> Pathogen contamination due to condensation falling onto/into uncovered product. Pathogen growth due to inadequate freezing (e.g. time/temperature abuse, improper air flow, space between packages, stacking procedure).	<ul style="list-style-type: none"><li>• Date code product before transferring to freezer.</li><li>• Ensure rapid freezing for control of ice crystal formation</li></ul>



## Product Description Form (Foodservice)

Product Category	Frozen Dairy Desserts
1. What is your product name and weight/volume?	Ice Cream
2. What type of product is it (e.g. raw, ready-to-eat, ready-to-cook, or ready for further processing)	Ready To Eat (RTE).
3. What are your product's important food safety characteristics (e.g. acidity, water activity, salinity, etc.)?	Frozen, added sugar.
4. What allergens does your product contain?	Milk See list of flavouring ingredients used in ice cream for potential allergens.
5. What restricted ingredients (preservatives, additives, etc.) does your product contain, and in what amounts e.g. grams)	None
6. How do you store your product e.g. keep refrigerated, keep frozen, keep dry) in your establishment and when you ship your product?	Stored and distributed at frozen temperature (<-18°C).
7. What is the shelflife of your product under proper storage conditions?	2 to 3 months in freezer (<-18°C).
8. Who will consume your product (e.g. the general public, the elderly, the immunocompromised, infants?)	Food Service customers.
9. How might the consumer mishandle your product and what safety measures will prevent this?	Mishandled in kitchen.
10. Where will the product be sold?	At own facility.
11. What information is on your product label?	Keep frozen, production date (lot code).

**Ice Cream**  
**Process Flow Table**



## Critical Control Points Table: Ice Cream

1. Identifying Hazards	2. Identifying Critical Control Points (CCP)	3. Establishing Critical Limits:	4. Establishing Monitoring Procedures (who, what, how and when	5. Establishing Corrective Actions:	6. Establishing Verification Procedures (who, what, how and when	7. Keeping Records
Pathogen growth due to improper cooling procedures	<b>CCP1B</b> Cool/Age Mix	Cool down to 20 °C within 2 hours and from 20 to 4 °C within 4 hours. Total cooling time not to exceed 6 hours.	<ol style="list-style-type: none"> <li>1. Production worker checks temperature with clean and sanitized probe thermometer.</li> <li>2. Check temperature every hour until 4 °C is reached.</li> <li>3. Record on batch report</li> </ol>	<p><b>When critical limits are not being met for one or more product samples.</b></p> <ol style="list-style-type: none"> <li>1. Report slow cooling to Operator. Check cooler and determine if maintenance is required.</li> <li>2. Place product on hold. Discard ice cream mix if time limit has not been met.</li> <li>3. Immediately investigate the cause of the non-conformance and take necessary corrective actions to prevent reoccurrence. Record all non-conformances and corrective actions on batch report.</li> </ol>	<ol style="list-style-type: none"> <li>1. Operator reviews and signs batch reports at end of production day to ensure that it has been properly completed.</li> <li>2. Once per week, the Operator ensures that the temperature checks follow the procedure (observes production worker in their task).</li> <li>3. Operator reviews and signs cooler temperature once per week.</li> <li>4. If a non-conformance is found during the verification procedure, immediately investigate the cause of the non-conformance and take necessary corrective actions to prevent reoccurrence.</li> <li>5. Record all observations on the batch report, including the date, the time and initials.</li> </ol>	Ice Cream Batch Report Cooler Temperature Log Thermometer Calibration Log

Note: CCPs are points in the your process where controls are essential to preventing hazards or reducing them to acceptable levels. You may not be able to prevent or reduce the risk of the hazard at any later step. A CCP is measureable. Some examples of measureable CCPS in dairy processing are the time and temperature of pasteurization, the pH of a fermented dairy product and the water activity of a dried product such as skim milk powder. Foodservice establishments may include additional preparation steps as CCPs particularly when there is no cook step in the operation. These additional CCPs control the hazards associated with crosscontamination due to sanitation and personnel.

## Ice Cream Batch Report

Date Made: 2022-Mar-03  
 Lot Code: 22062  
 Operator: Joe

**Preoperational checks done** Yes, JG  
 Desired Batch Size (Kg) 15 Kg

### Ingredients Used

Ingredient	Amount	Code/Lot	Supplier
Table Cream (18% BF)	11.6	MR 29	Saputo
Skim Milk Powder	675 G	19205	Pacific
Sugar	2.25 Kg	22062	Lantic
Gelatin	45 G	23 JA 09	Davis
Pasteurized Liquid Whole Egg	375G	22 JN 25	Vanderpols
Vanilla (optional)	75 mL	21295	Caldic

Process Step	Time	Temp ( °C )
Blend ingredients and start cook step	8:15	7
Cook start	8:30	82
Cook end	8:40	82
CCP1B Start cool in ice bath	8:45	82
Cool end	9:30	4
Record temperature of mix after aging in cooler overnight		4

Freezing

**Ice Cream Freezer Sanitized** Yes, JG

Flavour Preparation Used	Amount (Kg)	Code/Lot	Supplier
IQF Strawberries	2.2	21195	Pacific Coast
IQF Blueberries	1.5	21232	Pacific Coast

Observed Deviations and Corrective Actions

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Verification by:  
Mary Smith

Date of Record Review:  
2022-Mar-08