SAMPLE DOCUMENTATION

PRODUCTION OF DAIRY PRODUCTS IN FOOD SERVICE ESTABLISHMENTS

BRITISH COLUMBIA | Ministry of Health

Updated: September 2022

Production of Sour Cream in Food Service Establishment

Cultured sour cream is a standardized product in Canada. It is defined in the Canadian Food and Drug Regulations (B.08.077) as the product prepared by the souring of pasteurized cream with acid producing bacterial culture and shall contain not less than 14 percent milk fat. Sour cream is thick and tangy and is a good base for dips, dressings, spreads, and sauces. It is used as a tempering condiment for spicy foods.

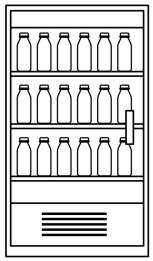
STANDARD RECIPE

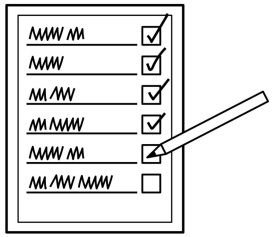
10 Litres of pasteurized 18% BF cream
125 g skim milk powder (about 2/3 cup)
Sour Cream bacterial culture (follow manufacturers instructions)

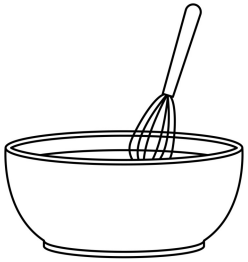
Equipment List

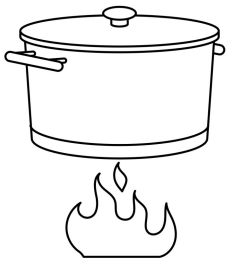
Measuring cups	Long handled metal spoon	Scale	Kettle/Pot
Thermometer	Incubation area (away from drafts)		

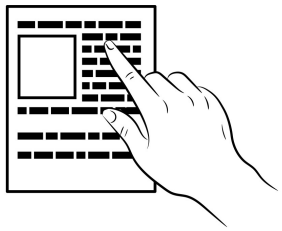
PROCESS BASED FOOD SAFETY PLAN

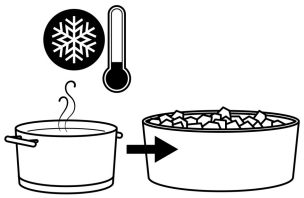
Step #	Process Step	Potential Hazards	Instructions and Outcomes
1	Purchase and refrigerate cream 	**Biological** Pathogen contamination due to using product that is past best before date. Pathogen growth due to time/temperature abuse. Pathogen contamination due to condensation falling onto/into uncovered product.	• Purchase and use only pasteurized dairy ingredients from approved sources. • Keep pasteurized dairy ingredients in original commercial packaging, as purchased, until use. • Store at 4°C or colder. **Do not use products where the best before date has expired.**

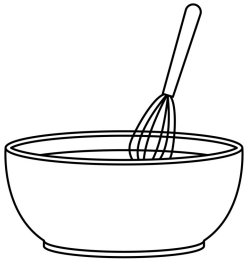
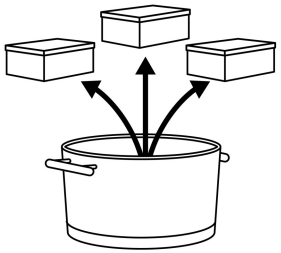
PROCESS BASED FOOD SAFETY PLAN			
Step #	**Process Step**	**Potential Hazards**	**Instructions and Outcomes**
2	Preoperational Checks 	**Biological** Pathogen contamination due to incomplete sanitation procedures. **Chemical** Cross contamination due to improper separation of activities. Contamination with non-food chemicals due to residual cleaners or sanitizers. Contamination with non-food chemicals due to mishandling of sanitizer spray bottlers during use or filling.	• Inspect, clean and sanitize designated work area. • Inspect equipment, utensils, and processing areas (clean and sanitized). • Use written recipe each time you make the product to ensure consistency of measurements and that all steps in the production process are followed. • Label the sanitizer spray bottles to indicate the content (non-food chemical).
3	Stage Ingredients 	**Biological** Pathogen growth due to time/temperature abuse. Pathogen contamination due to unsanitary equipment. Pathogen cross-contamination due to improper employee handling practices. **Chemical** Contamination with non-food chemicals due to residual cleaners or sanitizers. **Allergens** Allergen cross contamination due to improper separation of activities.	***Sour cream*** is a cultured cream product that contains between 14 and 20% butterfat. An 18% BF Table Cream can be a good starting point for this product. Half and half cream (10%BF) can be used but the sour cream will have a thinner consistency. Skim milk powder can be added to improve the consistency.

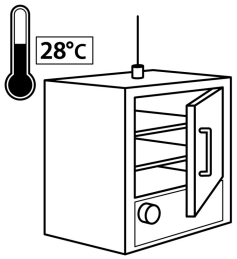
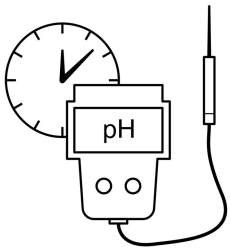
PROCESS BASED FOOD SAFETY PLAN			
Step #	**Process Step**	**Potential Hazards**	**Instructions and Outcomes**
4	Adjust Milk composition & Blend Ingredients 	**Biological** Pathogen contamination due to unsanitary equipment. Pathogen growth due to poor inventory control (use of FIFO) Pathogen contamination due to poor hygiene and improper handling by employees. Pathogen growth due to time/temperature abuse. **Chemical** Contamination with non-food chemicals due to residual cleaners or sanitizers. **Physical** Hazardous extraneous material contamination due to improper preparation of ingredients.	• 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. • Blend milk ingredients and begin the heating step. • Slowly add dry ingredients to warm milk and cream portion of mix using a whisk. Ensure all ingredients are incorporated and continue heating.

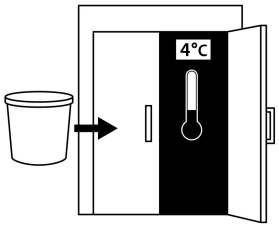
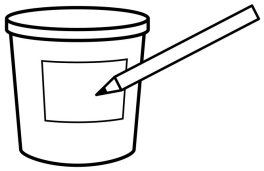
PROCESS BASED FOOD SAFETY PLAN			
Step #	**Process Step**	**Potential Hazards**	**Instructions and Outcomes**
5	Heat cream/Warm cream to inoculation temperature 	**Biological** Pathogen growth due to time/temperature abuse (too slow heating rate, incorrectly calibrated thermometer). Pathogen contamination due to poor hygiene and improper handling by employees. Pathogen contamination due to unsanitary equipment. **Chemical** Contamination with non-food chemicals due to residual cleaners or sanitizers. **Allergens** Contamination by allergens due to improper separation of activities.	• The starter culture used for sour cream is a mesophilic culture and grows at room temperature. • Heat milk to desired temperature as per your recipe (reach temperature within 1 hour) • Sour cream can be made by ***warming milk to inoculation temperature*** following bacterial culture manufacturers recommendations. • It is beneficial to use a ***heat treatment such as 82 °C for 10 minutes***. This optional heat treatment will denature the milk proteins and improve shelf life. • Heat treatment and the addition of skim milk powder to increase total milk solids are significant factors with respect to firmness and viscosity of the resulting sour cream. • Stir constantly to avoid burning the cream. Use of a water bath or double boiler is recommended. **Check temperature with clean and sanitized probe thermometer**

PROCESS BASED FOOD SAFETY PLAN			
Step #	**Process Step**	**Potential Hazards**	**Instructions and Outcomes**
6	Prepare Bacterial Culture 	**Biological** Pathogen contamination due to failure of culture/culture that is past code/inactive cultures. Pathogen contamination due to poor hygiene and improper handling by employees. Pathogen contamination due to unsanitary equipment. **Chemical** Contamination with non-food chemicals due to residual cleaners or sanitizers. **Allergens** Allergen cross contamination due to improper employee handling practices.	• Use only approved commercial starter culture. Check that culture is still within the expiry date. • Follow the manufacturer's instructions for usage rate and incubation requirements. • Hygienically measure out the required amount of bacterial culture from the package. • Hygienically close the culture package and return to storage. For foil packages, use an alcohol wipe (~60% alcohol content) to sanitize the outside of the package before sealing up. Place the package in a clean, food-grade re-sealable bag or container and store container as per the manufacturer's instructions. • Label the sanitizer spray bottles to indicate the content (non-food chemical) **Previous batches of sour cream or sour cream from other manufacturers are not approved for use as a bacterial culture.**

PROCESS BASED FOOD SAFETY PLAN			
Step #	**Process Step**	**Potential Hazards**	**Instructions and Outcomes**
7	Cool cream to inoculation temperature (if cream was heated) 	**Biological** Pathogen growth due to time/temperature abuse (too slow cooling rate, incorrectly calibratred thermometer). Pathogen contamination due to poor hygiene and improper handling by employees. Pathogen contamination due to uncovered or unsealed containers (improper packaging). **Physical** Hazardous extraneous material contamination due to uncovered or unsealed containers (improper packaging).	**CRITICAL CONTROL POINT (CCP1B)** • Cool down quickly to incubation temperature (reach temperature within 1 hour). • Cool the pot in a sink with cold water or ice bath. Example: cool to 28°C (refer to starter culture manufacturer for exact incubation temperature requirements) • Prolonged cooling time may allow for the growth of undesirable microorganisms (for example, spore formers naturally present in the milk). • Measure pH of cream. Hygienically remove a sample of cooled cream and measure the pH. This is your starting pH for the batch. • Discard cream sample after testing. **Corrective Action:** Discard cream if time limit has not been met. Document on batch sheet or production logbook

PROCESS BASED FOOD SAFETY PLAN			
Step #	**Process Step**	**Potential Hazards**	**Instructions and Outcomes**
8	Add Bacterial Culture (inoculate) 	**Biological** Pathogen contamination due to mixing culture with contaminated dairy ingredient. Pathogen contamination due to poor hygiene and improper handling by employees. Pathogen contamination due to unsanitary equipment. **Chemical** Contamination with non-food chemicals due to residual cleaners or sanitizers. **Allergens** Allergen cross contamination due to improper employee handling practices.	• Follow the instructions in this manual for the hygienic handling of dairy cultures. • Check that bacterial culture is still within the expiry date. Record lot code of culture used on batch record. • Sprinkle the bacterial culture directly into the processing container, or premix the culture with a small volume of the cream before adding to the processing container. • For the premix method, hygienically remove a small volume of cooled cream and mix in the starter culture. When the culture is dispersed, pour the mix back into the processing container. • Mix gently and thoroughly to disperse the culture.
9	Transfer to containers (if producing container set product) 	**Biological** Pathogen growth due to time/temperature abuse. Pathogen contamination due to use of non food grade, damaged or unclean containers (new or used). **Chemical** Contamination with non-food chemicals due to use of non food grade packaging material **Allergens** Allergen cross contamination due to unsanitary equipment. **Physical** Hazardous extraneous material contamination due to dirt and debris falling into uncovered product.	• Hygienically transfer inoculated cream to food grade containers with lids. • If re-using containers, ensure they are cleaned, sanitized, and approved for multi-use.

PROCESS BASED FOOD SAFETY PLAN			
Step #	**Process Step**	**Potential Hazards**	**Instructions and Outcomes**
10	Incubate/Ferment 	**Biological** Incomplete acidity development due to improper incubation procedure. Pathogen growth due to improper incubation temperature. Pathogen contamination due to uncovered or unsealed containers (improper packaging). **Physical** Hazardous extraneous material contamination due to uncovered or unsealed containers (improper packaging).	• Sour cream may be incubated by leaving it covered at room temperature in an area away from drafts. It may take up to 12 hours for the acidity, flavour, and body to develop. • Monitor the acidity development during the incubation
11	Reach end point pH 	**Biological** Pathogen growth due to failure of culture/culture that is past code/inactive cultures. Incomplete acidity development due to improper incubation procedure. Pathogen growth due to time/temperature abuse. Pathogen contamination due to improper employee handling practices. Pathogen contamination due to unsanitary equipment. **Allergens** Allergen cross contamination due to improper employee handling practices.	**CRITICAL CONTROL POINT (CCP1B)** • **Endpoint pH ≤4.6 or lower within 2 hours of the expected incubation time.** • Check the product pH at the expected completion time for the fermentation stage **Important: The normal fermentation time is specific to your process and must be established during your product development.** • If the target pH has not been reached, continue incubating and recheck the pH after 1 hour. **Corrective Action:** • If the end point pH (pH 4.6 or lower) has not been reached after 2 hours past the expected incubation time, there is a problem with the batch and it must be discarded. **Wash and sanitize all utensils, containers, and equipment before re-using them. Document on batch sheet or production logbook.**

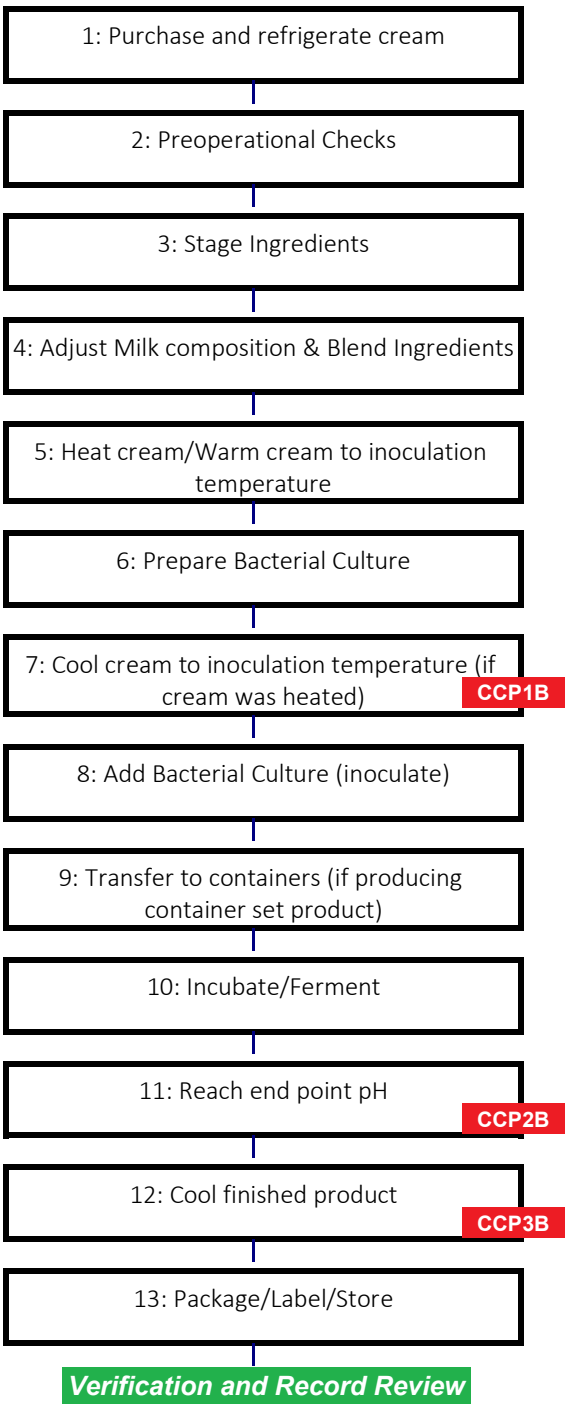
PROCESS BASED FOOD SAFETY PLAN			
Step #	**Process Step**	**Potential Hazards**	**Instructions and Outcomes**
12	Cool finished product 	**Biological** Pathogen growth due to time/temperature abuse (too slow cooling rate, incorrectly calibratred thermometer). Pathogen contamination due to poor hygiene and improper handling by employees. Pathogen contamination due to unsanitary equipment. **Chemical** Contamination with non-food chemicals due to residual cleaners or sanitizers.	**CRITICAL CONTROL POINT (CCP3B)** • Cool to 4°C to stop the fermentation process. 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.
13	Package/Label/Store 	**Biological** Pathogen growth due to improper storage conditions (cooler malfunction). Pathogen growth due to time/temperature abuse. Pathogen contamination due to exposed packaging material/damaged packaging. Pathogen contamination due to uncovered or unsealed containers (improper packaging). Pathogen growth due to poor inventory control (use of FIFO) **Physical** Hazardous extraneous material contamination due to uncovered or unsealed containers (improper packaging).	• Date product with 3 day use by date. • Store at 4°C or colder. • Discard product after 3 days. • Do not freeze The sour cream is better if allowed to age for one day before use.

Product Description Form (Foodservice)

Product Category	Cultured Products
1. What is your product name and weight/volume?	Sour 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), ingredient in meal preparation.
3. What are your product's important food safety characteristics (e.g. acidity, water activity, salinity, etc.)?	Pasteurized, cultured, stored refrigerated, pH $\leq$ 4.6.
4. What allergens does your product contain?	Milk
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 estblishment and when you ship your product?	Store in lidded container in refrigerator.
7. What is the shelflife of your product under proper storage conditions?	3 days refrigerated (4°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 refrigerated, production date (lot code).

Sour Cream

Process Flow Table



Critical Control Points Table: Sour 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
Growth of undesirable microorganisms (spore formers) due to improper cooling	**CCP1B** Cool cream to inoculation temperature (if cream was heated)	Cool down quickly to inoculation temperature. Reach temperature within 1 hour.	1. Production worker checks temperature with clean and sanitized probe thermometer. 2. Check temperature every 5 minutes during cooling to incubation temperature. 3. Record on batch report	**When critical limits are not being met for one or more product samples.** 1. Report slow cooling to Operator. Check cooler and determine if maintenance is required. 2. Discard batch if time limit has not been met. 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.	1. Operator reviews and signs batch reports at end of production day to ensure that it has been properly completed. 2. Once per week, the Operator ensures that the temperature checks follow the procedure (observes production worker in their task). 3. 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. 4. Record all observations on the batch report, including the date, the time and initials.	Sour Cream Batch Report Cooler Temperature Log Thermometer Calibration Log
Incomplete acidity development due to improper incubation procedures	**CCP2B** Reach end point pH	Reach endpoint pH of≤ 4.6 within 2 hours of the expected incubation time	1. Production worker checks pH with clean and sanitized calibrated pH meter. 2. Start pH checks one hour before anticipated end point pH for product and repeat every hour until end of incubation period. 3. Record on batch report.	**When critical limits are not being met for one or more sample.** 1. If target pH has not been achieved, continue for one more hour. **2.** Discard the batch if end point pH is not reached after this additional incubation time. **The batch is contaminated and should not be used.** 3. Record as corrective action on batch report. 4. **Clean and sanitize utensils, containers and equipment before reusing.**	1. Operator will establish fermentation time for sour cream process. 2. Operator reviews and signs batch reports at end of production day to ensure that it has been properly completed. 3. Once per week, the Operator ensures that the pH checks follow the procedure (observes production worker in their task). 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. Record all observations on the batch report, including the date, the time and initials.	Sour Cream Batch Report pH Meter 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.

Critical Control Points Table: Sour 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	**CCP3B** Cool finished product	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.	1. Production worker checks temperature with clean and sanitized probe thermometer. 2. Check temperature every hour until 4 °C is reached. 3. Record on batch report	**When critical limits are not being met for one or more product samples.** 1. Report slow cooling to Operator. Check cooler and determine if maintenance is required. 2. Place product on hold. Discard sour cream if time limit has not been met. 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.	1. Operator reviews and signs batch reports at end of production day to ensure that it has been properly completed. 2. Once per week, the Operator ensures that the temperature checks follow the procedure (observes production worker in their task). 3. Operator reviews and signs cooler temperature once per week. 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. Record all observations on the batch report, including the date, the time and initials.	Sour 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.

Sour Cream Batch Report

Date Made: 3/23/2022

Best Before Date: 22 MR 26 Lot Code: 22082

Operator: Joe

Preoperational checks done Yes, JG

Ingredients Used

Ingredient	Amount	Code/Lot	Supplier
Coffee Cream (18 %BF)	10 Litre	AP 7	Saputo
Skim Milk Powder	125 g	19205	Pacific
Sour Cream Culture	5 g	L20123A	Danisco

Process Step	Date	Time Start	Time End	Temp (°C)	pH
Heat Cream	23-Mar	7:45	8:15	28	6.3
CCP1B Cool to Innoculation Temperature		8:20	9:10	29	
Add bacterial culture		9:15		28	
		12:00		28	
		16:00		28	
		18:00		28	4.6
CCP2B Monitor pH			19:15	28	4.2
CCP3B Final temperature in cooler (at 24 hours)	24-Mar	8:00		4	4.1

Yield Package in 500 mL container for storage

Number of containers 19

Observed Deviations and Corrective Actions

Date of Record Review: 25-Mar-22 Verification by: M. Smith