

Production of Custard in Food Service Establishment

There are a variety of cooked custards used in food service establishments. Custard can be made with milk and custard powder which is a blend of sugar and starch and flavouring ingredients. There are custards made in a double boiler that use milk, sugar, egg and starch. These custards are generally used as fillings in other desserts or served as a pudding. This method refers to the oven baked product made with milk, eggs and sugar. In this method it is the egg that makes the custard thick; temperature control is key to the development of desired texture in this product. Crème brûlée and crème caramel are examples of custard-based desserts.



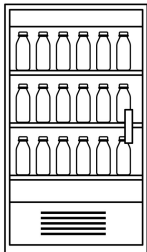
STANDARD RECIPE

This recipe is based on 2 L of milk
 2 L milk (2% or 3.25% BF)
 210 g white sugar (about 1 cup)
 240 g pasteurized liquid whole egg
 7 - 10 ml vanilla

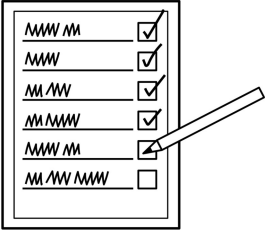
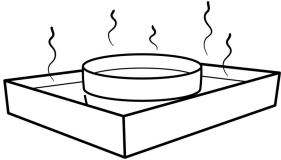
Equipment List

Scale	Measuring cups	Double Boiler	Whisk
Bain Marie	Ramekin/Baking Pan	Thermometer	


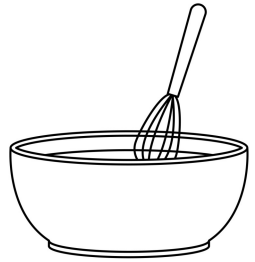
PROCESS BASED FOOD SAFETY PLAN

Step #	Process Step	Potential Hazards	Instructions and Outcomes
1	Purchase and refrigerate milk 	<u>Biological</u> Pathogen contamination due to using product that is past best before date. Pathogen contamination due to condensation falling onto/into uncovered product. Pathogen growth due to time/temperature abuse.	<ul style="list-style-type: none"> • 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. <p style="text-align: center;">Do not use products where the best before date has expired.</p>

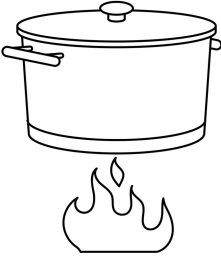
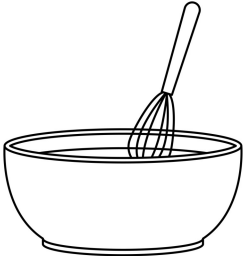
PROCESS BASED FOOD SAFETY PLAN

Step #	Process Step	Potential Hazards	Instructions and Outcomes
2	Preoperational Checks 	<p><u>Biological</u> Pathogen contamination due to incomplete sanitation procedures.</p> <p><u>Chemical</u> 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"> • 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	Preheat oven (prepare Bain Marie) 	<p><u>Biological</u> Pathogen survival due to improper heat treatment. Pathogen contamination due to poor hygiene and improper handling by employees. Pathogen contamination due to unsanitary equipment. Pathogen survival due to improper calibration of thermometer.</p> <p><u>Chemical</u> Contamination with non-food chemicals due to residual cleaners or sanitizers.</p>	<ul style="list-style-type: none"> • Preheat oven to 200°F. • A Bain Marie is used for gentle even heating. Use a pan with high sides such as a roasting pan (but not ceramic). Line the bottom of the pan with a towel. Add hot water.

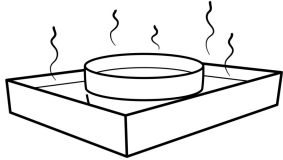
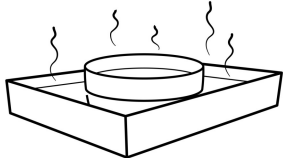
PROCESS BASED FOOD SAFETY PLAN

Step #	Process Step	Potential Hazards	Instructions and Outcomes
4	Stage Ingredients 	<p><u>Biological</u> Pathogen growth due to time/temperature abuse.</p> <p>Pathogen contamination due to unsanitary equipment.</p> <p>Pathogen cross-contamination due to improper employee handling practices.</p> <p><u>Chemical</u> Contamination with non-food chemicals due to residual cleaners or sanitizers.</p>	<ul style="list-style-type: none"> • Custard is made by indirectly heating a blend of milk, eggs and sugar using steam or a water bath. It is best to use 2% or 3.25% BF milk; skim milk is not recommended for this product. (additionally thickener such as a starch would be needed). • Use pasteurized liquid egg in this product. • Temperature control is key success factor to get desired texture.
5	Beat eggs and sugar 	<p><u>Biological</u> Pathogen contamination due to poor hygiene and improper handling by employees.</p> <p>Pathogen contamination due to unsanitary equipment.</p> <p><u>Allergens</u> Allergen cross contamination due to improper separation of activities.</p> <p>Contamination by allergens due to unsanitary equipment.</p> <p>Allergen cross contamination due to improper employee handling practices.</p>	<ul style="list-style-type: none"> • Raw eggs are a high risk ingredient. Use pasteurized liquid egg in this product. • Beat egg until slightly frothy and light yellow in colour. • Add sugar and vanilla using a whisk and mix gently.

PROCESS BASED FOOD SAFETY PLAN

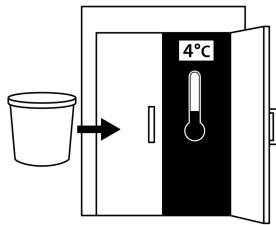
Step #	Process Step	Potential Hazards	Instructions and Outcomes
6	Heat Milk 	<p><u>Biological</u> Pathogen growth due to time/temperature abuse (too slow heating rate, incorrectly calibrated thermometer). Pathogen contamination due to unsanitary equipment. Pathogen contamination due to poor hygiene and improper handling by employees.</p> <p><u>Chemical</u> Contamination with non-food chemicals due to residual cleaners or sanitizers.</p> <p><u>Allergens</u> Contamination by allergens due to improper separation of activities.</p>	<ul style="list-style-type: none"> • Scald the milk. The desired temperature is 80 to 82°C. This denatures the protein and contributes to the smooth texture in the finished product. Milk must reach temperature within 1 hour. • Stir constantly to avoid burning the milk. Use of a water bath or double boiler is recommended. <p style="text-align: center;">Check temperature with clean and sanitized probe thermometer</p>
7	Blend hot milk into egg mixture 	<p><u>Biological</u> Pathogen contamination due to unsanitary equipment. Pathogen contamination due to poor hygiene and improper handling by employees.</p> <p><u>Chemical</u> Contamination with non-food chemicals due to residual cleaners or sanitizers.</p> <p><u>Allergens</u> Allergen cross contamination due to improper separation of activities.</p>	<ul style="list-style-type: none"> • Temper the eggs. Care is needed when adding hot milk to egg mixture to avoid coagulation of eggs. • Drizzle a portion of the heated milk over egg mixture, whisking the eggs quickly the entire time. • Slowly pour the rest of the milk into the egg mixture, whisking constantly. • Beat quickly to ensure good blending (less than one minute). Do not over beat.

PROCESS BASED FOOD SAFETY PLAN

Step #	Process Step	Potential Hazards	Instructions and Outcomes
8	Transfer mixture to shallow oven proof dish 	<p><u>Biological</u> Pathogen contamination due to poor hygiene and improper handling by employees. Pathogen contamination due to unsanitary equipment.</p> <p><u>Allergens</u> 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>	<ul style="list-style-type: none"> • Pour the custard into a shallow casserole dish or glass baking dish. Custards are usually prepared in individual ramekins.
9	Cook in Bain Marie 	<p><u>Biological</u> Pathogen growth due to time/temperature abuse (too slow heating rate, incorrectly calibrated thermometer). Pathogen survival due to improper heat treatment.</p> <p><u>Allergens</u> Allergen cross contamination due to improper separation of activities.</p>	<p>CRITICAL CONTROL POINT (CCP1B)</p> <ul style="list-style-type: none"> • The temperature of the Bain Marie must stay above 60°C. • Custard is done when it is set around the edges and slightly soft in the center. Use a sanitized knife to test. Custard is cooked if knife comes out clean. • The temperature at which the egg coagulates is affected by the addition of sugar. The custard should reach between 77 and 79 °C. If the temperature exceeds 80°C the egg protein may overcook resulting in syneresis and a watery custard lacking fine texture. <p style="text-align: center;">Check temperature with clean and sanitized probe thermometer</p>

PROCESS BASED FOOD SAFETY PLAN

Step #	Process Step	Potential Hazards	Instructions and Outcomes
10	Store in refrigerator	<p><u>Biological</u></p> <p>Pathogen growth due to improper storage conditions (cooler malfunction).</p> <p>Pathogen growth due to poor inventory control (use of FIFO for frozen paneer on hand).</p> <p>Pathogen contamination due to condensation falling onto/into uncovered product.</p> <p>Pathogen growth due to time/temperature abuse (process step not done in cooler).</p> <p><u>Allergens</u></p> <p>Allergen cross contamination due to inappropriate allergens product storage.</p>	<p>CRITICAL CONTROL POINT (CCP2B)</p> <p>Transfer baked custard to cooler. Monitor temperature of cooling.</p> <ul style="list-style-type: none"> • Store covered at 4°C or colder. • Discard product after 3 days. • 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. <p>Check temperature with clean and sanitized probe thermometer</p>

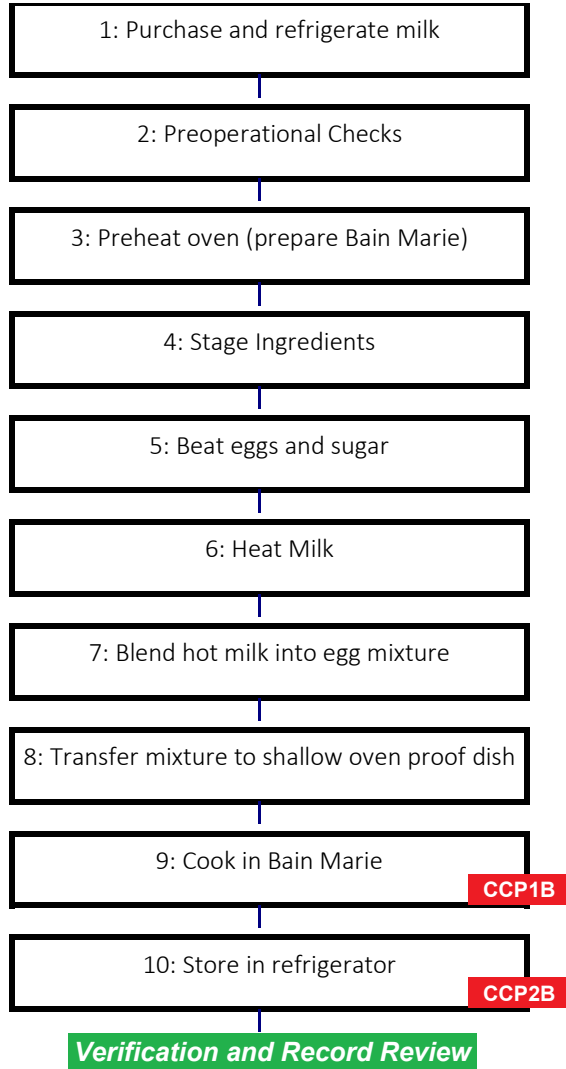


Product Description Form (Foodservice)

Product Category	Dulch de leche
1. What is your product name and weight/volume?	Custard
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). Served at room temperature or cold.
3. What are your product's important food safety characteristics (e.g. acidity, water activity, salinity, etc.)?	Baked with added egg and sugar. High water activity.
4. What allergens does your product contain?	Milk, Egg
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?	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).

Custard

Process Flow Table



Critical Control Points Table: Custard

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 time and temperature of thermal process.	CCP1B Cook in Bain Marie	Temperature of water in Bain Marie must be greater than 60°C. Finished custard internal temperature of 77-79 60°C	1. Production worker checks temperature of Bain Marie with clean and sanitized probe thermometer. 2. Record start and end of cook step on batch report.	When critical limits have not been met for the batch of custard. 1. Continue heating batch of product. Monitor time and temperature. Record on custard batch report. 2. If problem is due to malfunctioning equipment (stove) report to Operator. Place product on hold (in cooler) until equipment can be fixed. Record on custard batch report. 3. If heat treatment can not be completed and time in temperature danger zone (21-60°C) has exceeded two hours, discard the batch. 4. Immediately investigate the cause of the non-conformance and take necessary corrective actions to prevent reoccurrence. 5. Record corrective action on custard 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.	Custard Batch Report Thermometer Calibration Log
Pathogen growth due to improper cooling procedures.	CCP2B Store in refrigerator	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 custard if time limit has not been met. 3. Immediately investigate the cause of the non-conformance and take necessary corrective actions to prevent reoccurrence. 4. 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. 5. Record all observations on the batch report, including the date, the time and initials.	Custard 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.

Custard Batch Report

Date Made: 4/28/2022
 Best Before Date: 22 MA 01 Lot Code: 22118
 Operator: Joe

Preoperational checks done Yes, JG

Ingredients Used

Ingredient	Amount	Code/Lot	Supplier
Full Fat Milk (3.25% BF)	2 Litre	MA 12	Saputo
Sugar	210 G	21232	Lantic
Pasteurized Liquid Whole Egg	240 G	22 JN 25	Vanderpols
Vanilla (optional)	2 tsp.	21295	Caldic

Process Step	Time	Bain Marie Temp (°C)	Custard Temp (°C)	Comments
Prepare Bain Marie	8:00	61		
CCP1B Bake	8:10	63		
	8:40	68	72	
	9:20	65	79	firm set, knife comes out clean
CCP2B Cool in refrigerator	11:00		58	
	13:00		18	
	18:00		4	
Final temperature in cooler (at 24 hours)	8:00		4	

Number of portions (sealed and dated) 12

Observed Deviations and Corrective Actions

Date of Record Review: 1-May-22 Verification by: M. Smith