1.0 PURPOSE
To establish fixed procedures to be followed during the cheese making process for Blue cheese from pasteurized milk in at _______________. A strict record of all proceedings shall be made so that food safety/quality issues might be addressed.

2.0 SCOPE
This SOP applies to the production of Blue cheese produced at ________________ and all employees that are involved in the production of this cheese.

3.0 SAFETY & ENVIRONMENTAL CONSIDERATIONS
When working around hot water or chemical cleaners, always use care and follow instructions for use.

4.0 FREQUENCY
This SOP applies anytime Blue cheese from pasteurized milk is produced.

5.0 RESPONSIBILITY
- TASK ___________ Staff, anyone using plant for cheese production
- VERIFICATION ___________ Management
- PAPERWORK REVIEW
  As needed to address quality or safety concerns, by appropriate managers/regulatory officials including cheese make sheets, vendor lot code keys, batch sheets, sampling records, pH/TA recording sheets, salometer recording sheets, temperature recording sheets, and pasteurization records.

6.0 SUPPLIES/EQUIPMENT
6.1 Supplies
   6.1.1 Milk
   6.1.2 Appropriate cultures, rennet, calcium chloride, salt

6.2 Equipment
   6.2.1 Jacketed cheese vat with paddles (automated)
6.2.2 Calibrated pH meter and titratable acidity meter
6.2.3 Calibrated thermometer(s)
6.2.4 Draining mats
6.2.5 Molds (_______ molds manufactured by ____________)
6.2.6 Cheese knives (__________ knives manufactured by ______________) and/or ladle
6.2.7 Cheese Packaging (manufactured by ______________)

7.0 PROCEDURE

7.1 Cheese making preparation

7.1.1 In a clean and properly sanitized vat, add pasteurized milk volume. Take initial pH reading and record it.

7.1.2 Warm milk to 95.0°F while gently mixing.

7.2 Fermentation

7.2.1 Record lot numbers of cultures and calcium chloride on the make sheet.

7.2.2 Add culture(s) at the appropriate amounts. See make sheet for standards as mathematical calculations are required based on milk volume for all ingredients. Cultures are added at a rate of _______ gr/______ gallons of milk and _______ gr/______ gallons.

7.2.3 Acid ripen the milk for 60 minutes.

7.2.4 pH measurements must be taken at the intervals specified in the make sheet and recorded to ensure the culture is functioning and there is an increase in acidity. Record this reading on the make sheet. Add calcium chloride. Calcium chloride is added at a rate of _______ ml/______ gallons of milk.

7.3 Coagulation

7.3.1 Record lot number of rennet/coagulant on the make sheet.

7.3.2 When the titratable acidity of the milk is .22 percent, add rennet (or coagulant of choice) to milk and stir for 2-4 minutes. Maintain temperature at 89-90°F (+/-1°F) to ensure rennet functions at the same level between production lots (enzymatic reactions are temperature sensitive). Rennet is added at a rate of _____ ml/______ gallons of milk. Cover the vat. Rennet set takes 45-60 minutes, or until a clean break is achieved, with properly function enzyme. Determining when the curd is ready to cut must be determined and takes expertise and experience.

7.4 Cutting

7.4.1 Using a clean and sanitized cheese knife cut the curd first with the horizontal cheese knife the length of the vat.
7.4.2 Using a clean and sanitized cheese knife cut the curd next with the vertical cheese knife the length of the vat.

7.4.3 Finally, using the vertical knife cut the curd across the vat. Ensure that all cheese has been cut and a uniform cube size throughout has been obtained. Take a sample and measure pH and record on make sheet.

7.4.4 Rest curds for 5 minutes.

7.4.5 Agitate gently every 5 minutes until the titratable acidity of the whey raises by 0.93% (about 6 minutes).

7.4.6 Raise temperature to 91°F and hold for 2 minutes.

7.4.7 Drain whey and dispose of excess whey in an approved manner.

7.5 Inoculation

7.5.1 Trench curds.

7.5.2 Inoculate with ________ grams of *P. roqueforti* spore powder mixed with _____ kg of coarse salt.

7.5.3 Mechanically or manually, stir the salt and mold powder into the curd uniformly for 5 minutes.

7.6 Dipping the Curd

7.6.1 Scoop the partly salted, mold-inoculated curd into perforated circular cheese molds.

7.6.2 Fill the mold to the top but do not over-fill.

7.6.3 Test cheese for coliform and moisture.

7.6.4 Retain samples for regulatory authority and quality. Samples must be labeled with an appropriate label with accurate measurements and information.

7.7 Molding and draining

7.7.1 Turn molds over completely every 15 minutes for the first two hours; then twice more during that production day.

7.7.2 Drain covered on sanitized drainage mats overnight in a 72°F room.

7.8 Brining/Salting

7.8.1 Remove cheese from molds.

7.8.2 Place wheels in a saturated 23% salt brine for 24 to 48 hours.
7.8.3 Dry cheeses and dry salt the surfaces liberally for 3 days so that the final cheese will contain about 4% salt.

OR

7.8.2 Record lot number and manufacturer of salt on the make sheet.

7.8.3 Place wheels in a container of coarse salt, covering the surfaces liberally with the salt.

7.8.4 Brush off any loose salt and lay individual wheels on their curved sides in a cradle in a 60°F/16°C, 85% humidity room.

7.8.5 Repeat the heavy salting for 5 days (4 more times).

7.9 Waxing and Needling Air Holes

7.9.1 After 5-6 days of salting and 3 days of holding, immerse the clean wheels into a bath of low-temperature, pliable, food-grade wax at 170°F/77°C for 7 seconds.

7.9.2 Remove the wheels from the bath and let them dry.

7.9.3 Pierce the cheese’s two flat sides with approximately 54 holes that are each 2mm in diameter.

OR

7.9.1 Place wheel in a vacuum packaging bag, clamp, and expose briefly to hot water.

7.9.2 Perforate the wheels through the bag, either on one side or two.

7.10 Curing

7.10.1 Place the perforated wheels on the curved sides about 1 inch apart in cradles in a 52°F/11°C, 95% humidity room for 60-120 days, until the mold is flourishing.

7.11 Cleaning and Storing

7.11.1 Once cheese is cured, remove wax/vacuum packaging.

7.11.2 Fill all surface openings manually or mechanically with cheese.

7.11.3 Dry the cheese and cut into consumer portions, if applicable.

7.11.4 Package cheese using predefined methods.

7.11.5 Store at <45°F/7.2°C and distribute as appropriate.
8.0 ATTACHMENT/DOCUMENTATION

Cheese Make Sheet, Pasteurization Records, Lot Numbers for any products used during processing, pH recording sheet

9.0 SIGNATURES AND APPROVALS

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