# Example of personalisation of the GHHP to serve as FSMS

**Reference document: GHHP revised version of 20 December 2016**

**Example for producer who transforms milk from his/her own animals into mixed coagulation cheeses, butter, cream and fermented milk products.**

**Content:**

**Good Hygiene Practises**

**Good Manufacturing Practisses**

**HACCP based plans**

- **Milk production and storage on the farm**
- **Enzymatic and mixed coagulation cheeses**
- **Butter and cream**
- **Fermented milk products**

**Traceability**

**Self-monitoring**

**Non-conformity management**

# Section II – Good Hygiene Practises

**> Staff: general hygiene, training, health – p11/12**

**>> Training**

Describe how training is performed: by a formal food hygiene qualification or by direct instruction by more experienced colleague.
If applicable, add copies of certificates of followed trainings to FSMS.

**> Premises and equipment – p13/16**

**>> Requirements for equipment and premises**

**General layout and process-flow**

Add a plan of your premise or describe them detailed in order to show that they are suitable for the activities that are taking place (considering production volume, product varieties produced, number of workers).

Describe measures that you take to avoid cross contamination.

**>> Maintenance of equipment and installations**

| Equipment and installations that need maintenance | Frequency | Performed by (external company, yourself) |
|---|---|---|
| Milking machine | | |
| Milk tank | | |
| Cooling equipment | | |
| Pasteurizer | | |
| … | | |
| … | | |
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# Section II – Good Hygiene Practises

**> Cleaning and/or disinfection – p17/21**

**Plan for cleaning the premises:**

| Rooms in the workplace (Specifying floors, walls or ceiling). | Cleaning materials (scraper, brush, foam gun etc.) | Name and type of the cleaning products | Dosage, temperature (cold, warm or hot water) and contact time | Frequency of operations | Person responsible |
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**Plan for cleaning and/or disinfection of equipment:**

| Equipment (specify the type of equipment) | Cleaning materials (brush, pot-washing machine etc.) | Products used where necessary (specify the type) | Dosage, temperature (cold, warm or hot water) and contact time | Frequency of cleaning | Frequency of disinfection (where necessary) | Person responsible |
|---|---|---|---|---|---|---|
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**> Pest control plan - p22**

If you use traps, describe the type and frequency of checking.

If pest control is done by external company, add contract to FSMS.

# Section II – Good Hygiene Practises

**> Water quality - p23**

If the water used is from your own supply, add results of chemical and microbiological analysis according to your member state to FSMS.

# Section III – Good Manufacturing Practises

| | Cultures<br>p25-26 | Coagulants<br>p27-29 | Additions to milk and curd<br>p30-31 | Salt<br>p 32 |
|---|---|---|---|---|
| Supplier | | | | |
| Type<br>(liquid, powder, frozen) | | | | |
| Storage location | | | | |
| Storage temperature | | | | |
| Preventive measures taken | | | | |

# Section III – Good Manufacturing Practises

**Select the tables and rows that are applicable for your situation and mark or add the checking/monitoring procedure that is used**

## PRODUCT STORAGE AND TRANSPORT

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Storage in refrigerated displays, cabinets, cold rooms etc. | M: Contamination of unpackaged products with pathogenic microorganisms during handling. | Wear clean protective clothes, thoroughly wash hands. | Visual inspection. | If it is a recurrent issue review training of staff. |
| | M, P: Contamination of unpacked products (especially fresh) by microorganisms or foreign bodies from walls and/or shelves of cabinets or cold stores. | Keep all equipment and rooms in good hygienic condition. Maintain the equipment with appropriate frequency.<br>Do not leave doors of cabinets or stores open longer than necessary. | Visual inspection. | Replace damaged or defective equipment.<br>Refresh store rooms when they cannot be maintained in a satisfactory standard. |
| | M, P: Cross-contamination between stored products. | Do not allow contact of packed and unpackaged products.<br>Remove spoiled or damaged products and all unnecessary items. | Visual inspection, | Adjust to obtain the correct storage temperature.<br>Group and place stored products properly. |
| | M: Some fresh products are very sensitive to the development of harmful bacteria if the temperature is too high. | Immediately after production and ripening, place products in cold stores at the correct temperature. | Visual inspection,<br>Temperature control. | Immediately adjust to obtain the correct temperature<br>Remove damaged or spoiled products. |
| Loading | M, P: Physical and/or microbiological contamination by harmful microorganisms from: | Protect unpacked products against contamination (washable containers and other vessels). | Visual inspection. | Reject spoiled or damaged products and dirty, damaged or inadequate containers |
| | - Environment | Load products only into vehicles and containers appropriately designed, and which are maintained in good repair, clean and/or disinfected where necessary. | Visual inspection. | Repeat vehicle cleaning before loading |

# Section III – Good Manufacturing Practises

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| | - Other Foods | Avoid contact between packed or unpacked dairy products with other unpacked food products (meat products, fish, poultry, eggs, vegetables.) | Visual inspection. | Separate improperly placed products.<br>If food has not been separated, reject products where contamination (eg. with meat juices) has occurred and/or is suspected. |
| | - Handling | Keep high standards of personal hygiene. Wash hands thoroughly. | Visual inspection. | |
| Transport | M: Growth of pathogenic microorganisms in some fragile and sensitive products due to the temperature increase during transport. | Define the maximum acceptable temperature and ensure that it is always kept below this limit during transport.<br>Use properly equipped roadworthy, refrigerated transport. | Temperature control. | Withdraw non-conforming or spoiled products<br>Ensure efficient and appropriate cooling during transport |
| Unloading at the customer's premises | M: Growth of pathogenic microorganisms in some fragile and sensitive products due to the contamination during unloading. | Unload products quickly and place them at appropriate temperature.<br>In case of deliveries common to several customers it is better to prepare a separate container to every customer. | Temperature control. | Withdraw non-conforming or spoiled products. |

# Section III – Good Manufacturing Practises

## DIRECT SALE

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Display of products | M: Development of pathogenic microorganisms in products sensitive to temperature increase. | Maintain appropriate temperatures. In case of outdoor sales protect against sun, rain and dust. | Temperature control. | Withdraw products or find another application (change of intended use). |
| | M, C, P: Microbiological, chemical or physical contamination of unpacked products by environment (dust, insects, touching by people.) | Unpackaged fresh products should be displayed in conditions which prevent contamination. | Visual inspection. | Withdraw products or return them to the ripening room. Clean dirty equipment. |
| | M, C: Contamination of products by retail equipment: tables, pads, mats, price tags, decorative materials. | Use only clean materials<br>Do not use the same tools and utensils for dairy products and other food products sold together (meats, eggs, vegetables etc.).<br>Where contamination with allergens is possible, different tools for different dairy products can be used in order to avoid cross-contamination with allergens | Visual inspection | Clean dirty utensils and equipment and replace where they become unacceptably worn. |
| | M: Cross-contamination of products displayed next to each other on the counter. | Avoid contact between packed and unpackaged products<br>Take care to avoid contamination between unpackaged dairy products and other food products (meats, eggs, fish poultry.) | Visual inspection | Withdraw non-conforming products. Reorganize counter displays. |
| Sale of products | M, P: In case of sales from the store, contamination by customers if they enter into the production area. | Customer may be permitted restricted access to production facilities only in protected clothes and overshoes. | Visual inspection | Restrict access of customers or visitors. Establish strict rules for visiting. |

# Section III – Good Manufacturing Practises

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| | M, P: Microbiological or physical contamination by the seller. | Keep hygiene standards, wash hands. (1) | Visual inspection. | Retrain the staff. |
| | M, P: Contamination by retail utensils: knives, pliers, balances, calculators, pens etc. | Make sure all utensils are thoroughly cleaned (and/or disinfected if necessary) after use.<br>Weigh products after packaging or weigh on a piece of the packaging material. | Visual inspection. | Improve cleaning procedures, retrain the staff. |
| | M, C, P: Microbiological, chemical or physical contamination by packaging materials and/or labels where they are a food-contact material. | Store packaging material in dry and clean place, protected against dust, humidity, pests and insects.<br>Use only packaging material approved for dairy food. | Visual inspection. | Reject damaged or dirty packaging and/or labels. |
| End of sale on market place Return of unsold products to the production plant | M, P: Contamination of unsold products (especially fresh) during re-packing after sale.<br><br>M: Growth of pathogenic microorganisms in some fragile and sensitive products returned unsold to the plant. | Repack the most vulnerable products first.<br>Wrap pieces of cheeses (eg. with foil).<br>Clean utensils after sale as soon as possible.<br>Place products immediately in cold store or ripening room.<br><br>Unpacked dairy products put out for sale should not be placed in contact with other dairy products in the store. | Olfactory and visual inspection. | Review procedures for storage of products.<br>Withdraw non-conforming or spoiled products, return products to the store or ripening rooms, find another safe application.<br>Reject product which has thawed and it should not be refrozen |

See also: 1) GHP Staff General Hygiene, Training and Health

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

This section covers the hygiene relating to the production and storage on the farm of milk as raw material. It has been set up on basis of the specificities of cows, goats and sheep's milk.
*Some steps are particularly important relating milk intended for the production of raw milk dairy products: they are marked with an asterisk.

LR: Legal Requirement

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| Animal Husbandry | **M: Risk of milk contamination by bacteria which are pathogenic to humans. *** | **The farm must be brucellosis free or officially brucellosis free (for the three main dairy species).**<br>**For cows, the farm must be officially tuberculosis free. For species that are sensitive to tuberculosis, the herd must be regularly tested within a surveillance plan framework approved by the competent authority.**<br>**Where cows are also present, goats must be tested for tuberculosis.**<br>**Ensure that animals introduced are disease free as well as other herds in contact** | **Farm register kept up to date.**<br>**Results of compulsory prophylaxis analysis and on introduction of new animals if it is mandatory.** | **Withdraw the milk of sick or positive testing animals (for production and human consumption).** |
| | M: Lower resistance to disease in animals due to poor housing conditions or to unsuitable or insufficient feed or poor management/environement. | Provide sufficient ventilation.<br>For bedding areas, ensure bedding surface is well adapted (to the breed, the farm building, the type of livestock management etc.)<br>Store bedding materials in a dry area.<br><br>Feed animals in an appropriate and balanced way according to their needs. | Visual and olfactory inspection of bedding and ambience in the building.<br><br>Visual inspection of the physical state of animals. | Future corrective actions: adjust ventilation.<br><br>Review rations distributed and seek professional advice. |

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| | M: Milk contamination by substantial excretion of bacteria in the environment or by direct passage of bacteria into milk.* | Isolate sick animals<br>Treat animals presenting symptoms of disease, particularly of:<br>- the genital area<br>- the digestive system (enteritis with diarrhoea and fever)<br>- mammary secretion (inflammation of the teat due to injury or mastitis, abnormal appearance of milk)<br>Treat animals presenting cracks, spots, wounds or other lesions visible on the teat. | Visual inspection of animals and/or control of temperature of animals, and/or palpation, and/or veterinary opinion and/or analysis. | Immediate corrective action: Withdraw the milk of sick animals. |
| | M: Contamination of teat skin when the animals are housed.* | Have suitable living areas, in particular sleeping areas, that are clean and dry, suitable for the size and number of the animals and the building type.<br>Regularly maintain the bedding and exercise areas and particularly where straw is used :<br>-Put sufficient quantities of straw down<br>-Clean bedding out regularly<br>Scrape cows yards on a regular basis<br>Avoid excessive humidity around drinking areas located in sleeping areas<br>Control the presence of poultry, birds and vermin in the housing and milking areas<br>Do not put silage waste on bedding. | Visual inspection of cleanliness of the bedding and udders. | Immediate corrective action: Extra vigilance with hygiene during milking.<br><br>Future corrective actions: for housing, clean out bedding and/or put down straw more abundantly.<br><br>Repair defective pest control measures. |

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| | | As far as possible, maintain access routes to the farm buildings, especially when animals are grazing. | Visual inspection of cleanliness of access routes. | Future corrective actions: maintain access routes if necessary and/or vigilance with hygiene during milking. |
| | C: Animals can accidentally absorb inappropriate products (disinfectants, insecticides, rat poison) by licking building surfaces or treated equipment or bait. | Use only authorised products at recommended doses according to instructions for use. Respect the time period recommended between the application of disinfectant and the reintroduction of animals into the building and/or in transportation vehicles. | Visual inspection. | Immediate corrective action: Identify animals concerned and seek veterinary advice. Future corrective action: Change placement of bait. |
| Feeding | M, C: Contamination of bought-in feed (forage) by pathogenic bacteria or mycotoxins. | Check quality of feed upon reception. Equipment used for transport must be cleaned. | Visual inspection. | Immediate corrective action: Do not accept the forage. |
| | M: Contamination of forage by pathogen bacteria before harvesting.* | Respect a sufficient time delay, if possible a minimum of 3 weeks, between spreading slurry and harvesting the forage. In the case of a history of Salmonellosis in the cow herd, avoid spreading this slurry, or spread this slurry on fields and plough it in immediately. It is recommended to employ a decontamination procedure before spreading onto fields, eg. store the slurry for two months without further additions, or another decontamination process. | Veterinary monitoring. | Immediate corrective action: Do not use potentially contaminated fields for forage or pasture during the time required for decontamination. |

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| | | For poultry and pig slurry, wastewater treatment and plant sludge, avoid spreading directly onto fields and meadows. | | |
| | M: Contamination of animals due to use of contaminated feed.* | Sweep feed troughs, corridors and feed tables daily.<br>Use clean equipment for distribution | Visual inspection. | Immediate corrective action:<br>Do not distribute mouldy, sub-standard or suspect feed |
| Feeding<br>Dry feed (hay and concentrates). | M: Contaminating hay during harvest or harvesting conditions which enable the development of pathogens or mycotoxins production during storage.* | Avoid incorporating soil during forage harvesting: appropriate cut-height, efforts to combat molehills.<br>Harvest hay when dry. | Visual inspection. | Immediate corrective action:<br>Do not distribute any altered or suspect feed.<br>Future corrective action:<br>readjust the height of the cut, review harvest conditions. |
| | M: Contamination of feed during storage.* | Preserve hay and concentrates where they are sheltered from bad weather (rain, run-off, infiltration).<br>Keep animal feed storage areas away from the flow of farm waste effluents.<br>Ensure that feed is sheltered from animal contamination: vermin, birds, poultry. | Visual inspection, absence of heat emission. | Immediate corrective action:<br>Do not distribute contaminated feed.<br>Future corrective action:<br>Review storage conditions/ effluents storage. |

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| Feeding Silage and baled silage | M, C: Contamination of silage, baled silage during harvest or harvesting conditions which enable the growth of pathogens or mycotoxins production during storage.* | Avoid incorporating soil during forage harvesting: appropriate cut-height, combat molehills (grass).<br>Avoid incorporating soil during pit compacting. Complete each silage pit in less than two days.<br>Compact pits sufficiently and close hermetically.<br>Harvest forage at prescribed dry matter content levels depending on type of forage and the type of preservation: silage or wrapped bales.<br>Harvest forage at sufficient sugar content in order to enable good fermentation: choice of forage species, harvest at suitable stage and time. | Visual inspection. | Immediate corrective action: do not use any altered or suspect feed.<br>Future corrective action: readjust the height of the cut, review harvest conditions. |
| | M: Contamination of feed (silage, baled silage etc.) whilst in storage.* | Avoid incorporating soil when compacting the pit. Do not open pits immediately - if possible for at least 3 weeks.<br>Avoid restarting silage fermentation by ensuring an adequate rate of consumption and a uniform silage pit face. | Appearance of silage<br>Absence of heat emission. | Immediate corrective action: do not use contaminated feed.<br>Future corrective action: Review silage production process. |
| | | Ensure that wrapped silage bales and silage cover are in good condition. | Visual inspection. | Immediate corrective action: Repair damaged silage covers immediately. |

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| Feeding<br>Grazing | M: Contamination of teats if conditions are inappropriate.* | Control the deterioration of areas where animals are grouped together (rest areas, drinking areas etc.) | Visual inspection. | Immediate corrective action: where possible, move grouping areas, move the animals to different pasture, use feed inside and/ or vigilance with hygiene during milking. |
| | M: Contamination of pasture grass with pathogenic bacteria by spreading farm fertiliser, effluents, sludge from wastewater treatment plants.* | Respect time between spreading and grazing (three-week minimum).<br>Beware of flow of effluent spreading towards grazing areas. | | Immediate corrective action: move animals to different pasture. |
| | C: Residues of plant protection products on pasture grass where the product's conditions of use are not respected. | Strict observance of the manufacturers stated time between application of plant protection treatment and use of pasture. | Keep a register of plant protection treatments | Immediate corrective action: temporarily change the grazing pasture/ do not use the milk. |
| Calving | M: In the case of abortion, possibility of contaminating the other animals. * | Rapidly put foetuses and placentas out of reach of farm animals and seek veterinary advice.<br>It can be a regulatory obligation to declare abortion depending on MS<br>If possible, quarantine the animal. | Analysis of the foetus. | Immediate corrective action: Follow veterinary prescriptions. |
| | M: Possibility of mammary infection during calving.* | Ensure calving takes place on clean bedding. | Visual inspection. | Future corrective action: Improve hygiene in calving area |

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| Milking | M: Contamination due to poor condition of teats.* | Regular inspection and maintenance of the milking machine by the farmer or by a qualified inspector<br>Avoid aggressive milking techniques which increase the risk of damaging the natural defences of the teat.<br>Limit air ingress at cup attachment and removal:<br>– break the vacuum before removing the cups<br>– limit dripping and over milking | Date and result of milking equipment inspection.<br>Visual and auditory inspection.<br><br>Visual inspection of teats before and after milking. | Immediate corrective action: treat and maintain the teats<br>Future corrective action: have milking machine inspected by a qualified person.<br><br>Organise assistance during milking. |
| | **M: Contamination due to poor cleaning of milking machine*** | **Clean the milking machine after each milking. For robotic milking systems (cows) it is recommended (for raw milk) that they are cleaned three times per day.** | **Visual inspection, respect of cleaning and (when necessary) disinfection procedure.** | **Future corrective action: change cleaning procedure.** |
| | **M: Contamination due to unclean teats*** | **Milking must be carried out hygienically. Clean and disinfect cloths used to clean udders after each milking, or use disposable clothes. Limit contamination of the skin of teats by the hands of the milker by washing hands before milking.**<br>**Sufficient lighting in milking parlour**<br>**When squeezing the first milk from the teat (stripping the teat) collect into a specific container.**<br>**In the case of cows, wash and wipe the teats dry before milking.** | **Visual inspection of teats** | **Immediate corrective action: wash teats again. Review cleaning procedures for milking areas and teats**<br><br>**For robotic milking (cows): ensure that animals are clean. Review the teat-cleaning procedures.** |

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| | | **In the milking parlour, ensure the waiting area is clean at the start of milking**<br>**–Make sure the milking platform is clean during milking**<br>**– Clean the cubicle after each milking**<br>**For cows, milking in the cow shed: ensure faeces is cleared away before milking**<br>**For outdoor milking:**<br>**- Ensure milking animals have sufficiently clean and dry areas to lay down and that the teats are as clean as possible for milking**<br>**- Keep the areas next to the milking zone as clean and clear of mud as possible by installing stone/concrete milking cubicles or by moving the milking machine frequently.**<br>**For robotic milking (cows): the milking area must be clean. Ensure that teat-cleaning system works correctly and check its efficacy.** | | |
| | M: Contamination of milk due to the cluster/cups dropping during milking* | Carry out milking in a calm atmosphere | | Where necessary, clean before re –application |
| | M: In the case of clinical mastitis in the herd, cross contamination between animals and contamination of the milk.* | If in doubt, inspect the first quantity of milk stripped from the teats<br>If possible, avoid treating sick animals during milking. | Visual inspection of animals, udders and milk | Immediate corrective action:<br>Milk animals suffering from clinical mastitis separately<br>Do not use this milk |

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| | M: Contamination of milk caused by mammary infection.* | See above:<br>- Maintain teats in good condition: testing and maintenance of the milking machine.<br>- Milking hygiene and cleanliness of the milking machine.<br>- Avoid cross contamination between animals. | California Mastitis Test (CMT)<br>Or individual cell count<br>Or take into account clinical indicators, condition of the udder-conformation, teats and the level of inflammation. * | Immediate corrective action: Treat or cull the animals concerned. |
| | C: Contamination of milk due to inadequate cleaning of milking machine or during disinfection. | Observe the conditions of use of the product (authorised cleaning product, dosage, rinsing etc.) | Visual inspection | Future corrective action: change cleaning procedure or disinfection procedure |
| | C: Contamination of milk by teat disinfectant. | Observe the conditions of use of the disinfectant | Visual inspection | Immediate corrective action: Clean or wipe the teats<br>Future corrective action: change disinfection procedure |
| | C: Presence of residues of veterinary medicines in milk | In the case of animal treatment with veterinary medicines, follow prescription/instructions and segregate the milk of the treated animal during the withdrawal period.<br>Keep a record of treated animals and dates of end of treatments and withdrawal time. | Sanitary register<br>Prescription of medicine | |

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| Drying period | M: Contamination of milk caused by mammary infections when lactation restarts.* | | CMT<br>Or individual cell count<br>Or take into account clinical indicators, conditions of the udder – conformation, level of inflammation - and the teats | Immediate correction action: Treat animals suspected of infection during drying period/ cull the animals concerned |
| | **C: Presence of antibiotic residues when lactation restarts.** | **Follow veterinary prescriptions closely.** | **Interval between the date of treatment and date of calving and between first lactation and first use of the milk; sanitary register** | **Immediate corrective action: If the interval of time is too short, separate the milk or verify the absence of residues** |
| Water | M: Contamination of drinking water | Limit contamination of water by faeces. Clean regularly drinking troughs and vats used for water transportation. | Visual inspection | Discard dirty water, clean drinking troughs and vats, disinfect them when necessary.<br>Change the drinking troughs or move them in another place. Treat the water. |
| | **M: Contamination of equipment through cleaning water.*** | **Refer to the recommendations of chapter GHP Water quality** | | |
| | C: Contamination of drinking water and of equipment through contaminated rinse-water. | Follow regulations, prescriptions for use of water treatments (authorised product, dosage). | | Future corrective action: review the system of water treatment |

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| Transfer of milk to processing area. | **M, P: Contamination of milk by the equipment (milk line, churns etc.)** | **Use equipment that is clean, airtight and sealed. Where churns are used, they should be covered to prevent milk contamination.** | **Visual inspection.** | **Review cleaning procedure** |
| | | **Make sure equipment is in good condition: in particular any rubber parts eg. joint-seals.** | **Visual and auditory inspection.** | **Replace any rubber parts or pipes in poor condition.** |
| Filtration | M, P: Contamination by the equipment. | Ensure filters are fitted correctly.<br>The filtration equipment must be kept clean: cleaning of fixed filters or (where used) remove the disposable filter after each milking (before cleaning), replace it with a new filter before the next milking. | Visual inspection. | Change the filter. |
| | M : Presence of contaminants in the milk which contribute to the bacteria load | The milk should be filtered while milking or immediately afterwards for manual milking. | Visual inspection | Review practices |
| Cold storage | M, P, C: Contamination of milk whilst in storage. | Milk should be stored immediately after milking in a clean place (regularly cleaned) and in clean and covered vessels.<br>Protect the area from insects and vermin. Do not store any inappropriate products or material in the storage area.<br>In the case of outside milking and mountain dairies, storage and transport recipients should be covered as soon as possible to prevent physical contamination: insects, dust, light bulbs etc. | Visual inspection | Review cleaning procedure<br>Review the pest control plan<br>Review organization of the area |

## Section IV – Risk analysis for primary production

# MILK PRODUCTION, STORAGE ON THE FARM

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking | Corrective actions |
|---|---|---|---|---|
| | **M : Growth of pathogenic bacteria during storage** | **In general (LR, for exception, see regulatory requirements), store milk in a refrigerated environment at :**<br>**- 8°C maximum in the case of daily collection**<br>**- OR 6°C maximum if collection is not daily**<br>**The milk must be cooled to this temperature within 2 hours.**<br>**In cases where milk is cooled in a refrigerated tank, remove dust regularly from the condenser** | **Thermometer** | **Adjust the temperature of the storage vessels.**<br>**Where necessary, check the refrigeration unit is working correctly.** |
| | C, M: Contamination of milk by the equipment | Clean and/or disinfect after draining tank and rinse with appropriate quality of water the interior of the storage milk vat or milk transportation equipment<br>Respect regulation and recommendations for use of treatment for water (authorized product, dose) | Visual inspection | Change cleaning and/or disinfection procedure<br><br>Review the water treatment system. |
| | **C: Contamination of milk due to inappropriate use of disinfectant and/or cleaning products** | **Respect the conditions of use of the product (authorized product, dose, rinsing etc.)** | **Visual inspection** | **Change cleaning and/or disinfection procedure** |

For more information, see the sheets: GHP Cleaning, GHP Disinfection, GHP Pest control, GHP Water quality

(LR) 853/2004 - The milk must be cooled immediately to
- 8°C maximum in the case of daily collection
- OR 6°C maximum if collection is not daily

Exceptions: the milk is processed within 2 hours of milking; derogation obtained for technological reasons. Also in these cases, the milk must comply with regulatory criteria (somatic cells and total plate count)"

FLEXIBILITY MEASURE

## Section V – HACCP -based Plans

# ENZYMATIC AND MIXED COAGULATION CHEESES

Predominantly enzymatic coagulation cheeses are a group comprising both hard and soft cheeses, both fresh and ripened. The group is quite diverse and may include products without inoculation or with minimal acidification. The coagulation time is quite fast – typically less than one hour.
"Mixed Coagulation cheeses" comprises surface-ripened cheese which includes mould-ripened cheeses, washed-rind cheeses, mixed-rind cheeses and internally mould-ripened (blue) cheese. Coagulation time may be typically between one and two hours.

The slow, or absent, acidification typical of some soft mixed coagulation and unripened, unacidified predominantly enzymatic cheeses may not control the growth of harmful bacteria; many are higher-risk products requiring high standards of dairy hygiene and strict control of the hygienic quality of the milk.

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Filling the Vat | M, C: Contamination of the milk from equipment and utensils (vats, stirrers, buckets, scoops etc.) Dirty equipment can contaminate milk with pathogenic bacteria. Residues of cleaning agents can get into milk. | Ensure that equipment is always clean. Never put small items of equipment directly on the floor. (1) | Visual inspection. | Repeat cleaning and/or disinfection. Rinse sufficiently with potable water. Amend cleaning procedure. If it is a recurrent issue review training of cheesemaker. |
| Maturation without inoculation | M: Growth of pathogenic bacteria: Milk can contain undesirable bacteria. When the number of lactic acid bacteria (LAB) is low or conditions for their development are unfavourable, pathogenic bacteria can dominate. | Where possible, promote the development of LAB through good animal husbandry (see sheet milk production). Use proper maturation temperature and time to promote sufficiently rapid growth of LAB (2). | Experience of cheesemaker: organoleptic inspection, measurement of temperature, time and acidity development. | Add dose of acidifying culture. Reject suspect milk (taste, smell, appearance). Adjust production parameters (time, temperature). If it is a recurrent issue, improve milk production practices or change milk supplier. |

## Section V – HACCP -based Plans

# ENZYMATIC AND MIXED COAGULATION CHEESES

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Maturation with inoculation | M, C: Improper process parameters can allow growth of pathogenic bacteria. | Maintain correct temperature, time and dose of cultures. Add cultures as soon as possible. (3) | Experience of cheesemaker: organoleptic inspection, measurement of temperature, time and acidity development. | Adjust production parameters: time, temperature, type and dose of cultures. |
| | M: Contamination of milk during inoculation due to poor quality of starter bacteria or inadequate handling by the cheesemaker. | Use only starters of known origin (including homemade starters) or those with a certificate of conformity as suitable for food-use. Handle with care. Reject starters of suspect odour, colour or appearance. (3) | Visual and organoleptic inspection of direct or bulk starters | Reject inactive starters or those with suspect or damaged packaging. Adjust bulk starter preparation procedure. |
| Addition of the coagulant | M, C: A coagulant can be contaminated due to bad handling or storage. Coagulants can contaminate milk with pathogenic bacteria or chemical compounds | Use only coagulants of known origin (including homemade coagulant) or those with a certificate of conformity as suitable for food-use. Handle with care. Reject coagulants of suspect odour, colour or appearance. (4) | Visual and organoleptic inspection of coagulants. | Reject coagulants of suspect quality, abnormal appearance or smell, or those with suspect or damaged packaging.<br><br>Amend handling and storage procedures. Change the supplier. |
| Curd Treatments (cutting, ladling, stirring, washing, draining, moulding,<br>pressing). | M: Contamination of the curd by the hands and arms of the cheesemaker. | Ensure food handlers have clean hands/arms. Where necessary use protective gloves to cover skin lesions. (5) | Visual inspection. | Wash hands/arms. Change torn gloves. If it is a recurrent issue review training of cheesemaker. |

# ENZYMATIC AND MIXED COAGULATION CHEESES

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| | M, C: Contamination of curd with badly cleaned equipment or cheeses cloths. | Ensure that equipment is always clean. Never put small items of equipment directly on the floor. (1) | Visual inspection. | Repeat cleaning and/or disinfection. Rinse with potable water of acceptable quality. Amend cleaning procedure. If it is a recurrent issue review training of cheesemaker. Repair dirty or worn cheesecloth or equipment. |
| | P: Contamination of curd with poorly maintained or damaged equipment. | Ensure equipment is maintained in good condition. (6) | Visual inspection. | Repair or replace damaged equipment.<br><br>Reject the batch if metal contamination is suspected following visual inspection |
| | M, C, P: Contamination of curd washed with non-potable water. | Use only potable water with normal odour, taste and colour. (7) | Visual inspection. Use of water from public water supply. Potability certificate for private water supplies. | Reject water if unsuitable or batch if contaminated.<br><br>Use another source of potable water. |

# ENZYMATIC AND MIXED COAGULATION CHEESES

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| | M: Growth of pathogenic bacteria during acidification and drainage. Many enzymatic and mixed coagulation cheeses involve slow acidification and low doses of starter cultures. | **Ensure high standards in milk production.** (2)<br><br>Satisfactory acidification appropriate to the cheese variety. | Experience of cheesemaker: organoleptic inspection, measurement of temperature, time and acidity development. | Continue cheesemaking and quarantine batch pending further decision by cheesemaker. Suspect batches may be selected for testing under routine self-monitoring plan. Consider pasteurisation or change of supplier where self-monitoring plan suggests that microbiological quality is unsatisfactory or variable.<br><br>Adjust production parameters for future batches: time, temperature, type and dose of cultures. |
| Milling | M, C, P: Contamination of milled curd due to dirty milling equipment or poor staff hygiene, residues of cleaning chemicals or as a result of poor maintenance (eg. metal shards or nuts, plastics, lubricants). | Clean equipment and utensils after use and rinse thoroughly.<br>Check milling equipment for signs of damage. | Visual inspection before and after milling. | Wash and rinse again before production.<br><br>In case of missing parts or visible damage inspect the product carefully. Reject the product in the case of contamination with metal or hard plastic. |
| Additives | C: Use of additives, enzymes and processing aids that are not suitable for food processing or where their application does not comply with stated conditions of use. | Check that additives, processing aids and enzymes are suitable for food use and permitted for the type of cheese. Observe the stated dose, particularly where legal limits exit for food products. Observe the stated condition of use. (9) | Visual inspection. Careful measurement of quantity of additive. | Recall and reprocess or, if reprocessing cannot remove the hazard, dispose of products as “nor fit for human consumption”. |

# ENZYMATIC AND MIXED COAGULATION CHEESES

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Salting | M, C, P: Contamination of the curd due to poor quality salt (8) | Use only salt of known origin or with a certificate of conformity as suitable for food-use. Cover and store in clean, dry conditions. | Visual inspection. | Reject salt of suspect quality. |
| | M: Contamination of the cheese with pathogenic bacteria present in brine used for salting or storing cheese. (8) | Use potable water and salt of acceptable quality. Where appropriate, control temperature, salt concentration or acidity. Sieve the brine to remove small curd particles. Keep the area around brine tanks clean or cover the brine to prevent contamination. | Visual inspection. Where necessary, measurement and control of temperature, salt concentration and acidity. | Add salt and lower the temperature if appropriate to the cheese technology; otherwise renew the brine; improve storage conditions and general hygiene. Reject brine of suspect quality. |
| Piercing | M, C, P: Contamination of cheeses by pathogenic microorganisms due to dirty or poorly cleaned or maintained equipment or as a result of poor handling. | When using a piercing machine, clean it after use and check it for signs of damage. Maintain the equipment in good condition and repair or replace worn parts when identified. | Visual inspection. | Wash and/or rinse again before production.<br><br>Replace damaged elements immediately. |

# ENZYMATIC AND MIXED COAGULATION CHEESES

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Rind Treatment (eg. Smoking, Oiling, Waxing, Larding, Cloth-binding, Plastic-Coating, Rind-washing/smearing) | M, P: Microbiological contamination and cross-contamination may occur during rind-treatment. Physical contamination may arise as a result of damaged equipment or shelving. | Ensure equipment is always clean and maintained in good condition. (1)<br><br>Ensure food handlers have clean hands. Where necessary use protective gloves to cover skin lesions. | Visual inspection. | Repeat cleaning and/or disinfection. Rinse with potable water of acceptable quality. Amend cleaning procedure. If it is a recurrent issue review training of cheesemaker. |
| | M: Contamination and Cross-Contamination during **Rind Washing (smearing)**.<br><br>Poorly developed rinds may allow the growth of pathogenic bacteria while pH increases on the rind during ripening can permit growth of previously inactivated salt-tolerant pathogens such as *Listeria monocytogenes*. | Ensure high hygienic standards during milk production. (2)<br><br>Ensure a good standard of hygiene during cheesemaking and ripening; in particular, maintaining an adequate standards of hygiene in hard-to-clean areas (eg. Wheels of vat or tables, hydraulic or pneumatic cylinders) as well as smearing equipment and ripening racks.<br><br>Improve conditions necessary for the growth of ripening cultures.<br><br>” Old-young” smearing (where bacteria are transferred from mature to new cheeses) can promote rapid development of the correct rind microflora but may allow for cross-contamination. | Visual inspection of cheese surface | If it is a recurrent issue review procedures and training of milker and/or cheesemaker.<br><br>Where smear solution cultures are not viable, consider adding a dose of smear-ripening bacterial or yeast cultures.<br><br>It is possible to verify the safety of” old-young” smearing processes by checking smear solution rather than products for presence of *Listeria monocytogenes*. |

# ENZYMATIC AND MIXED COAGULATION CHEESES

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| | C: Use of rind additives which are not suitable for human consumption | Verify that the treatment is suitable for human consumption and if not inform the consumer that the rind must not be eaten. Follow the conditions of use for additives and ensure that they are suitable for the type of cheese. | Visual inspection | Inform the consumer that the rind must not be eaten.<br>Recall the batch. |
| | C: Chemical contamination during smoking if combustion material is contaminated with varnish, plastics, pesticides, etc. | Use wood or other combustion material sold as suitable for smoking food product or obtained from a known source. Don't use wood from coniferous trees. | Visual inspection. Supplier specification when the combustion material is originated from an unknown source | Change combustion material or supplier. |
| | P. Physical contamination during rind treatment. | Ensure that equipment is maintained in good condition. | Visual inspection. | |
| Ripening | M, P: Contamination of the cheese surface by pathogenic bacteria. | Ensure food handlers have clean hands. Where necessary use protective gloves to cover skin lesions. Ensure that equipment is clean and maintained in good condition. | Visual inspection. | Repeat cleaning and/or disinfection. Amend cleaning procedure. If it is a recurrent issue review training of staff. |
| | M: Survival of *Brucella* in sheep and goats raw milk cheeses with less than 60 days of ripening time, when herd is not brucellosis free. (2) | Check that the batch is older than 60 days before release. | Production records or batch date of production | Recall batches ripened for less than 60 days and extend the ripening period to more than 60 days. |

# ENZYMATIC AND MIXED COAGULATION CHEESES

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Refrigeration | M: Growth of harmful bacteria in **very soft, surface-ripened,** mixed coagulation cheeses. The acidity of the freshly made cheese may be low enough to control the growth of harmful bacteria but the pH rises during the ripening of surface-ripened cheeses. | **Store soft cheeses <8ºC upon completion of ripening** | Refrigeration temperature. | Reduce temperature or transfer stock to alternative store. Repair or replace refrigeration equipment if problem persists. |
| | M: Growth of harmful bacteria in **unripened, unacidified** enzymatic cheeses. | **Store cheeses at < 8ºC immediately after processing** | | |
| Cutting, Packing and Dispatch | M, C, P: Contamination of the cheese due to contaminated packaging materials, cutting, weighing and packing equipment or poor staff hygiene. (1) (5) | Use packaging materials (including traditional materials) suitable for food use and stored in clean, dry conditions. Ensure that equipment is clean before use and between cutting different products. Fresh products should be returned to chilled storage immediately after packing. | Visual inspection | Reject contaminated, damaged or suspect packaging. If necessary, change supplier of packaging materials or improve storage conditions.<br><br>Repeat cleaning and/or disinfection of cutting and weighing equipment.<br><br>If it is a recurrent issue review training of staff. |

See also: 1) GHP Cleaning, GHP Disinfection. 2) Risk analysis Primary Production. 3) GMP Cultures. 4) GMP Coagulants 5) GHP Staff General Hygiene, Training & Health 6) GHP Premises & Maintenance of Equipment. 7) GHP Water quality. 8) GMP Salting. 9) GMP Additions to the Milk & Curd.

## Section V – HACCP -based Plans

# BUTTER, CREAM

The cream used to make butter can be pasteurised; some member states require it to be pasteurised though a full account of national legislation is outside the scope of this guide.

| Process step to monitor | Why do we need to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Cream separation | M: Growth of pathogenic bacteria between milking and the completion of cream separation. | In case of mechanical separation, separate the cream as quickly as possible after each milking<br>For pan-based separation, maintain appropriate temperature:<br>* In case of pre-maturation, maintain at a temperature which can allow the development of and acidification by lactic acid bacteria<br>* Otherwise, hold the milk at < 8°C (LR) | Thermometer,<br>Length of time | Review cream separation system |
| | M, C: Contamination of the cream by pathogenic bacteria via the separator or the collecting containers or by residues of cleaning products. | After use, take apart and clean the milk supply system, the cream separator and the collecting containers. Rinse equipment thoroughly. | Visual inspection | Repeat cleaning process. Review procedures where necessary as well as staff training (if it is a recurrent issue) |
| | M: If the cream separator does not have sufficient capacity, creaming sludge can be pulled along into the cream. | Do not separate beyond the capacity of the cream separator. | Visual inspection | If needed, use a cream separator with an adjustable flow rate according to the volume of milk to be treated, or use a buffer tank |

## Section V – HACCP -based Plans

# BUTTER, CREAM

| Process step to monitor | Why do we need to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Inoculation* | M: Contamination of milk during inoculation due to poor quality of starter bacteria or inadequate handling by the cheesemaker. | Use only starters of known origin or those with a certificate of conformity, suitable for food-use. Handle hygienically. Reject starters (including homemade starters) of abnormal odour, colour or appearance. | Visual and organoleptic inspection of direct or bulk starters. | Reject inactive starters or those with abnormal or damaged packaging. Adjust bulk starter preparation procedure. |
| Cream maturation (a very important step in the case of fermentative maturation) | For fermentative maturation: M: Acidification which is insufficient or too slow can lead to the development of pathogenic bacteria. | Cover the containers. Adjust the temperature of the cream in order to allow the development of lactic bacteria until the desired acidity is obtained. | Thermometer, Length of time. Organoleptic inspection of the cream or pH /titratable acidity. | Readjust the temperature or maturation time. |
| | M: Growth of bacteria when the cream is being ripened. | Cool the cream as quickly as possible. Cover containers. | Thermometer | Adjust storage temperature |
| Packaging of cream** | M, P, C: Contamination of cream by the equipment, the packaging or the handler. | Clean and disinfect any reusable packaging. Use clean equipment that is maintained in good condition. Store packaging away from potential contaminants. Maintain personal and clothing hygiene. | Visual and olfactory inspection | Repeat cleaning process. Review procedures where necessary as well as staff training (if it is a recurrent issue) |
| Storage of cream** | M: Growth of bacteria during storage. | Cool the cream as quickly as possible. Cover containers. | Thermometer | Adjust storage temperature |
| | M, C: Contamination by pathogenic bacteria of cream via storage containers or by cleaning product residues | After each use, clean and disinfect the storage containers. Rinse equipment thoroughly. . | Visual and olfactory inspection. | Repeat cleaning process. Review procedures where necessary. |

## Section V – HACCP -based Plans

# BUTTER, CREAM

| Process step to monitor | Why do we need to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Churning*** | M, C, P: Contamination of cream via the churn by pathogenic bacteria, foreign bodies or by cleaning product residues. | Use clean equipment that is maintained in good condition. After each use, clean the churn and rinse thoroughly. | Visual and olfactory inspection. | Repeat cleaning process. Review cleaning procedures where necessary. Minimise sources of physical contamination in food handling areas. |
| | M: Presence and growth of pathogenic bacteria in butter. | Maintain a suitable temperature for churning. **Stop churning at the grain stage and extract the maximum amount of buttermilk** | Visual inspection Thermometer. | Readjust temperature and length of churning time. |
| Washing the Butter*** | M: Growth of pathogenic bacteria if the washing process does not remove the buttermilk sufficiently | Perform washing with adequate quantities of water and for a sufficient number of washes | Visual inspection | Adjust the quantity of washing water |
| | M, C: Contamination of butter by the water used for washing | Use potable water | Use of water from public water supply. Potability certificate for private water supplies. | Review water treatment where necessary |
| | M: Growth of pathogenic bacteria where the water is too warm. | Adjust washing water temperature to the temperature of the butter. | Thermometer | Cool the water used for washing butter. |
| Blending*** | M: Growth of pathogenic bacteria due to a poor distribution of moisture droplet or large droplet size | Evacuate the maximum of washing water. Blend sufficiently in order to obtain a good distribution of moisture and droplet size. | Visual inspection And/or Water test paper | Readjust length of blending time |
| Salting***/* | M, C: Contamination of butter by the salt | Use food quality salt within the expiry date | Visual inspection | Change supplier |

## Section V – HACCP -based Plans

# BUTTER, CREAM

| Process step to monitor | Why do we need to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Moulding/ Packaging*** | M, P, C: Contamination of butter by the moulding equipment, the packaging or the handler. | Use clean equipment that is maintained in good condition. Store packaging away from possible contamination. Monitor personal hygiene. Store quickly at cold temperatures. | Visual inspection. | Repeat cleaning process. Review procedures where necessary as well as staff training (if it is a recurrent issue). |

**Steps concerning cream production only/ *** Steps concerning butter production only/ * Optional steps
See also: 1) GHP Cleaning. 2) GHP Disinfection 3) GMP Cultures. 4) GHP Staff General Hygiene Training and Health. 5) GHP Pest Control 6) GHP Water quality 7) GMP Additions to the Milk and Curd

(LR) 853/2004 - The milk must be cooled immediately to
- 8°C maximum if it is transformed or collected the same day
- OR 6°C maximum if it is not transformed or collected the same day

## Section V – HACCP -based Plans

# FERMENTED MILK PRODUCTS

This family of fermented milk products includes kefir, yoghurt, buttermilk, ymer, filmjölk, **rjażenka** and others - whose common feature is their acidification by lactic acid bacteria. There are two ways of making fermented milk products:

1. **Set type method**. Milk is mixed with ingredients (sugar, fruits, flavours, colourings etc.) then inoculated with starter cultures, filled into its final packaging before incubation and, finally, cooling.

2. **Stirred type method**. Milk is inoculated with starter cultures and incubated in a fermentation vessel. When a required pH has been reached, the coagulum is cooled and mixed with ingredients before filling and packing.

Depending on the technology used, the producer should determine the exact sequence of steps appropriate to their product.

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Filling the vat | C, M: Contamination of milk by processing equipment and utensils (vats, stirrers, buckets, scoops etc.) Dirty equipment can cause contamination of milk with pathogenic bacteria. Residues of cleaning agents can contaminate milk. | Ensure that equipment is always clean. Never put small pieces of equipment directly on the floor. (1) (2) | Organoleptic inspection. | Repeat cleaning and/or disinfection. Rinse thoroughly with potable water.<br>Adjust cleaning procedure. If it is a recurrent issue review training of staff. |
| Pasteurisation** (3) | M: Fermented milk products are very sensitive to the development of pathogenic bacteria. Some bacteria can survive inadequate pasteurisation. | Provide adequate facilities for pasteurisation. | Measurement of temperature and time. | Re-pasteurise the milk if the required temperature drops below the limit.<br>Change or improve pasteurisation equipment. |
| Cooling to incubation temperature | M: Possibility of recontamination due to too long cooling time or unsuitable cooling equipment. | Ensure quick cooling time using effective cooling equipment. | Measurement of temperature and time. | Change or improve cooling equipment |
| Addition of starter cultures (4) | M: Contamination of milk during inoculation due to poor quality of starter bacteria or inadequate handling by the production staff. | Use only active starters of known origin or those with a certificate of conformity and suitable for food-use. Store and handle hygienically. | Visual inspection: check appearance and expiry date. | Reject packs of poor quality, abnormal appearance and smell.<br>Adjust handling and storage procedures, change the supplier. |

## Section V – HACCP -based Plans

# FERMENTED MILK PRODUCTS

| Process step to monitor | Why do we have to be careful? | Preventive actions | Checking/Monitoring procedure | Corrective actions |
|---|---|---|---|---|
| Addition of* fruit, colourings, flavourings etc. (5) | M, C, P: Possibility of contamination during additions of ingredients. | Use only tools cleaned and/or disinfected after each dosing. Use only ingredients obtained from a reputable supplier or known source and checked upon delivery and before use. Heat-treat herb mixes or fruit where the source and harvesting conditions are not known. | Visual and organoleptic inspection. | Reject ingredients and packaging of suspect quality, abnormal appearance and smell.<br>Adjust handling and storage procedures, change the supplier |
| Incubation* | M: Acidification if slower than expected according to the recipe can allow development of harmful microorganisms. | **Ensure good technical condition of process facilities: (incubation vessels or chambers) Maintain appropriate time and temperature, according to the given technology** | **Visual and organoleptic inspection**<br>**Monitoring of acidification or pH measurement**<br>**Generally recommended value: final acidity pH ≤ 4,5** | Reject products with unusual smell and/or taste<br>Adjust incubation parameters |
| Cooling of the product | M: Possibility of development of harmful microorganisms because of long and slow cooling. | Ensure rapid cooling of the products | Measurement of temperature and time. | Maintain and/or replace cooling equipment |
| Packaging | M, C, P: Possibility of contamination by packaging machines, packaging material, production staff or the packing environment e.g. by airborne fungi. | Clean and/or disinfect filling and packaging lines after each use. Keep packages in dry and clean place, protected against pests. Carefully clean reusable packaging. Minimise air circulation; close doors and windows and turn off fans if not required. | Visual inspection. | Reject packages if damaged or of poor quality,<br>Maintain packaging equipment in a good state of repair.<br>If it is a recurrent issue review training of staff. |

* According to a specific technology, these steps may occur in different order.

** This step is strongly recommended but not compulsory

See Also: 1) GHP cleaning. 2) GHP Disinfection 3) HACCP-based Plan Milk Collection, Storage and Treatment. 4) GMP Cultures. 5) GMP Additions to the milk and curd

# Section VI – TRACEABILITY

p79
Describe what you consider to be a production lot (production of one day, cheese from one vat, production of one week etc.).

Describe how you can identify the lot number of a product. (label, paper, etc.).

Describe you way of numbering lots (date, day of the year, best before date, etc.).

Describe how you keep record of your production lots (logbook of production, excel file, other).

Describe how you keep record of ingredients used in processing: milk, coagulant, lactic cultures, salt, etc. (logbook of production, excel file, other).

Not obligatory but highly recommended.
Describe how these are linked to your production lots.

Describe how you keep record of the buyers of your products (not applicable for selling to final consumers).

Describe how you handle unsold products that return from the market

# Section VII – SELF MONITORING

p 80-82
Specify microbiological analysis for each product analysis per year

| PRODUCT | Analysis | Criterion | Frequency |
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In case of environmental monitoring, specify here:

| SAMPLING PLACE | Analysis | Criterion | Frequency |
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# Section VIII – NON CONFORMITY MANAGEMENT

| Date | Product | Non Conformity | Corrective Measure |
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