



STARMILK PRODUCTS PRIVATE LIMITED

CIN : U74900WB2015PTC206779

To whom it may concern

This is to certify that Souvik Bera, student of B. Voc (Food Processing) from Mugberia Gangadhar Mahavidyalaya has successfully completed his 30 days industrial training from 01/01/2023 to 30/01/2023 at Starmilk Products Private Limited, Vill + Post: Jangalpara, P.S. Pursurah, Dist-Hooghly, PIN- 712401.

He has followed and maintained all the instructions & protocol of the company during the training period and is being relieved from Starmilk with effect from 30/01/2023

Star management wishes him all success in life.

Date: 30/01/2023

With all best wishes,

Authorized Signature

For Starmilk Products Pvt. Ltd.



MARKETED BY - MOTHER DAIRY



Industrial training report

Training at Dairy plant

Date - 1st January to 30th January 2023...

STARMILK PRODUCTS PVT. LTD.



Submitted By - Bipasha Maity, Amrita Bhattacharya,
Saheli Guchhachhit, Alik Maiti, Souvik bera

2nd YEAR 4th SEM STUDENTS

DEPARTMENT OF NUTRITION

B. VOC(FOOD PROCESSING AND TECHNOLOGY)

MUGBERIA GANGADHAR MAHAVIDYALAYA

(Affiliated to Vidyasagar University)

Vill+Po- Bhupatinagar, Dist- Purba Medinipur, west
Bengal , Pin - 721425

STARMILK

PRODUCTS PRIVATE LIMITED (01/01/2023 - 30/01/2023)

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PREFACE

The industrial training is the effort to produce link between the students and the industry in order to develop the awareness of industrial approaches to solving the problems based on the understanding of tools ,plant and machinery process, mode of operation.

Having united experience from the industrial training at **starmilk products pvt. Ltd.** We have been written this report that attempts to combine theory and laboratory applications.

The 30 days training is part of the undergraduate and postgraduate curriculum. The training adapting ourselves to the industrial environment and understanding the limitation and the freedom under which the engineers work. The training involves the industrial work and knowledge about the food industry . we get to know the raw material used in milk processing , testing of raw material, all kinds of primary tests, testing of finished goods and the packaging materials.

ACKNOWLEDGEMENT

We deep sence of gratitude I express our thanks to **Mr.Tripatak Kumar** (mother dairy) and **Mr. Bhupati Bera** , general manager of **starmilk products pvt. Ltd.** Who permitted us to take up training in the organization. We humbly pay our thanks to administration , and all staff , workmen for their valuable guidance.

I also pay our Heartiest thanks to **Mr.Dhraritiman Ghosh**, Quality control manager and **Mr. kumar shreyas solanki**, production manager and **Mr. sunil kumar** for making the necessary arrangement for our training. All of them has been our main inspiration throughout training period and had taken pain to see us through problems. We are thankful to all of them for constant encouragements during the whole period of our training.

We are also thankful to **Dr. Apurba Giri** , H.O.D of Departments of Nutrition and food processing of Mugberia Gangadhar Mahavidyalaya , who had provided us with necessary guideline to complete our training successfully. Finally we are extemly thankful to our parents for their learned advice during our training..

Company Overview

Starmilk Products Private Limited incorporated with MCA on 18 June 2015. The Starmilk Products Private Limited is listed in the class of pvtltd company and classified as Non Govt. Company. This company is registered at Registrar of Companies (ROC), Kolkata.

Starmilk Products Private Limited company register number is 206779 and its Corporate Identification Number (CIN) provided from MCA is U74900WB2015PTC206779.

Starmilk Products Private Limited company's registered office address is Jangal Para, P.O – Champadanga, P.S – Pursura, Hooghly, WB – 712401.

Electricity Supply



Electricity



Incoming supply 3 phase (11000 volt)



Meter Room (in)



VCB (vacuum circuit breaker, 11000-7500 volt)(it is use for safety purpose)



Transformer (electricity in – 11000 volt, electricity out – 440 volt)



Distribution panel (440 volt) → APFC panel (Automatic Power Factor Control)



ACB (Air Circuit Breaker)(safety purpose)

Generator

500 KVA (Kilo volt Ampere)



500 KVA DG AMF Panel

BOILER

2 Ton packed Hybrid Boiler



1000 L water



Oxygen supply (FD Fan)



Main stop Valve



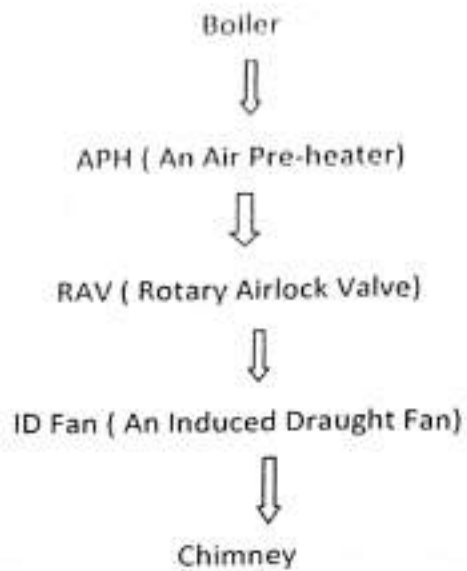
Header



Supply (100 pound steam)

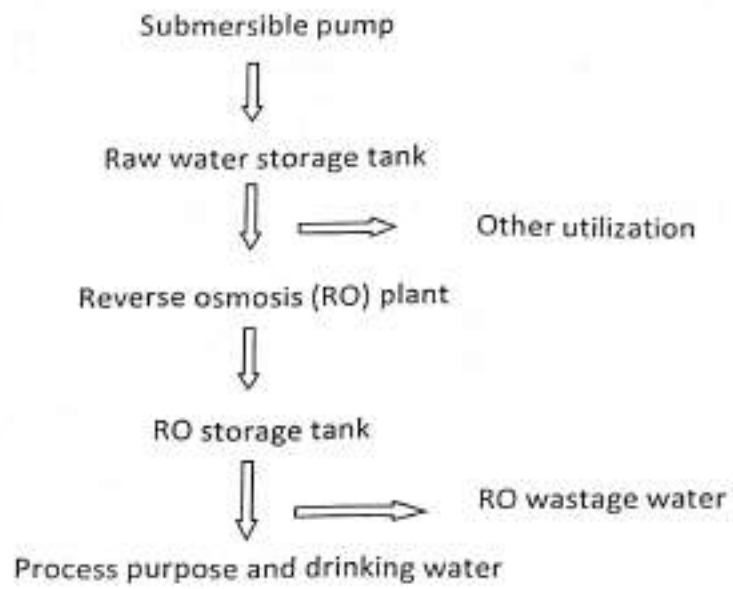


Ash Outlet

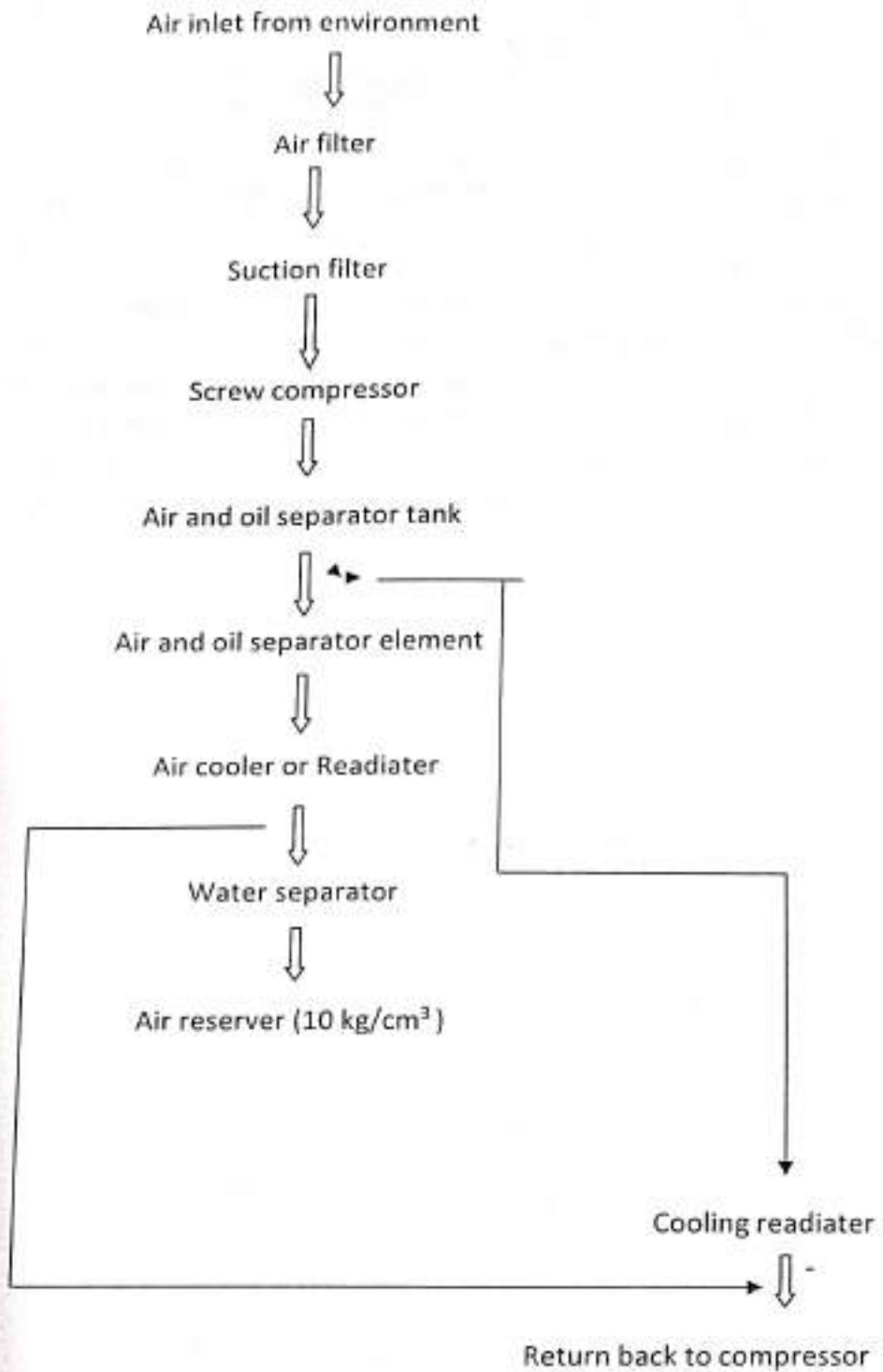


- Working pressure : 100 pound or 7 kg
- Movray : It is used for water level in time
- Blow Down : It is remove extra steam and scale in boiler
- Gach glass : It is maintain water level in boiler
- Fungal plug : It is used for safety purpose
- Scale remove chemical : Oxygen , P^H booster, Anti scale

WATER SUPPLY



Air Compressor

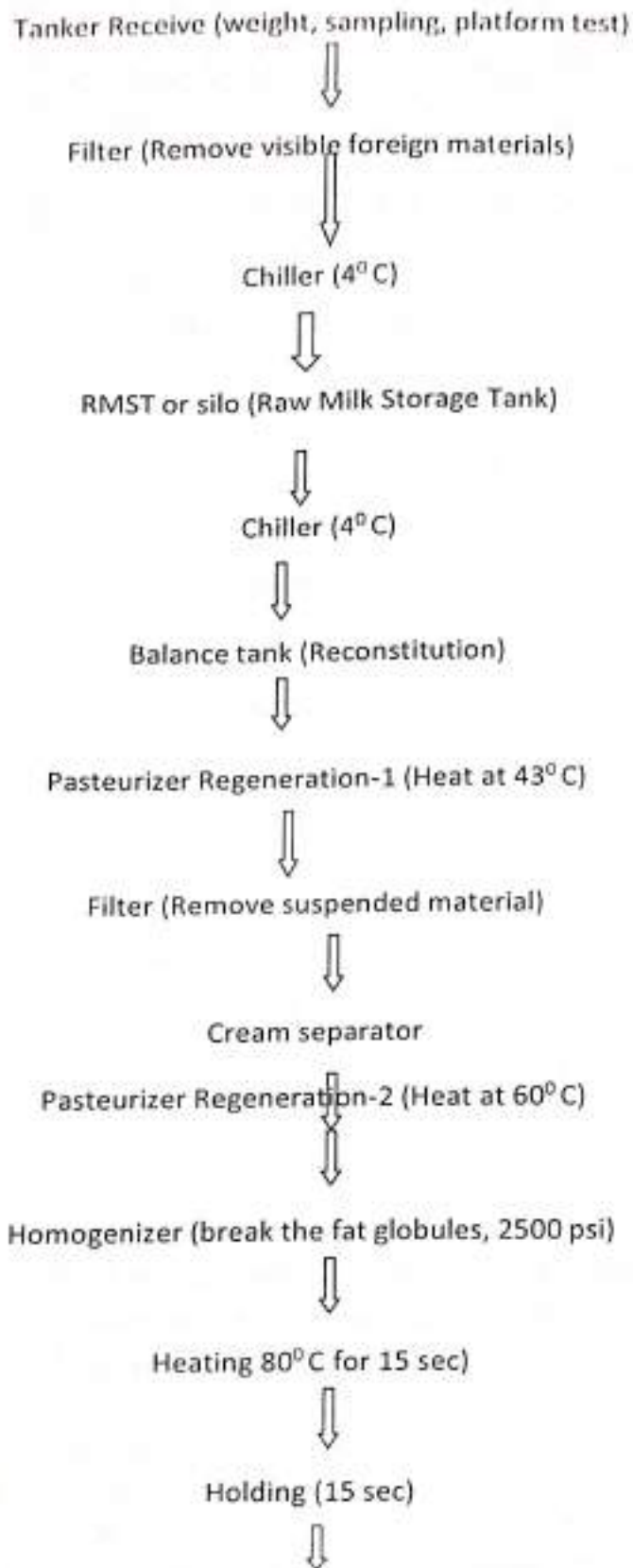


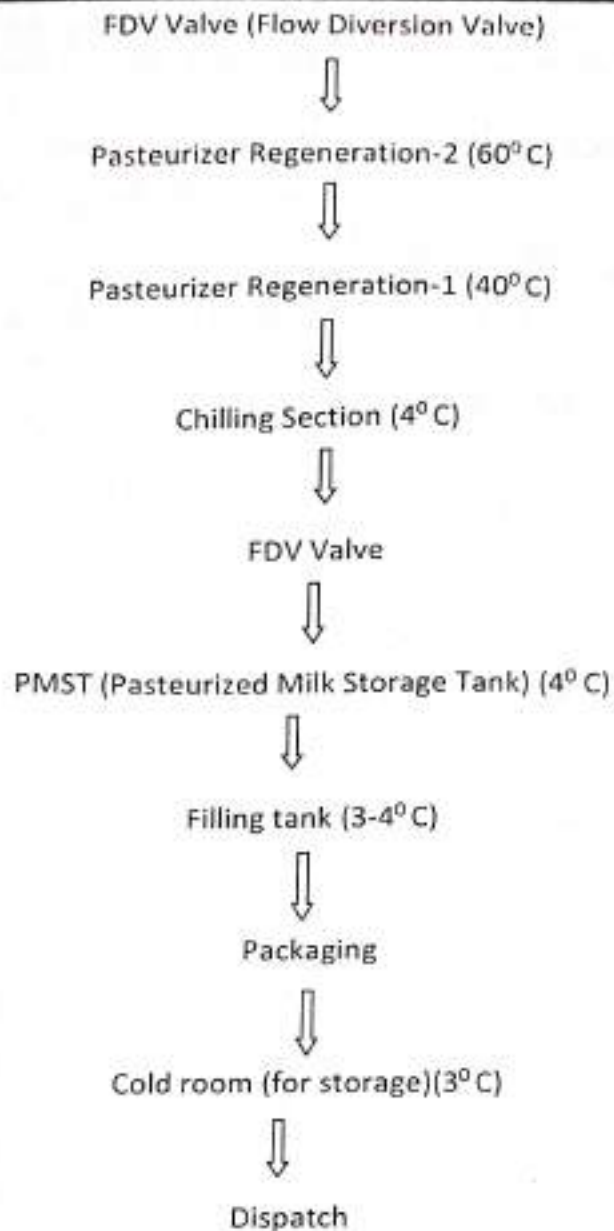
Milk Section

Milk is a nutrient rich liquid food produced by the mammary glands of mammals. It is the primary source of nutrition for young mammals, including breastfed human infants before they are able to digest solid food.

Cow's milk is a good source of protein and calcium as well as nutrients including vitamin B₁₂ and iodine. It also contains magnesium, which is important for bone development and muscle function, and whey and casein which have found to play a role in lowering blood pressure. It's packed with important nutrients like calcium, phosphorus, B Vitamins, potassium and vitamin D. Drinking milk and dairy products may prevent osteoporosis and bone fractures and even help for maintain a healthy weight.

Processing steps:





❖ **Tanker Receiving :-**

Milk delivered to the milk plant in tankers (road). Milk in these tankers has to be graded, emptied, measure by weight or volume, sampled and bulked to provide to RMST (Raw Milk Storage Tank) for further processing.

❖ **Filter :-**

To improve the aesthetic quality of milk by removing visible foreign matter.

❖ **Float Control Balance Tank:-**

Maintains constant head of milk for feeding the raw milk pump also receives any sub-temperature milk diverted by FDV (Flow Diversion Valve).

- ❖ **Clarifier and Cream separator :-**
Cream separator is used for separating and removing cream from whole milk.
- ❖ **Homogenizer :-**
Homogenizer is used for breaking the large fat globules of milk into small sizes. Homogenization pressure 2500 psi .
- ❖ **Pasteurization :-**
Pasteurization is done in milk for killing the pathogens present in raw milk and keeping the quality of milk better. Milk is pasteurized at $80 \pm 2^{\circ} \text{C}$ for 15 second.
- ❖ **Chilling :-**
Pasteurized milk chilled at below 4°C and store at PMST (Pasteurized Milk Storage Tank).

Equipments :-

Equipments name	Equipments number	Capacity
Chiller	4	5000 Lit/Hr
Pasteurizer	1	5000 Lit/Hr
Cream separator	1	
Homogenizer	1	5000 Lit/Hr
RMST (Raw Milk Storage Tank)	1	10000 Lit
PMST (Pasteurized Milk Storage Tank)	6	1,2- 10000 Lit; 3,4,5,6- 5000Lit
Raw milk silo	3	1,2 – 30000 Lit; 3 – 20000 Lit

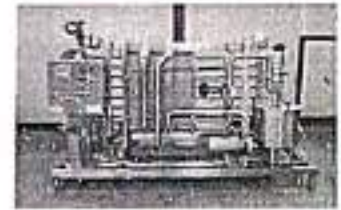
FILTRATION ---



SEPARATOR -----



Pasteurizer -----



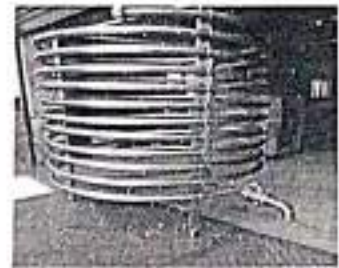
PMST -----



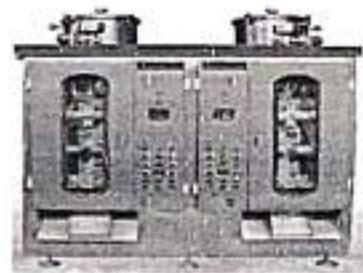
HOMOGENIZER ----



HOLDING COIL ----



PACKGEING MACHINE -----



WEIGHT BRIDGE ---

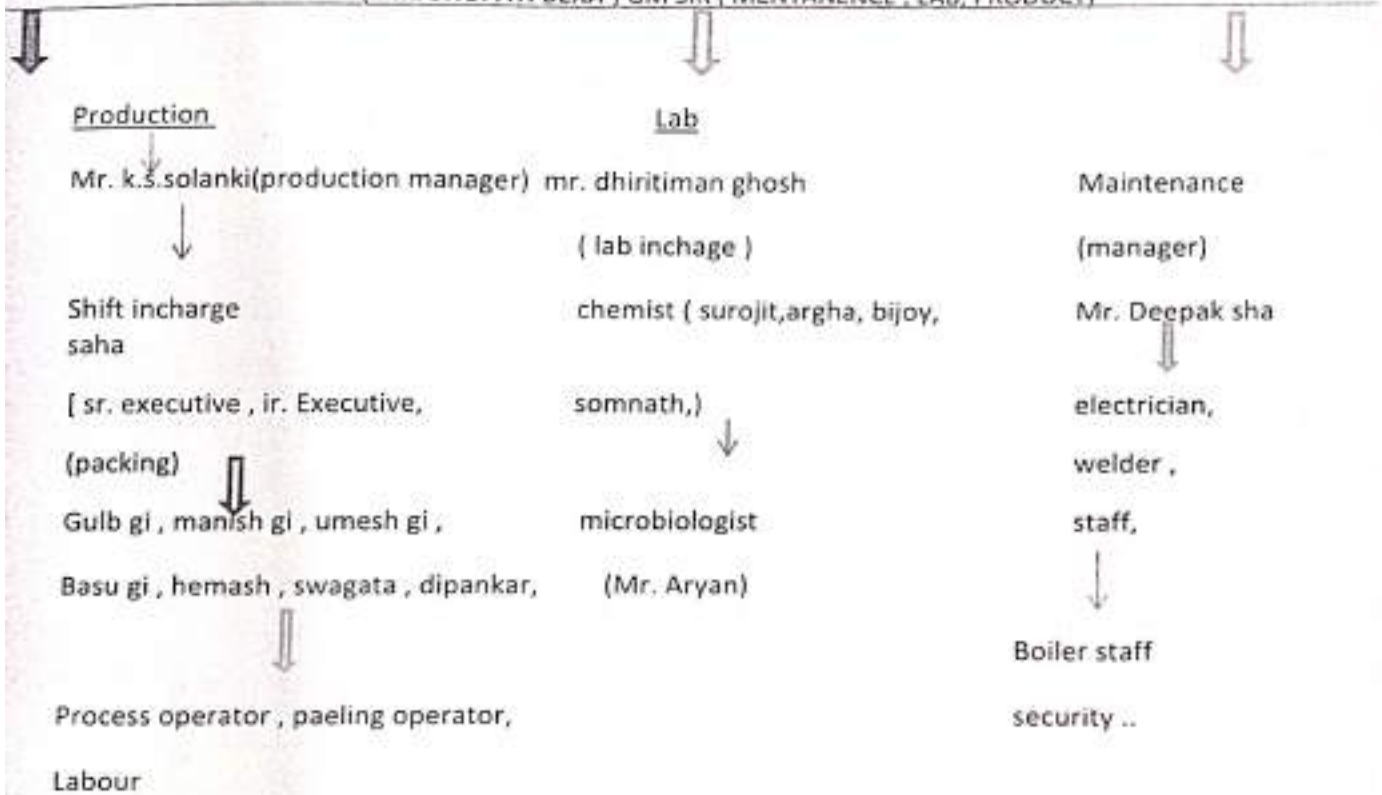
COLD STORAGE ---



MANAGEMENT SYSTEME OF STARMILK



DIRECTOR SIR (MR. BHUPATI BERA) GM SIR (MENTANENCE , LAB, PRODUCT)



Packaging :-

PMST / Filling Tank (3-4^o C)



Balance tank



Vertical seal (eye marking)



Horizontal seal and cut



Pouch outlet



10 Lit / 14 Lit tray



Roller/ channel



Cold room (4^o C)

PRODUCTS NAMES AND THERE COMPOSITION

- MILK is further sub divided into four group

1. Cow milk -

Quantity per 100gm.



Fat – 4.1gm. SNF- 9g.

Carbohydrate – 4.8g

Calcium – 109mg.

Protein – 3.1g.

Energy- 68kcl.

Add sugar- 0.01

2. Stander super – T ...



Quantity per 100g.
FAT – 4.6 SNF- 8.5.
Carbohydrate – 4.8g
Calcium – 109mg.
Protein – 3.1g
Energy – 73kcl.
Vitamin- 120iu

3. Toned milk ...

Quantity per 100gm.



FAT – 3.1 SNF – 8.5
Carbohydrate – 4.8gm.
Calcium – 109mg.
Protein- 3.1g
Energy – 60 kcal .

4. Double tone milk (live lite)



Quantity per 100g.
FAT – 1.5 SNF – 9.0
Carbohydrate – 5.1g.
Calcium – 116mg.
Protein – 3.2g
Energy – 47kcal.
Total sugar – 0.01g.
Cholesterol – 2.7mg.

COMPOSITION

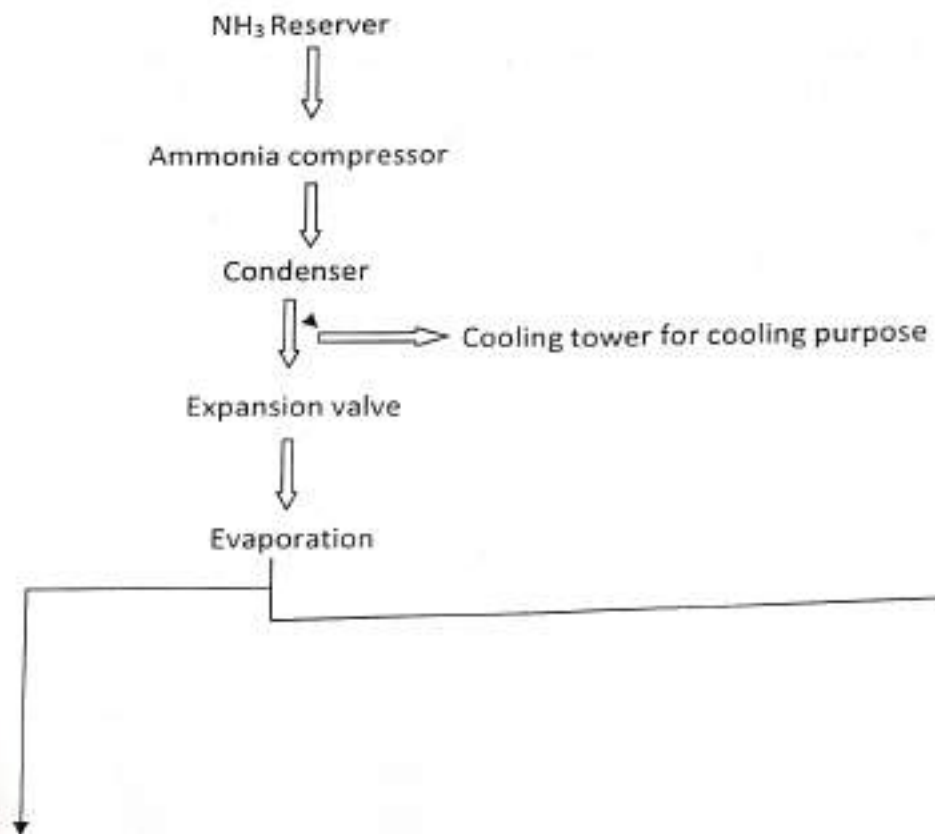
VARIANT	QUANTITY	PRICE
Cow milk.	500ML	RS. 28.00
Stander milk .	500ML	RS. 30.00
	1LIT	RS. 59.00
Toned milk.	500ML	RS. 27.00
	180ML	RS. 10.00
DOUBLE TONED..	500ML	RS. 24.00
	200ML	RS. 10.00

Storage :- Milk

packets are stored below 4°C . **Dispatch :-** Dispatch
time 7:00 pm from cold storage.

Dispatch temperature below 5°C .

Refrigeration System



Circulate the water for working purpose (Ex- IBT tank)



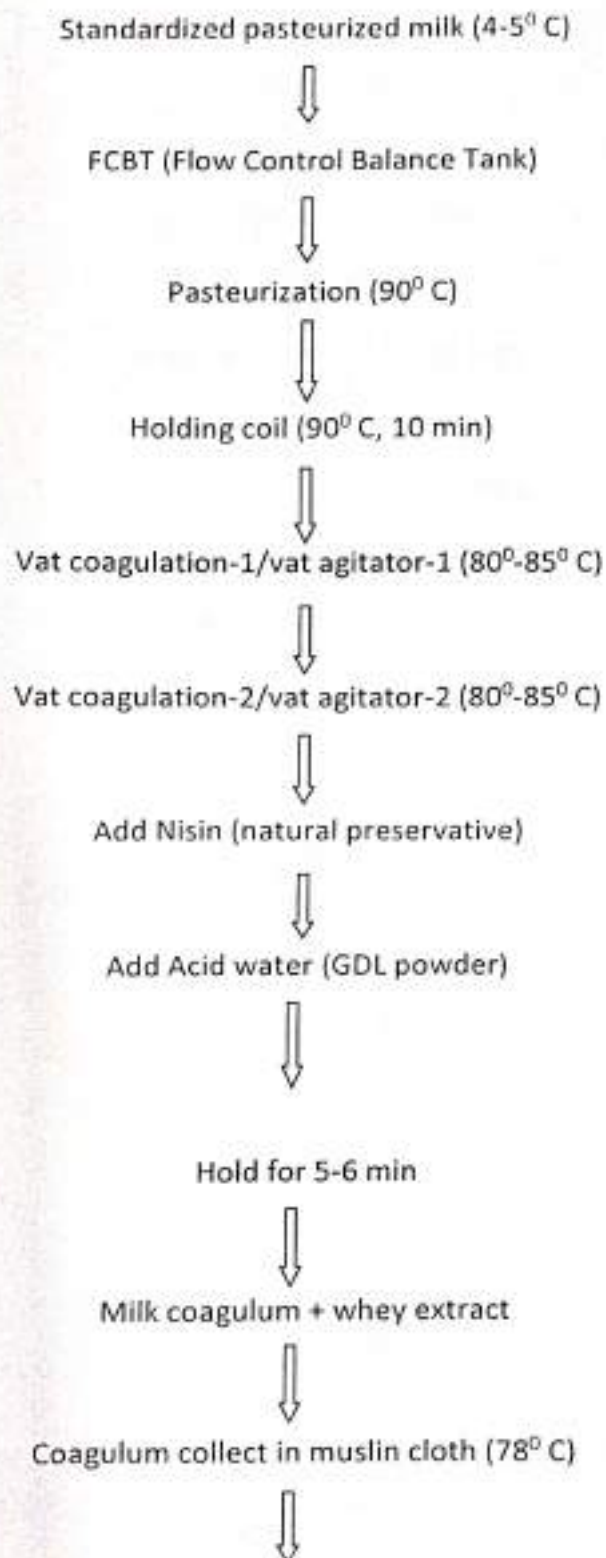
Paneer Section

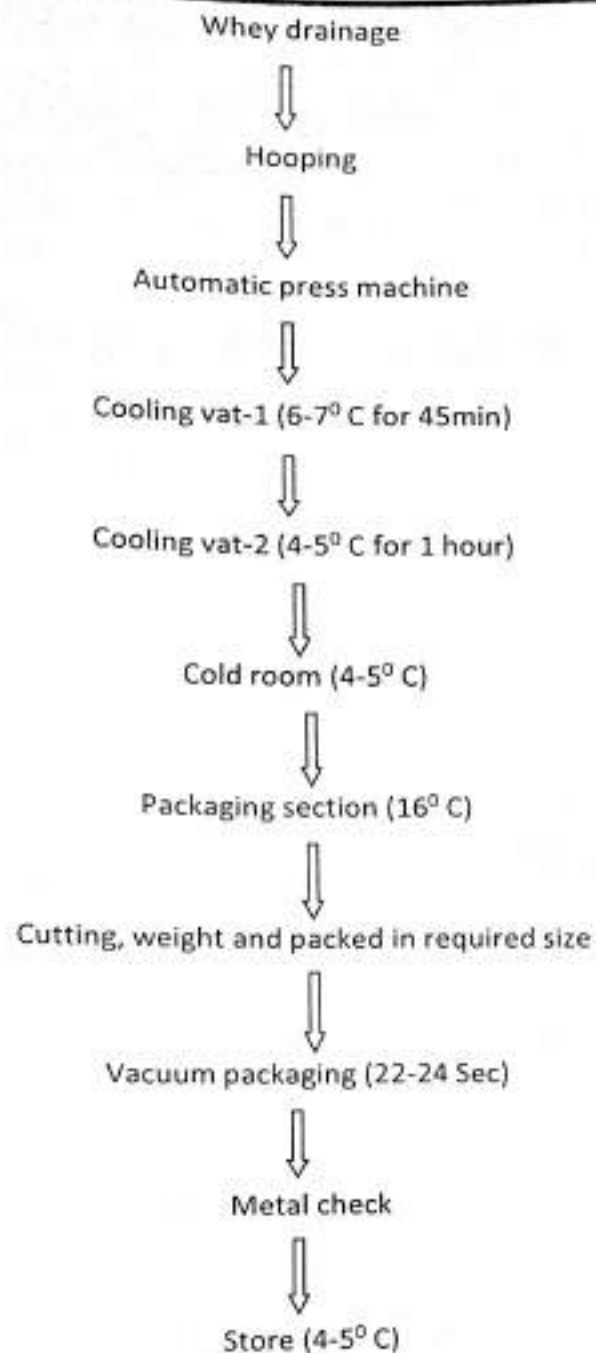
Paneer also known as panir or Indian Cottage Cheese, is a fresh cheese in the Indian sub continent made from cow or buffalo milk. It is a non-aged, non-melting soft cheese made by curdling milk with a fruit or vegetable derived acid such as lemon juice.

Paneer is a good source of high quality protein. Paneer are packed with other nutrients like calcium, and B₁₂.

Intake of paneer can reduce the risk of cancer, building better bones and teeth, an essential component in weight loss programs. Paneer is a ideal food for diabetic patients. It builds a strong immune in our body and prevents and protects from disease.

Processing steps :-





Equipments :- Storage tank, Double jacket VAT with agitator, Heat exchanger, Hoops (pressing device), Brine tank, Cold Storage, Weighing machine, Vacuum packaging machine, Deep freezer.

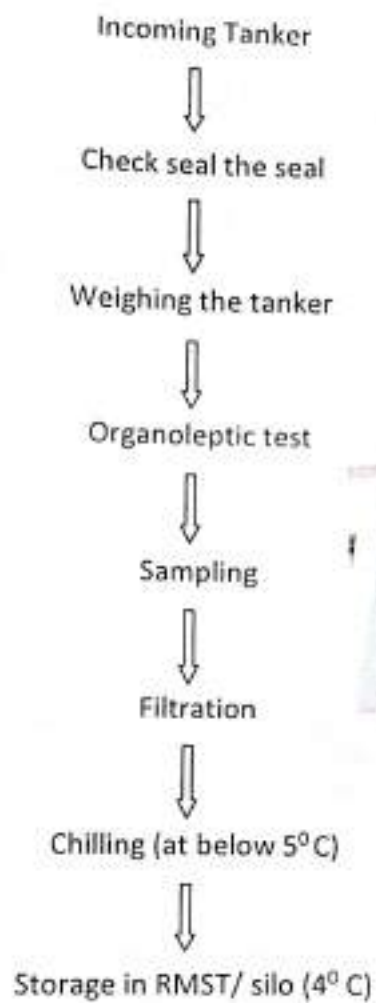
Packaging :- At first paneer cubes are bring in the packaging room. Then cubes are cutting with sterilized knife by manually in required size. Then this pieces of paneer are packed by vacuum packaging machine for 22-24 second. Then by the metal detector machine, check the presence of metal of the packed paneer.

Storage :- Paneer packets are stored below 4°C .

Dispatch :- Dispatch time 11:00 pm from cold storage.

Dispatch temperature below 5°C .

Raw Milk Receiving Dock (RMRD)



List of Raw Materials and Packaging Materials and their tests :-

A. Raw materials :-

Raw materials	Tests
1. Milk	<ul style="list-style-type: none">✓ Organoleptic test✓ Adulteration test✓ Fat test✓ Alcohol test✓ Correct Lactometer Reading test✓ Acidity test
2. Skimmed Milk Powder	<ul style="list-style-type: none">✓ Fat test✓ Moisture test✓ Acidity test✓ Alcohol test✓ Insolubility test✓ Bulk density test✓ Total ash test✓ Adulteration test✓ Protein test✓ Sodium test
3. Sugar	<ul style="list-style-type: none">✓ Dust material test✓ Foreign material test
4. Caramel colour	✓ labelling test
5. Mango Flavour	✓ Labelling test
6. Mango Pulp	✓ Labelling test
7. Tartrazine	✓ Labelling test
8. Sunset Yellow Colour	✓ Labelling test
9. Culture	✓ Labelling test
10. Lactovit (soln. Of vitamin A and D)	✓ Labelling test
11. Nisin	✓ Labelling test
12. GDL	✓ Labelling test

B. Packaging materials :-

Packaging materials	Tests
1. Cup (85, 100, 200, and 400 gm)	<ul style="list-style-type: none"> ✓ Top (OD) ✓ Coller (OD) ✓ Neck (OD)
	<ul style="list-style-type: none"> ✓ Bottom (OD) ✓ Height ✓ Lid thickness ✓ OFC ✓ Weight
2. Tray	
I. Corrugated tray	<ul style="list-style-type: none"> ✓ Dimension ✓ Total GSM ✓ Brusting Strength ✓ Moisture
II. Thermoformed tray	<ul style="list-style-type: none"> ✓ Dimension ✓ Thickness ✓ Weight ✓ Cavity diameter
3. Lid	<ul style="list-style-type: none"> ✓ Thickness ✓ Grammage ✓ Diameter
4. Spoon	<ul style="list-style-type: none"> ✓ Thickness
5. Polyfilm	<ul style="list-style-type: none"> ✓ Thickness ✓ Weight ✓ Length ✓ GSM ✓ Core dia ✓ Eye mark ✓ Printing matter

Effluent Treatment Plant (ETP)

Effluent Treatment Plant is a process design for treating the industrial waste water for its reuse or safe disposal to the environment.



Clean – in – place (CIP)

Clean-in-place (CIP) is a method of automated cleaning the interior surfaces of pipes, vessels, equipment's, filters, without major disassembly. It is an important operation in food or dairy section to remove the adhere organic components through acid, alkali and hot water remaining and to ensure prevention for micro biological hazard. CIP is a commonly used for equipment such as piping, tanks, and filters. CIP employs turbulent flow through piping, or spray balls for large surfaces. Industries that rely heavily on CIP are those requiring high levels of hygiene, and include: dairy, beverage, brewing, processed foods, pharmaceutical, and cosmetics.

Importance of CIP:-

- The benefit to industries that use CIP is that the cleaning is faster, less labor-intensive and more repeatable, and poses less of a chemical exposure risk.
- The chemical used in CIP system remove organic component i.e; protein and fat and also dissolve the sticky mineral salt and water.
- Alkali act as detergent for removing fat and sugar from pipeline.
- Acid act as solvent for fat particle adhere, which prevent the micro bacterial growth and dissolve milk stone.



Procedure :-

Ingredients	Temperature	Running (Approx) time
1. Fresh water	45-50 ^o C	5min
2. Hot caustic	75-80 ^o C	10min
3. Fresh water	45-50 ^o C	7min
4. Hot acid	50-60 ^o C	12min
5. Fresh water	45-50 ^o C	7min
6. Hot water	85-90 ^o C	15min
7. Fresh water	45-50 ^o C	5min

Hygiene and Safety Measure in Starmilk Products Private
Limited

STARMILK Products Private Limited is Certified by.....

- I. Good Manufacturing Practice (GMP)
- II. Food Safety and Standards Authority of India
 - A. Food Safety and Standards Act, 2006
Licence No. – 10016031001890
- III. West Bengal Pollution Control Board
 - A. Section 25 and 26 of water (Prevention and Control of Pollution) Act, 1974
 - B. Section 21 of the Air (Prevention and Control of Pollution) Act, 1981
- IV. ISO 22000

Quality Lab at the Plant

All product manufactured by dairy must comply with the legal standard be accepted by the consumers. To ensure this a quality control laboratory has been constituted.

Various tests conducted for milk are as follows:-

1) Organoleptic Evaluation of Raw/ Pasteurized Milk:

Procedure :-

- Take milk sample from the milk tanker
- Mix it properly by inverting it up and down gently 3-4 times.
- Warm the sample to 40°C.
- Take a full whiff of air to detect any off odour that may be present.
- Around 10 to 15 ml milk in a beaker and take a sip.
- Roll around the sample in mouth and the sensation is noted.

2) To check fat in milk by gravimetric method i.e, Gerber Method :

Procedure :-

- Take 10ml sulphuric acid in the butyrometer (90% strength).
- Pipette out 10.75ml of well mixed sample of milk pre-heated at 40°C and cooled to 27°C and transfer it to butyrometer carefully.
- Add 1ml iso-amyl alcohol.
- Add water if required to adjust the level.
- Close the neck of butyrometer firmly with stopper without disturbing the content.
- Mix the contents by shaking the butyrometer until all the curd is dissolved.
- Centrifuge at Funki centrifuge for 5min.
- Adjust the fat column within the scale on butyrometer and note down the reading.

3) To determine Clot-On-Boiling Test in Milk:-

Procedure :-

- Take 5ml sample in the test tube and smell.
- Place the tube in a boiling water bath and hold for about 5min and smell again for any acidic flavour.
- The formation of clot (precipitate particles) is indicative of positive test.

4) To determine Alcohol test in Milk:-

Procedure :-

- Take 5ml milk in a test tube
- Add 5ml 70% ethyl alcohol with constant shake
- Formation of precipitate indicates alcohol test positive.

5) To determine Acidity test in Milk:-

Procedure :-

- Take 10ml milk in a conical flask/ 100ml beaker.
- Add 3-4 drops of the phenolphthalein indicator.
- Titrate the contents with N/10 sodium hydroxide (NaOH) solution stirring the contents.
- Observe occurrence of pink colour as end point for the titration.

6) Phosphatase test in Milk:-

Procedure :-

- Take 1ml milk in a test tube.
- Add 5ml phosphatase solution
- Then keep the test tube in a water bath at 37°C temperature for 2 hours.

7) Corrected Lactometer Reading test in Milk:-

Procedure :-

- Take the milk sample.
- Then heat it, at 40°C temperature.
- Cool it at 15.5°C temperature
- Then take the milk in measuring cylinder
- Dipped the lactometer in the milk and take the reading.

8) Methylene Blue Dye Reduction Test(MBRT) in Milk :-

Procedure for Raw milk:

- Take 10ml milk sample in sterile MBRT test tube.
- Add 1ml MBRT dye solution .
- ☐ Stopper the tubes with sterilized rubber stopper and carefully place them in a test tube stand dipped in a serological water bath maintained at 37+/-1° C for 30-40min

Procedure for pasteurized milk:-

- Take 10ml milk sample in sterile MBRT test tube.
- Add 1ml MBRT dye solution .
- Stopper the tubes with sterilized rubber stopper and carefully place them in a test tube stand dipped in a serological water bath maintained at $37\pm 1^{\circ}\text{C}$ for 6hr.

Adulteration Test for Milk :-

- Sugar test
- Salt test
- Starch test or Cereal flour test
- Ammonia test
- Urea test
- Formalin test
- Neutralizer test
- Nitrate compound test
- Hydrogen peroxide

Testing procedure :-

Test name	Steps	Interpretation
1. Sugar compound	<ul style="list-style-type: none">✓ Take 3ml milk in a test tube✓ Add 5ml 0.1% resorcinol solution✓ Shake the test tube properly and keep the test tube in a boiling water bath for 5min	<ul style="list-style-type: none">• Brick red colour formation indicates sugar test is positive.
2. Salt compound	<ul style="list-style-type: none">✓ Take 5ml silver nitrate solution in a test tube✓ Add 3 drop of 10% potassium chromate solution✓ Add 1ml milk✓ Shake the test tube properly	<ul style="list-style-type: none">• If light yellow colour appears the test is positive.
3. Urea test	<ul style="list-style-type: none">✓ Take 2ml in a test tube✓ Add 2ml urea reagent (DAMB)(p-Dimethyl Amino Benzaldehyde)✓ Shake the test tube properly	<ul style="list-style-type: none">• If yellow colour appears the test is positive.
4. Starch compound	<ul style="list-style-type: none">✓ Take 3ml milk, boil and cool under tap water✓ Add 1 drop starch reagent (iodine solution)	<ul style="list-style-type: none">• Presence of starch is indicated by the appearance of blue colour, which disappear when the sample boiled
		and reappear on cooling.
5. Neutralizer test	<ul style="list-style-type: none">✓ Take 2ml milk in a test tube✓ Add 2ml Neutralizer reagent✓ Shake the test tube properly	<ul style="list-style-type: none">• If rose red or pink colour appears the test is positive.

Dahi Section

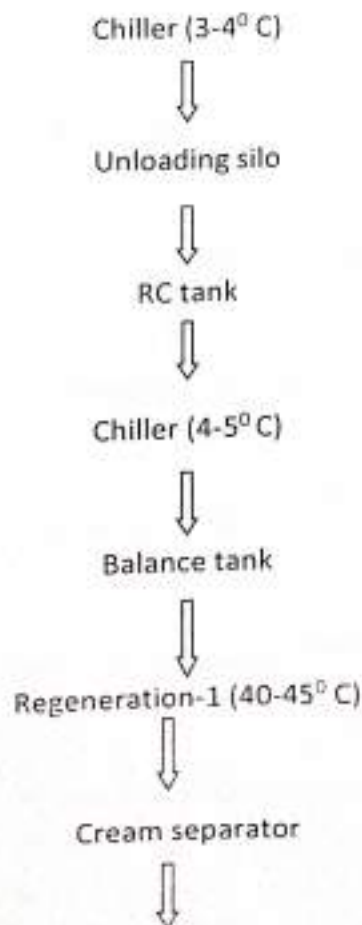
Curd is a traditional yogurt or fermented milk product, originating from the Indian subcontinent usually prepared from cow's milk, and sometimes buffalo milk. It is proportional throughout the Indian subcontinent.

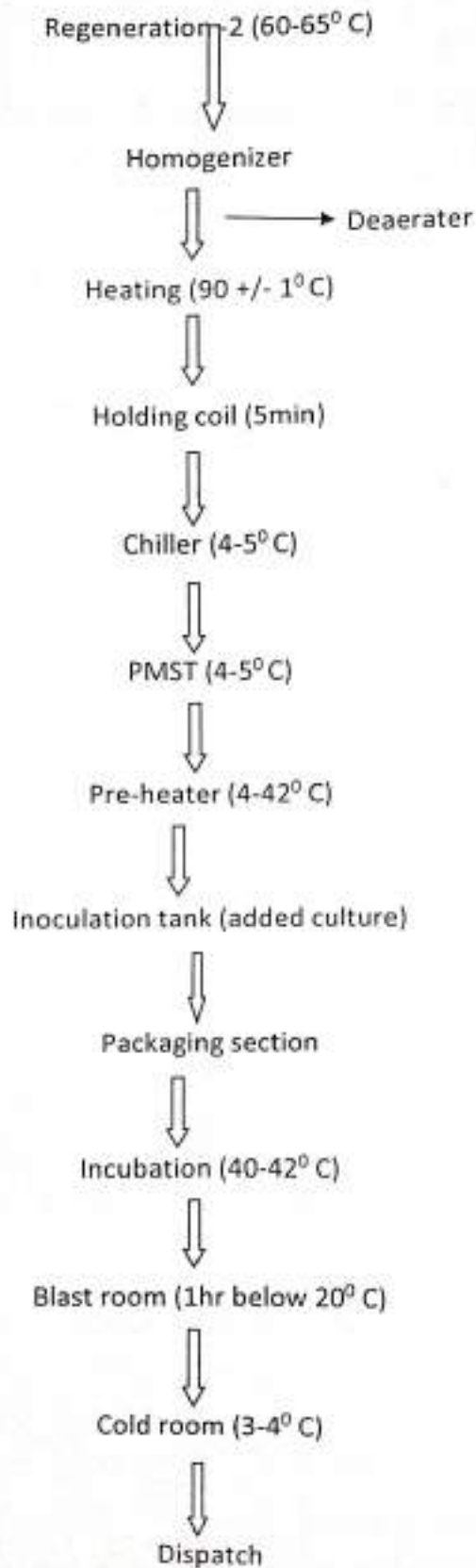
Curd is packed with the healthiest bacteria, which makes it a brilliant gut healer. Its probiotic nature improves the immunity system, and can potentially help our body fight everything from virals fevers to common cold and infections. Dahi is also good for every kind of gut issue, from indigestion to bloating.

Curd may contain a wide variety of bacteria like *Lactobacillus acidophilus*, *Lactococcus lactis*, *Lactococcus lactis cremoris*.

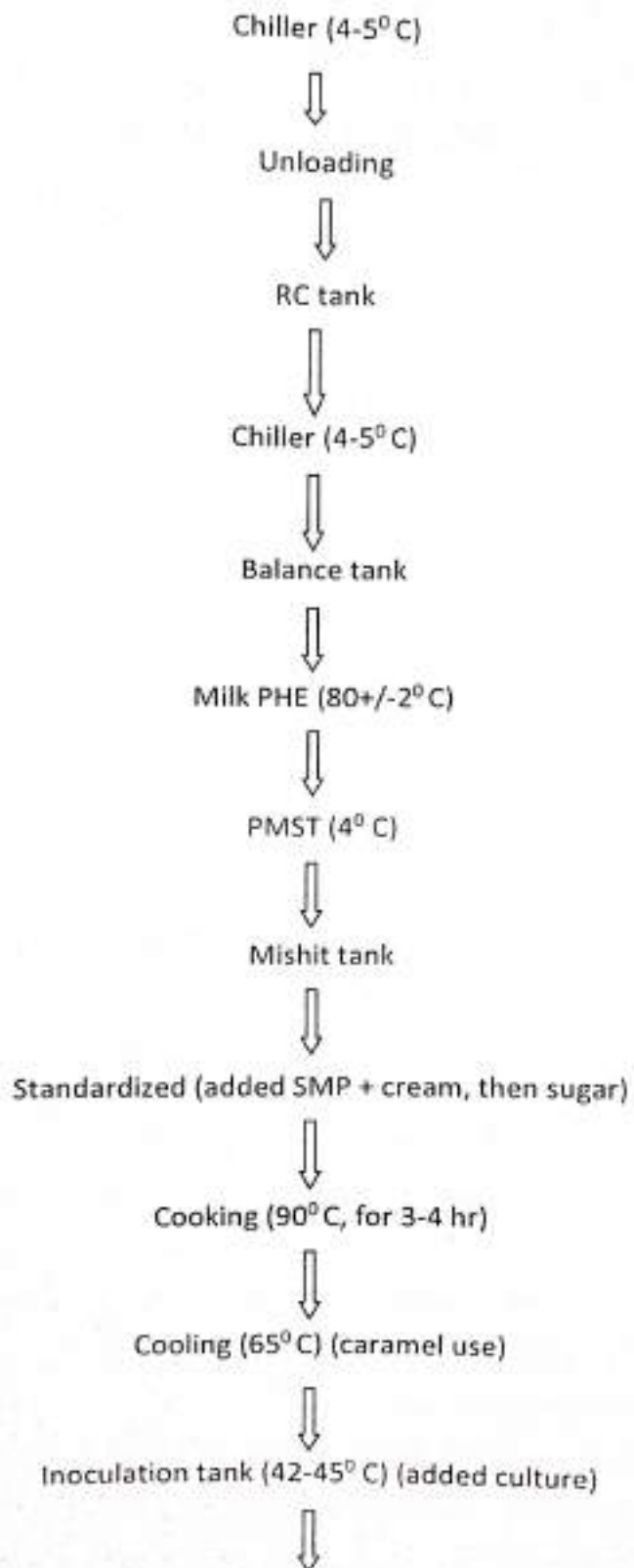
In this industry there is four types of Dahi is manufacturing. Their processing steps are as follows

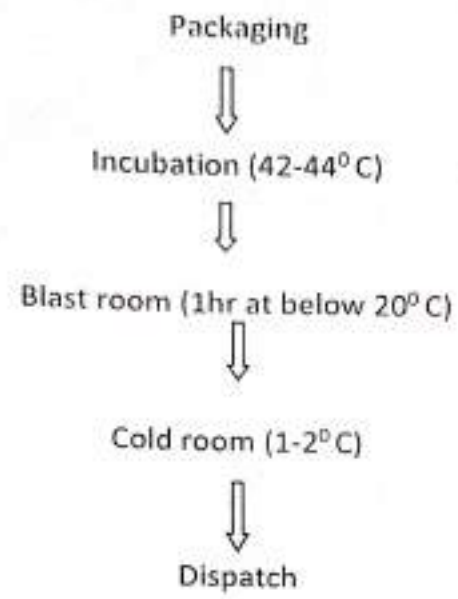
Processing steps of classic dahi/ Toned dahi :-



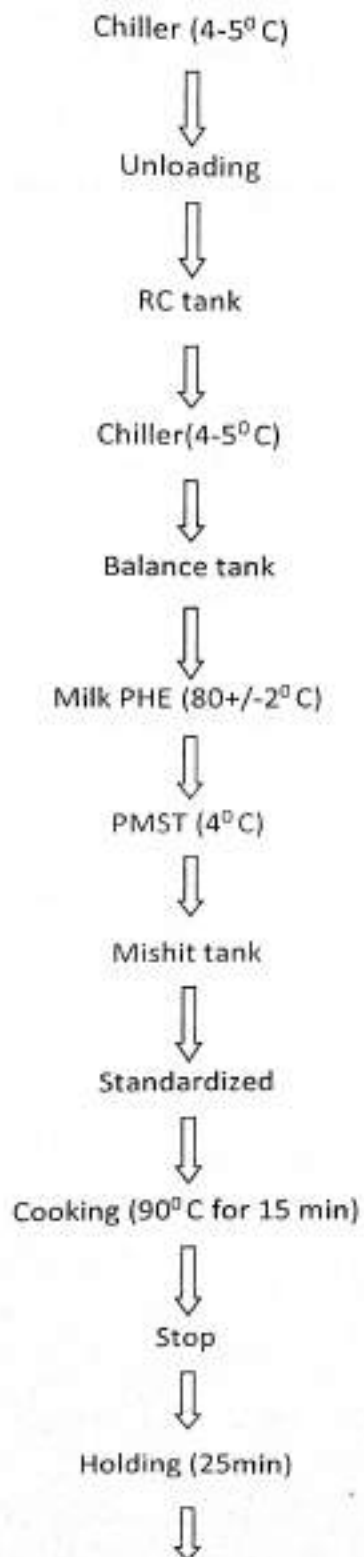


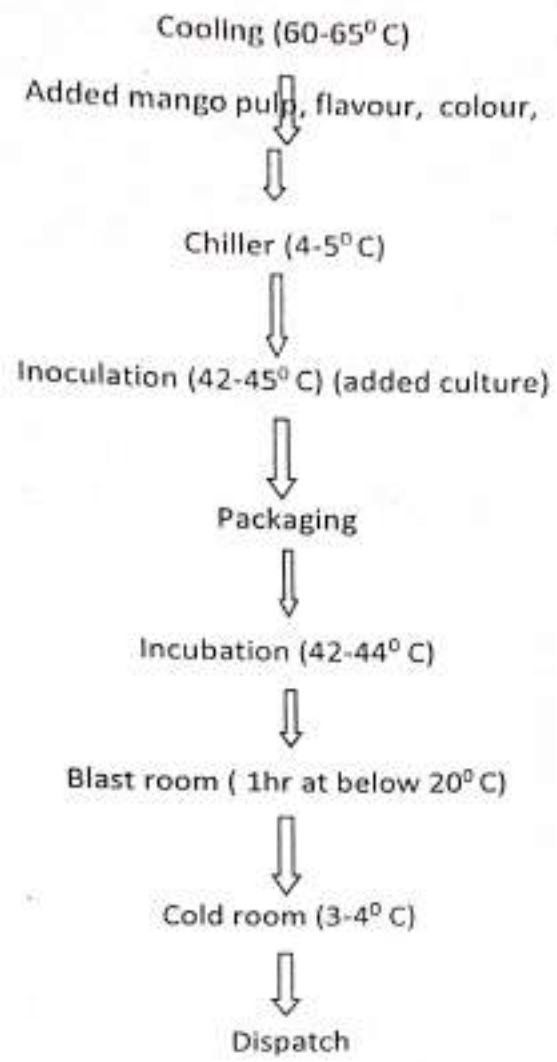
Processing steps of Sweet curd + Mishti dahi :-





Processing steps of Aam dahi :-





CURD

There are mainly four type curd manufacturing

Quantity per 100gm.

1. Classic curd.(sour)



FAT – 3.0 SNF – 10.80

Carbohydrate – 5.0g

Protein – 3.7g

Calcium – 169mg

Energy – 62kcl .

2. Misty Dahl (sweet curd)



FAT – 6.0g SNF – 14.20

Carbohydrate – 27.0g

Protein – 4.3g

Calcium- 194mg.

Energy 179kcal.

Added sugar – 22.5g.

3. Sweet curd (sweet)



FAT – 3.0g SNF – 14.0

Carbohydrate – 23.8g

Protein – 4.3g

Calcium – 170mg

Energy – 139kcl.

Added sugar – 18.0 g

4. Mango Dahl (mango flavour)



FAT – 8.6 SNF - 16.50

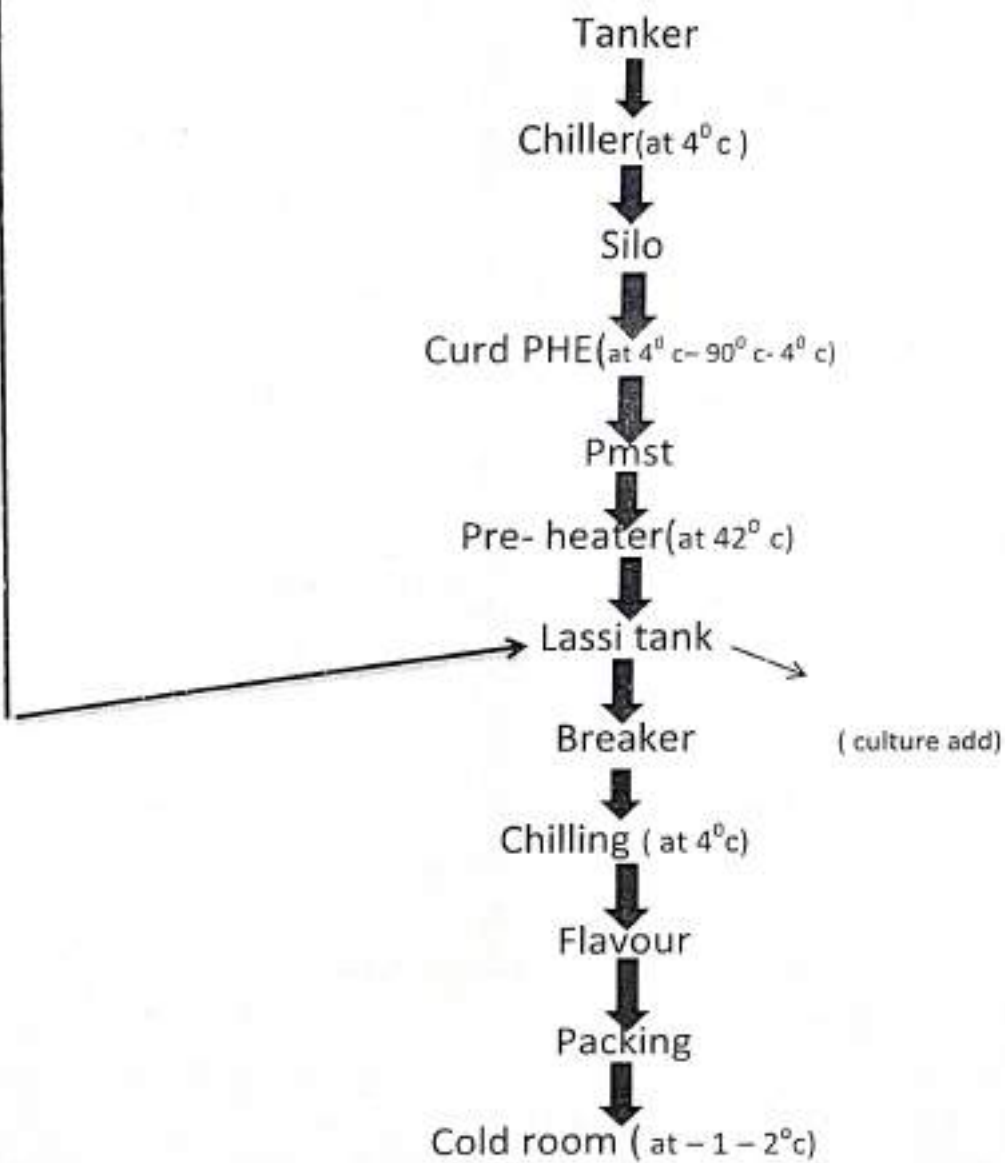
Carbohydrate- 26.0g.

Protein – 4.0g

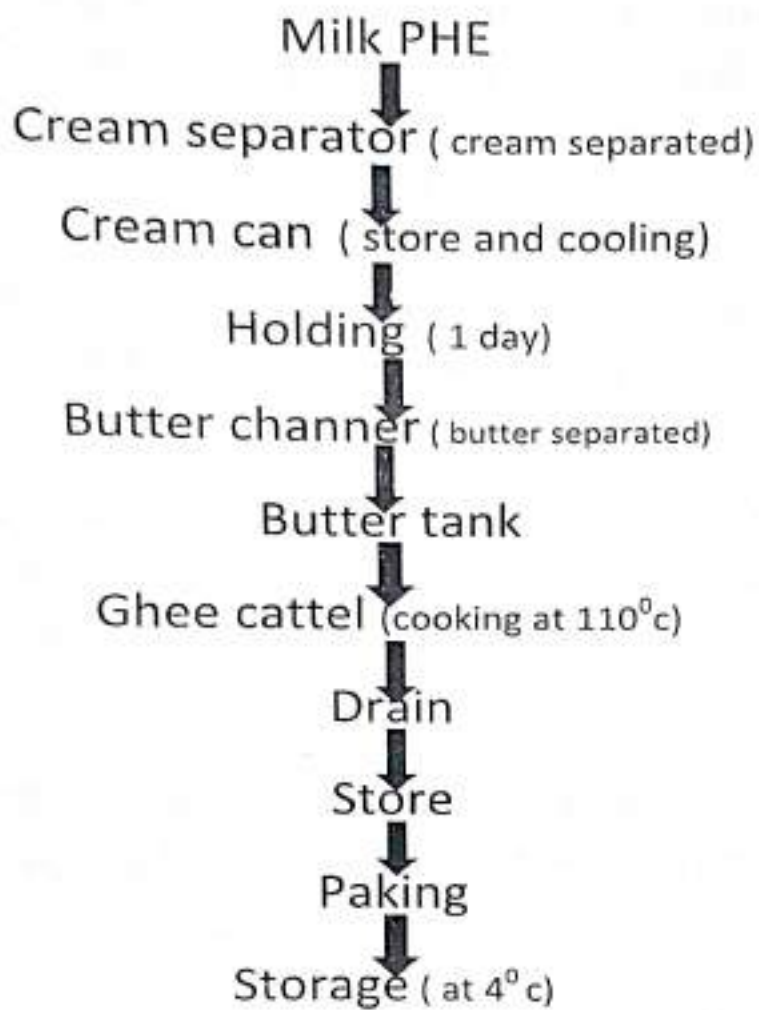
Energy – 174kcal.

LASSI

Misti tank (water+ sugar)
Chilling (at 65° c)



Ghee



Conclusion

The industrial training of 30 days was great experience us . this training help us to become aware of practical knowledge about the manufacturing process of various types of milk and cur and manufacturing process of paneer.

We came to know about various quality analysis tests of the raw materials as well as the finished products.

During this training session we are were also told about how we are can control the environment pollution and the methods installed in the factory to minimize pollution.

It helped us to develop our confidence and to bridge a connection between the theoretical study and practical work.