



**An Internship Report**  
**On**  
***Studies on Production and Quality Control of Food & Beverage***  
**At**  
**Akij Food and Beverage Ltd.**

**Submitted To:**

**Prof. Dr. Md. Bellal Hossain**  
**Head**  
***Department of Nutrition and Food Engineering***  
**Faculty of Allied Health Science**  
**Daffodil International University**

**Submitted By:**

**Ariful Islam**  
**ID: 161-34-485**  
***Department of Nutrition and Food Engineering***  
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**Daffodil International University**

**Date of Submission: 19-12-19**

**LETTER OF TRANSMITTAL**

**Date: 19, December, 2019**

Prof. Dr. Md. Bellal Hossain  
Head  
Department of Nutrition and Food Engineering  
Faculty of Allied Health sciences  
Daffodil International University

**Subject: Submission of internship report.**

Dear Sir,

It is a great pleasure and honor for me to have the opportunity to submit Internship report as a Part of the Nutrition and Food Engineering (NFE) program curriculum.

I have prepared this report based on the acquired taste knowledge during my internship period In Akij Food and Beverage Ltd. It is great achievement to work under your active supervision. This Report is based on, **“Studies on the production and quality control of Food and Beverage”** at Akij Food And Beverage Ltd., Barobaria, Dhamrai, Dhaka. I have got the opportunity to work in Akij Food and Beverage Ltd. In “Quality Control and Production Department” for thirty days, under the supervision A.S.M. Shihabul Huda (QC Manager) .

Firstly of all I have gained knowledge about the organizational culture of a prominent product producing organization of the country. Secondly, the project gave me the opportunity to develop a network with the corporate environment.

I therefore, would like to place this report to your judgment and suggestion. Your kind advice will encourage me to perform better planning in future.

Sincerely Yours,

*Ariful Islam*

Ariful Islam

ID: 161-34-485

*Department of Nutrition and Food Engineering*  
Faculty of Allied Health Science  
Daffodil International University

**LETTER OF AUTHORIZATION**

**Date: 19, December, 2019**

Prof. Dr. Bellal Hossain

Head

Department of Nutrition and Food Engineering

Faculty of Allied Health Science

Daffodil International University

**Subject: Declaration regarding the validity of the internship report.**

Dear Sir,

This internship report entitled Knowledge and extent the practice of **Studies on Production and Quality Control of Food and Beverages** at Akij Food and Beverages Ltd. was submitted to the Department of Nutrition and Food Engineering, Faculty of Allied Health Science, Daffodil International University, Dhaka, Bangladesh. This study was fully concerned with the department and faculty members.

Sincerely yours,

*Ariful Islam*

Ariful Islam

ID: 161-34-485

*Department of Nutrition and Food Engineering*

Faculty of Allied Health Science

Daffodil International University

**CERTIFICATION OF APPROVAL**

I am pleased to certify that the internship report on Production and Quality Control of Food and Beverage, conducted by Ariful Islam, bearing respectively ID No: 161-34-485 of the department of Nutrition and Food Engineering has been approved for presentation and defense/viva-voice.

I am pleased to hereby certify that the data and finding presented in the report are the authentic work of Ariful Islam. I strongly recommended the report presented by Ariful Islam for further academic recommendations and defense/viva-voice. Ariful Islam bears a strong moral character and a very pleasant personality. It has indeed a great pleasure working with him. I wish him all success in life.



**Prof. Dr. Bellal Hossain**

**Head**

*Department of Nutrition and Food Engineering*  
Faculty of Allied Health Science  
Daffodil International University

## ACKNOWLEDGEMENT

In the preparation of this report, I would like to acknowledge the encouragement and assistance given to me by a number of people. At first, I would like to express my gratitude to almighty Allah for enabling me the strength and opportunity to complete the report in the scheduled times successfully. I am taking this privilege to deliver my gratefulness to each and every person who is involved with me in every phase of my life.

I am grateful to my parents without whom I cannot be here. Without the support of my parents, I could not be able to achieve my objectives and goals.

My Deep gratitude and sincere thanks to the honorable Head, Nutrition and Food Engineering department **Professor Dr. Bellal Hossain** for this kind cooperation and to accept this Degree. I am encouraged taking this privilege to deliver my gratefulness to each and every person who is involved with me in every phase of my life.

I am deeply indebted to my Supervisor **Professor Dr. Bellal Hossain** honorable Head, Nutrition and Food Engineering department, Department of Nutrition & Food Engineering, Daffodil International University for his whole-hearted supervision during my organizational attachment period. I am very grateful to **Sheikh Shamim Uddin, Director** of Akij Food and Beverage Ltd. For giving us permission to carry out this internship in his organization. I am also grateful to A.S.M. Shihabul Huda (QC Manager), as my organizational supervisor to conduct. It would have been very difficult to prepare this report up to this mark without their guidance.

I would like to express my warmest thanks to **Nutrition and Food Engineering Faculty members** for their countless inspiration and encouragement during the student life.

Finally I wish to express immense gratitude & humbly convey my heart-felt respect to Managing Director.

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## **INTRODUCTION**

At twelfth semester out of twelfth semesters in multi year Bachelor of Science in Nutrition and Food Engineering (Hon's), I got a chance to work at Akij Food and Beverage Ltd. (AFBL), Bangladesh the piece of my temporary job program. The span of my temporary job was from 21st september 2019 to twentieth october 2019. AFBL is the top and biggest refreshment organization in the nation. AFBL has numerous kinds of division. The divisions are – HR and Admin, Quality Control, Research and Development, Production, Electrical, Mechanical, Store, Distribution, Accounts, Vat, Civil, Resource, Hygiene and so forth. My worry was Quality Control Department and Production Department which enveloped the accompanying exercises:

- i. Maintain all quality control parameter according to determination.
- ii. Ensure nature of creation.
- iii. Knowledge on item costing.
- iv. To plan and to submit fundamental reports required by the administration.
- v. Have to submit report to power each day for generation utilization, costing, quality and so forth.
- vi. To make fundamental creation arrangement according to the timetable gave by the generation office.

## AIM OF THE TRAINING

### **Aim of the Training:**

Entry level positions give a chance to understudies to interface hypothesis with training and further fill in as an impermanent work pool for those offices that have resolved to take part in the temporary job program. The division satisfies its strategic getting ready understudies for critical expert and administrative situations in every one of the parts. Important expert improvement themes and workshops are talked about week after week.

### **The internship...**

- a. Provides an understudy with a functional true involvement with general society, private or charitable area.
- b. Enables an understudy to create significant open organization aptitudes which can't be instructed in the homeroom. These encounters fluctuate from chipping away at uncommon tasks for the interning office to finding out about the human inspiration process in a mind boggling association.
- c. Enables an understudy to look at hypothetical thoughts learned in the homeroom inside the universe of work with respect to open organization encounters.
- d. Provides an understudy with involvement with a real open, private or charitable organization before entering the activity showcase. Such experience expands understudies' activity possibilities, yet in addition instructs what is normal as far as expert conduct.
- e. Permits an understudy to apply the specialized abilities learned in the study hall to genuine open, private or philanthropic managerial issues.



## **DESCRIPTION OF THE ORGANIZATION**

### **About Akij Group:**

Akij Group is one of the biggest Bangladeshi modern combinations. The businesses under this aggregate incorporate materials, tobacco, nourishment and drink, bond, earthenware production, printing and bundling, pharmaceuticals, customer items and so forth. In 2009, Akij Group paid 390 million euros in charge, making it the greatest neighborhood citizen, contributing two percent to this present country's whole spending plan. Akij additionally gives benefits in medicinal services, data and correspondence innovation. Its turnover in 2009 was 89 billion Taka.

Akij Group was built up during the 1940s by industrialist Sheik Akij Uddin as a jute exchanging business, before moving into cigarettes and different territories of business. It has confronted analysis for utilizing youngster laborers.

The inheritance of AKIJ GROUP is over 50 years old and throughout the years Akij has built up itself as the brimming with certainty and much venerated mechanical group of Bangladesh. Akij Group is probably the greatest combination in Bangladesh. It comprises of 24 major worries with assorted exercises and various items. Akij Group propelled its endeavor as a little jute broker over 50 years back. From that point forward it has been advancing with gigantic pace in the mechanical territory of Bangladesh. An enormous number of individuals are utilized by the gathering and thought about as individuals from the Akij family. The non-benefit concerns are likewise associated with continuing improvement of the nation and for social welfare.

- Akij Cables limited.
- Abrar Tours and Travels
- Ad-din Foundation
- Akij Automotive Industry
- Akij Biri Factory Ltd.
- Akij Cement Company Ltd.
- Akij Ceramics Company Ltd.
- Akij Computer Ltd.
- Akij Corporation Limited
- Akij Food & Beverage Ltd.
- Akij Foundation School & College
- Akij Gas Company Ltd.
- Akij Gas Station Ltd.
- Akij Institute of Technology
- Akij Jute Mills Ltd.
- Akij Match Factory Ltd.

### **About Akij Food and Beverage:**

Akij Food and Beverage Ltd. (AFBL) a unit of Akij Group began its activity in the year 2006. AFBL produces a wide scope of Snacks and Beverage for both National and International market the same. AFBL is an undertaking worth \$ 70 million & is financed by the parental company Akij Group. There are different sorts of drink. Magic is the brand name of cola, Lemu is the brand name of Lemon and Speed is the brand name of caffeinated drink. Following the presentation of the brand it turned out to be extremely famous among its customer as a result of the high caliber and escalated dispersion in each alcove and corner of the nation. Checky Monkey is the brand name of banana chips delivered from this manufacturing plant. It additionally is turning out to be well known chips in Bangladesh.

### **Vsion of Akij Food & Beverage:**

Having the nature of value, turning into the most nourishment and refreshment organization of Bangladesh

### **Mission of Akij Food & Beverage:**

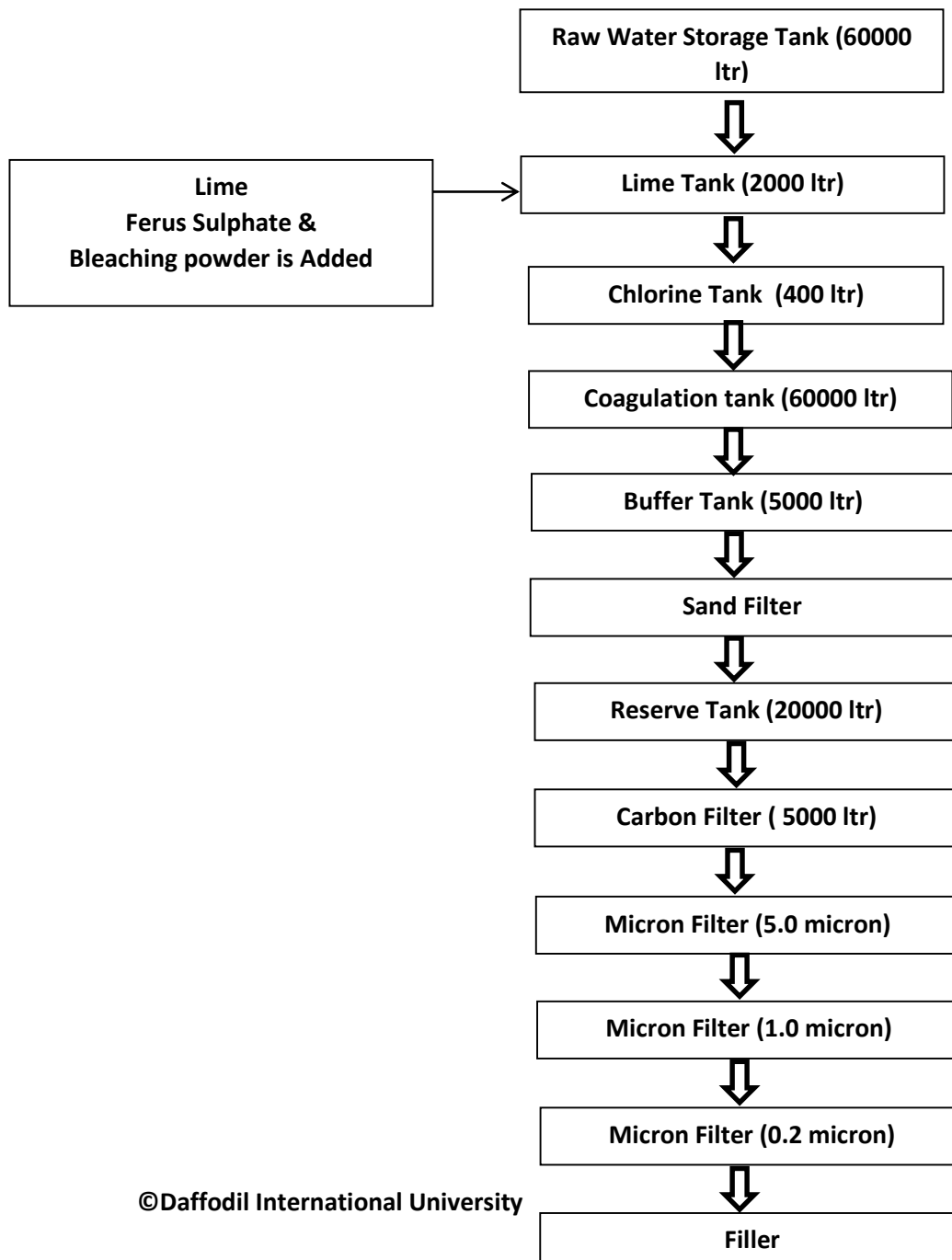
- Produce great items.
- To supply great items.
- To convey zero imperfection items.
- All time apply high innovation to create top notch items.
- Brings quality throughout everyday life.
- Work for social welfare.

### **Values of Akij food & Beverage:**

- Innovation
- Teamwork
- Integrity
- Customer center
- Trust and Respect

## WORK DESCRIPTION IN DETAILS

### Water Treatment Plant Flowchart of Treated Water



## **Tests of Water Treatment plant**

### **Hardness Test:**

#### **Chemicals**

1. Buffer Solution
2. Irriochrom Black T indicator
3. EDTA

#### **Test procedure**

1. Take 100 ml water in a fanel
2. Add 2/3 drops of T pointer /Indicator
3. Tritrate the arrangement with EDTA.

#### **Result**

Hardness=Burette reading  $\times$  10 ppm

### **Chlorine Test:**

Specification: After Sand filter 6 – 10 ppm

After Polisher 0 ppm

Rinser 2 – 3 ppm

#### **i. Chemicals / Equipment Required.**

- Ortho Toludine Solution
- 5 ml glass ( Test Tube )
- Slide comparator range 0.2-12 ppm.

#### **ii. Procedure :**

- Take 5 ml water test in the Test Tube.
- Add 3 to 4 dropsof 0-Toludine arrangement.
- Shake tenderly.
- Place the test tube in the Comparator Cavity.
- Move the slide for a shading match.
- Record the closest range in ppm of free chlorine.

### **pH test**

### **Required chemicals/equipment**

1. No chemical is used.
2. pH meter

### **Test procedure**

- Take 100ml water in a container as an example.
- Deep the pH meter into it.
- Collect the perusing/Reading
- pH meter perusing is the outcome

### **TDS test**

### **Required chemicals/equipment**

3. No chemical is used.
4. TDS meter

### **Test procedure**

1. Take 100ml water in a container as an example.
2. Deep the TDS meter into it.
3. Collect the perusing.
4. TDS meter perusing is the outcome.

### **Chloride test:**

#### **Chemicals**

1. 0.1N silver nitrate
2. Potassium chromate

### **Test procedure**

1. Take 100 ml water in a pipe
2. Add 2/3 drops of potassium chromate marker
3. Tritrate the arrangement with 0.1N silver nitrate.

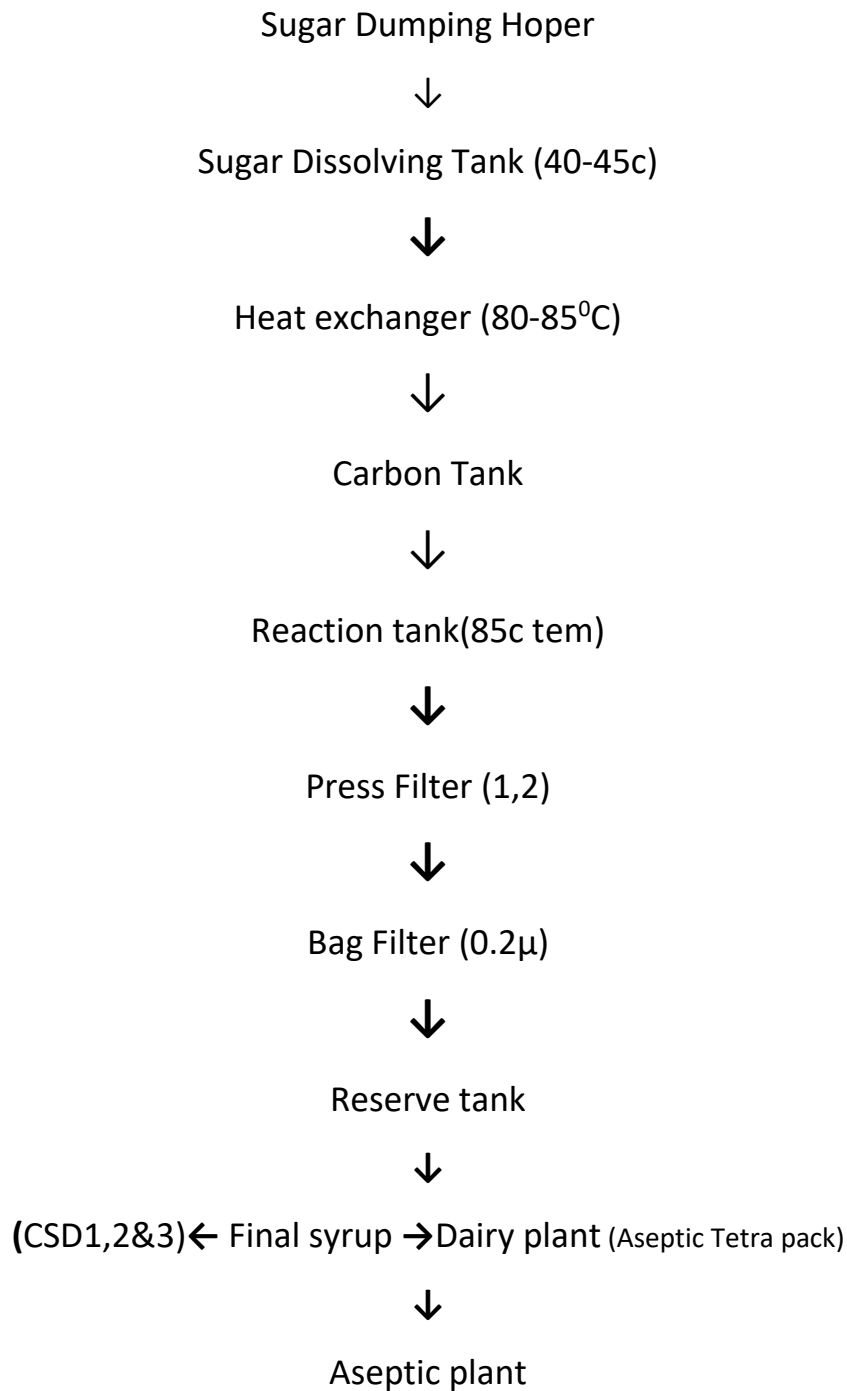
### **Result**

Chloride=Burette reading × 10 ppm

## **Sugar Syrup processing plant:**

**Raw materials:** Sugar, Hot water, Activated carbon, Filter aid.

### **Flow chart of Sugar Syrup processing**



## **(Carbonated Soft Drinks) CSD**

1. Speed 250 ml
2. Mojo (250ml, 500ml, 1ltr, 2ltr)
3. Clemon (250ml, 500ml, 1ltr, 2 ltr)
4. Lemu (250ml)
5. Wild Brew (250ml)
6. Twing (250ml, 500ml)

### **Time span of usability (PET)**

✓ Speed	✓ 4 months
✓ Mojo	✓ 4 months
✓ Clemon	✓ 4 months
✓ Lemu	✓ 4 months

### **Time span of usability (CAN)**

✓ Speed	✓ 9 months
✓ Mojo	✓ 9 months
✓ Clemon	✓ 9 months
✓ Lemu	✓ 9 months

### **Tests of CSD**

1. Gas volume
2. pH
3. Acidity
4. Torque
5. Brix
6. SST

### **Name of Test: Determination of Beverage Acidity.**

Required Equipment's:

- Conical Flasks
- Burette
- Pipette with pipette filler
- Beaker
- Magnetic stirrer with magnet bar

Required Chemicals:

- NaOH 0.1N
- Phenolphthalein (Indicator)

**Test Procedure:**

- From the start take drink sample
- Expelled CO<sub>2</sub> appropriately from drink.
- Bring 10ml example into a cone shaped shrapnel by pipette.
- Include 2/3 drops phenolphthalein marker into funnel shaped flagon.
- Titration against 0.1N NaOH until pink shading showed up.
- take burette perusing.
- Compute % Acidity by utilizing cry computation.

$$\text{Calculation: \% Acidity} = \frac{\text{Burette Reading} \times \text{Normality of NaOH} \times \text{Eq. Wt. of Acid} \times 100}{\text{Sample Wt.} \times 1000}$$

### **Name of Test: Determination of Beverage P<sup>H</sup>**

**Required Equipment's:**

- Beaker
- Magnetic stirrer with magnet bar
- P<sup>H</sup> Meter

**Test Procedure:**

- From the outset take drink test into a measuring utencil.
- Include attractive bar into measuring glass and expelled CO<sub>2</sub> appropriately from drink test by utilizing attractive stirrer.
- Expelled attractive bar from measuring glass.
- Set PH meter cathode into the container.
- Take perusing from PH meter which demonstrated example PH.

### **Name of Test: Determination of Beverage %Brix**

**Required Equipment's:**

- Beaker
- Magnetic stirrer with magnet bar
- Digital refractometer

**Test Procedure:**

- From the outset take refreshment test into a recepticle.
- Include attractive bar into measuring glass and expelled CO<sub>2</sub> appropriately from refreshment test by utilizing attractive stirrer and expelled attractive bar from container.
- Or then again expelled CO<sub>2</sub> appropriately from drink test by shaking.
- Open example council of refractometer.



- Take scarcely any drop test into refractometer test chamber.
- Take perusing from refractometer which demonstrated example brix as rate.

### **Name of Test: Organoleptic Test (Taste, Odor, Appearance)**

Required Equipment's:

- Beaker

Test Procedure:

- From the start take drink test into a measuring glass.
- See drink appearance and contrast and existing one.
- Appearance ought to be goes along.
- Take smell and contrast and existing one.
- Must be no awful scent and conforms to existing one.
- Taste drink test.
- Contrast and existing one.
- Taste ought to be goes along.

### **Name of Test: Determination of Beverage Bottle Opening Torque.**

Required Equipment's:

- Torque Tester

Test Procedure:

- Take test bottle from line soon after filling as indicated by number of capper head.
- Set jug base on the torque analyzer and shut cluster appropriately. This anticipates the container as opposed to the top turning when torque is applied.
- Set torque analyzer perusing zero to drop any torque identified during position of the container.
- Turns the top in a counter-clockwise course till open the conclusion.
- Take opening torque perusing as lbs-Inch.

### **Name of Test: Secure Seal Test (SST)**

Required Equipment's:

- Secure Seal Tester

Test Procedure:

- Take test bottle from line soon after filling as per number of capper head.
- Punched and modify Pin with an example bottle just in the door purpose of conclusion.
- Seal it with an extraordinary clasp gave.

- Associate the example with the estimating head. Put the example into the water tank, and afterward close the machine spread. If it's not too much trouble check whether the spread is bolted well.
- Go selector to TEST and watched pressure check for testing pressure 150 psi.
- After 150 psi pressure go into the container at that point watch for bubble during test around 1/2 minutes.
- On the off chance that air pocket watched, at that point demonstrate disappointment and in the event that no air pocket watched, at that point show passed.
- Go selector to VENT and afterward expelled container from analyzer.

### **Name of Test: Determination of Gas Volume (GV).**

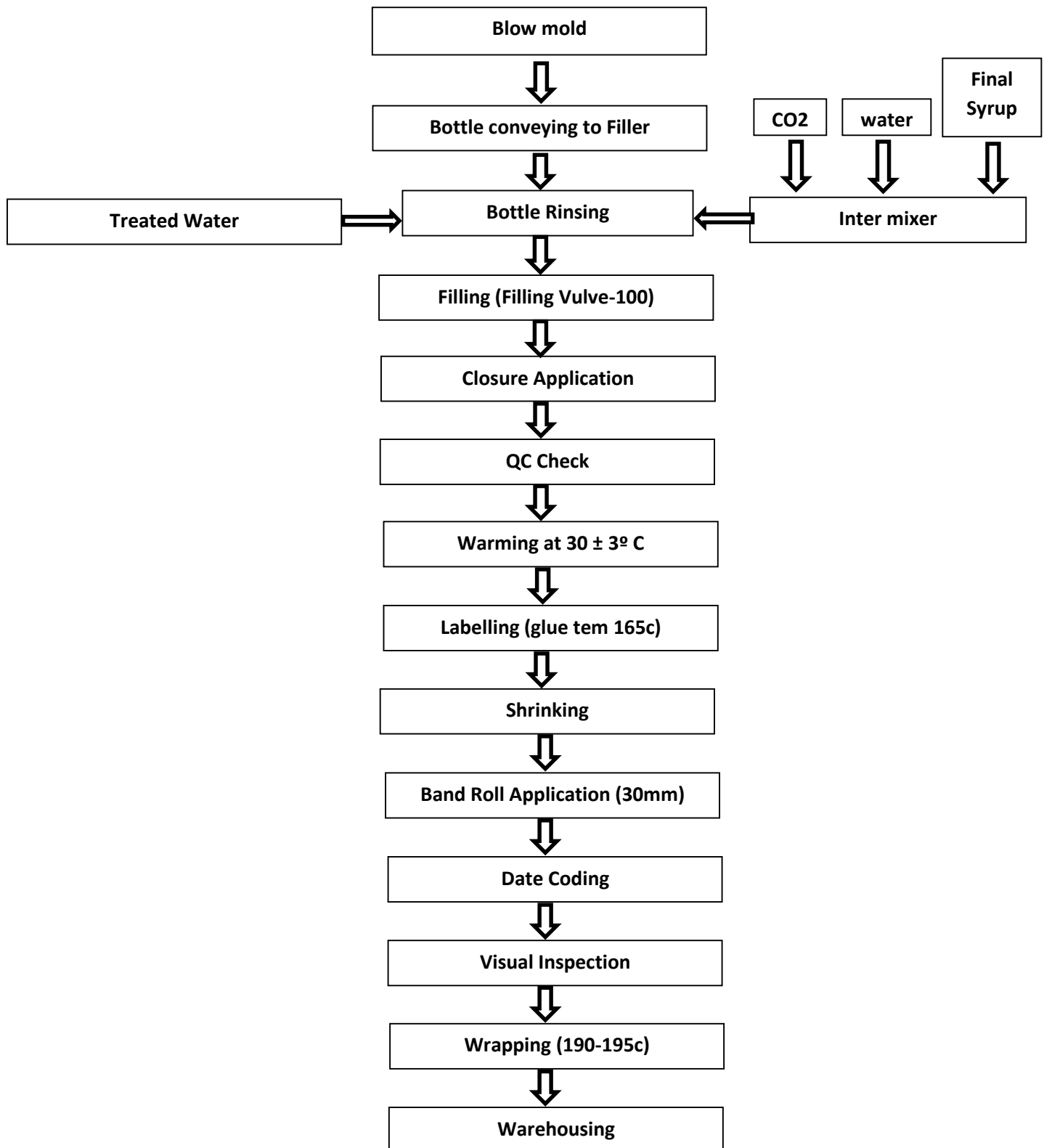
Required Equipment's:

- CO<sub>2</sub> Tester
- Carbonation Calculator

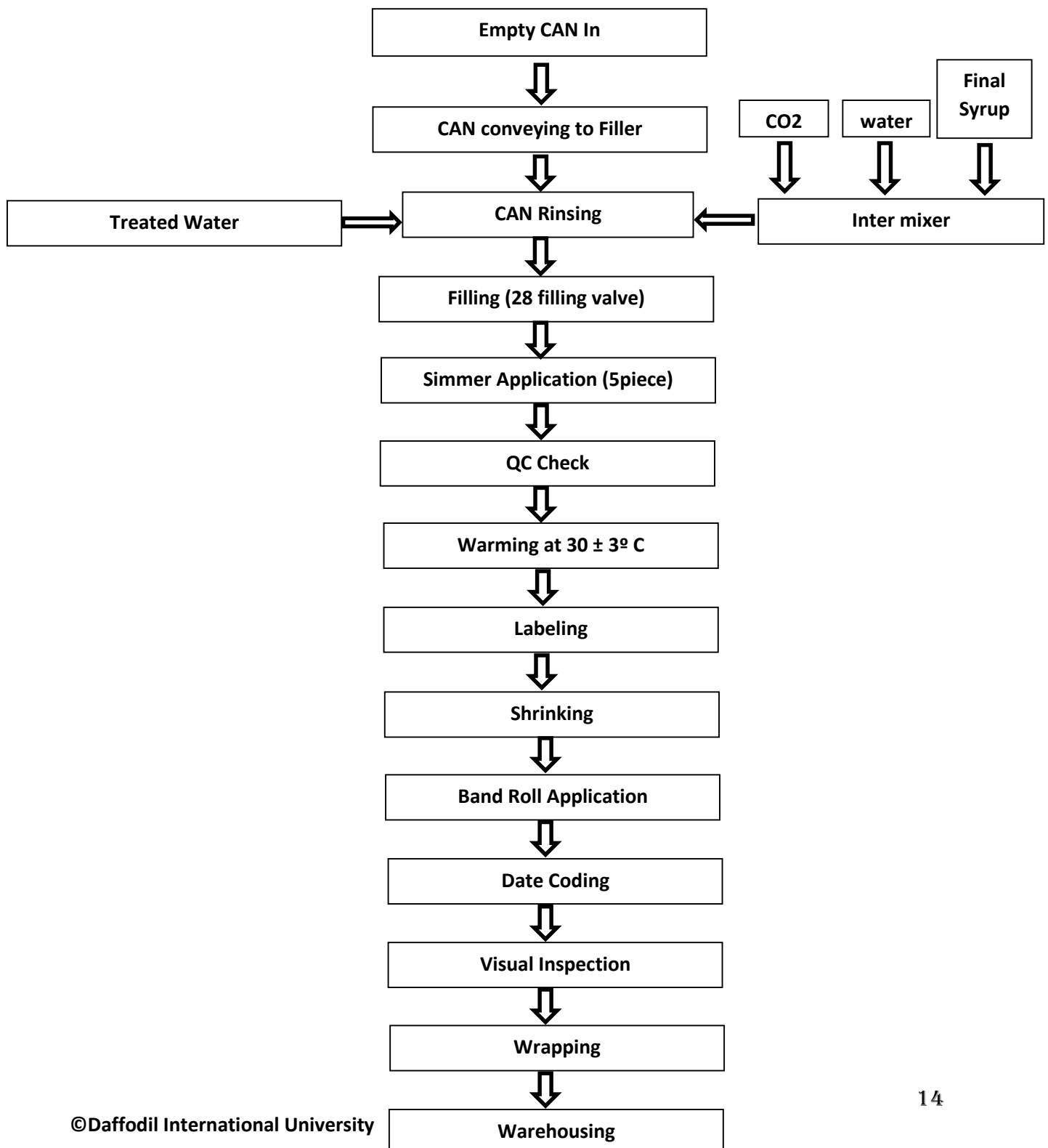
Working Procedure:

- Take test blown jug from line after filler (Temp. about 40°F±3°F).
- Equilibrate line tests by delicately altering multiple times in 30 seconds (don't shake).
- Adjust bottle at CO<sub>2</sub> Tester.
- Removes abundance pneumatic stress in the headspace by opening snifting valve to guarantee that lone broke down CO<sub>2</sub> is estimated
- Shake it appropriately to a most extreme steady weight.
- Take pressure check perusing as psi and thermometer perusing as °F.
- Calculate CO<sub>2</sub> volume by utilizing carbonation mini-computer from weight and temperature.

## Flowchart of CSD (PET)

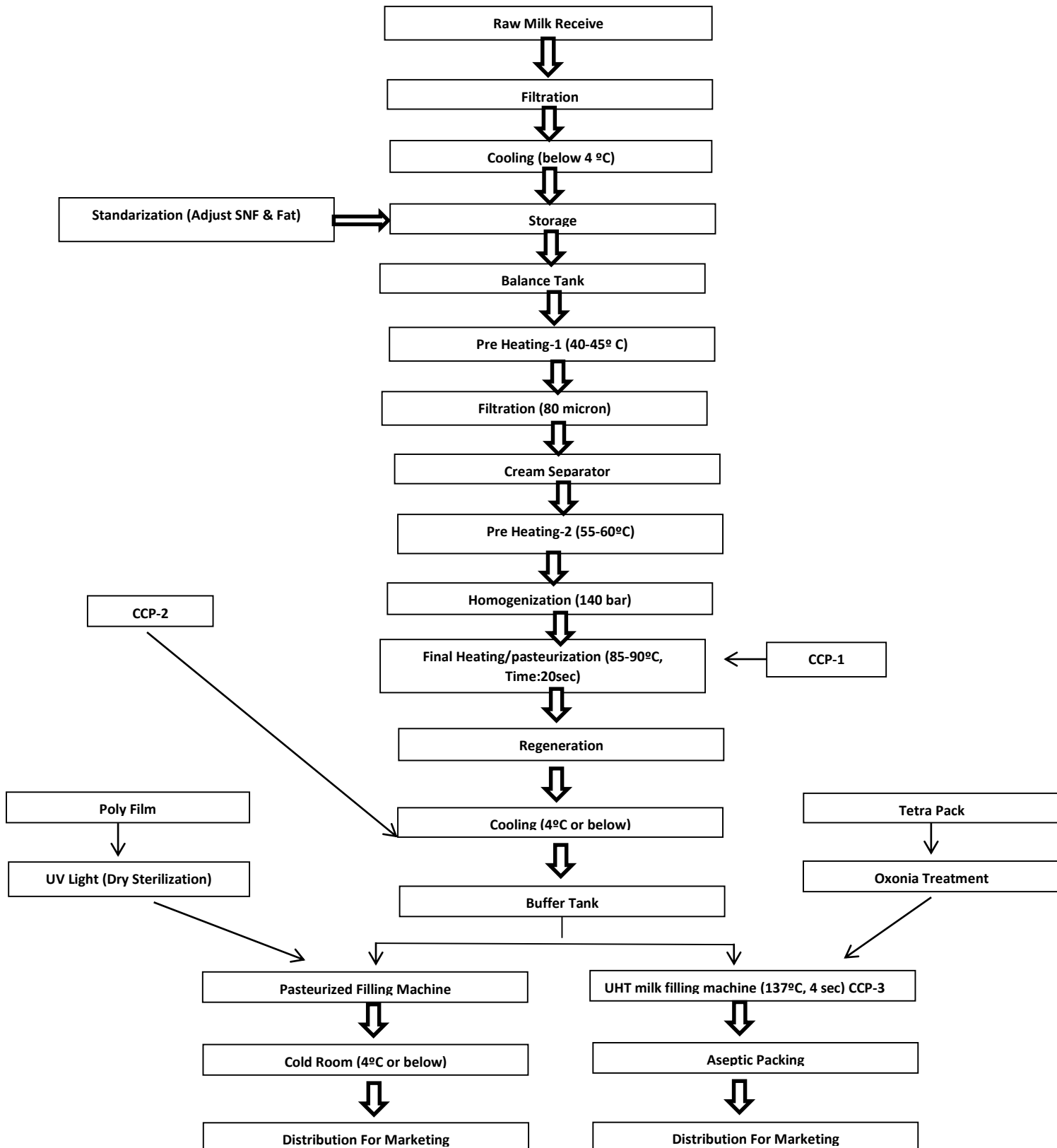


## Flowchart of CSD (CAN)

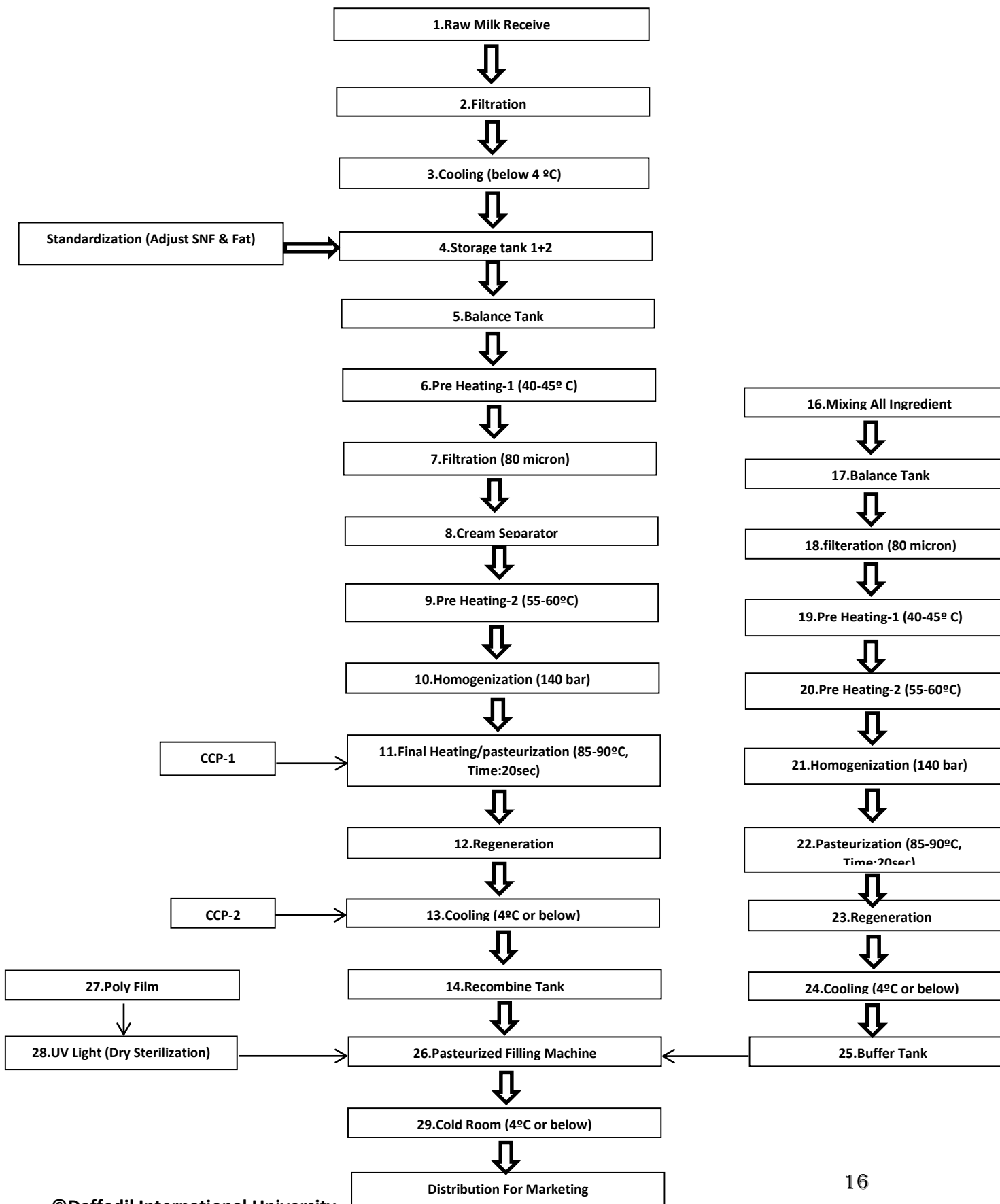


# Milk Processing Plant

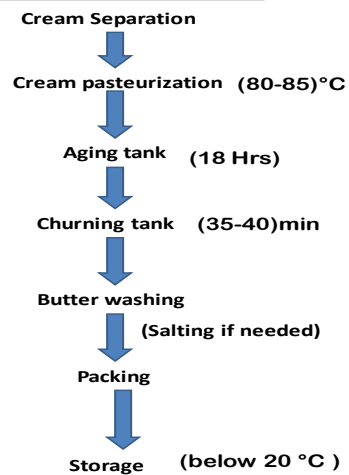
## Flowchart of Milk (Pasteurized & UHT)



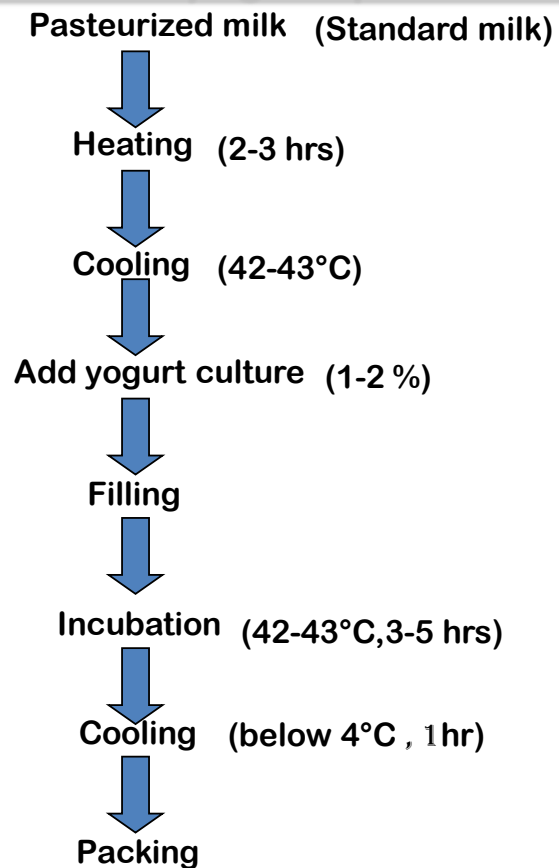
## Flowchart of Mango Milk/Chocolate Milk



### Butter Production:



### Flow chart for yogurt production



### **Product of Milk Plant**

1. Pasteurized milk
2. UHT Milk
3. Sweet Curd
4. Sour Curd
5. Low Fat Curd
6. GHEE
7. Butter
8. Mango Milk
9. Chocolate Milk
10. Green Mango Milk
11. Mango Shake
12. Mango juice (Frutika tetra pack-UHT)

### **Tests of dairy plant**

1. Sensory test
2. Alcohol test
3. Fat % of milk
4. pH test
5. COB (Clot On Boiling)
6. Acidity test
7. Specific gravity test
8. Sugar test
9. Salt test
10. Formalin
11. Soda test



## Sensory Test

### Chemicals / Equipment Required:

No chemicals are required.

### Procedure:

1. Milk is tested by physical/sensory method
2. This is done by using of eye, nose, and tongue.

### Result:

If the milk is discolored, contain bad smell, and the test is not good so far, then the milk must be rejected.

## Alcohol Test

### Chemicals / Equipment Required:

1. Test tube
2. Ethyl alcohol

### Procedure:

1. Take 2 ml of milk in a test tube
2. Add 2ml of ethyl alcohol and shake well

### Result:

If the solution makes homogenous and not adsorb on the interior surface of the test tube then milk is Alcohol negative.

## Clot On Boiling (COB) test

### Chemicals / Equipment Required:

1. Test tube
2. Spirit Lamp

### Procedure:

1. Take 5 ml milk in a test tube
2. Heat the test tube in spirit lamp for 2/5 minutes

### Result:

If the solution makes heterogeneous and adsorb on the interior surface of the test tube then the milk is COB positive.

### **pH Test**

#### **Chemicals / Equipment Required:**

1. pH meter
2. beaker

#### **Procedure:**

1. take 100 ml milk in a beaker
2. deep the pH meter into it
3. note down the reading

#### **Result:**

The collected pH meter reading is the ph of the sample

### **Acidity Test**

#### **Chemicals / Equipment Required:**

1. Beaker
2. Dropper
3. Phenolphthalein indicator
4. Sodium Hydroxide Solution

#### **Procedure:**

1. Take 9 ml milk in a beaker.
2. Add ½ drops Phenolphthalein indicator.
3. Titrate with 0.1 N Sodium Hydroxide Solution until the color changes to pink/rose.

#### **Result:**

Burette reading is the acidity of milk.

#### **Calculation:**

Acidity-  $(\text{Burette Reading} \times \text{Normality of Alkali} \times \text{Equivalent weight of acid} \times 100) \div (\text{Weight of Sample} \times 1000)$

### **Specific Gravity Test**

#### **Chemicals / Equipment Required:**

1. Measuring cylinder
2. Hydrometer

**Procedure:**

1. Heat the sample at 20°C
2. Fill the measuring cylinder by the sample
3. Now dip the hydrometer in the sample

**Result:**

Hydrometer reading is the result.

**Fat % of milk****Chemicals / Equipment Required:**

1. Sulfuric Acid 93%
2. Amyl Alcohol 75%
3. Butyrometer
4. Centrifuge machine

**Procedure:**

1. Take 10 ml sulphuric acid in a butyrometer.
2. Add 10.75 ml milk in the butyrometer by using of 10.75 ml pipette.
3. Now add 1 ml amyl alcohol and shake well.
4. Then place the butyrometer in a centrifuge for 5 minutes.

**Result:**

Fat reading shows in the butyrometer's upper level scale.

**Starch Test****Chemicals / Equipment Required:**

1. Test tube
2. Spirit Lamp
3. Iodine Solution
4. Dropper

**Procedure:**

1. Take 3 ml of milk in a test tube.
2. Heat the test tube for 5 minutes
3. Then cold the test tube in room temperature
4. Add 2/3 drops of iodine solution

**Result:**

If the color of the solution changes to violet then the milk is adulterated with starch.

## Formalin Test

### Chemicals / Equipment Required:

1. Test tube
2. Sulfuric acid (conc.)

### Procedure:

1. Take 10 ml of milk in a test tube
2. Add 5 ml of sulfuric acid slowly

### Result:

If the violet color formed between two layers then milk is adulterated with formalin.

## Soda Test

### Chemicals / Equipment Required:

1. Test tube
2. Alizarin solution

### Procedure:

1. Take 2 ml of milk in a test tube
2. Add 2 ml alizarin and shake well.

### Result:

If the color changes into light violet then the milk is soda positive.

## Salt Test

### Chemicals / Equipment Required:

1. Test tube
2. Silver Nitrate Solution
3. Potassium Dichromate Solution
4. Dropper

### Procedure:

1. Take 1ml milk in a test tube.
2. Add 5 ml silver nitrate solution.
3. Add 2/3 drops potassium dichromate solution and shake well.

**Result:**

If the color changes into yellow then the milk is salt positive.

## Sugar Test

**Chemicals / Equipment Required:**

1. Test tube
2. Conc. Hydrochloric acid
3. Resorcinol
4. water bath

**Procedure:**

1. Take 10 ml milk in a test tube.
2. Add 5 ml of conc. Hydrochloric acid
3. Add 1ml resorcinol and shake well
4. Then place the test tube in water bath for 5 minutes

**Result:**

If the color is changed into red then the solution is adulterated with sugar

## **LAB**

### **Equipment list of Lab**

1. Micro oven
2. SST (Secure Seal Tester)
3. Co2 cylinder
4. Magnetic stirrer
5. Moisture meter
6. Gauge tester
7. Digital meter
8. Viscometer
9. Water bath
10. Gas volume analyzer
11. BOD tester
12. CO2 purity tester/ CO2 volume tester
13. Enamel tester
14. COD analyzer
15. Distilled water plant
16. Density meter
17. Shaker
18. Thermometer
19. pH meter
20. Filter paper
21. Microscope
22. Colony counter
23. Digital Autoclave
24. Digital sterilizer
25. Laminar air flow
26. Refrigerator

### **Making of Indicator**

#### **Phenolphthalein:**

1. Take 0.5g dissolved in 50ml alcohol
2. Add 50ml distilled water

#### **Mixed indicator:**

1. 0.33g Bromocresol Green.
2. 0.66g methyl red.
3. Dissolve them in 100ml distilled water.

#### **(0.1N) Sodium ThioSulphate:**

1. Take 2.5g sodium thiosulphate.
2. Dissolve it into 100ml distilled water.

#### **Irriochrom Black T (Hardness Indicator):**

1. Take 6.1g sample.
2. Dissolve it into 100ml methanol.

# **Microbiological Test**

**Name of the test:** Total bacterial count

**Method:** : Pour plate (For Water, Mango pulp, Fruit Drinks)

**Purpose:** The pour plate technique can be used to determine the number of microbes/ml or microbes/gram in a specimen.

## **Requirements:**

- Sterile Petridis (90mm)
- Micropipette
- Alcohol (70%)
- Laminar Air Flow
- Autoclave
- Incubator
- Colony Counter
- Water bath
- Plate count Agar

## **Procedure:**

1. Set up the media and disinfected via autoclave at 121°C for 15 minutes, 14.5 psi.
2. Take explicit measure of test in Petridis.
3. In the wake of autoclaving media permit to cool in 40°C.
4. Around 15-20ml of media is pour in Petridis and appropriately homogenized by clockwise and anticlockwise and permits to harden.
5. After hardening hatch the plate at 37°C in rearranged position for 24-48 hours.
6. After hatching tally the state by settlement counter.
7. Every one of the means ought to be done under laminar wind stream to keep up aseptic condition.

**Results:** count the result and record as cfu/ml or gm.



**Name of the test:** Total Yeast, mold count

**Method:** Pour plate (For Water, Mango pulp, Fruit Drinks)

**Purpose:** The pour plate technique can be used to determine the number of microbes/ml or microbes/gram in a specimen.

**Requirements:**

- Sterile Petridis (90mm)
- Micropipette
- Alcohol (70%)
- Laminar Air Flow
- Autoclave
- Incubator
- Colony Counter
- Water bath
- Orange serum agar

**Procedure:**

1. Set up the media and cleaned via autoclave at 121°C for 15 minutes, 14.5 psi.
2. Take explicit measure of test in Petridis.
3. In the wake of autoclaving media permit to cool in 40°C.
4. Around 15-20ml of media is pour in Petridis and appropriately homogenized by clockwise & anticlockwise and permit to cement.
5. After hardening brood the plate at 37°C in reversed situation for 24-48 hours.
6. After hatching check the state by province counter.
7. Every one of the means ought to be done under laminar wind stream to keep up aseptic condition.

**Results:** Count the result and record as cfu/ml or gm

**Name of the test:** Total Coliform count

**Method:** Membrane Filtration (For Water)

**Purpose:** Use the membrane filter technique to determine the coli form bacteria from the specimen

**Requirements:**

- Sterile membrane filter apparatus
- Sterile 0.45- $\mu\text{m}$  filters
- Forceps
- Alcohol (70%)
- 47-mm Petri plate containing Endo Agar
- Incubator
- Laminar Air Flow

**Procedure**

1. Disinfect the layer channel unit including pipe
2. Keep it into laminar wind stream and clean the holder with 70% liquor.
3. Put layer channel paper on holder and fixed with pipe.
4. Empty the example into pipe and switch vacuum siphon on.
5. Test went through film because of negative weight of vacuum siphon and tests are gathered in another vessel.
6. Cautiously expel the channel from the channel holder utilizing sterile forceps.
7. Cautiously place the channel on the Endo agar. Try not to twist the channel; place one edge down first, at that point deliberately put the rest of. Try not to leave air spaces between the channel and agar.
8. Alter the plate and brood it for 24 hours at 35-37°C.
9. Watch and check all provinces that are red and have a metallic sheen.

**Results**

Examine membrane filters for presence of colored colonies. All red colonies having the characteristic metallic sheen are coli forms.

**Name of the test:** Total Coli form count

**Method:** : Pour plate (For Water, Mango pulp, Fruit Drinks)

**Purpose:** Use the Pour Plate Method to determine the coli form bacteria from the specimen

**Requirements:**

- Sterile Petridis
- Micropipette

- Alcohol (70%)
- Laminar Air Flow

- Autoclave
- Incubator
- Water bath
- Endo Agar

### **Procedure:**

1. Set up the media and cleaned via autoclave at 121°C for 15 minutes, 14.5 psi.
2. Take explicit measure of test in Petridis.
3. In the wake of autoclaving media permit to cool in 40°C.
4. Around 15-20ml of media is pour in Petridis and appropriately homogenized by clockwise & anticlockwise and permit to set.
5. After hardening brood the plate at 37°C in modified situation for 24-48 hours.
6. Watch and tally all provinces that are red and have a metallic sheen

### **Results**

All red colonies having the characteristic metallic sheen are coli forms.

# **Chips Plant**

## **Product of Chips Plant**

1. Cheese puff
2. O'Potato
3. Cocktail
4. Aafi Chanachur (35g & 80g)

## **Time span of usability**

✓ 1.Cheese puff (22gm)	✓ 6 months
✓ 2.Spicy Cocktail (21gm)	✓ 4 months
✓ 3.Tangy Tomato (21gm)	✓ 4months
✓ 4.Aafi Chanachur (35 & 80 gm)	✓ 6 months

## **Tests of Chips Plant**

### **PV Value**

#### **Chemicals**

1. Acetic acid.
2. Chloroform.
3. Potassium Iodide
4. Starch indicator
5. Sodium Thiosulphate

#### **Sample preparation**

1. Take 5 ml oil as sample.
2. Take 20 ml solution of acetic acid: chloroform (3:2).
3. Add 5g potassium Iodide into it.
4. Place the sample for 15 minute in a dark place.

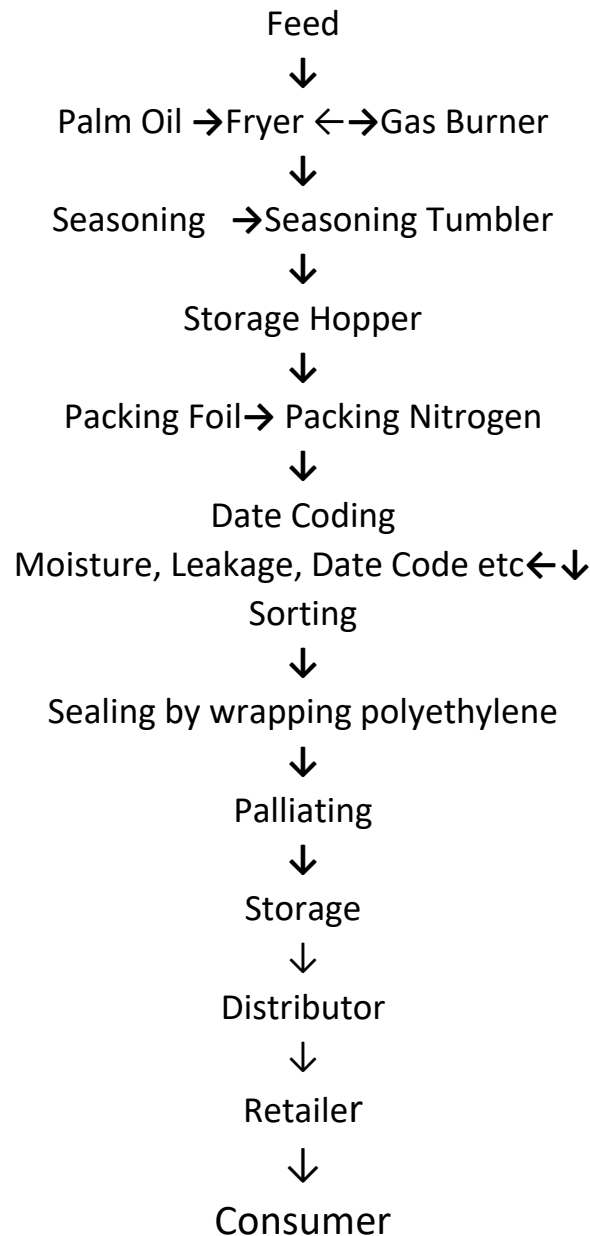
#### **Test procedure**

1. Now take the sample & add starch indicator into it.
2. Now titrate the solution with sodium thiosulphate.

#### **Calculation**

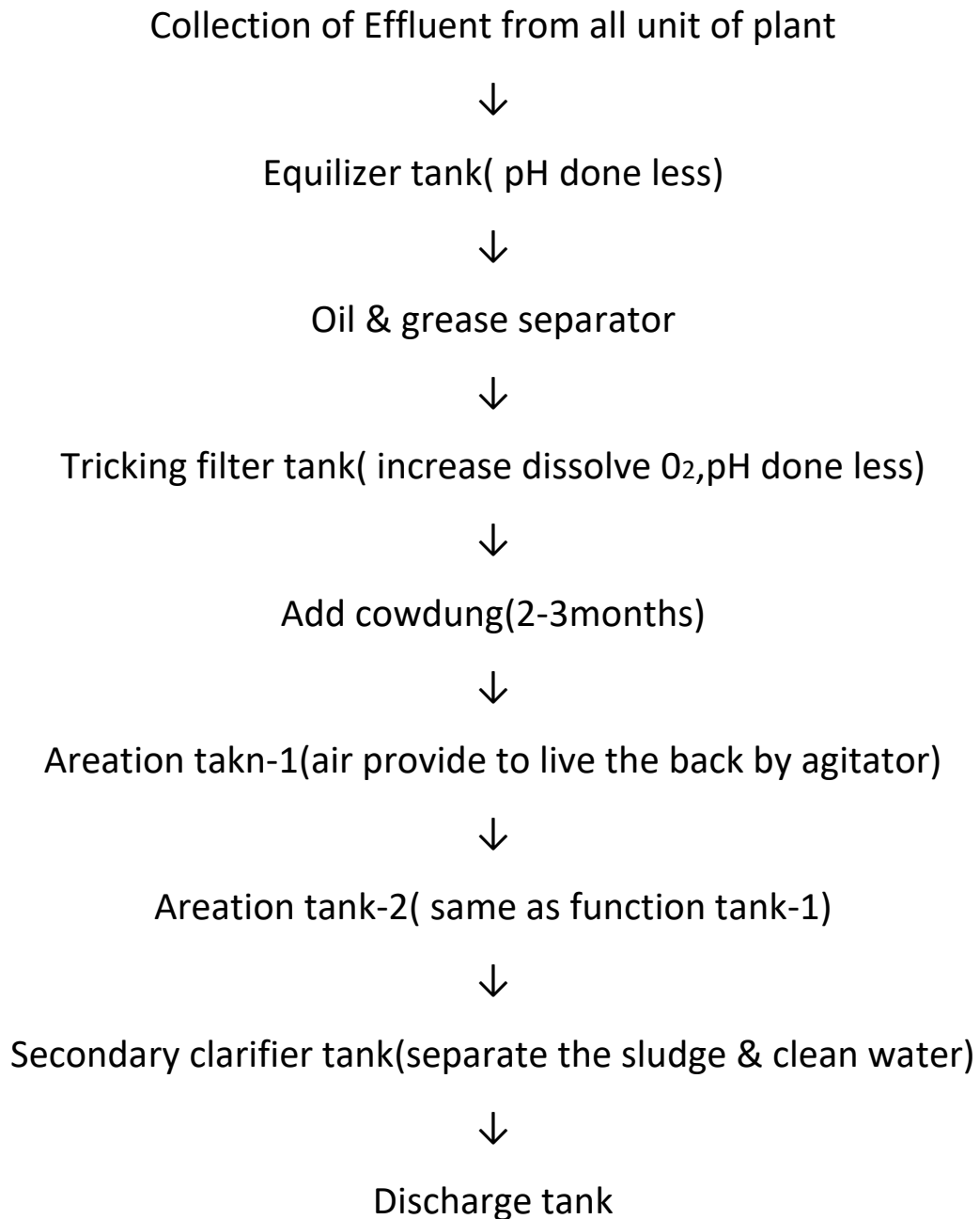
PV=  $\frac{(\text{Burette reading} \times \text{normality of sodium thiosulphate} \times 100)}{\text{Sample weight.}}$

**Flow chart:**



## ETP Plant

### Flow chart:



**ETP Test Parameters:**

- 1.Dissolved Oxygen (DO)
- 2.Chemical Oxygen Demand (COD)
- 3.Color
- 4.pH
- 5.Sludge volume

## Conclusion

Akij Food and Beverage Ltd. is one of the pioneers nourishment organization in Bangladesh. I feel glad for that I have a chance to prepare myself in this organization. Mentors are genuine to us. They have given us sufficient opportunity to attempt to give thoughts regarding various segments of the generation and quality control division totally. Expectation this experience will be valuable in our reality.



**THE END**