



**Internship Report**

On

**Study on Igloo Ice Cream & Milk Unit**

At

Abdul Monem Limited

Dhaka Mach, Shampur, Dhaka



**Submitted To:**

Prof. Dr. Md. Bellal Hossain

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**Submitted By:**

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**Date of Submission:**

## Letter of Transmittal

Prof. Dr. Md. Bellal Hossain

Date:

Head,

Department of Nutrition and Food Engineering

Faculty of Allied Health Science

Daffodil International University

**Subject: Submission of Internship Report**

Dear Sir.

I am Jerin Afrose Annhi, ID: 152-34-411. Now I am hereby submitting my internship report, which was a part of the NFE program. It was a great achievement to work active supervision. This report was based on, “Igloo Ice Cream”. This internship gave me both academic and practical exposures.

I will be highly obliged if you are enough to receive this report and provide you valuable judgment.

Sincerely you

Jerin Afrose Annhi

ID: 152-34-411

Department of Nutrition and Food Engineering

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Daffodil International University

## Certificate of Approval

This is certify that Jerin Afrose Annhi, ID: 152-34-411 of Department of Nutrition And Food Engineering has done this report on “Igloo Ice Cream” for the purpose of completing internship report. I am pleased to hereby certify that the data and test presented in the report are authentic work of Jerin Afrose Annhi. I strongly recommended the report present by Jerin Afrose Annhi for further academic recommended and defense/viva-voice. Jerin Afrose Annhi bears a strong moral character and a very pleasant personality. I wish her all success in life. I accept this report as a final internship report. I wish every success and prosperity of her career and life.



Prof. Dr. Md. Bella Hossain

Head

Department of Nutrition and Food Engineering

Faculty of Allied Health Science

Daffodil international University

## Acknowledgement

I would like to express to my utmost gratitude to all the people, who have supported me to make this report. Frist of all, I am thankful to Almighty Allah for making me successfully complete my internship report. Then my parents, who had put me on the map and support me in every situation.

I would like to express my gratitude to **Professor. Dr. Md. Bellal. Hossain**, Head of the Dept. of Nutrition Food and Engineering, Daffodil international University For creating his enormous scope of practical knowledge in the curriculum and providing me valuable guidance to complete my work.

My deepest respects and thankfulness to Abu Reza, Chief Human Resource Manager Igloo Ice Cream and milk unit and for allowing me to complete the internship in Igloo Ice cream.

I am also grateful to Mr. A. K. M. Ali Reza, Manager, Mr. Mahmoodul Hoque Khan, Assistant Manager for giving me their valuable time, sharing knowledge and teaching me various practical aspects of industrial life and organizational behavior and I also thankful to Mr. Manjurul Haque, SR. Executive, Mr. Basu Dev Chandra Sharma, Executive(Microbiologist), Workers and others. They give us guidance to earn various knowledge about different quality measurement system.

I express my deep gratitude of the Department of Nutrition and food engineering under the faculty of Allied Health Science, Daffodil International University.

## **Abstract**

The internship was conducted at Abdul Monem Limited in Igloo Ice Cream & Milk Unit from 02 February 2019 to 30 March 2019. This factory mainly manufacture different types of Ice Cream. To prepare Ice Cream is used to milk, sugar, stabilizer, emulsifier, water, food grade flavor, skimmed milk powder, butter oil, coconut oil, glucose, food grade color, fruit pulp, in Ice Cream they mainly check physical, chemical, microbiological test for quality control. Major objective of this report is to identify the actual health hazard and quality control of igloo Ice Cream and also develop the production and quality control. In this regard, customer are very important for every business. My report is based on the hazardous free and qualified Igloo Ice Cream. The report contains information of the organization itself, sanitation, hygienic facilities of the overall industry and collected qualified raw materials. Also involve the raw materials test, safe production, ultimately quality check of the final product then marketing.

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## Introduction

Before completing my graduation, I was entrusted to undergo our industrial training at Abdul Momen Limited, IGLOO ICE CREAM and MILK UNIT for two months. The internship opportunity I had IGLOO ICE CREAM and MILK UNIT provided a great chance for learning and professional skill development. Therefore, I consider myself very lucky to be a part of it.

Learning theoretical is never the same when it comes to practice. So, Training in “IGLOO ICE CREAM and MILK UNIT”, was undoubtedly one of the most incredible memories in my university life. I am delighted and grateful to attend such an excellent Industrial attachment, not only to pass the course, but also to learn, explore and reflect.

## About IGLOO Ice Cream & Milk Unit:

Igloo is the most popular impulse take-home Ice Cream brand of Bangladesh. Igloo was established in 1964 as a business concern of Abdul Monem Limited under its Ice Cream and Milk Unit. Since its beginning, igloo has become synonymous for quality Ice Cream all across the country.

Over the last 50 years, Igloo has developed over 100 different varieties of flavor, forms and shapes of Ice Creams for a rich, unmatched experience for its consumers. Igloo is equipped with the most modern machinery, skilled human forces and it never compromises the quality. As the customer taste preference is changing day by day, Igloo is always introducing new flavors to serve the consumers' needs. The official slogan of igloo is “**A WORLD OF GREAT TASTE**” which reflects the company's dedication to its customers to provide a delightful experience of taste quality.



## **Company Profile:**

**Name of the Company:** Abdul Monem Limited (AML)

**Year of Establishment:** 1956

**Status of the Company:** Private Limited Company

**Country of Registration:** Registered under Registrar of joint stock companies, Dhaka Bangladesh

**No. of Employees:** 10,000 +

**Corporate HQ:** Modern Business District, 111, Bir Uttam C.R. Datta Road, Sonargoan Road, Dhaka-1205

## **Objective of the study:**

There are two objective of this study:

- General objective
- Specific objective

### **General objective:**

The main objective is to hazard free safe production and quality control of ice cream. That's help gain real life exposure and gets a clear idea about dairy product as well as promoting brand

### **Specific objective:**

- To focus on the hygienic production and quality control of igloo ice cream.
- To know different activities of the organization.
- To identify different critical control point in ice cream.
- To describe the processing ice cream.
- To fulfill the requirement of NFE program.
- To give an overview of Abdul Monem Limited Igloo Ice Cream.

First day we received a warm welcome from the industrial authority. He delivered a short speech to us about the whole training. Then he assigned us to Mr. Mahmoodul Hoque Khan, Assistant Manager (QA). Then we went to QA laboratory Mr. Mahamoodul Hoque Khan, Assistant Manager (QA) gave us a guide line about our activities of during training.

### **Schedule of Internship:**

<b>Department</b>	<b>Duration</b>
<b>QA</b>	02.02.19 – 13.02.19
<b>Production(Ice Cream)</b>	14.02.19 – 23.02.19
<b>Engineering</b>	24.02.19 – 02.03.19
<b>Milk Unit</b>	03.03.19 - 10.03.119
<b>Plastic Unit</b>	11.03.19 – 17.03.19
<b>General Store</b>	18.03.19 – 20.03.19
<b>Distribution</b>	21.03.19 - 22.03.19
<b>Admin</b>	23.03.19
<b>Report Submission</b>	27.03.19
<b>Evaluation</b>	30.03.19

***CHAPTER-01***  
***QUALITY ASSURANCE DEPARTMENT***

## Quality Assurance Department:

I worked in quality assurance department from 02-02-2019 to 13-02-2019. Now I am introduced with the staffs of this departments. Mr. A. K. M. Ali Reza, Manager, Mr. Mahmoodul Hoque Khan, Assistant Manager, Mr. Manjurul Haque, SR. Executive, Mr. Basu Dev Chandra Sharma, Executive(Microbiologist), Workers and others. They give us guidance to earn various knowledge about different quality measurement system.

## ORGANOGRAM of QA Department:



## Test Parameters and Objectives:

**Table 1- Physical Test:**

Physical Parameters	Objectives
<b>Color, flavor, taste, length, volume, weight, sealing and packaging condition</b>	To get attractive and finished product
<b>Specific gravity</b>	To check the density of milk and ice cream mixture
<b>Temperature</b>	To prevent the growth of microorganisms
<b>Homogenization pressure</b>	To give uniform mix of milk and ice cream
<b>Pasteurization and chilling temperature</b>	For proper pasteurization and chilling
<b>Overrun</b>	To get uniform texture and mouth feeling
<b>PH</b>	To determine acidity and alkalinity
<b>Moisture</b>	To check the water

**Table 2- Chemical Test:**

Chemical Parameters	Objectives
<b>Soda, H<sub>2</sub>O<sub>2</sub>, Formalin, Sugar</b>	To check the adulteration
<b>Lactose and fat</b>	To ensure the proper composition
<b>Acidity</b>	To measure developed acidic condition
<b>Turbidity and Hardness</b>	To ensure proper cleaning
<b>I<sub>2</sub>, Saponification and acid value</b>	To ensure the right fat suitable for human consumption
<b>Cleaning agents</b>	To determine the strength of CIP solution

**Table 3- Microbiological Test:**

Microbial Parameters	Objectives
Standard plate count	To count the total number of microorganisms in a product
Coliform count(Fecal and non-fecal)	To identify coliform count that causes diarrhea, urinary tract infection, wound infection, appendicitis, infection of gall bladder etc.
Salmonella	To identify the presence of Salmonella
Fungi	To identify the presence of fungi

● **Tests that are performed in the Laboratory:**

**1. Alcohol test of raw milk:**

- a) 1ml alcohol was taken in a test tube
- b) Then 1ml of raw milk was added to it.
- c) Milk was not coagulated. So milk was perfect.

**2. Clot on Boiling(COB) test of raw milk:**

- a) 1 ml of raw milk was taken in a test tube.
- b) Then it was heated until the milk was boiled.
- c) Milk was not coagulated. So milk was ok.

**3. Acidity test of raw milk:**

- a) 9 ml of raw milk was taken in a beaker.
- b) 2-3 drops of phenolphthalein indicator was added to it.
- c) Then the solution was titrated against 0.1N NaOH solution.

$$\% \text{ Acidity} = \frac{\text{Titre value} \times \text{Normality of NaOH} \times \text{Eq.wt. of lactic acid} \times 100}{\text{wt. of sample} \times 1000}$$

**4. Specific gravity of ice cream mix:**

- a) Ice cream mix was taken in a 25 ml pycnometer.
- b) The weight of the mix was then in a digital weighing machine.

$$\text{Specific gravity} = \frac{\text{Weight of mix}}{\text{volume of mix}}$$

**5. Fat of raw and pasteurized milk:**

- a) 10 ml of H<sub>2</sub>SO<sub>4</sub> (95% Purity) was taken in a butometer.
- b) 10.75 ml milk was added to it.
- c) 2ml butometer was centrifuged for 5 min at 1100rpm. The reading was read directly from butometer scale.

**6. Viscosity determination of ice cream mix:**

- a) At first, mix temperature was lowered down to 4°C.
- b) Then a suitable spindle was selected and set on the viscometer.
- c) The viscometer was higher speed was taken and multiplied with suitable factor to obtain the viscosity in cp

**7. Moisture and TS test:**

Few drops of sample were taken on foil paper and determined by direct moisture analyzer reading.

**8. Adulterant test of Milk:**

**Alcohol test (platform test):**

- 2 ml ethylene
- 2 ml milk
- Shake
- No clotting(alcohol absent)
- Or. Clothing (alcohol present)

**Soda test:**

- 2 ml ethylene
- 2 ml milk
- Rozalic acid 1-2 drops
- Pink color(defected milk, soda present)

**Salt test:**

- 5 ml  $\text{AgNO}_3$
- 2 ml milk
- 2 drops of  $\text{K}_2\text{CrO}_4$
- Shake
- Yellow white color(salt present)

**$\text{H}_2\text{O}_2$  test:**

- 5 mL milk
- Venediumpentaoxide
- Shake
- White color( $\text{H}_2\text{O}_2$  absent)

***CHAPTER-02***  
***PRODUCTION UNIT***



## **Production unit (ICE CREAM):**

We went to ice cream production section on 14-02-2019 to 23-02-2019. Mr. Taminur Islam Chowdhury, Asst. Manager, Mr. Hassan Ahmed Abid, Sr. Executive, Shafiqul Islam, Jr. Executive and staffs of production unit gave their maximum efforts to help us. They discussed about the ice cream processing, pasteurization system, associated machineries, labor management and gave us the information about the production unit and they answered what asked. We enjoyed their company.

## **Organogram of Production Department:**



**Ice cream** is defined as the frozen dairy production made by proper blending and processing of cream and other milk product, together with sugar and flavor, with or without stabilizer or color, and with the incorporation of air during the freezing process.

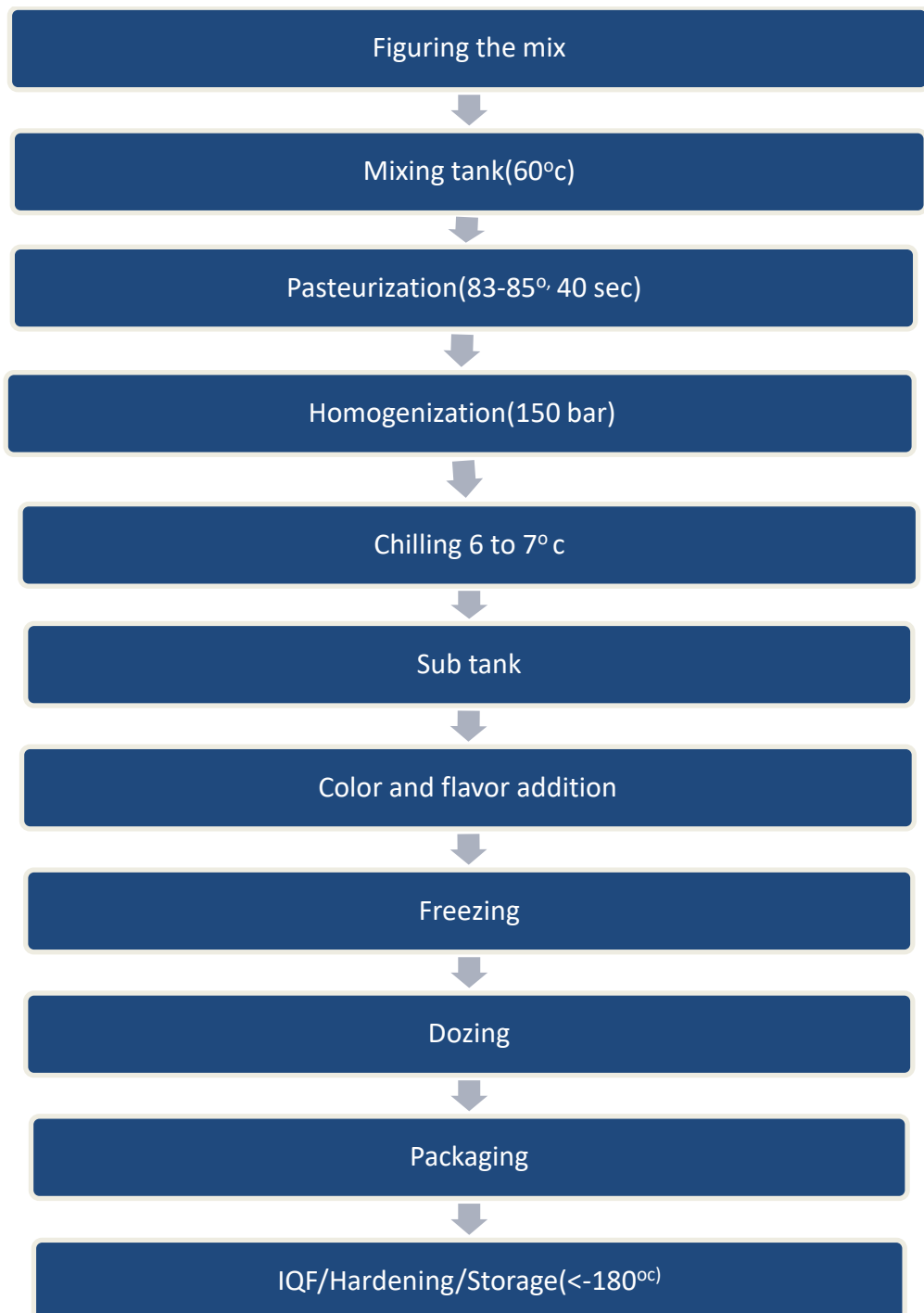
### **Ingredients of Ice Cream:**

- Skimmed milk powder
- Sugar
- Cream
- Butter oil
- Vegetable oil
- Coconut oil
- Liquid glucose
- Flavor and color

### **Ice Cream Producing Temperature:**

<b>Unit</b>	<b>Temperature</b>
Mother Tank	4-6°c
Mixing Tank	60°c
Pasteurization	83-85°c
Homogenization	150 bar
Chilling	6-7°c

## Flow Sheet of Cream Preparation:



## Tank Capacity:

Tank no.	Capacity
1, 2, 3	6000
4, 5, 14	2400
6, 7, 9, 15, 16, 17, 18	3000
8, 11, 12, 13	1200
10	600

## Types of Ice Cream:

### A. Stick items:

1. Choc-bar
2. Mini Choc
3. Ego
4. Macho
5. Mega
6. Sell & Core
7. Sweet Heart

### B. Lollys:

1. Lemon
2. Orange

### C. Cups:

1. Vanilla Cup
2. Strawberry Cup
3. Single Sundae
4. Black Forest
5. Mango Cup

### D. Cones

1. Cornelli Premium
2. Cornelli Belgium
3. Cornelli Classic

### E. Kids Item:

1. Mango Magic
2. Snowball

**F. Family Pack:**

1. Chocolate
2. Mango
3. Strawberry
4. Vanilla

**G. Family Pack(Premium):**

1. Caramel Combo
2. Chocolate Cheers
3. Mango Melody
4. Piata Passion
5. Strawberry Sparkle
6. Ripple

**Raw Ingredients of Ice Cream:**

1. Fresh Milk
2. Skim Milk Powder
3. Vegetable fat
4. Sugar
5. Butter Oil
6. Coconut oil
7. Glucose
8. Cocoa Powder
9. Citric Acid
10. Peanut
11. Almond nut
12. Ripple
13. Stabilizer
14. Emulsifier
15. Natural color and Flavor

## Some product pictures of Igloo Ice Cream Company





***CHAPTER-03***  
***ENGINEERING UNIT***



## **Engineering Section:**

We visited Engineering section from 24-02-19 to 02-03-19 We first meet Mr. Ahmed Sharif Pasha, Asst. General Manager (Engineering) and then he assigned us to Mr. Golam Maola Manager, who gave us a brief outline about the Engineering section, their responsibility and task. We noted down the important information and saw the machineries with an operation.

Engineering section is subdivided into five units:

1. Electrical
2. Mechanical
3. Refrigeration
4. Civil
5. Automobile

## **Machineries of Utility Unit:**

1. Gas generator:  
Model: FGLD 480  
Capacity: 523KW  
RPM: 1500  
Fuel: Natural gas
2. Diesel generator:  
Model: MW160  
Capacity: 128KW  
Origin: Germany
3. Fire Tube Boiler:  
Capacity: 2.8 ton/hr  
Type: Horizontal  
Gauge Pressure: 75 psi  
Origin: Germany
4. Air Compressor:  
Model: E 30-10  
Capacity: 4.531 m<sup>3</sup>/min  
Rated pressure: 9.51 kg/cm<sup>3</sup>  
Type: Screw  
Origin: India

## **Ammonia plant compressor:**

### **A. Model TSMC 108L:**

Speed: 1460

Refrigerant: R717

Swept volume: LP 414 m<sup>3</sup>/hr

Working pressure: 18hr

Test Pressure: 42/27 bar

### **B. Model TSMC 116L:**

Swept volume: LP 848 m<sup>3</sup>/hr

Working pressure: 22hr

### **C. Model SMC 116L HP:**

Swept volume: LP 414 m<sup>3</sup>/hr

Working pressure: 18hr

### **D. Model SMC 104S HP:**

Swept volume: LP 221 m<sup>3</sup>/hr

Working pressure: 18hr

Test Pressure: 42/27 bar

## **Machineries for Refrigeration Unit:**

Ammonia refrigeration system used for SL 0 and ROLLO 27 and for the cold storages IQF, hardening room'

Boiler used for steam production, generator used for electricity production, air compressor used for compressed air production, chiller used for chilled water production, ice bank used for cooled water production.

## **Automobile:**

There are in total 152 vehicles for ice cream distribution. The maintenance of those vehicles and facing of various types of problems in transportation are the responsibilities of Automobile department.

***CHAPTER-04***  
***MILK UNIT***

## **Milk Unit:**

We went to milk unit from 03-03-19 to 10-03-19, there we meet Mr. Md. Fardous Ali. Manager, Md. Hafizur Rahaman, Deputy Manager and also production officer and staffs of milk unit they gave their maximum effort to help us. They discussed about the dairy product processing, pasteurization system, associate machineries, labor management and gave us the information about the dairy unit and the answered what we asked. We enjoyed their company.

Mainly two types of milk is produced in milk unit:

1. Fresh Market milk
2. Flavored milk (mango and chocolate)

Apart from these following items are also produced in milk unit:

1. Sweet curd
2. Sour curd
3. Labang
4. Ghee

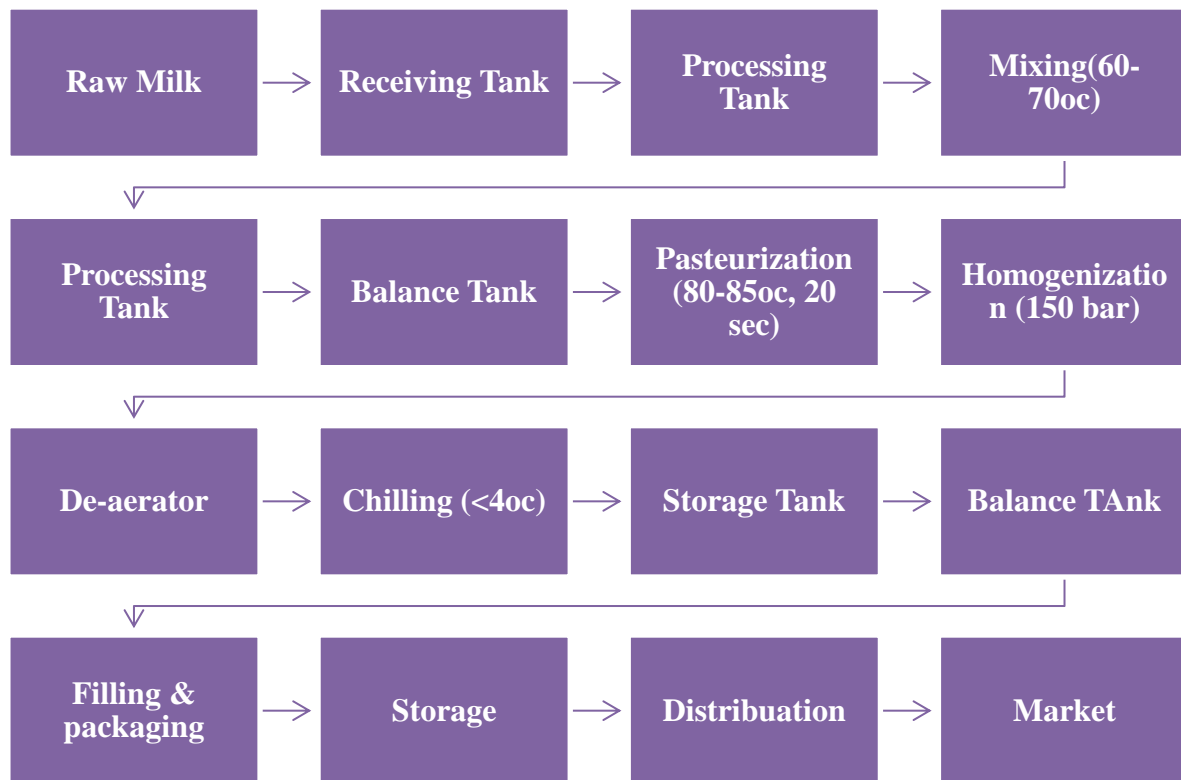
## **Ingredients of Milk:**

1. Fresh milk
2. Skim milk powder
3. Sugar
4. Stabilizer
5. Color
6. Mango pulp
7. Flavor etc.

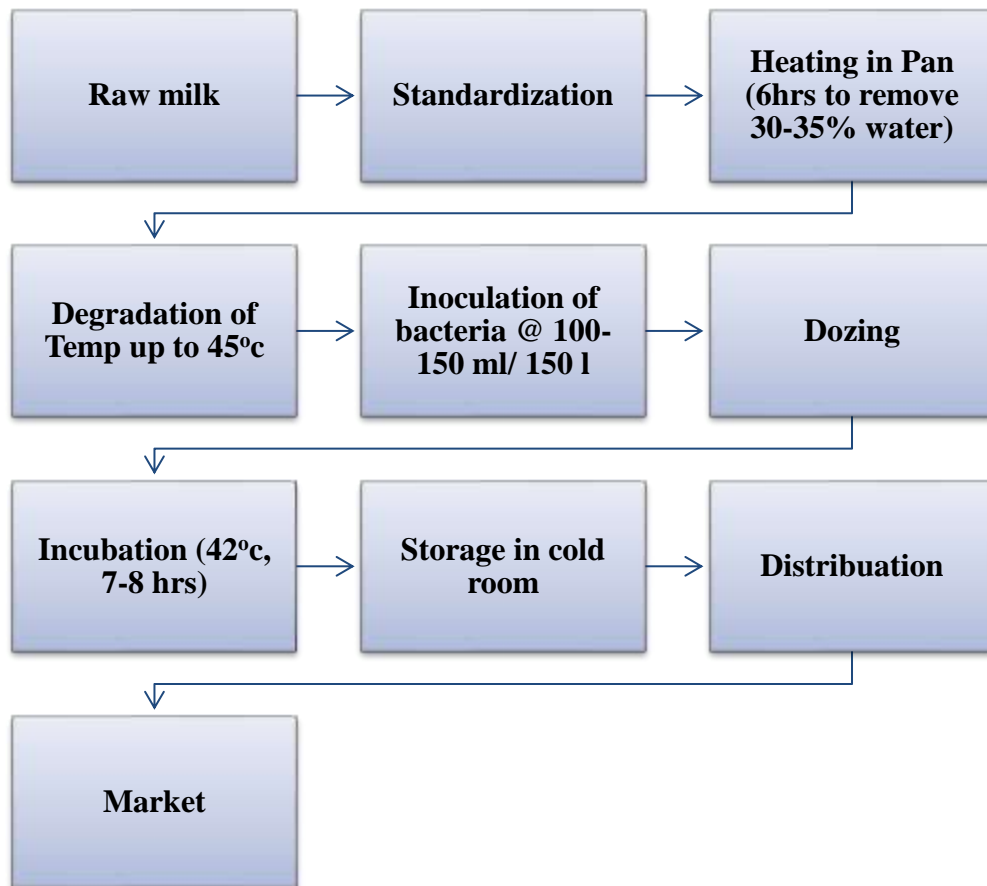
## **Bacteria used for yoghurt Fermentation:**

- a. *Lactobacillus bulgaricus*
- b. *Streptococcus thermophilus*
- c. *Streptococcus acidophilus*
- d. *Lactobacillus lactis*

- **Milk Processing flow Diagram:**



• **Flow Diagram of SWEET CURD:**



***CHAPTER-05***  
***PLASTIC UNIT***

## **Plastic Unit:**

We worked in plastic unit from 11.03.19 to 17.03.2019. There we met Mr. Robiul Alam, Assistant Engineer who showed us the machineries and processing systems and also told us about plastic materials.

## **Test Parameters of Plastic:**

1. Density
2. Tensile strength at yield
3. Melt index
4. Flexural modules
5. Izod impact strength
6. Heat deflection temperature at .455 MPa and 1.82 Mpa
7. Shore hardness
8. Crystalline melting point
9. Mould shrinkage point
10. Thermal conductivity

## **Raw Ingredients of Plastic:**

1. Polypropylene  
Chemical used-
  - I.  $\text{TiO}_2$  (for white)
  - II. master batch
2. Low density polyethylene (LDPE): for soft lids and cover
3. HDPE
4. Poly Styrene
5. HIPS
6. LIP

## **Machineries Used in Plastic Unit:**

1. Injection Molding machine
2. Plastic Cuter Machine
3. Thermoforming Machine
4. Extruder

## **Plastic Used in Modern World:**

1. Poly Propylene
2. Linear Low Density Propylene
3. Low Density Propylene
4. High Impact Poly Styrene
5. High Density Propylene
6. Poly Ethylene Terephthalate



***CHAPTER-06***  
***GENERAL STORE***

## **Store:**

We went to store section from 18-03-19 to 20-03-19. Mr. Rahul Amin, Deputy Manager (Store) gave us a brief outline about their activity, stored materials and storage condition. Then we visited the store rooms noted down the stored materials.

## **Stored Materials:**

### **1. Raw Materials**

#### **General materials:**

- a. Butter oil
- b. Sugar
- c. Skim milk powder
- d. Nutrilac IC-1590
- e. Vegetable fat
- f. Stabilizer
- g. Lusice-4753
- h. Cremodan SE 709
- i. Hazel nut coating 5071138
- j. Spray chocolate coating 502270
- k. Chocolate chips
- l. Toffee coating 510463
- m. Ligth chocolate
- n. Chewing gum ball
- o. Red cherry fruit E120
- p. Luxice 1005

### **2. Flavor**

- a. Caramel flavor
- b. Toffee flavor
- c. Cream flavor
- d. Lemon flavor
- e. Vanilla flavor
- f. Mango flavor
- g. Strawberry flavor
- h. Orange flavor
- i. Kulfi flavor
- j. Chocolate flavor
- k. Coffee flavor

### **3. Colors**

- a. Chocolate colors
- b. Caramels colors
- c. Apple colors
- d. Orange colors

#### **4. Plastic Raw Materials**

- a. Plastic PPB- 3800
- b. Hostalen-370R

#### **5. Packaging Materials (Imported)**

- a. Wooden stick
- b. Wrapping Paper
- c. Alusleev

#### **6. Packaging Materials (Local)**

- a. Paper stickers
- b. Paper cartons
- c. Paper labels
- d. Wrapping Cup
- e. Plastic cup
- f. Plastic containers
- g. Tin containers

#### **7. Raw and Chemical Materials**

- a. Glucose
- b. Butter corn starch
- c. Cocoa powder
- d. Lecithine
- e. Vanillin powder
- f. Mango pulp
- g. Nuts
- h. Icing sugar
- i. Sorbitol
- j. Soybean oil
- k. Raw coffee
- l. Orange Jam
- m. Guar gum etc.

### **Suppliers:**

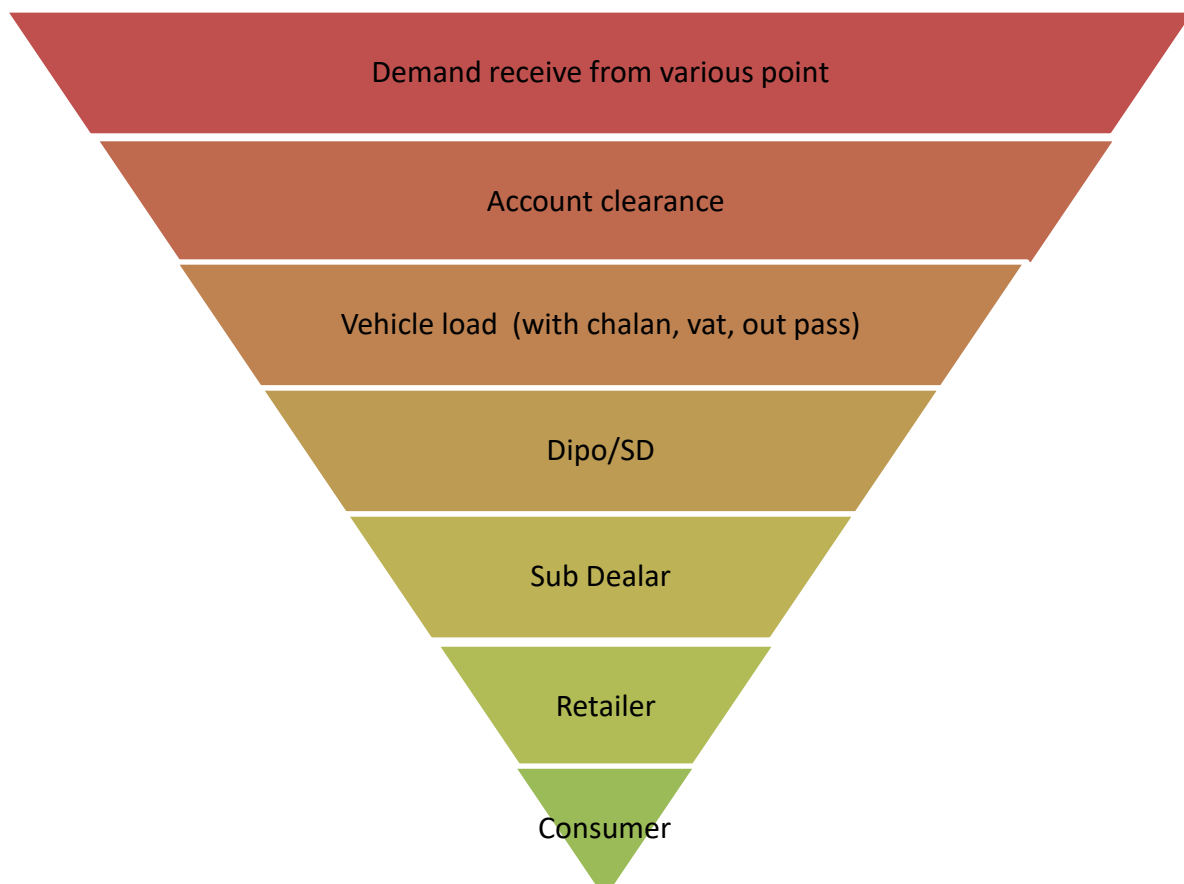
Suppliers of Igloo provides for items ranging simple nuts coatings, and other basic raw materials to high tech ice cream processing machines. Almost all ingredients are supplied by foreign suppliers. The main ingredients such as milk powder, nuts, chocolates, sticks, tetra packs, various essences and flavors are imported from Australia, New Zealand, UAE and Dubai, Machines are imported from Denmark, Italy and Switzerland. An important note on suppliers is mad here by the Igloo's Marketing Manager. According to him local suppliers is made far less reliable than foreign suppliers are more reliable. Such is its faith on foreign suppliers that Igloo imports all items though it is time consuming and there are costly import related formalities.

***CHAPTER -07***  
***DISTRIBUTION SECTION***

## Section of Distribution:

We went the distribution section from 21-03-19 to 22-03-19. In distribution section we met with Mr. MD. Ruhul Amin, Manager (distribution) and discussed with about distribution system of ice cream. He gave us following information about distribution system.

## Distribution System:



## **Admin & HR Department:**

We went to Admin & HR department 23-03-19 to see and gather knowledge about the administrative activity. Mr. Ismail Hossain, Manager (Admin & HR) discussed about the administrative work and gave us a clear outline about their activity.

They recruit employee in two ways:

1. Internally
2. Externally

Three types of work here, Casual, Monthly and Permanently. Mr. Ismail said us, they followed the labor law strictly and ensure a great environment for working.

## **Conclusion:**

Igloo Ice cream and Milk unit is ISO 9001: 2000 certified plant. It produces very popular items of Ice cream and Milk which are in leading position due to sincerity and safety system of the employs.

This study show how to maintain hygienic production and quality control of Ice Cream and Milk.

I am very proud and glad to be one of the members of the “Industrial Training program “. I can compare my theoretical with the practical filed about the product management system, production machineries, space utilization and good manufacturing practice.

## **Reference:**

- All Department of Igloo Ice Cream & Milk Unit