



**Daffodil**  
*International*  
**University**

## Internship Report

On

“Internship of Quality Assurance Department at Dhaka  
Ice-cream Industry”



Submitted To

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Submitted By

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Date of Submission: 23-12-2018

## **Declaration**

I herewith declare that this thesis is predicated on my original work aside from equations and citations that are punctually acknowledged. This thesis paper are ready to submit for the partial fulfillment of the degree of B.Sc. in Nutrition & food Engineering. I additionally declare that it's not been antecedently submitted for different the other degree at Daffodil International University of Science & technology or other establishments

# LETTER OF TRANSMITTAL

**Date: 23 December 2018**

Professor Dr. Md. Bellal Hossain

Head Department of Nutrition & Food  
Engineering Daffodil International  
University.

**Subject:** Submission of internship report on internship of quality assurance department  
at Dhaka ice-cream industry.

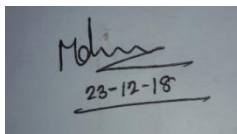
Dear Sir,

It is an excellent pleasure on behalf of me to possess the chance to submit my position report on production of microbiological Quality Assessment of hand sewn Lolly in street of Dhaka town as a locality of the Nutrition and Food Engineering (NFE) program.

I have ready this report supported the preference information throughout my project report during this university science laboratory. It's nice action to figure below your active direction. This report is predicated on, "Studies on the assembly of Edible Microbiological Quality Assessment of handsewn Lolly. I even have got the chance to figure during this university science laboratory for a few days below the direction lecturer Najia Kamrul .

This is the primary times this project gave American state each tutorial and sensible exposures. The project gave American state the chance to develop a network with the company atmosphere.

Sincerely yours,



Mahabubur Rahman  
ID: 161-34-501  
Department of Nutrition and Food Engineering  
Daffodil International University

## LETTER OF AUTHORIZATION

**Date: 23 December 2018**

Professor Dr. Md. Bellal Hossain

Department Head of Nutrition & Food Engineering

Daffodil International University.

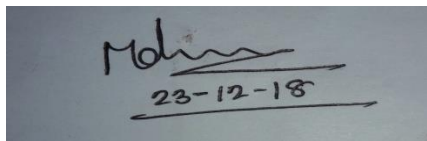
**Subject: Declaration regarding the validity of the Internship Report.**

Dear Ma'am,

This is my truthful declaration that the “**Internship Report**”. I have prepared is not a copy any Thesis Report previously made any other students.

I also express my honestly confirmation in support to the fact that the said thesis report has neither been used before to fulfill my other course related not it will be submitted to any other person an authority in future.

Yours Sincerely,

A photograph of a handwritten signature and date on a piece of paper. The signature is written in black ink and appears to be 'Mahabubur Rahman'. Below the signature, the date '23-12-18' is written and underlined with a horizontal line.

Mahabubur Rahman

ID: 161-34-501

Department of Nutrition and Food Engineering

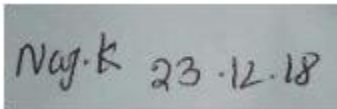
Daffodil International University

## APPROVAL CERTIFICATION

This is to certify that this project entitled “Development of LicheeLolly Ice-Cream Industry Ltd” of Project. Mahabubur Rahman, ID: 161-34-501 B.Sc. Students, Departments of Nutrition and Food Engineering, Daffodil International University, has been carried out under my Supervision. This is further to certify that this project work is carried out as partial Requirement for fulfillments of the B.Sc. Degree in Nutrition and Food Engineering.



Professor Dr. Md. Bellal Hossain  
Professor and Head  
Department of Nutrition and Food Engineering  
Daffodil International University



Najia kamrul, Supervisor  
[Senior Lecturer]  
Department of Nutrition and Food Engineering  
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# Acknowledgement

In the preparation of this report, i'd wish to acknowledge the encouragement and help provide to ME by variety of individuals. At first, i'd wish to specific my feeling to almighty Supreme Being for facultative ME the strength and chance to finish the report within the schedule times with success. i'm taking this privilege to deliver my thankfulness and each folks that involved me in every section of my lives.

I am grateful to my folks while not whom I can't be here. while not the support of my folks, I couldn't be able to attain my objectives and goals.

My Deep feeling and sincere because of the honorable Dean, school of Allied Health Science, faculty member Dr. Ahmed Ismail Mustafa for this sort cooperation and to just accept this Degree.

I am deeply indebted to my Supervisor faculty member Dr. Md. Bellal Hossain, Department of Nutrition& Food Engineering and Daffodil International University for his wholehearted management throughout my structure attachment amount. i'm terribly grateful to the management Najia Kamrul. For giving me permission to hold out this project in his organization. it might are terribly tough to organize this report up to the present mark while not their steerage.

Finally i'd wish to specific my warmest because of NFE school members for his or her infinite inspiration and encouragement throughout the scholar life.

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## **Company History:**

30 and obtaining younger. that is the story of Polar these days – this year Polar wore a up to date trend and glossed up its offerings keeping an equivalent goal of transferrable out a smile, creating moments a bit special with its innovative vary of tasty and quality ice creams.

Back in 1987 once Polar started, the story but was quite different-one with exceptional long-sightedness and knowledge. It all started once Mister Amanullah Miah, a visionary bourgeois determined to supply fashionable and smart quality frozen dessert in an exceedingly rising economy with several youngsters. Undaunted by the extent of challenge, he summoned specialists from Denmark to assist originated a plant capable of constructing international normal ice creams in his town of alternative – Dhaka.

The third story may be a story of pragmatism. In 2009, to more strengthen its foothold, the business welcome mister. Nazim Uddin Ahmed, a palm businessperson as a brand new partner. Associate degree engineer and a business graduate, he introduced several fashionable management philosophies and embedded a thriving performance culture on the foundations of a foremost food safety management approach. Underneath his place, Polar became the first ISO 22000:2005 certified company in farm class in Bangladesh.



## **The Ultimate Goal of Dhaka Ice Cream Industries (Polar):**

Polar is within the business of constructing individuals pleased with its ice creams. on every occasion Polar ice creams bring out a smiles, creating your moments a touch special, Polar gets a step nearer to its goal.

Our Guiding Principles

### **You First**

The Polar family stands robust to satisfy customers, shoppers and alternative stakeholders with top quality ice creams and superior services.

### **Compliance and Conduct**

We forever accommodates statutory and restrictive needs and conduct our business upholding moral standards expected of a decent company subject.

### **Innovation to stay most popular**

We area unit unendingly innovating merchandise, processes and services to remain fashionable and most popular.

### **Accountability and responsiveness**

At DIIL, we tend to area unit in charge of our actions and that we respond quickly to our customers and colleagues alike. This is often our approach of building a winning team.

### **Wholesomeness and positive mental attitude**

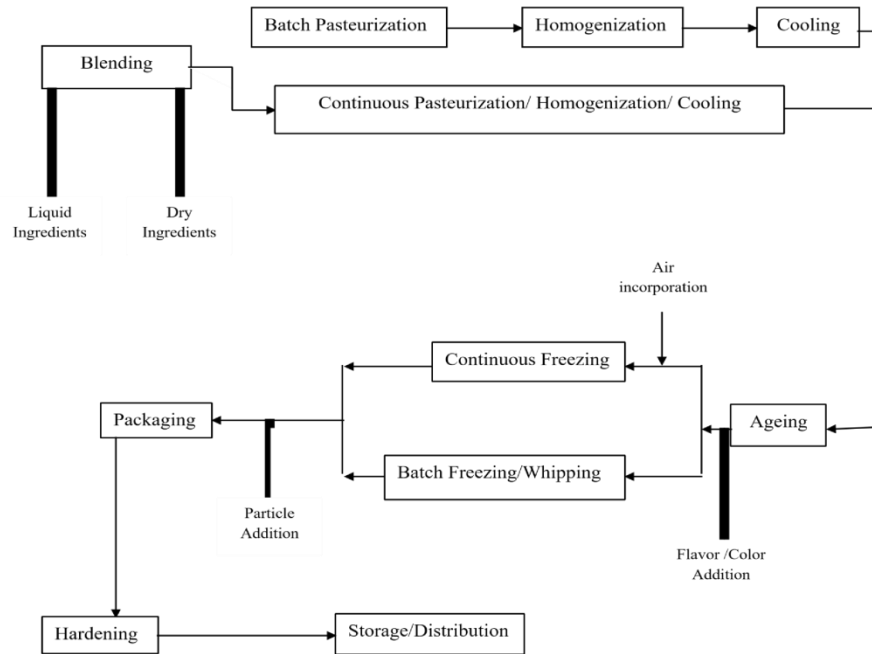
The Polar family contains a healthy, wise and positive minded approach towards everything we tend to do.

## **Aim/Objective of the Training:**

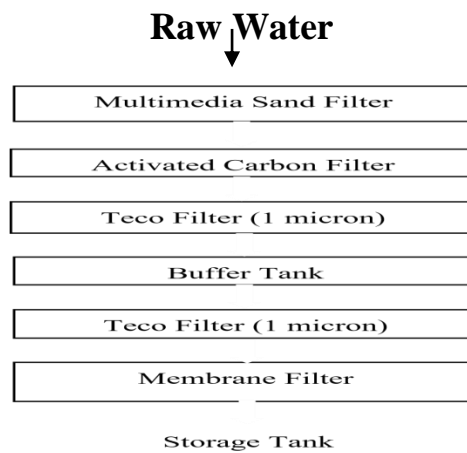
The specific objectives of this study are as following:

- To have an idea of system & activities of Ice-cream, dairy, Bake & other processing unit.
- To know different rules & methods of the organization.
- To identify the hazard during the processing & production of products in the plant & finding how to take necessary steps.
- To identify different critical control point in dairy & aseptic products.
- To describe the processing of all products.
- To maintain standard quality parameters.
- To give an overview of Dhaka Ice-cream Industries Limited.

## PROCESS FLOW DIAGRAM of Dhaka Ice-cream Manufacture: Ice-Cream Manufacture:



## Flow Diagram of RO Water:



## My Work Description with Schedules:

Department	Training Period			Name of the Work
	From	To	Total Days	
Production plant-2	15-10-16	26-10-16	6	Production Monitoring
Production plant-1	29-10-16	09-11-16	6	Production Monitoring
Mix unit	09-11-16	12-11-16	2	Mix unit onitoring
Cone Biscuit & Khoya Plant	14-11-16	19-11-16	4	Monitoring Cone Biscuit & Khoya Production
Online Laboratory	23-11-16	03-12-16	5	Introduce with laboratory instruments & apparatus Chloride & Alkinity, TDS & Hardness of water test.
Microbiology Laboratory	05-12-16	10-12-16	3	Introduce with laboratory instruments & apparatus, Total count, Yeast Mold test

Processing details including description, Raw materials used, Flow diagram, Tables and Process Control. If needed extra sheets can be added)

### General Ice Cream Processing Steps

- ✓ Blend Ingredients
- ✓ Pasteurize Mix
- ✓ Homogenize
- ✓ Age Mix
- ✓ Add Liquid Flavors and Colors
- ✓ Freeze
- ✓ Add Fruits, Nuts, and Bulky Flavorings
- ✓ Package
- ✓ Harden

#### ▪ Blend the Ice Cream Mixture

The milk fat source, nonfat solids, stabilizers and emulsifiers are blended to ensure complete mixing of liquid and dry ingredients.

#### ▪ Pasteurize Mix

Ice cream mix is pasteurized at 155°F (68.3°C) for 30 minutes or 175°F (79.4C) for 25 sec. The conditions used to pasteurize ice cream mix are greater than those used for fluid milk because of increased viscosity from the higher fat, solids, and sweetener content, and the addition of egg yolks in custard products.

#### ▪ Homogenize

Ice cream mix is homogenized (2500 to 3000 psi) to decrease the milk fat globule size to form a better emulsion and contribute to a smoother, creamier ice cream.

Homogenization also ensures that the emulsifiers and stabilizers are well blended and evenly distributed in the ice cream mix before it is frozen.

#### ▪ Age the Mix

Ice cream mix is aged at 40°F (5°C) for at least 4 hours or overnight. Aging the mix cools it down before freezing, allows the milk fat to partially crystallize and the gives the proteins stabilizers time to hydrate. This improves the whipping properties of the mix.

#### ▪ Add Liquid Flavors and Colors

Liquid flavors and colors may be added to the mix before freezing. Only ingredients that are liquid can be added before the freezing, to make sure the mix flows properly through the freezing equipment.

- Freeze

The process involves freezing the mix and incorporating air. Ice cream mix can be frozen in batch or continuous freezers and the conditions used will depend on the type of freezer. The continuous freezing process is much faster than the batch freezing process.

The addition of air is called overrun and Up to 50% of the volume of the finished ice cream (100% overrun) can be air that is incorporated during freezing. Premium ice creams have less overrun (approximately 80%) and are more dense than regular ice cream.

- Add Fruits, Nuts and Bulky Flavorings (candy pieces, etc.)

Fruits, swirls, and any bulky type of flavorings (nuts, candy pieces, etc.) are added at this point. These ingredients cannot be added before freezing or they would interfere with the smooth flow of the mix through the freezer. The ice cream at this point is soft and it is easy to mix in the bulky flavorings so they are uniformly distributed throughout the ice cream. Mixing in bulky flavorings after freezing also prevents damage to the pieces and allows them to remain whole or in large chunks.

- Package

As desired, depending on the product.

- Harden

The ice cream is cooled as quickly as possible down to a holding temperature of less than -25°C. The temperatures and times of cooling will depend on the type of storage freezer. Storage at 25°C will help to stabilize the ice crystals and maintain product quality.

## **Material and Method:**

### **Raw materials used:**

- Skimmed milk
- Full cream milk
- Sugar
- Stabilizer & Emulsifier
- Glucose
- Flavors & colors
- Hydrogenated coconut oil, palm oil
- Chocolate coating
- Cocoa powder

### **Package materials:**

- Ice cream stick
- Wrapper
- Cartoon
- Cup
- Litter box
- Lid

# Process control

## Hardness Test

### Chemicals

- Buffer Solution
- Ferrochrome Black T indicator
- EDTA

### Test procedure

- Take 100 ml water in a conical flask
- Add buffer solution
- Add 2/3 drops of T indicator
- Titration by EDTA.

### Result:

Hardness=Burette reading  $\times$  10 ppm

## Chlorine Test

### Chemicals & Equipment Required

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

### Procedure:

- Take 5 ml water sample in the Test Tube.
- Add 3 to 4 drops of Ortho Toluidine solution. Shake gently.
- Place the test tube in the Comparator Cavity.
- Move the slide for matching color.
- Record the nearest range in ppm of free chlorine.

## pH test

### Required chemicals/equipment

- No chemical is used.
- pH meter



### **Test procedure**

- Take 100ml water in a beaker as a sample.
- Deep the pH meter into it.
- Collect the reading.
- pH meter reading is the result

## **All Test Procedure in Dhaka Ice- cream Industries**

### **Over Run**

#### **Used chemicals & equipment**

- No chemical use
- Ice-cream cup
- Scale
- Digital Balance

#### **Test Procedure**

1. Fill the cup with Mix an Ice-cream individually & level the surface
2. Weight mix & Ice-cream individually.

#### **Calculation:**

#### **Test Procedure**

Over run= $\frac{(\text{mix Weight}-\text{Ice cream weight})}{\text{Mix Weight}} \times 100$

### **Brix -test**

#### **Used chemicals & equipment**

1. No chemical use
2. Digital Refract meter

### **Test Procedure**

1. Firstly, set zero the refract meter with distilled water
2. Then dry it
3. Place small volume of sample
4. Close it
5. Refract meter reading appears after temperature reach at 20 degree celcius.

### **Acidity Test**

#### **Chemicals & Equipment Required:**

1. Beaker
2. Dropper
3. Pipette
4. Burette
5. Phenolphthalein indicator
6. Sodium Hydroxide Solution (As Alkali)

#### **Procedure:**

1. Take 5ml mix in a beaker.
2. Add 2-3 drops of phenolphthalein indicator.
3. Titration with 0.1 N Sodium Hydroxide Solution until the color changes to pink/rose.

#### **Result:**

Burette reading is the acidity of milk.

#### **Calculation:**

Acidity= (Burette Reading× Normality of Alkali × Equivalent weight of

Acid×100) ÷ (Weight of Sample×1000)

## **Viscosity test**

### **Required chemicals & equipment**

1. No chemical is used.
2. Viscosity meter

### **Test procedure**

1. Take 250ml mix as sample.
2. Viscosity meter make ready.
3. Deep the splendor of viscosity meter into it.
4. Start measuring.
5. Collect the reading.
6. The reading is the result.

## **Microbiological Side:**

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

**Method:** Pour plate (For Final Products)

**Purpose:** The pour plate technique can be used to determine the number 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. Prepare the media and sterilized by autoclave at 121°C for 15 minutes, 14.5 psi.
2. Take specific amount of sample in Petridis.
3. After autoclaving media allow to cool in 40°C.
4. About 15-20ml of media is pour in Petridis and properly homogenized by clockwise & anticlockwise and allows solidifying.
5. After solidification incubate the plate at 37°C in inverted position for 24-48 hours.
6. After incubation count the colony by colony counter.
7. All the steps should be done under laminar air flow to maintain 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, Fruits pulp, Date Molasses)

**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. Prepare the media and sterilized by autoclave at 121°C for 15 minutes, 14.5 psi.
2. Take specific amount of sample in Petridis.

3. After autoclaving media allow to cool in 40°C.
4. About 15-20ml of media is pour in Petridis and properly homogenized by clockwise & anticlockwise and allow to solidify.
5. After solidification incubate the plate at 37°C in inverted position for 24-48 hours.
6. After incubation count the colony by colony counter.
7. All the steps should be done under laminar air flow to maintain aseptic condition.


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

**Conclusion:**

This study shows how to maintain the hygiene production and quality control of food & Ice-cream. The industrial attachment program has covered both hygiene production and quality control of food products. To ensure hygiene production and quality control different types of test parameter including Physical, Chemical, Microbiological has been taken. Actually a BSTI standard maintains or regulates its quality parameter. Physical and chemical tests are done routinely in the lab. Microbiological test is also important especially for final product.

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