AN INTERNSHIP REPORT ON STUDIES ON PRODUCTION AND QUALITY CONTROL OF FOOD AND BEVERAGE AT AKIJ FOOD & 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:

Md.Abu Rahat
ID:161-34-486
Department of Nutrition and Food Engineering
Faculty of Allied Health Science Daffodil International University

Date of Submission:

LETTER OF TRANSMITTAL

Date:

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

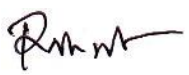
Subject: Submission of internship report.

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,
Md.Abu Rahat
ID:161-34-486

Department of Nutrition and Food Engineering

LETTER OF AUTHORIZATION

Date:

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

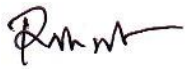
Subject: Declaration regarding the validity of the internship report.

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



Md.Abu Rahat
ID:171-34-486

Department of Nutrition and Food Engineering
Faculty of Allied Health Science

CERTIFICATION OF APPROVAL

I am pleased to certify that the internship report on Production and Quality Control of Food and Beverage, conducted by Md. Abu Rahat, bearing respectively ID No: 161-34-486 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 Md.Abu Rahat. I strongly recommended the report presented by Abu Rahat for further academic recommendations and defense/viva-voice. Md.Abu Rahat 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. Md. 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 give 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 schedule times successfully. I am taking this privilege to deliver my gratefulness to each and every people who are involved with me in every phase of my lives.

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 encouragement taking this privilege to deliver my gratefulness to each and every people who are involved with me in every phase of my lives.

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.

ABSTRACT

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. Coaches are extremely earnest to us. They have given us sufficient opportunity to attempt to give thoughts regarding various segments of the generation and quality control office totally. Expectation this experience will be helpful in our reality.

TABLE OF CONTENTS

INTRODUCTION

At 12 semester out of 12 semesters in 4 year Bachelor of Science in Nutrition and Food Engineering I got an opportunity to work at Akij Food and Beverage Ltd. (AFBL), Bangladesh the part of my internship program. The duration of my internship was from 21th September 2019 to 21toctobor 2019. AFBL is the top & largest beverage company in the country. AFBL has many types of department. The departments are – HR & Admin, Quality Control, Research & Development, Production, Electrical, Mechanical, Store, Distribution, Accounts, Vat, Civil, Resource, Hygiene etc. My concern was **Quality Control Department & Production Department** which encompassed the following activities:

- Maintain all quality control parameter as per specification.
- Ensure quality of production.
- Knowledge on product costing.
- To prepare & to submit necessary reports required by the management.
- Have to submit report to authority every day for production consumption, costing, quality etc.
- To make necessary production plan as per the schedule provided by the production department.

AIM OF THE TRAINING

Aim of the Training:

Internships provide an opportunity for students to link theory with practice and further serve as a temporary labor pool for those agencies that have committed to participate in the internship program. The department fulfills its mission of preparing students for significant professional and managerial positions in all the sectors. Relevant professional development topics and workshops are discussed weekly.

CO2 PLANT:

CO2 Plant Flowchart

Gas line/ Diesel line

Boiler(160 Degree C)

crubber tower(160 Degree C for remove C vapour)

Absorber Tower(45 Degree C for only absorve CO2)

Heat Exchanger(90 Degree C)

Nox Tower

Stripper Tower(107 Degree C for separate CO2&MEA)

Gas Coller(38 Degree C for cooling)

Water Scrubber

Dehydrator(Drying CO2 moisture)

Carbon filter(Odor remove)

Reprises

CO2 PRODUCTION USE:

So as to make the holder or container stable, CO2 is surrendered to the bottle.so business for the most part make the CO2 in bit by bit without anyone else in the business.

Carbon di oxide making procedure:

Fundamentally two line is utilizations to supply gas or diesel through a gas line or diesel line.

so the gas diesel blend with O2 at 160 degree Celsius in boiler.so by the response of gas and oxygen the last item CO2 is item .This CO2 contains C particles .In request to expel the extra carbon.CO2 streams into scrubber pinnacle where the temperature keep up at 160 degree Celsius .so C fume progressively expel from CO2.A clay channel held inside the internal side of scrubber pinnacle .After the progression the CO2 is consumed by safeguard tower which just safeguard CO2 at 45 degree Celsius. At that point the ingested CO2 goes into the warmth exchanger by a warmth exchanger siphon. Warmth exchanger keeps up at 90 degree .After that CO2 streams into Knox tower .All the method in keep up at precise temperature however the CO2 what is coming idea all the siphon isn't sufficiently unadulterated .If contains mono ethane.

Stripper tower expels the mono ethane from CO2 at 170 degree Celsious.so the unadulterated CO2 is remained. At last if should be cool.so CO2 is flown into a gas cooler at 38 degree.CO2 at long last gas into water scrubber .After packing the CO2 passer into a dehydrator to dry CO2 dampness and to enact alumina .As the CO2 has request which would not be valued by buyer .so a carbon channels use to evacuate odder. A repeat at long last store CO2 as fluid structure the fluid is utilized as gas in the buyer item.

CHIPS PLANT:

Chips Flowchart

Four types of maize powder

Mixer machine

3 Extruder

Reserve Hopper (90 - 91 Degree C)

Glow boy

Oil and seasoning

Mixer Tank

Dryer Machine (Remove moisture)

Packaging Room

Reserve Hopper

Packing(weight scale 22g)

Final Product

Maize powder is utilized to make chips. There are four sorts of maize powder as indicated by size of molecule.

There are:

1080 Micron

850 micron

650 Micron

425 Micron

Flour water and cellulose control needs to blend in with maize control. So as to bother 3 radiator Extruder is utilized on a condition. Two straw have consume utilized .One is clock another is anticlock. There clock keep up at 90-91 degree Celsius for 2-5 mint to save container and to chill off the catted bug. At that point the blended crude material goes into blender where oil and explicit measure of water present. At that point Air is use and before the utilizing of air water and sezening is utilized through flautist. The oil needs to blend in with half Spice and stay half flavor has the blend by hand. At that point the zest blended chips turns out from the framework. Anyway the chips contains 7-8% water. Which should be expelled by a dryer. Where 3 layer remains drying process ceaseless for 35 moment. At that point the last chips goes into a bundling room. Despite the fact that a transport the bundled chips goes into a save container. A solitary chips bundle has 22g chips.N2 gas is utilized in the parcel to hold the chips.

MILK PROCESSING PLANT:

MILK PROCESSING PLANT Flowchart

Tanker

↓

MRU

↓

Receive Tank(Product tem 0-4 Degree C)

↓

Balance Tank

↓

Holding Tube(for 55 Degree C)

↓

Detractor(For remove gas)

↓

Separator(for cream separation)

↓

Holding Tube(For 77 Degree C)

↓

Homogenizer(For homo oil pressure 160 bar)

↓

Holding Tube (For final heating 88-92 Degree C)

↓

Regeneration (in holding tube)

↓

Cooling (By chiller water in 0-4 Degree C)

↓

PASTEURIZE FILLING:

A tremendous measure of milk originates from the farmhouse so as to process the milk and to supply consumable quality milk. Milk handling includes some significant advances which has been executing in the business.

The means are given in a portrayal cry:

Milk handling machine includes some segment and tank. This area have their own usefulness. Get tank from the outset get the crude milk which has a temperature at 0-4 degree Celsius. At that point a holding tube hold the milk a particular time at 55 degree Celsius. After that a depreciator is utilized to expel gas from the milk. As the milk contains enormous measure of cream which without a doubt unsafe for human wellbeing so it should be limit. Minimization of cream at a specific rate has been isolated from milk. On the other hand the milk goes legitimately into a holding tube. The temperature keeps up have at 77 degree Celsius. After that a homogenizer makes weight of 160 bar due to make same size molecule (homo) in milk. A last warming at that point done at 88-92 degree Celsius for 20 sec so all the microorganism devastate happen inside the milk. Recovery process directs in holding tube. At long last the milk chill off at cooling area by chilling water at 0-4 degree Celsius. At that point the last procedure milk is filled into sanitized bundle

Test parameter	Specification
Alcohol	-ve
Fat%(minimum)	3.6
CLR	27
SNF(minimum)	8.0
Treatable Acidity	0.15

pH	6.6-6.8
Extra fat	-ve

UHT MILK PLANT:

UHT MILK PLANT Flowchart

UHT Milk(137-141 Degree C for 0.4 sec)

⬇

Buffer tank

⬇

Balance Tank

⬇

Pre-heating(75-78 Degree C)

⬇

Homogenizer(80-85 Degree C &200 bar pressure)

⬇

Holding Tube(137-140 Degree C for 4 sec)

⬇

Cooling(20-22 Degree C)

⬇

Filling

ASEPTIC PLANT:

Aseptic Flowchart

KZE

↓

UHT balance tank

↓

Exchange 1(40-50 Degree C)

↓

Pre-heater(54-56 Degree C)

↓

DE aerator(Remove Foam)

↓

Exchanger 2(60-70 Degree C)

↓

Homogenizer(195 bar pressure)

↓

Exchanger 3(80-90 Degree C)

↓

Heater(96-99 Degree C)

↓

Heat holding(96-99 Degree C for 40 sec)

↓

Exchanger 3(90-80 Degree C for cooling)

↓

Exchanger 2(80-60 Degree C for cooling)

↓

Exchanger 1(60-40 Degree for cooling)

↓

Sterile tank(23000 Volume)

↓

FILLER:

A procedure of making item with no safeguarding synthetic or treatment.3 cip tank is required for the procedure.

7Steps:

1.Normal Water

2.Hot Water

3.Castic pop

4.Hot water

5.Nitric corrosive

6.Hot water

7.Normal water

Scathing soft drink utilizes =45-90%

Nitric acid=70%

7

stages is followed so as to actualize diverse flavor item aseptic procedure. For same flavor 5 stages is pursued. A product offering stars KzE. Result of intrigue goes directly into UHT balance tank. Where tam.is 30-35 Degree C. Item gets more smoking by exchanger 1 at 40-50 Degree C. At that point it needs to pre-heat at 54-56 Degree C.A DE aerator expels froth from item at 60-70 Degree C.A homogenizer smooth and blender every one of the particles at an equivalent way ar 195 bar pressure. Warming procedure is finished by exchanger(80-90 Degree C) Heater (96-99 Degree C)and heat holding (96-99 Degree C for 40 sec).Then again exchanger 3 (90-80 Degree C for cooling) Exchanger 2 (80-60 Degree C for cooling) Exchanger 1(60-40 Degree C for cooling). At long last cooler at 25 Degree C. At that point sterile tank volume 23000 .at that point filler. At that point water 121 Degree C tem. Warmed and water 30-35 Degree C tem. Cooling for bottle washing. Doosan and Kristal synthetic utilizing for bottle washing. Compound utilizing 15ml .Then container filling and leveling and bundling. Juice filling 50 bulb. At that point last item put away.

CSD3 PLANT:

CSD3 Flowchart

Pre-form bottle(15.2 g cumber color)

Hopper

Preform supply roller

In feed Line

Oven(55-70 Degree C)

In feed Gripper

Blowing Station(Air pressure 25-28 bar)

Discharge Gripper

Transfer Wipe

Capper head machine

Blower (Moisture remove)

Leveling machine control

Date Code Machine

Wrapping Machine

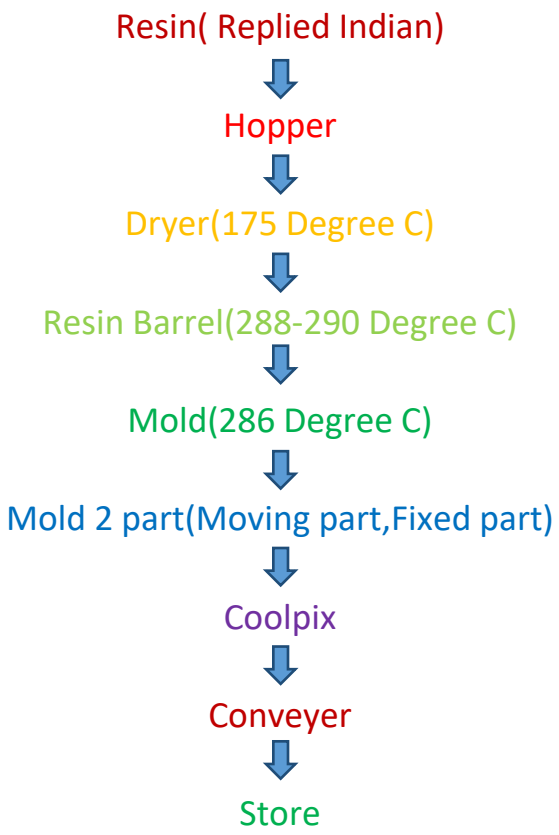
PALLETIZER MACHINE:

FORKLIFT

A pre-structure bottle containing weight 15.2 g and shade of the container is cucumber shading is utilized to make speed soda pops. These pre-structure bottles goes into container then through a vertical transport. These containers flown into stove where temperature is kept up at 55-70 Degree C. In feed griper holds the preform. A Blowing station gives the state of preform at 25-28 bar pressure. The molded jugs chill off by an exchange whip. These jugs are filled by filler (30000 for each hour).Caps are sewed on bottle by capper head machine. These total read bottles streams into blower so as to evacuate dampness .Labeling machine gives data of the beverages on the external side of containers. A Wrapping machine wraps those jugs and sends them to palletizer machine cuts down 120 catch. At that point it is put away.

PPS (plastic proceesing system plant):

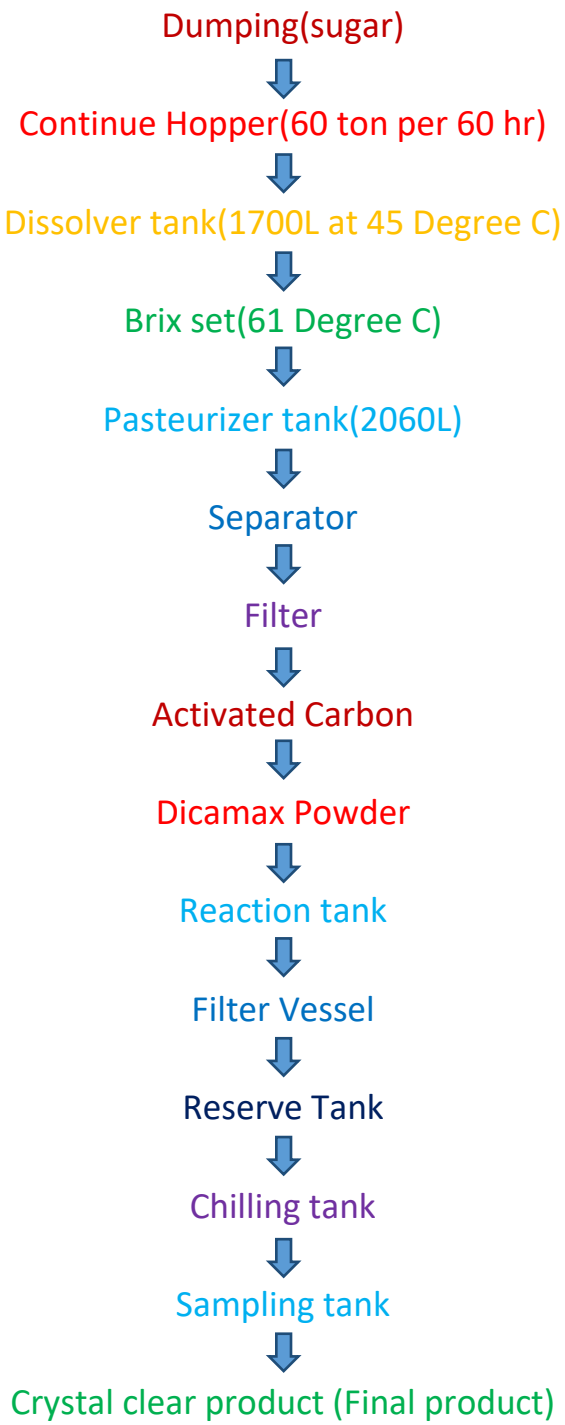
PPS Flowchart



PPS is where pre-structure is delivered from sap. The pitch is utilized here is Indian Replied sap. The pitch needs to fill Husky Hyped 500 Machine. At that point sap goes to container by a pipe. Warmth has been given on container by dryer at 175 Degree C. warmed gum comes to barrel so as to soften at 288-290 Degree C. These liquefied tar are formed at 288 Degree C. Spout warmth of form is 44%.Two parts are available in shape. One is moving part which is known as center plate. Another is fixed part which is known as cavity. A pre-structure shape is made by these part and these shape needs to chill off inside a particular time (2.4 sec).These shape fill Coolpix. By a transport these pre-structure store at a spot.

SUGAR PROCESSIN PLANT:

Sugar Processing Flowchart

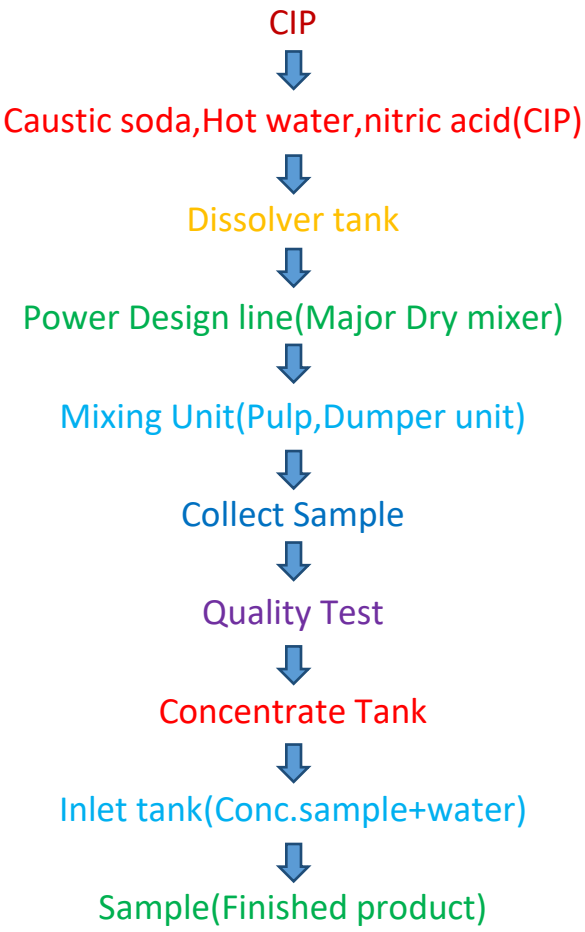


SUGAR PROCESSING METHOD:

Crude sugar is purchased from showcase and these sugar is filled dumping container. Sugar begins to break up with water in dissolver at 41 Degree C. The estimation of brix then shows 61 Degree C. Broken up sugar streams into pasteurizer tank. Warmth exchanger heat the sugar at 82-85 Degree C. At that point an enacted carbon dosing tank changes over the shade of sugar from ruddy to white and it shields the sugar from microscopic organisms. At that point Diamox powder. After the syrup streams into response tank where response among carbon and syrup is occurred. A channel new at that point channel the responded item. Staying soil is expelled by Ama back channel. On the other hand a warmth exchanger chill off the sugar at 19-21 Degree C. At that point the last sugar is put away at hold tank where limit is 30500.

JUICE MIXING PLANT:

Juice Mixing Flowchart



From the start we do 5 stage Cip in juice blending unit. 1. Stage 1: PRE-RINSE (Used for evacuation of all solids in line. 2. Stage 2: CAUSTIC WASH – (140° – 185° F) Prevent stuffing with froth. 3. Stage 3: INTERMEDIATE RINSE its guaranteeing legitimate cleaning in line 4.STEP 4: FINAL RINSE the last flush water might be recouped and reused as the pre-wash answer for the following cleaning cycle. 5. Stage 5. Cleaning RINSE May be required to help slaughter microorganisms before

beginning the following generation run. For a long time, different hypochlorite arrangements (potassium, sodium or calcium), otherwise called "hypo," have been utilized as sanitizers in numerous CIP cycles. At that point, we got sugar syrup from Sugar preparing unit the completely clear item goes to dissolver tank at that point goes to Powder configuration line (PDL) It is significant Dry Mixer. At that point goes to Mixing Unit (Pulp + Dumper unit) at that point we gather the example then we send the example for quality test after quality test it goes to focus tank at that point goes to bay blender where combining conc. Test and water then we got completed item.

MICROBIOLOGICAL TEST:

Microbiological test are done to recognize different microorganisms .at the outset we utilizes autoclave for microscopic organisms expel. Auto clave Tem.- 121 Degree C

pressure-15 PSI (Parts per square inch)

time-15 min (Bacteria expel)

Microscopic organisms produce-Toxin, catalyst, some drug.

Auto clave set point Temperature-45 Degree C.

100 Degree C develop microscopic organisms Bacillus

Parasitic 25 Degree C

Just for aseptic microscopic organisms 35 Degree C

Test	Temp.(Degree C)	Time (Hrs.)
TBC	35	48
Y/M	25	72/120
Coliform	35	24

Microbiological test report CSD Unit:

Specification		Methods of test REF. To
Simple Syrup(TBC) Simple Syrup(Y/M) Final Syrup(TBC) Final Syrup(Y/M)		
Final Product (TBC)	Max-50ml	App.pf BDS 860:2001
Finish Product (Y/M)	Max-02ml	App.pf BDS 860:2001
Finish Product (coliform)	Nil/ml	App.pf BDS 860:2001

Treated Water &Drinking water Unit:

Specification		Methods of Test Ref. To
Drinking Water (TBC)	1000/ml	App. K of BDS 1414:2000
Drinking Water (Coliform)	Absent /100ml	App. K of BDS 1414:2000
Drinking Water (Pseudomonas SPP)	Absent /100ml	

Microbiological test report of Environmental Monitoring:

Specification		Methods of Test Ref. To
Air Sample	Grade A<3/m3	WHO
Air Sample	Grade B=10m3	WHO
Air Sample	Grade C=100m3	WHO
Air Sample	Grade D=200/m3	WHO

MICROBIOLOGICAL TEST REPORT OF GHEE & BUTTER:

Specification		Remarks
Butter Total Bacterial Count	<50,000/ gm.	Food &Drug Administration
Butter Total Yeast &Mold Count	<20/gm.	Food &Drug Administration
Butter Total Coliform Count	<10/gm.	Food &Drug Administration
Ghee Total Bacterial Count	Not more than 500gm	Bureau of Indian Standards
Ghee Total Yeast &Mold Count	Absent in 1 gm.	Bureau of Indian Standards
Ghee Total Coliform Count	Absent in 0.1gm	Bureau of Indian Standards

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. Coaches are extremely earnest to us. They have given us sufficient opportunity to attempt to give thoughts regarding various segments of the generation and quality control office totally. Expectation this experience will be helpful in our reality.

THE END