Internship Report on

“Product Manufacturing in IFAD Multi-products LTD”

Submitted to

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Supervised by

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Submitted By

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LETTER OF TRANSMITTAL

Date: 15th November, 2022

Dr. Nizam Uddin

Associate Professor and Head

Department of Nutrition and Food Engineering,

Faculty of Allied Health Science

Daffodil International University Dhaka, Bangladesh.

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 IFAD Multi-products LTD. This report is based on, "Internship Training on Product Developments & Analyzing Product Activities in IFAD Multi-products LTD''. This is the first time the project gave me both academic and practical exposures.

First of all, I have gained knowledge about the organizational culture of one of the leading consumer products 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,

Ridwan

Md Ridwanul Islam

Student ID: 182-34-784

Department of Nutrition and Food Engineering

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Daffodil International University

CERTIFICATE OF APPROVAL

On the behalf of the university, this is to certify that Md Ridwanul Islam, bearing ID: 182-34-784, Program B.Sc. in Nutrition & Food Engineering is a regular student, department of Nutrition & food Engineering, Faculty of Allied health Sciences, Daffodil International University. He has successfully completed his internship program of Three month in IFAD Multi-Products LTD industry on “Product Developments & Analyzing Product Activities” Then he completed this report on 15th November, 2022, under my direction. I was aware that Md Ridwanul Islam has completed his internship report by observing our instructions. In addition, I ensure that his report is worthy of fulfilling the partial requirements of the NFE program.

Nizam

…………………………………

Dr. Nizam Uddin

Associate Professor and Head

Department of Nutrition and Food Engineering

Faculty of Allied Health Science

Daffodil International University Dhaka, Bangladesh.

DECLERATION

This Treatise entitled "Product Manufacturing in IFAD Multi-products LTD" is being submitted to the Department of Nutrition and Food Engineering, Faculty of Allied Health Sciences, Daffodil International University, Ashulia, Savar, Dhaka-1341, Bangladesh as a part of partial fullness of the requirements for the degree of Bachelor of Science in Nutrition and Food Engineering. No part of the work mentioned in the Report has been submitted in support of an application for another degree or certification from this or any other university or institute of learning.

Nizam

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Dr. Nizam Uddin

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Department of Nutrition and Food Engineering

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Ridwan

Md Ridwanul Islam

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Dhaka, Bangladesh.

Acknowledgement

First and foremost, I want to express my gratitude to Almighty Allah for giving me the courage and opportunity to carry out my duties as an intern and submit the report on schedule.

For his unwavering support throughout my organizational attachment term, the department head and my supervisor, Dr. Nizam Uddin, Associate Professor and Head, Daffodil International University, deserve a great deal of my gratitude. I must also express my gratitude to Mr. Sabbir Ahmed, Business Development Manager of IFAD Multi-products LTD, for providing me with such educational opportunities.

My appreciation goes out to the entire NFE Department at Daffodil International University for setting up an internship program that enables the application of theoretical knowledge in practical settings. In addition, I want to thank the entire staff of IFAD Multi-products LTD, my peers, seniors, and colleagues for their wise counsel, inspiring ideas, and support. I must mention the great working environment and teamwork in this organization, which have helped me handle a variety of issues.

Abstract:

My three months of hands-on experience at IFAD Multi-products LTD (IMPL) in Ashulia, Dhaka, Bangladesh, served as the basis for this study. My practical knowledge and experiences in microbiology, the filling section, biscuit production, toasting, baking, ovens, chips, noodles, and other related topics have been greatly enhanced by this internship program.

One of Bangladesh's top industries is IFAD. Its goal is to use profitable enterprises to provide jobs for our fellow citizens and help them obtain dignity and respect because hunger and poverty are both curses. IFAD contributes significantly to the economy of the nation by utilizing local labor, lowering unemployment rates in the still-developing nation, and establishing itself as one of Bangladesh's most prosperous businesses on a commercial level.

They send out this flavor to 15-20 nations every day with their diversified food products in eight different categories, including confectionery, snacks, baked goods, cakes, and biscuits. This is one of the food sectors in Bangladesh to export its product to over 15-20 countries, and so on.

I was graciously selected for an internship with IFAD, which allowed me to watch their operations and get practical experience. They showed their appreciation by providing me with the tools I'll need for my internship to put my studies into practice. This internship provides me with the resources I've been waiting for to put my academic knowledge to use in the real world.

Table of Contents

Chapter 1: Introduction

One of Bangladesh's top producers of consumer food is IFAD Multi Products Ltd. It started out by building one of the biggest automated flour mills in the country, and it now competes to be one of the biggest providers of flour-based goods. Following a comprehensive refining process that contributes to its exceptional quality, the company concurrently established itself as one of the leading providers of salt, both consumer and industrial grade. The company has established itself as a significant producer and supplier of instant noodles, stick noodles, a variety of cookies and biscuits, packaged whole spices, cakes, chips,chanachur, puffed rice and bottled water drawn from nearby aquifers. Besides having one of the biggest automated flour mills, the company also have one of the largest chips plant in South Asia. The company recognizes that its customers are the reason for its success in business, and it is committed to listen and respond positively to their needs. The company has a number of other consumer products in its pipeline which will manifest itself in the near future. All of these businesses are located in its own industrial park

1.1 Mission & Vision:

- To be the No. 1 company in our industry through the commitments to employees, customers and stakeholders.
- Exceed Customer's expectations through passion, continuous innovation and development.

1.2 Values:

- Customer Focus
- Responsibilities
- Aspiration
- Teamwork

Chapter 2: Significance of the Study

Manufacturers of food goods are always creating new products. One of IFAD's greatest benefits is that it is a company in Bangladesh that manufactures a variety of food items stand out from competitors by creating and introducing new products. They differentiate themselves from competitors by developing novel items, including new flavors of chips. Products from IMPL are in demand not just in Bangladesh but throughout the entire world. There is still a lot of advanced study to be done on a variety of food products. The job path for food engineers is particularly unique. The report included information on the production management overview and other topics. However, the subject is relevant to production management since I had the chance to experience every aspect of production management, such as quality assurance, research and development, distribution, and storage.

Chapter 3: Quality Control & Activities

3.1Packaging Material and Their Quality Analysis:

CBB(Corrugated Board Box):

- Length
- Weight
- Height
- GSM(Gram per meter square)
- Text/Print
- Strength

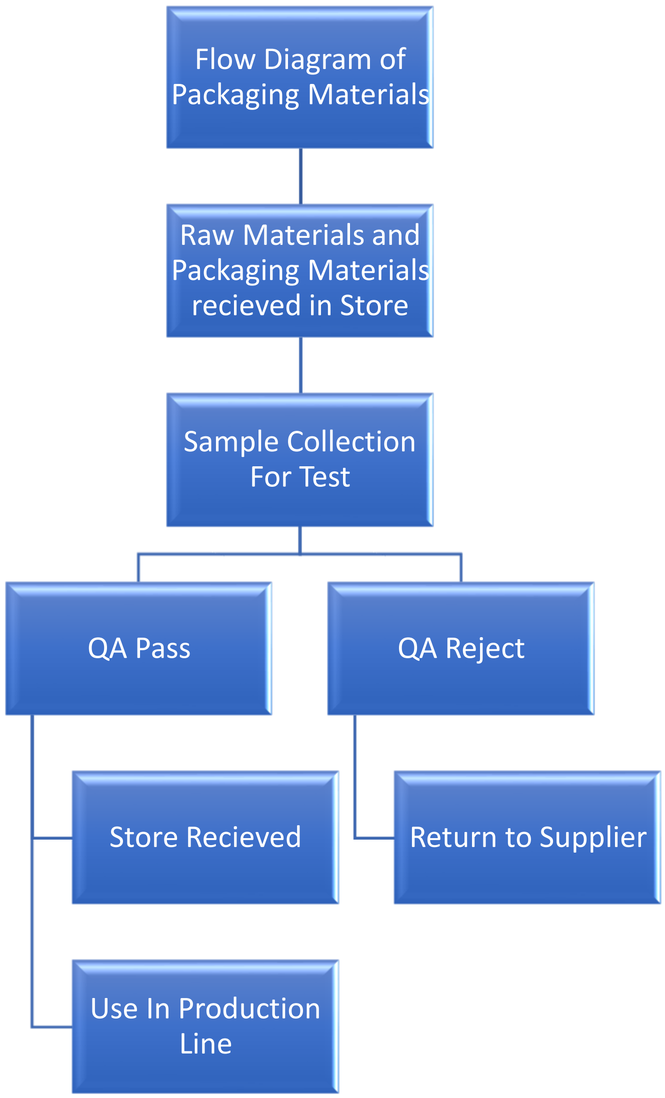
N.B: The upper portion of the packaging material is known as Liner, the bottom portion is known as Media and the mid portion is known as Corrugation.

Wrapper:

- Length
- Weight
- Text/Print
- GSM
- Thickness
- I-mark

N.B: I-mark is used for the ease of machine to cut the packets.

Flow Diagram of Packaging Materials



3.2 Raw Materials and their Quality Analysis:

3.2.1 Wheat Flour:

- **Moisture Test:** Moisture can be tested in two methods.
    1. **Oven Method:** Take some amount of wheat flour and keep them in oven at 105°C for 3 hours
    2. **Digital Method:** Take only 5gm of wheat flour and place it to moisture analyzer and you will get the result.
- **Gluten Test:**
    - ➢ Give the gluten a right amount of wash to remove all the excessive particles
    - ➢ Then pour the washed gluten into centrifuge and you will get wet gluten
    - ➢ And if you put the wet gluten into glutork, you will get dry gluten.

3.2.2 Palm Oil:

- **Moisture test**
- $\boldsymbol{Free\ \ Fatty\ Acids} = \frac{0.1 \times 0.6 \times 28.25}{10}$

  Here, 0.1 = KOH Strength
  0.6= Burrate Reading
  28.25= Molecular weight of oleic acid
- **Peroxide Value Test:**
    - ➢ Take 10gm of palm oil.
    - ➢ Add 10gm of chloroform in it.
    - ➢ Then add 20mL acetic acid
    - ➢ After that add 1mL KI(Potassium Iodide)
    - ➢ Now keep it in a dark place for 5 minutes
    - ➢ Now add 30 mL of distill water
    - ➢ After that add 1mL starch
    - ➢ Then shake it.
    - ➢ At last, do titration with sodium thiosulphate.
- **Iodin Value Test:**
    - ➢ Firstly, 2gm of palm oil is taken
    - ➢ Then 10 mL Chloroform is added
    - ➢ After that, 25mL of Wij's solution is added
    - ➢ Then, shaken for 30 minutes in dark place
    - ➢ Next, 10 mL of KI is added
    - ➢ Then 100 mL of distill water is added to the solution
    - ➢ Lastly, Titration is done with sodium thiosulphate.
    - ➢
- **Saponification Value Test:**
    - ➢ At first, 1.5-2gm of palm oil is taken
    - ➢ Then, 25mL of alcoholic KOH is added
    - ➢ Next, it is heated for 30 minutes in condenser and then being cool down.

- Then,1 drop of phenolphthalein indicator is added.
- Lastly, titration is done with HCl

- **Fat test:**
  - Firstly, 10 gm of palm oil is taken in a thimble
  - And then the fat test is done by the help of Soxhlet apparatus
  - The reagent used in this case is Petroleum Ether.

3.2.3 Salt:

- **Moisture Test**
- **Insoluble Matter Test**
- **pH Test:** It's done by pH meter
- **Purity Test:** It is checked by the titration method with $AgNO_3$(Silver Nitrate)
- **Calcium and Magnesium Test:** Both are done by the titration with EDTA

3.2.4 Finished Goods(FG) Analysis:

- **Physical Appearance**
- **Odor Test**
- **Color Test**
- **Moisture Test**
- **pH Test**
- **Free Fatty Acid Test**
- **Per Oxide Value Test**
- **Fat Test**
- **Ash Test:**
  - 10gm of sample is taken and kept in the muffle furnace for 6 hours at 650℃ temperature.
  - Then the crucible should be cooled at the desiccator of muffle furnace
  - And then the weight is taken

$$\%Ash = \frac{W1 - W2}{Samples\ Weight} \times 100$$

3.2.5 Microbial Test:

- Total plate count (TPC)
- Yeast and Mold
- Coliform

3.2.6 Identification of Yeast & Mold by SDA Agar:

Required Apparatuses:

• Measuring balance

• Beaker

• Conical flask

• Test tube

• Hot-water bath

• Measuring flask

• Pincers

• Spatula

• Inoculation loop

• Petri dish

• Autoclave

• Spreader

• Micro pipette

• Laminar air flow

• Incubator

Procedure:

1) In a conical flask, combine 16.25 g of flavored dextrose agar and 250 ml of distilled water thoroughly. If using SS Agar, increase the amount of agar to 18.90 g.

2) Apply aluminum foil paper to the conical flask's mouth to seal it.

3) To properly dissolve the solution, submerge the conical flask in a hot water bath (45–600°C).

4) After that, autoclave all of the equipment for 30 to 45 minutes at 1210 C and 15 pressure.

5) After autoclaving, place all other apparatuses—aside from the conical flask—in laminar airflow.

6) A conical flask was placed in a hot air bath.

7) Powdered form is used for all solid samples.

8) Put 10 g of the sample and 35–40 ml of the media into the Petri plate.

9) Seal the Petri dish's lid and place it in an incubator set at 25–270°C for 72–120 hours. (Incubation temperatures and times for SS Agar's media are 35-370C for 24-72 hours.)

Determine the total microbial (Yeast and Mold) count last.

Chapter 4: Choco star & Activities

4.1 Raw Materials:

1. Flour
2. Sugar
3. Syrup
4. Palm Oil
5. Ethyl Vanilla
6. Flavor
7. Cocoa Powder
8. Color

Figure 1 Choco Star Biscuit

4.2 Role of Some Chemicals in Biscuit Production:

- Ammonia: Ammonia works as an alkaline chemical leavening agent. It is commonly used as a substitute of baking soda and baking powder.
- Lecithin: Lecithin basically used for reducing the use of eggs and fats. It also helps to produce better quality of mixture. It plays a vital role in the protecting the dough against oxidation
- SAPP or Sodium Acid Pyrophosphate: SAPP is used to provide a moist texture in the biscuits. It maintains the buffer system of the dough in pH range of 7.3 to 7.5

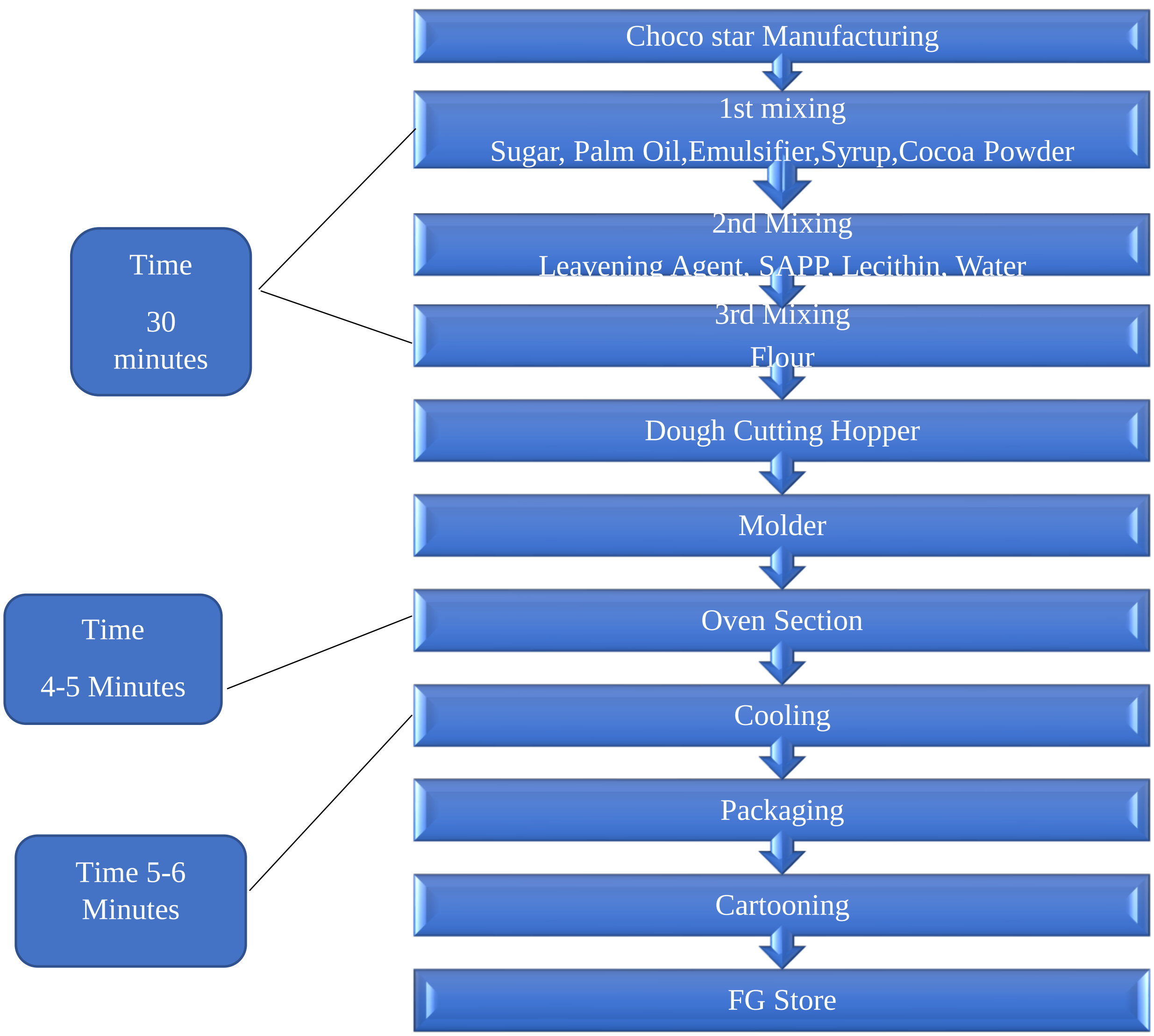
4.3 Manufacturing of Choco star:

1. **Mixing Section:** All the raw materials including the chemicals are mixed here properly to form a dough which will become biscuits after baking. The average weight of per batch is 500 kg. 4 batches are mixed per hour. The average mixing time of per batch is 15-20 minutes in case of soft dough. And it takes 30 minutes to mix a batch of hard dough.
2. **Forming Section:** In this section, the dough gets biscuit shapes to go further for baking. At first, the dough is being put in the forming machine. The dough goes to the laminator zone from the sheeter zone. Then the laminator makes sheets as per requirements Next the dough is sent to the cutting zone. In this zone, the dough is being cut for further procedure. Then the dough goes to the molding zone and gets the biscuits shape as per requirement. The extra dough that remains after all the procedure in the forming section again they are putted to the forming machine to get biscuit shape and to go the oven section.
3. **Oven Section:** In this section, the biscuits are baked to be called as finished goods. The oven has 5 different chambers. The first three chambers are known as chemical zone. All the chemical reactions occur in these three chambers. The fourth chamber is known as baking zone. In this chamber, the biscuits are baked properly. The fifth chamber is known as color zone. The biscuits get required color in this chamber. The average baking time of biscuits is 4-5 minutes

4. **Cooling Section:** In this section, the biscuits are being cooled after baking for 5-6 minutes.
5. **Packaging Section:** Then the biscuits go for sealing and packaging section. After that the finished goods are stored in the FG store zone.
6. **Finished Goods:** 17 pieces per packet
   24 Packets per cartoon

N.B: Per Batch wastage is 5kg approx.

Choco star Manufacturing Flow Diagram



Chapter 5: Kaju Delight & Activities

5.1 Raw Materials:

1. Flour
2. Sugar
3. Syrup
4. Palm Oil
5. Malt
6. Flavor
7. Cashew Nut
8. SMP
9. WMP
10. Color

Figure 2 Kaju Delight Biscuits

5.2 Role of Some Chemicals in Biscuit Production:

- Ammonia: Ammonia works as an alkaline chemical leavening agent. It is commonly used as a substitute of baking soda and baking powder.
- Lecithin: Lecithin basically used for reducing the use of eggs and fats. It also helps to produce better quality of mixture. It plays a vital role in the protecting the dough against oxidation
- SAPP or Sodium Acid Pyrophosphate: SAPP is used to provide a moist texture in the biscuits. It maintains the buffer system of the dough in pH range of 7.3 to 7.5

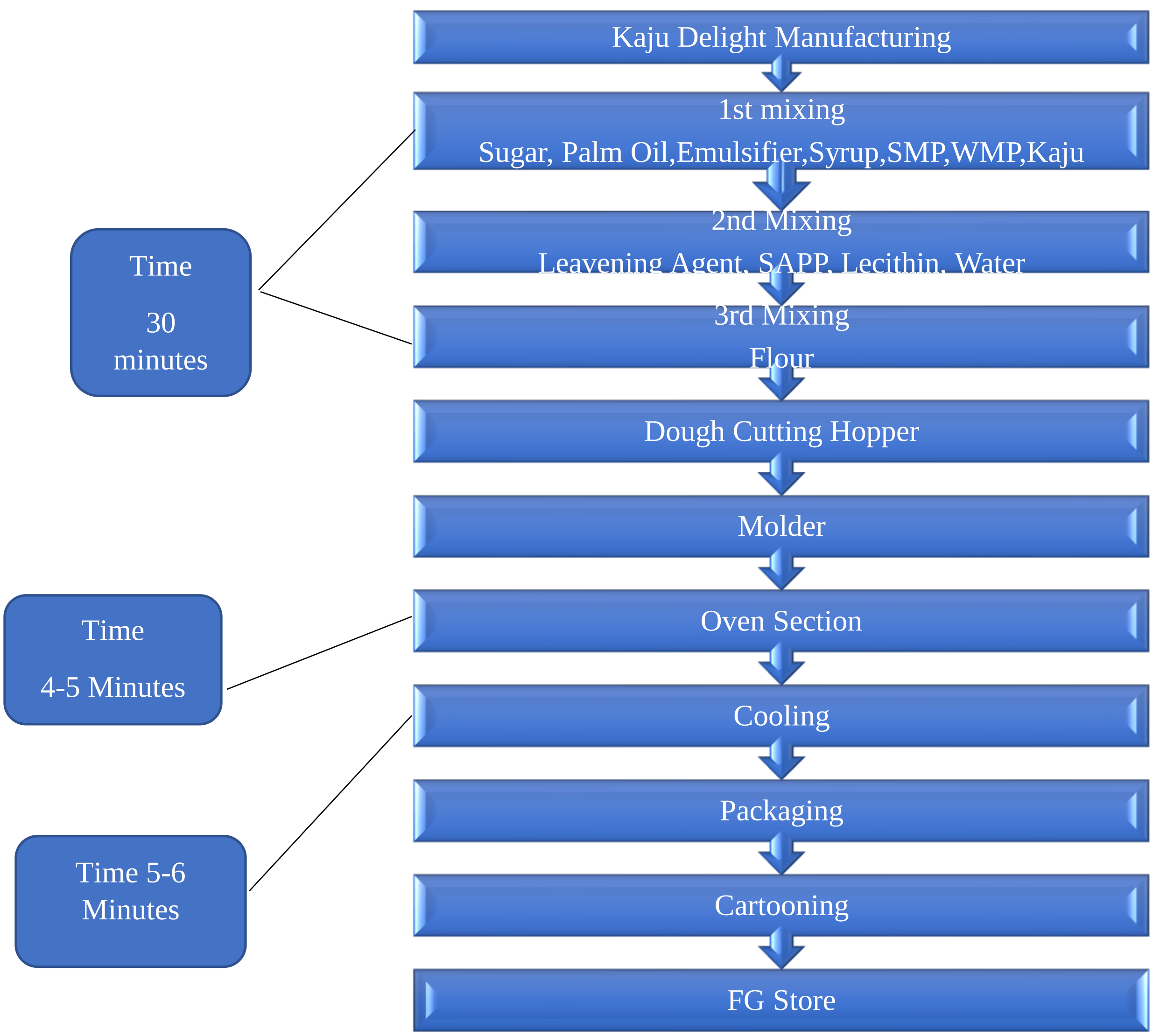
5.3 Manufacturing of Kaju Delight:

1. **Mixing Section:** All the raw materials including the chemicals are mixed here properly to form a dough which will become biscuits after baking. The average weight of per batch is 500 kg. 4 batches are mixed per hour. The average mixing time of per batch is 15-20 minutes in case of soft dough. And it takes 30 minutes to mix a batch of hard dough.
2. **Forming Section:** In this section, the dough gets biscuit shapes to go further for baking. At first, the dough is being put in the forming machine. The dough goes to the laminator zone from the sheeter zone. Then the laminator makes sheets as per requirements Next the dough is sent to the cutting zone. In this zone, the dough is being cut for further procedure. Then the dough goes to the molding zone and gets the biscuits shape as per requirement. The extra dough that remains after all the procedure in the forming section again they are putted to the forming machine to get biscuit shape and to go the oven section.
3. **Oven Section:** In this section, the biscuits are baked to be called as finished goods. The oven has 5 different chambers. The first three chambers are known as chemical zone. All the chemical reactions occur in these three chambers. The fourth chamber is known as baking zone. In this chamber, the biscuits are baked properly. The fifth chamber is known as color zone. The biscuits get required color in this chamber. The average baking time of biscuits is 4-5 minutes

4. **Cooling Section:** In this section, the biscuits are being cooled after baking for 5-6 minutes.
5. **Packaging Section:** Then the biscuits go for sealing and packaging section. After that the finished goods are stored in the FG store zone.
6. **Finished Goods:** 11 pieces per packets
   24 packets per cartoon

N.B: Per Batch wastage is 5kg approx.

Kaju Delight Manufacturing Flow Diagram



Chapter 6: Glucose Biscuit & Activities

6.1 Raw Materials:

1. Flour
2. Sugar
3. Syrup
4. Palm Oil
5. Malt
6. Lecithin
7. Liquid Glucose
8. Flavor
9. Ethyl Vanilla
10. Dextrose

Figure 3 Glucose Biscuit

6.2 Role of Some Chemicals in Biscuit Production:

- Ammonia: Ammonia works as an alkaline chemical leavening agent. It is commonly used as a substitute of baking soda and baking powder.
- Lecithin: Lecithin basically used for reducing the use of eggs and fats. It also helps to produce better quality of mixture. It plays a vital role in the protecting the dough against oxidation
- SAPP or Sodium Acid Pyrophosphate: SAPP is used to provide a moist texture in the biscuits. It maintains the buffer system of the dough in pH range of 7.3 to 7.5

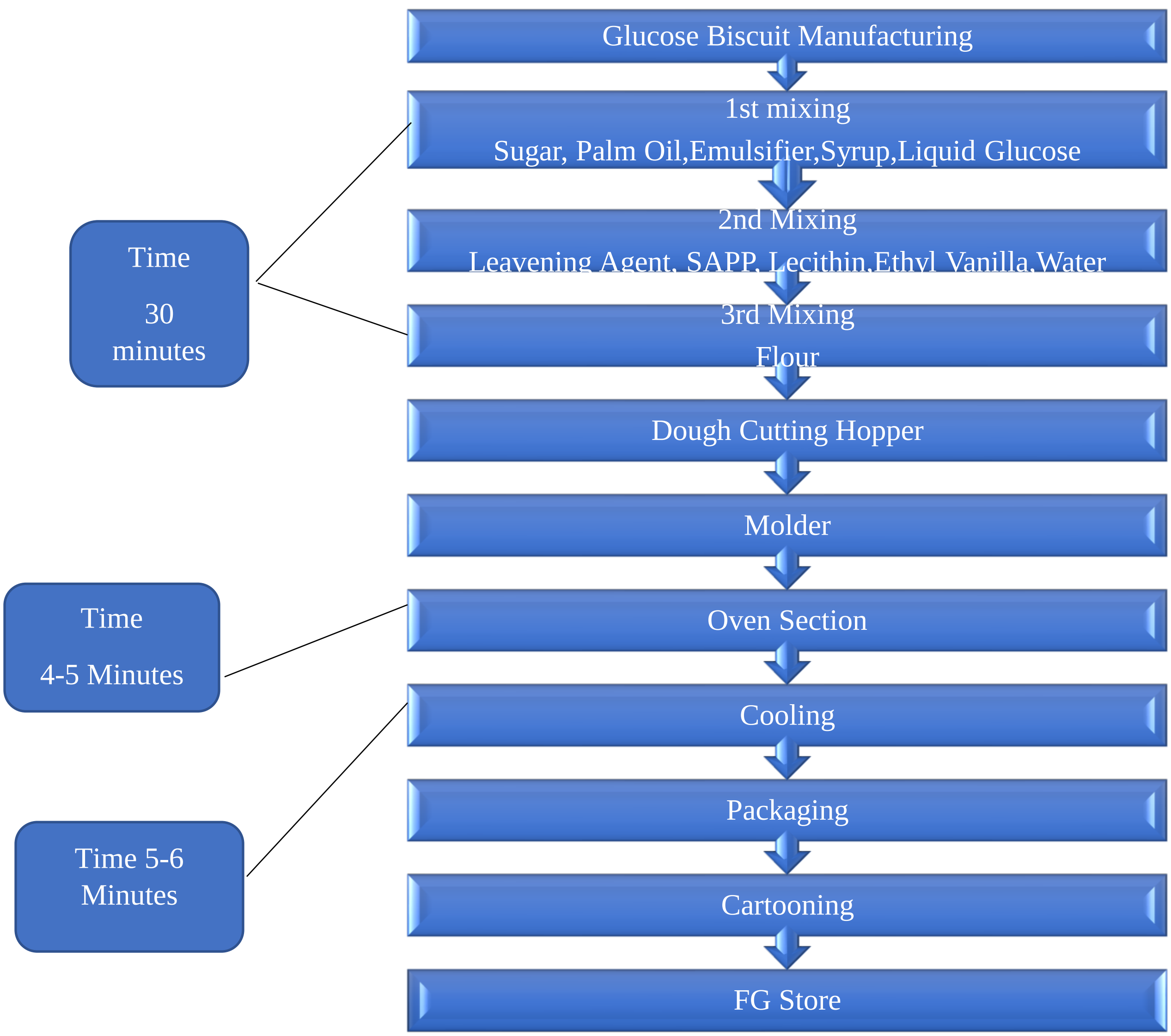
6.3 Manufacturing of Glucose Biscuit:

1. **Mixing Section:** All the raw materials including the chemicals are mixed here properly to form a dough which will become biscuits after baking. The average weight of per batch is 500 kg. 4 batches are mixed per hour. The average mixing time of per batch is 15-20 minutes in case of soft dough. And it takes 30 minutes to mix a batch of hard dough.
2. **Forming Section:** In this section, the dough gets biscuit shapes to go further for baking. At first, the dough is being put in the forming machine. The dough goes to the laminator zone from the sheeter zone. Then the laminator makes sheets as per requirements Next the dough is sent to the cutting zone. In this zone, the dough is being cut for further procedure. Then the dough goes to the molding zone and gets the biscuits shape as per requirement. The extra dough that remains after all the procedure in the forming section again they are putted to the forming machine to get biscuit shape and to go the oven section.
3. **Oven Section:** In this section, the biscuits are baked to be called as finished goods. The oven has 5 different chambers. The first three chambers are known as chemical zone. All the chemical reactions occur in these three chambers. The fourth chamber is known as baking zone. In this chamber, the biscuits are baked properly. The fifth chamber is known as color zone. The biscuits get required color in this chamber. The average baking time of biscuits is 4-5 minutes

4. **Cooling Section:** In this section, the biscuits are being cooled after baking for 5-6 minutes.
5. **Packaging Section:** Then the biscuits go for sealing and packaging section. After that the finished goods are stored in the FG store zone.
6. **Finished Goods:** 9 pieces per packets
   24 packets per cartoon

N.B: Per Batch wastage is 5kg approx.

<u>Glucose Biscuit Manufacturing Flow Diagram</u>



Chapter 7: Butter Delight & Activities

7.1 Raw Materials:

1. Flour
2. Sugar
3. Syrup
4. Palm Oil
5. SMP
6. WMP
7. Butter
8. Lecithin
9. Flavors
10. Vegetable Fat

Figure 4 Butter Delight Biscuits

7.2 Role of Some Chemicals in Biscuit Production:

- Ammonia: Ammonia works as an alkaline chemical leavening agent. It is commonly used as a substitute of baking soda and baking powder.
- Lecithin: Lecithin basically used for reducing the use of eggs and fats. It also helps to produce better quality of mixture. It plays a vital role in the protecting the dough against oxidation
- SAPP or Sodium Acid Pyrophosphate: SAPP is used to provide a moist texture in the biscuits. It maintains the buffer system of the dough in pH range of 7.3 to 7.5

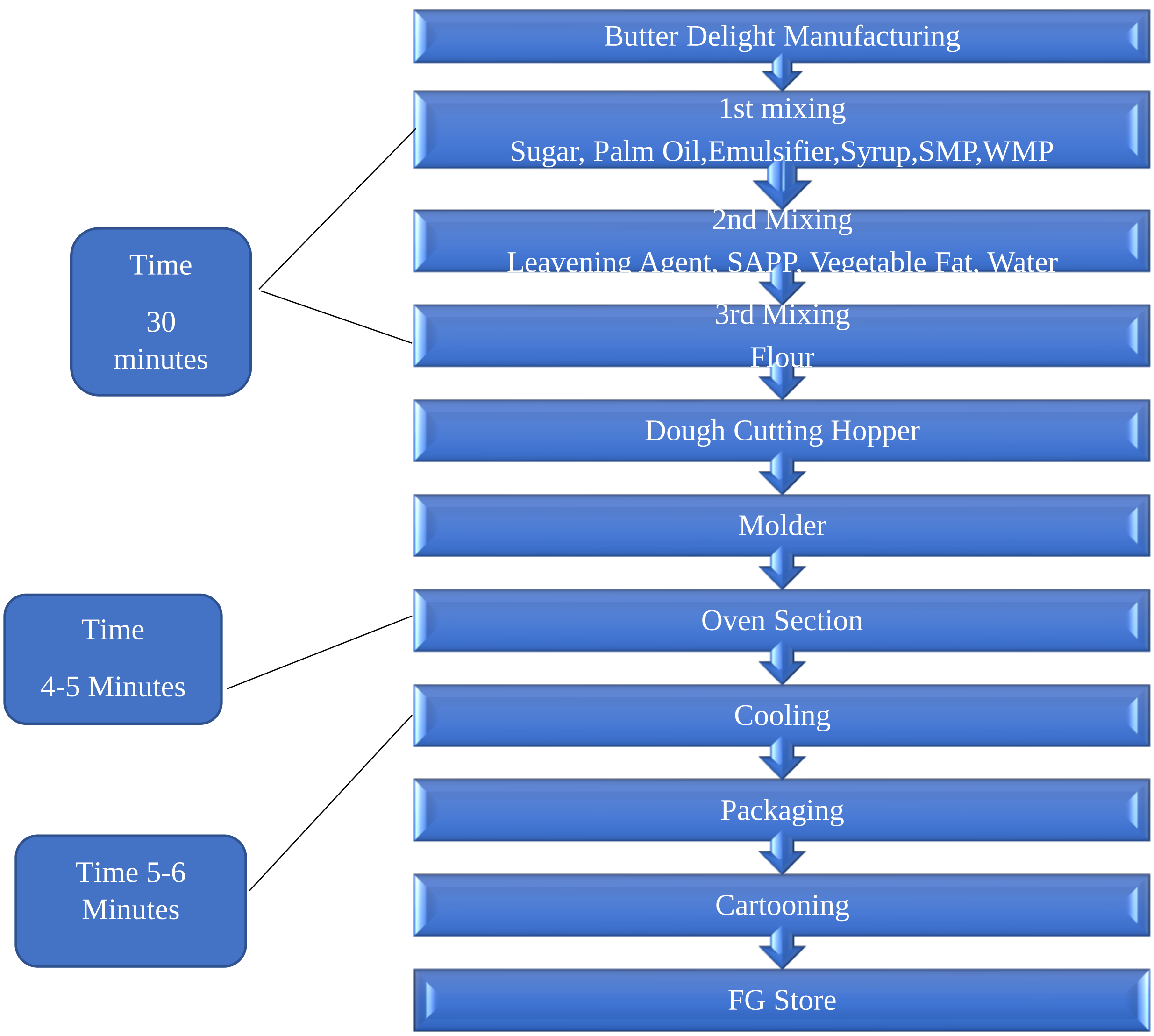
7.3 Butter Delight Production:

1. **Mixing Section:** All the raw materials including the chemicals are mixed here properly to form a dough which will become biscuits after baking. The average weight of per batch is 500 kg. 4 batches are mixed per hour. The average mixing time of per batch is 15-20 minutes in case of soft dough. And it takes 30 minutes to mix a batch of hard dough.
2. **Forming Section:** In this section, the dough gets biscuit shapes to go further for baking. At first, the dough is being put in the forming machine. The dough goes to the laminator zone from the sheeter zone. Then the laminator makes sheets as per requirements Next the dough is sent to the cutting zone. In this zone, the dough is being cut for further procedure. Then the dough goes to the molding zone and gets the biscuits shape as per requirement. The extra dough that remains after all the procedure in the forming section again they are putted to the forming machine to get biscuit shape and to go the oven section.
3. **Oven Section:** In this section, the biscuits are baked to be called as finished goods. The oven has 5 different chambers. The first three chambers are known as chemical zone. All the chemical reactions occur in these three chambers. The fourth chamber is known as baking zone. In this chamber, the biscuits are baked properly. The fifth chamber is known as color zone. The biscuits get required color in this chamber. The average baking time of biscuits is 4-5 minutes

4. **Cooling Section:** In this section, the biscuits are being cooled after baking for 5-6 minutes.
5. **Packaging Section:** Then the biscuits go for sealing and packaging section. After that the finished goods are stored in the FG store zone.
6. **Finished Goods:** 11 pieces per packets
   24 packets per cartoon

N.B: Per Batch wastage is 5kg approx.

Butter Delight Manufacturing Flow Diagram



Chapter 8: Milk Biscuit & Activities

8.1 Raw Materials:

1. Flour
2. Sugar
3. Syrup
4. Palm Oil
5. SMP
6. WMP
7. Malt
8. Flavor
9. Color
10. Lecithin

Figure 5 Milk Biscuit

8.2 Role of Some Chemicals in Biscuit Production:

1. Ammonia: Ammonia works as an alkaline chemical leavening agent. It is commonly used as a substitute of baking soda and baking powder.
2. Lecithin: Lecithin basically used for reducing the use of eggs and fats. It also helps to produce better quality of mixture. It plays a vital role in the protecting the dough against oxidation
3. SAPP or Sodium Acid Pyrophosphate: SAPP is used to provide a moist texture in the biscuits. It maintains the buffer system of the dough in pH range of 7.3 to 7.5

8.3 Manufacturing of Milk Biscuit:

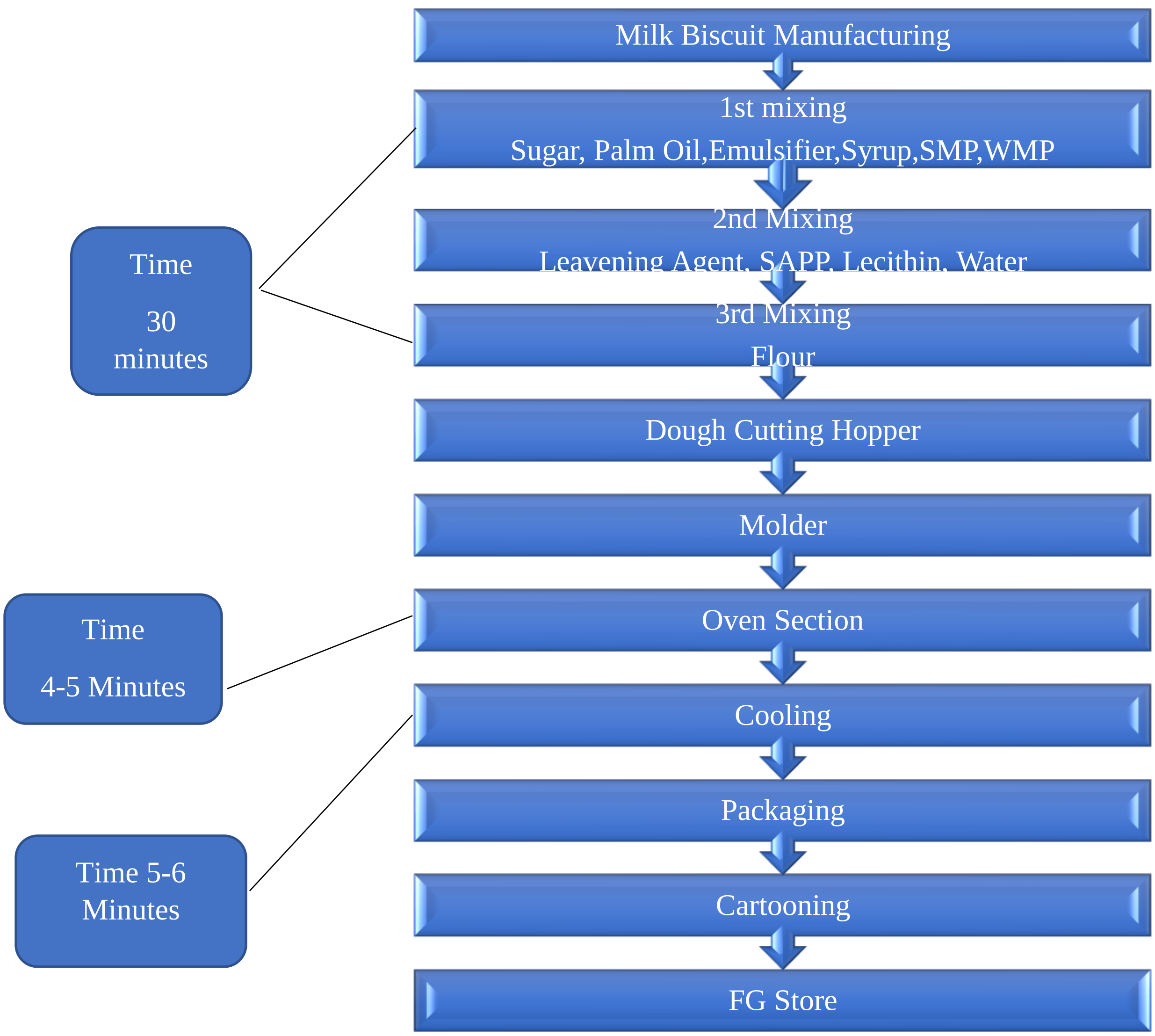
1. **Mixing Section:** All the raw materials including the chemicals are mixed here properly to form a dough which will become biscuits after baking. The average weight of per batch is 500 kg. 4 batches are mixed per hour. The average mixing time of per batch is 15-20 minutes in case of soft dough. And it takes 30 minutes to mix a batch of hard dough.
2. **Forming Section:** In this section, the dough gets biscuit shapes to go further for baking. At first, the dough is being put in the forming machine. The dough goes to the laminator zone from the sheeter zone. Then the laminator makes sheets as per requirements Next the dough is sent to the cutting zone. In this zone, the dough is being cut for further procedure. Then the dough goes to the molding zone and gets the biscuits shape as per requirement. The extra dough that remains after all the procedure in the forming section again they are putted to the forming machine to get biscuit shape and to go the oven section.
3. **Oven Section:** In this section, the biscuits are baked to be called as finished goods. The oven has 5 different chambers. The first three chambers are known as chemical zone. All the chemical reactions occur in these three chambers. The fourth chamber is known as baking zone. In this chamber, the biscuits are baked properly. The fifth chamber is known

as color zone. The biscuits get required color in this chamber. The average baking time of biscuits is 4-5 minutes

4. **Cooling Section:** In this section, the biscuits are being cooled after baking for 5-6 minutes.
5. **Packaging Section:** Then the biscuits go for sealing and packaging section. After that the finished goods are stored in the FG store zone.
6. **Finished Goods:** 17 pieces per packets
   24 packets per cartoon

N.B: Per Batch wastage is 5kg approx.

<u>Milk Biscuit Manufacturing Flow Diagram</u>



Chapter 9: Milk Muffin & Activities

9.1 Raw Materials:

- Wheat Flour
- Eggs
- Sugar
- Salt
- SMP
- WMP
- Palm Oil
- Cake gel
- Baking Powder
- Starch
- Food Color
- Flavor

Figure 6 Milk Muffin

9.2 Role of some chemicals in cake production:

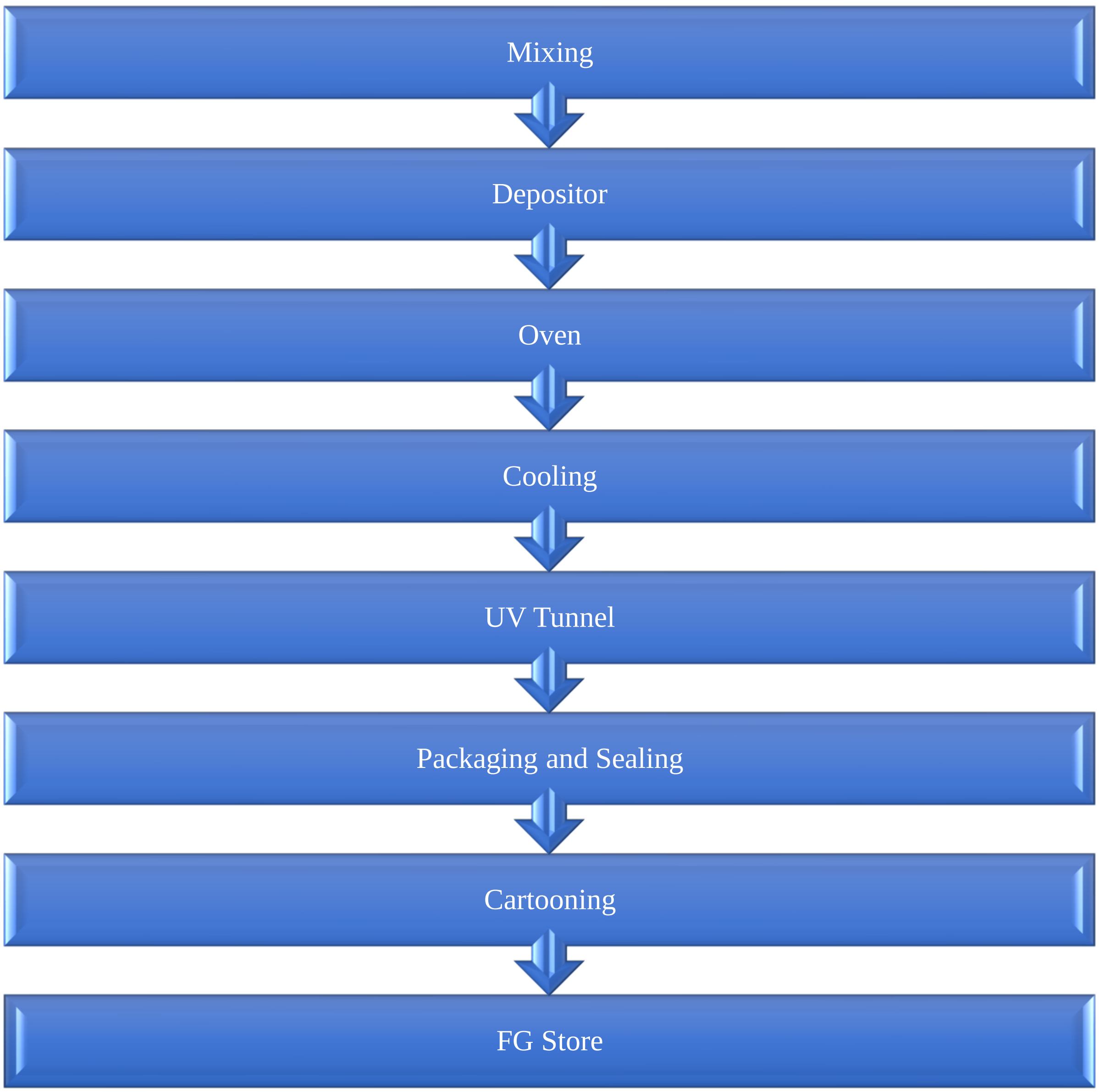
- Sorbitol: It is used as sweetener or moisture-stabilizing agent in case of cake production.
- Sodium Propionate: It acts as an effective inhibitor of the growth of certain molds and some bacteria in cakes.
- Potassium Sorbate: Potassium Sorbate is commonly known as a food preservative and is used to prevent mold, yeast, and microbes in cakes.

9.3 Milk Muffin Manufacturing:

1. At first, sugar, flour baking powder, salt and starch are mixed. Then approx. 30 eggs, flavor and color are mixed. Then cake gel which is instructed by the QC is mixed. When a foam like structure is formed sorbitol and potassium sorbate are mixed in proper amount. Then wait until a proper dough is formed. Then proper amount of water and baking powder are mixed. At last, Starch and Palm oil are mixed. The average weight per batch is 160 kg and the average mixing time per batch is 10 minutes.
2. Next, through the depositor machine the dough is pored into the molds at a fixed weight and then it goes to oven for baking.
3. The oven that is used is a tunnel oven and has three zones. First zone is called chemical zone. The second zone is called baking zone and the third zone is called coloring zone. The average temperature for baking is 160-190°C. And the average baking time is 20-25 mins.
4. After baking is done the cake goes to the cooling zone through conveyor belt and the temperature of the cooling zone always kept between 22-25°C.
5. Then the cakes go through the UV tunnel to destroy any kind of microbial activities.
6. Then the cake goes for packaging and sealing.
7. Then the cartooning is done and 1 cartoon contains 72 packets
8. Then the cartoons are sent to the FG store

N.B: Per batch wastage is approx. 10%.

Flow Diagram of Milk Muffin Manufacturing



Chapter 10: Strawberry Muffin & Activities

10.1 Raw Materials:

- Wheat Flour
- Eggs
- Sugar
- Salt
- Palm Oil
- Cake gel
- Baking Powder
- Starch
- Food Color
- Flavor

Figure 7 Strawberry Muffin

10.2 Role of some chemicals in cake production:

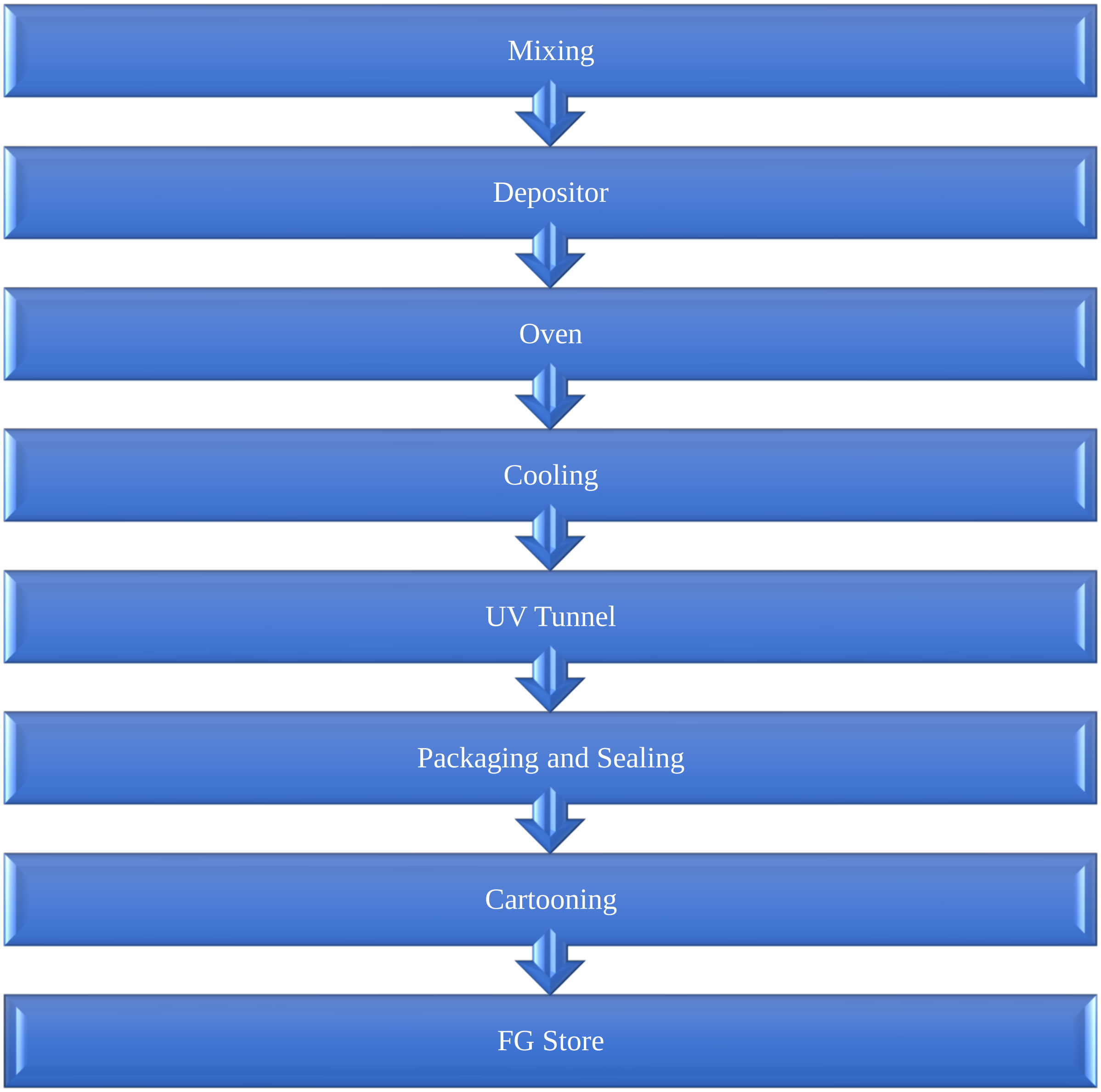
- Sorbitol: It is used as sweetener or moisture-stabilizing agent in case of cake production.
- Sodium Propionate: It acts as an effective inhibitor of the growth of certain molds and some bacteria in cakes.
- Potassium Sorbate: Potassium Sorbate is commonly known as a food preservative and is used to prevent mold, yeast, and microbes in cakes.

10.3 Manufacturing of Strawberry Muffin:

1. At first, sugar, flour baking powder, salt and starch are mixed. Then approx. 30 eggs, flavor and color are mixed. Then cake gel which is instructed by the QC is mixed. When a foam like structure is formed sorbitol and potassium sorbate are mixed in proper amount. Then wait until a proper dough is formed. Then proper amount of water and baking powder are mixed. At last, Starch and Palm oil are mixed. The average weight per batch is 160 kg and the average mixing time per batch is 10 minutes.
2. Next, through the depositor machine the dough is pored into the molds at a fixed weight and then it goes to oven for baking.
3. The oven that is used is a tunnel oven and has three zones. First zone is called chemical zone. The second zone is called baking zone and the third zone is called coloring zone. The average temperature for baking is 160-190℃. And the average baking time is 20-25 mins.
4. After baking is done the cake goes to the cooling zone through conveyor belt and the temperature of the cooling zone always kept between 22-25℃.
5. Then the cakes go through the UV tunnel to destroy any kind of microbial activities.
6. Then the cake goes for packaging and sealing.
7. Then the cartooning is done and 1 cartoon contains 72 packets
8. Then the cartoons are sent to the FG store

N.B: Per batch wastage is approx. 10%.

Flow Diagram of Strawberry Muffin Manufacturing



Chapter 11: Pillow Chips and Activities

11.1 Raw Materials:

- Wheat Flour
- Soya Flour
- Salt
- Emulsifier
- Maize Starch
- Water
- Palm oil
- Seasoning

Figure 8 Pillow Chips

11.2 Role of Nitrogen Gas in Chips Production:

- Nitrogen is used in chips packet because its an antioxidizing agent that prevents the rancidity of the chips.

11.3 Manufacturing of Pillow Chips:

1. Firstly, all the raw materials are mixed well together and a perfect dough is formed.
2. Then, the dough is taken to the extruder machine for the further procedure.
3. After getting a well stream from the extruder machine the dough will go to the dyes machine to get a thin sheet size.
4. Then the sheet are cut into required chips shapes and go for frying in the fryer.
5. The chips are then fried at 160-170℃ for 2-2.5 minutes.
6. After frying then chips go to the seasoning machine to get a well sprinkled seasoning on them.
7. When the seasoning is done the chips then go to the cooling section where a temperature of 20-30℃ is maintained and the cooling is done for 2-3 minutes.
8. Next, the chips go to the packaging section. The chips are being packed very well. Nitrogen gas is inlet through a machine is very important before sealing the packets and it is a must. 1 minipack contains 20 packets of chips and 1 master pack contains 80 packets of chips.
9. Lastly the chips go to the Finished Goods store.

Flow Diagram of Pillow Chips Manufacturing

Chapter 12: Wavy Chips & Activities

12.1 Raw Materials:

- Wheat Flour
- Soya Flour
- Salt
- Emulsifier
- Maize Starch
- Water
- Potato Flakes
- Palm oil
- Baking Powder

Figure 9 Wavy Chips

12.2 Role of Nitrogen Gas in Chips Production:

- Nitrogen is used in chips packet because its an antioxidizing agent that prevents the rancidity of the chips.

12.3 Manufacturing of Wavy Chips:

1. Firstly, all the raw materials are mixed well together and a perfect dough is formed.
2. Then, the dough is taken to the extruder machine for the further procedure.
3. After getting a well stream from the extruder machine the dough will go to the dyes machine to get a thin sheet size.
4. Then the sheet are cut into required chips shapes and go for frying in the fryer.
5. The chips are then baked for 2-2.5 minutes.
6. After frying then chips go to the seasoning machine to get a well sprinkled seasoning on them.
7. When the seasoning is done the chips then go to the cooling section where a temperature of 20-30℃ is maintained and the cooling is done for 2-3 minutes.
8. Next, the chips go to the packaging section. The chips are being packed very well. Nitrogen gas is inlet through a machine is very important before sealing the packets and it is a must. 1 minipack contains 20 packets of chips and 1 master pack contains 80 packets of chips.

9. Lastly the chips go to the Finished Goods store.

Flow Diagram of Wavy Chips Manufacturing

Chapter 13: Instant Noodles & Activities

13.1 Raw Materials:

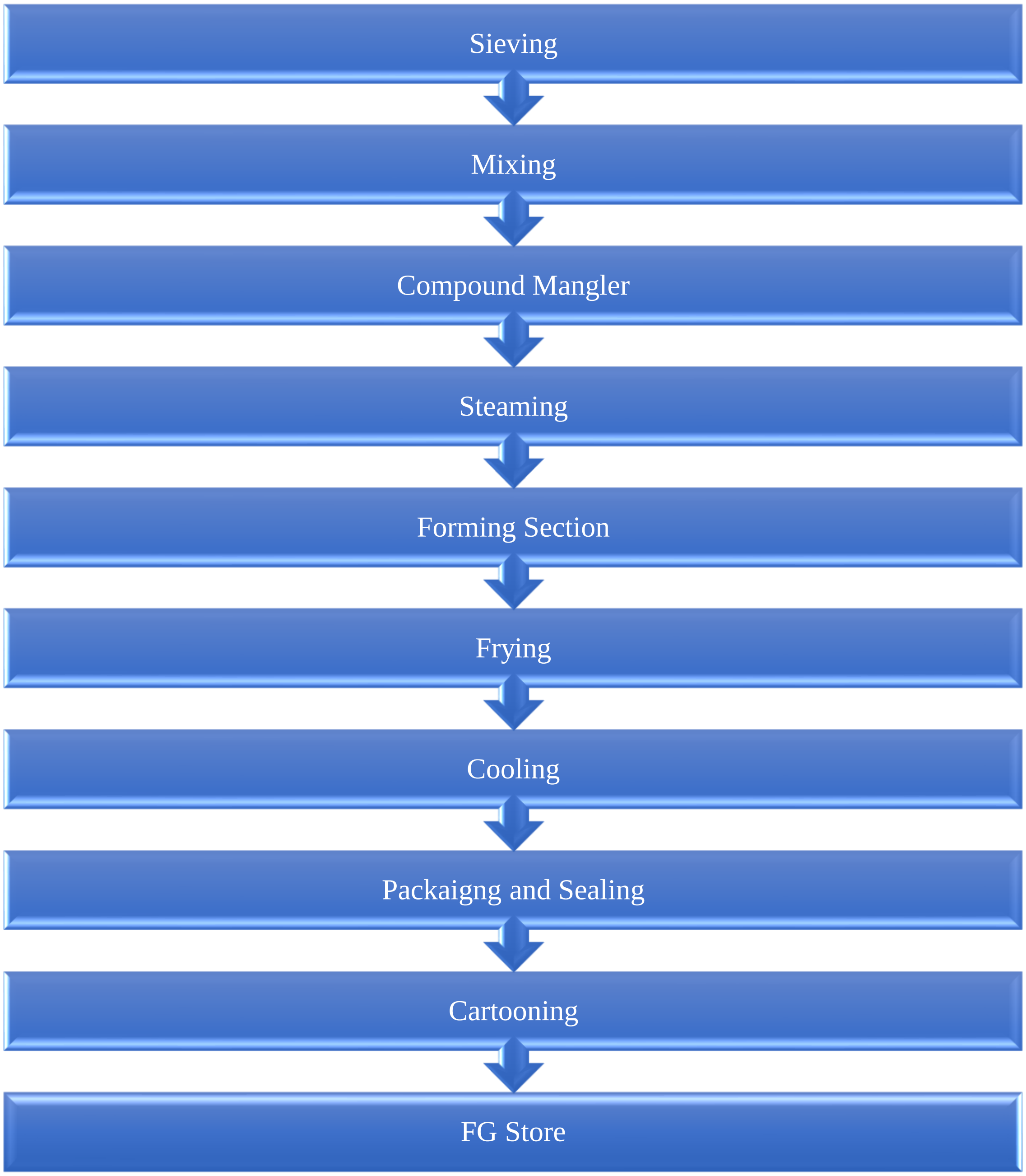
- Wheat Flour
- Salt
- CMC
- Riboflavin
- Palm Oil

Figure 10 Instant Noodles

13.2 Manufacturing of Instant Noodles:

1. At first, the flour is sieved very well.
2. Then the flour goes to the mixing zone where Kansu water is mixed with flour to form a dough. Kansu water is made of salt, CMC and riboflavin.
3. Then the dough goes to the compound mangler where the dough is converted into sheets and then waved and cut into instant noodles shapes.
4. Then the noodles are steamed at 90-95 °C for 5 minutes.
5. Then the steamed noodles go to the forming section for cutting into the require noodles cakes.
6. Next, the noodles cakes are fried at 140-150°C for 2 minutes.
7. After the frying is done the noodles cakes are cooled for 2 minutes in the cooling zone.
8. Next, the noodles cakes go for packaging and sealing. The taste makers are also packed with the noodles before sealing. 1 packet contains 8 pieces of noodles cakes.
9. Then they go for cartooning and 1 cartoon contains 6 packets.
10. Lastly the cartoons are sent to FG Store.

Flow diagram of Instant Noodles Manufacturing



Chapter 14: Muri Toast & Activities

14.1 Raw Materials:

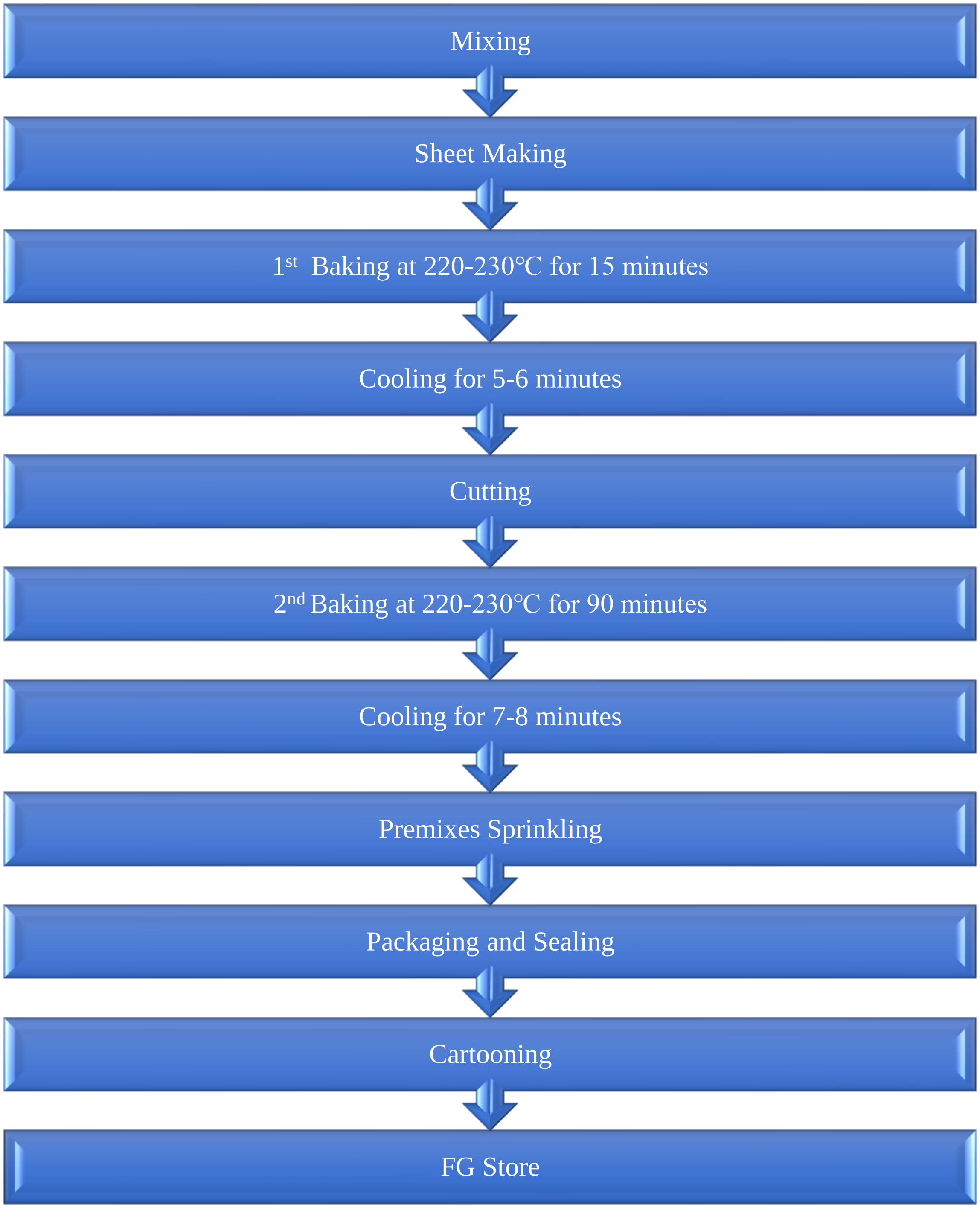
- Wheat Flour.
- Sugar
- Salt
- Yeast
- Palm oil
- Milk Powder
- Sesame
- Black Cumin Seed

Figure 11 Muri Toast

14.2 Muri Toast Manufacturing:

1. At first, sugar and milk powder is mixed. Then flour is added and mixed properly. Then yeast and salt are added to the mixture and they are mixed properly. Then palm oil is added and mixed until the dough gets a good consistency. At last, sesame seeds and black cumin seeds are added and mixed until a perfect dough is formed.
2. Then the dough is taken for cutting into long sheets.
3. When the all sheets are done they are baked in the oven at 220-230℃ for 15 minutes for getting a bread like texture. The oven that is used in this case is rotary oven
4. After the baking is done the sheets are taken out and cooled for 5-6 minutes.
5. Then the baked sheets are cut into muri toast shapes by the help of the cutting machine.
6. Then they are taken into the oven section and are put into the oven for baking at 220-230℃ for 90 minutes. When they are taken out of the oven it is seen they get the toast texture
7. Next, the toast are cooled for 7-8 minutes before going into the further process.
8. Then the premixes of sugar and powder milk are sprinkled on them by the help of a mixture machine.
9. Then they go to the packaging and sealing section.
10. After the packaging and sealing are done the packets sent for cartooning and 1 cartoon contains 4 packets of muri toasts.
11. Then the cartoons are sent to the FG store.

Flow Diagram of Muri Toast Manufacturing



Chapter 15: Conclusion

This three-month internship program at IFAD Multi-products LTD covers both the quality and production areas. One of Bangladesh's top food industry is IFAD. This internship program focused mostly on the biscuits, cakes, chips, and noodles production line. Every production line has its own production area, and every production there adheres to a different CIP (cleaning in place) and SOP (standard operating procedure). I watched each process, from gathering raw materials to producing the goods (such as raw materials storage, shortening, raw materials processing, blending, aging, processing, storage, waste management, remix, QA, and so on). To ensure production quality before, during, and after the process in the particular production line, quality controllers use a number of specialized quality metrics.

Practices for raw materials (RM), packing materials (PM), and completed goods in stores and warehouses are additional actions that are taken in the sector to guarantee product quality for a long time (FG). Low density polyethylene, polypropylene, high density polyethylene, and aluminum foil are some of the materials used to package finished goods.