



FACULTY OF ENGINEERING
DEPARTMENT OF PROCESS AND FOOD ENGINEERING

INDUSTRIAL TRAINING REPORT

KONG GUAN SAUCE & FOOD MFG. CO SDN BHD

2019

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PREFACE

As a requirement to graduate in Bachelor Process and Food Engineering, I had undergone an industrial training at one of the small-medium enterprise which is Kong Guan Sauce & Food Mfg. Co Sdn Bhd. The company is located at Perai, Pulau Pinang and is operated for 6 days per week. The industrial training started from 24th June 2019 till 1st September 2019 for 10 weeks. During the period, I was on leave for 2 weeks starting from 27 July 2019 till 5 August 2019. I extended my industrial training till 6th September 2019 and had been given tasks from my company as a replacement for week 10.

During my industrial training period, I had been placed and trained into 3 different departments which is EAC department, Quality Assurance department and Wastewater department. This training had exposed me to the real working environment in industry as an operator and a QA personnel. As the mission of this company is to meet customer satisfaction, I could experience the strict system of this company in ensuring their products are safe and have high quality. Then, I also had been exposed on the wastewater management of this company.

The following report focuses on the company's background, activities during the training, my experiences and some of the information that I gained from the company.

ACKNOWLEDGEMENT

First and foremost, I would like to thank Kong Guan Sauce & Food Mfg. Co. for giving me the opportunity to undergo my industrial training there for 10 weeks. A lot had happened, and I had been received lot of helps and love from the management and the personnel there.

A special thank and love goes to my company supervisor, Mrs Tan Lye Ean. I am so grateful to have her as my supervisor. She is so an understanding and considerate person. She is lovable and has given me lot of opportunity to learn in the company. Not to forget, great appreciation to the Kong Guan personnel especially in the Quality Assurance department, Mr. Azri, Ms. Afifah and Mr. Firdaus. They provided me a lot of knowledges, guidance and comforts during my training in the department.

Overall, all the personnel in Kong Guan Sauce & Food Mfg. Co. had given me full cooperation and support in all aspects. The whole program gave me such a valuable experience and knowledge to be applied in the future.

Furthermore, I would like to express my gratitude to the Industrial Training Coordinator of Process and Food Engineering department, Dr. Noor Zafira binti Noor Hasnan for the guidance and helps starting from before I got accepted in any company till, I successfully completed my industrial training. Not forget to my visiting lecturer, Dr. Mohd Zuhair bin Mohd Nor that provide full support and guidance during my training.

Last but not least, I would like to thank to my family and friends for cheering me up and always be there to support me till I finish my internship in Kong Guan Sauce & Food Mfg.Co. Again, thank you for all that involve as direct or indirect in making sure the successful of this training.

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CHAPTER 1

1.0 INTRODUCTION

1.1 Company Background



Kong Guan Sauce & Food Mfg. Co Sdn Bhd is a small-medium enterprise company which manufactured variety of products such as chilli sauce, soy sauce, plum sauce, soy bean paste, yeast water and vinegar. It is operated at 2463, Solok Perusahaan Satu, Prai Industrial Estate, 13600 Perai, Pulau Pinang. This company is directed by the Managing Director, Mr. Leong Yoke Hare. Kong Guan Sauce & Food Mfg company has also been in the food industry for more than 70 years. The brand names for this company are Camel brand, Double Camel brands, Single Camel, Dog Head and Kampung. This company also supplies soy sauce for A.Clouet company (Ayam Brand) and Ntuc FairPrice (Singapore). Moreover, Kong Guan Sauce & Food Mfg.Co also manufactured soy sauce to the distributor such as Tormas Enterprise, Dayet Sdn Bhd, Teo Hong Tai Sdn. Bhd and Tiah Trading company. The products from this company are Halal certified products since 1988. It complies to Malaysian Food Regulation 1985, has been certified by HACCP since 2000 and ISO Quality Management System since 2003.

Mission:

- Produce safe and quality products meeting customers satisfaction.

Quality Policy:

- Committed to meeting regulatory requirements and to continual improvement.

Company's Principle Value:

- Quality is our priority
- Teamwork
- Transparency
- Learn from mistake

- Management by result
- Integrity
- Proactive
- Win- win

Environmental, Health and Safety Policy

1. Health and Safety of Our Employees

Provide a safe and pleasant work environment for our employees and conduct all operations in such a manner to minimise risk to their health and safety.

2. Protection of the Environment

Conduct all operations in such a manner that protects the environment quality of the states, countries and communities in which Kong Guan facilities are located.

3. Compliance with Environmental, Health and Safety Laws and Regulations

Comply with relevant environmental, health and safety laws and regulations of those communities, states and countries in which Kong Guan facilities are located. Support and contribute to the development of scientifically based, effective environmental, health and safety laws, regulations and standards to protect public health, safety and the environment.

4. Product Design, Manufacture and Disposal

Incorporate environmental, health and safety criteria and regulatory requirements in the design, manufacture, service and ultimate disposal for our products.

5. Energy and Resource conservation and Pollution Prevention

Minimise energy and materials consumption in the design of products and processes and in the operation of our facilities. Actively promote recycling materials, including hazardous waste, whenever possible. Minimise the generation of hazardous chemical discharge and non-hazardous waste from Kong Guan facilities.

6. Communication

Promote sound environmental, health and safety principles and practices by open communication with employees, government, communities, customers, universities and industry groups.

1.2 Company History

Kong Guan Sauce & Food Mfg.Co Sdn Bhd was initiated even before the world war II. The business was started in 1945 by two siblings which were Mr. Leong Mun Tong and Mr. Leong Mun Pun. At that time, they were only twelve years old and eight years old respectively. The business was done in a small scale which was by riding their bicycles to houses and shops.

In 1948, a site located in Jalan Dato Keramat, Pulau Pinang was chosen as the location for this company. Previously, this company was known as Kong Guan Tee Kee. Later, this company moved to another location which was in Bagan Ajam, Butterworth. This company was well-established and well-known to other states of Malaysia which included Perak, Perlis, Kedah, Sabah and Sarawak. Due to the rapid progress by company and high demand from customers, they decided to change the location of company to a more suitable and strategic site. Therefore, they got a site with 3-acre of area at Solok Perusahaan Satu. The development of this new factory was equipped with modern technologies and was done by Mr. Leong Yoke Hare, son of Mr. Leong Mun Tong. Till now, their market covers all states in Peninsular and East Malaysia, and their products are also exported to Brunei, Thailand, Indonesia, Singapore, China and Hong Kong.



Figure 1: Selling sauce by bicycle



Figure 2: First location of company

1.3 Organization Structure

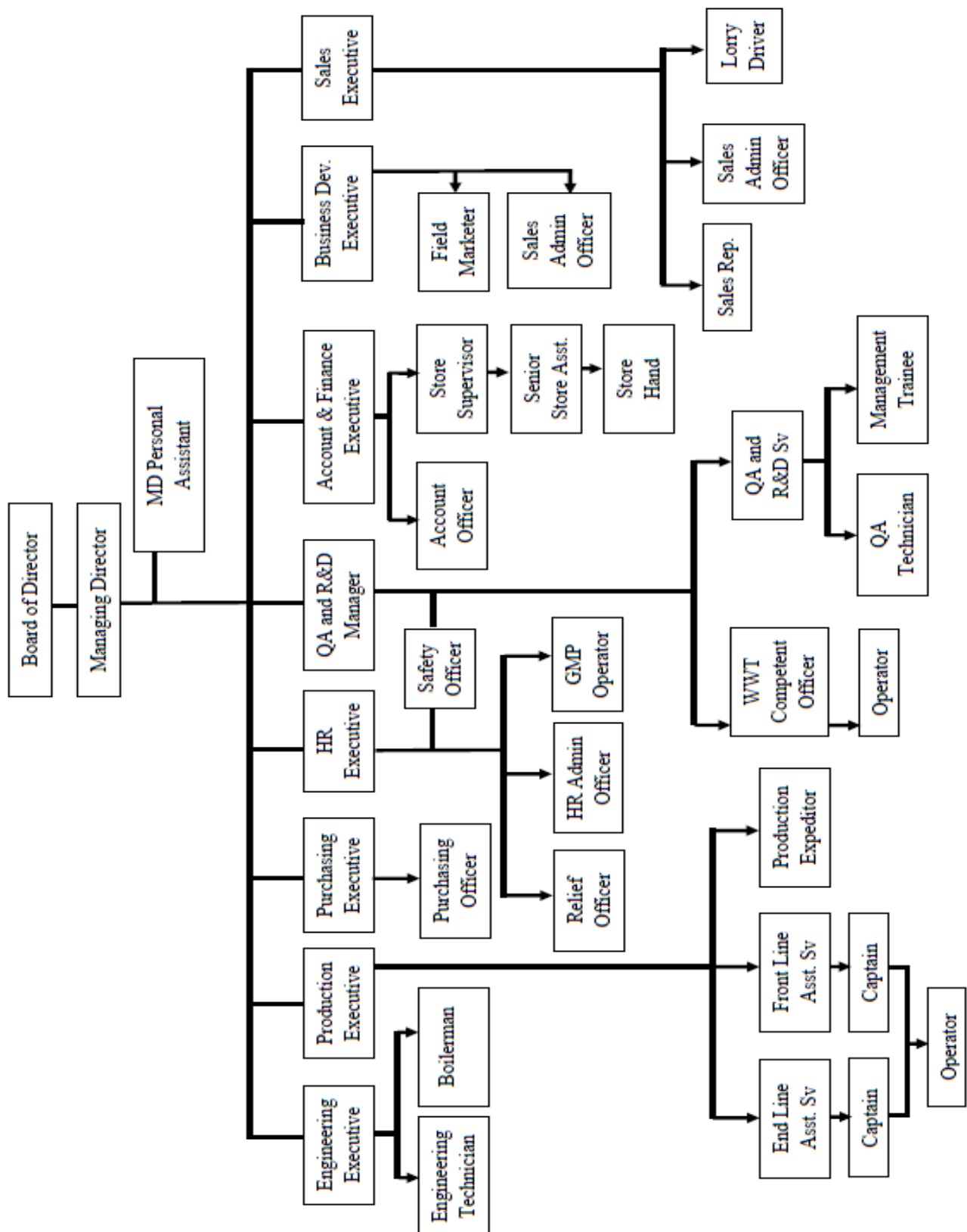


Figure 3: The organizational chart of company

CHAPTER 2

2.0 INDUSTRIAL TRAINING ACTIVITIES

2.1 Programmes and Activities

In 10 weeks of industrial training in Kong Guan & Food Mfg. Co. Sdn. Bhd., I had been assigned to several departments such as EAC department, Quality Assurance department and Wastewater department. EAC department involves in filling the soy sauce into the bottles till loading the products onto the pallet. In Quality Assurance department, they run the R&D tests, run the chemical analysis, maintain and ensure the Halal, GMP, HACCP and ISO:9001 systems are implemented. Then, in wastewater treatment department, they treat the wastewater from all departments and ensure the safety and cleanliness of the wastewater to be discharged into the drain.

Table 1: Summary of activities by week

Week	Activities
1	i. Great Game Of Business (GGOB) meeting ii. Plant visit iii. CCM meeting iv. Study of safety on noise and laboratory chemicals v. Assessment of safety on noise and laboratory chemicals vi. Traceability of documents
2	i. Bottle loading ii. Cap sealing iii. Folding of carton tray iv. Shrink wrapping v. Packing of products into carton tray
3	i. Traceability of documents ii. Briefing for incoming QA inspection iii. Inspection of raw materials and labels iv. Samples taking for bottle, cap seal and cap. v. Measurement of bottle, cap seal, cap and label vi. Shrinking test for cap seal vii. Leaking test for bottle and cap

4	i. Samples taking of plastic bottles, stretch films, cap seal, carton trays and labels ii. Shrinking test of cap seal iii. Measurement of plastic bottles, stretch films, cap seal, carton trays and labels. iv. Leaking test of plastic bottles v. Inspection of raw materials, labels and carton trays vi. Rejection of incoming item
5	i. Participation in Effective Supervisory Skills and Leadership Workshop ii. Samples taking of glass bottles, soy bean, labels, and carton trays. iii. Leaking test and sliding test for glass bottles. iv. Soaking test for soy bean v. Inspection of raw materials vi. Tagging of packaging bag for coarse salt vii. Discussion with senior colleague (QA technician) on reference card
6	i. Samples taking of flip top cap, labels, PET bottles, tub and cap seals. ii. Personal hygiene inspection iii. Taking fingerprints of workers using BPA and MacConkey agar iv. Result analysis of the fingerprints v. Inspection of raw materials vi. Measurement of cap, labels, bottles, tub and cap seals. vii. Leaking test of bottles, tub and cap. viii. Collection of data and items for each product (Kong Guan Sauce, NTUC Product, A.Clouet Product and 1st Grade Product) ix. Preparation on example of reference card.
7	i. Inspection of incoming items. ii. Getting feedback from HOD on example of reference card iii. Collecting picture of products through Internet and photo shooting. iv. Discussion with senior colleague on organizing the details on reference card. v. Preparation for reference cards.

	vi. Hand in the reference cards to HOD to be reviewed and send to EAC department. vii. Discussion with senior colleague on making the reference cards into booklet form. viii. Rejection of carton tray.
8	i. Photo shooting of reference cards for booklet task. ii. Tagging of packaging bag for coarse salt iii. Inspection of labels and salt. iv. Rejection of labels v. Collection of details and items for distributor products vi. Preparation of reference card for distributor products. vii. Hand in the reference cards to HOD to be reviewed and send to EAC department. viii. Printing of products booklet ix. Filing and documentation for rejected form. x. Searching of terms and info for HACCP, ISO 9001, Halal and company's principle values. xi. Study of ISO 22000 and ISO 9000.
9-10	i. Folding of carton trays ii. Cap sealing iii. Labelling and shrink wrapping of taucheong iv. Inspection of raw materials and label v. Samples taking of labels, bottles, caps, carton trays and tubs. vi. Measurement of bottles, label, caps, carton trays and tubs. vii. Leaking test for caps and bottles. viii. Sliding test for glass bottles. ix. Wastewater treatment visit x. Sample taking of wastewater from SBR, culture and EQ tanks. xi. pH reading of wastewater xii. Checking of smell, sludge volume, foam and supernatant of the wastewater from the tanks. xiii. Briefing of incoming QA tasks to colleague.

CHAPTER 3

3.1 INVOLVEMENT IN PRODUCTION (EAC DEPARTMENT)

3.1.1 Process Description

In the EAC department, there is a machine called EAC Machine Filler which is specialized for filling the soy sauce into the bottle. The machine also handles the capping and labelling of the bottle. Light soy sauce such as Dog Bot, Double Camel, KK Tan, LSK, KK TAN SC, KK TAN DC, NTUC Superior and NTUC Standard are processed into finished product by using this machine. Meanwhile, for thick soy sauce, only Taj Mahal, NTUC Superior Dark and NTUC Standard Dark use this machine for the process of filling, capping and labelling. The other thick soy sauce such as Dark Sauce King and DS II are filled in manually at the other department.

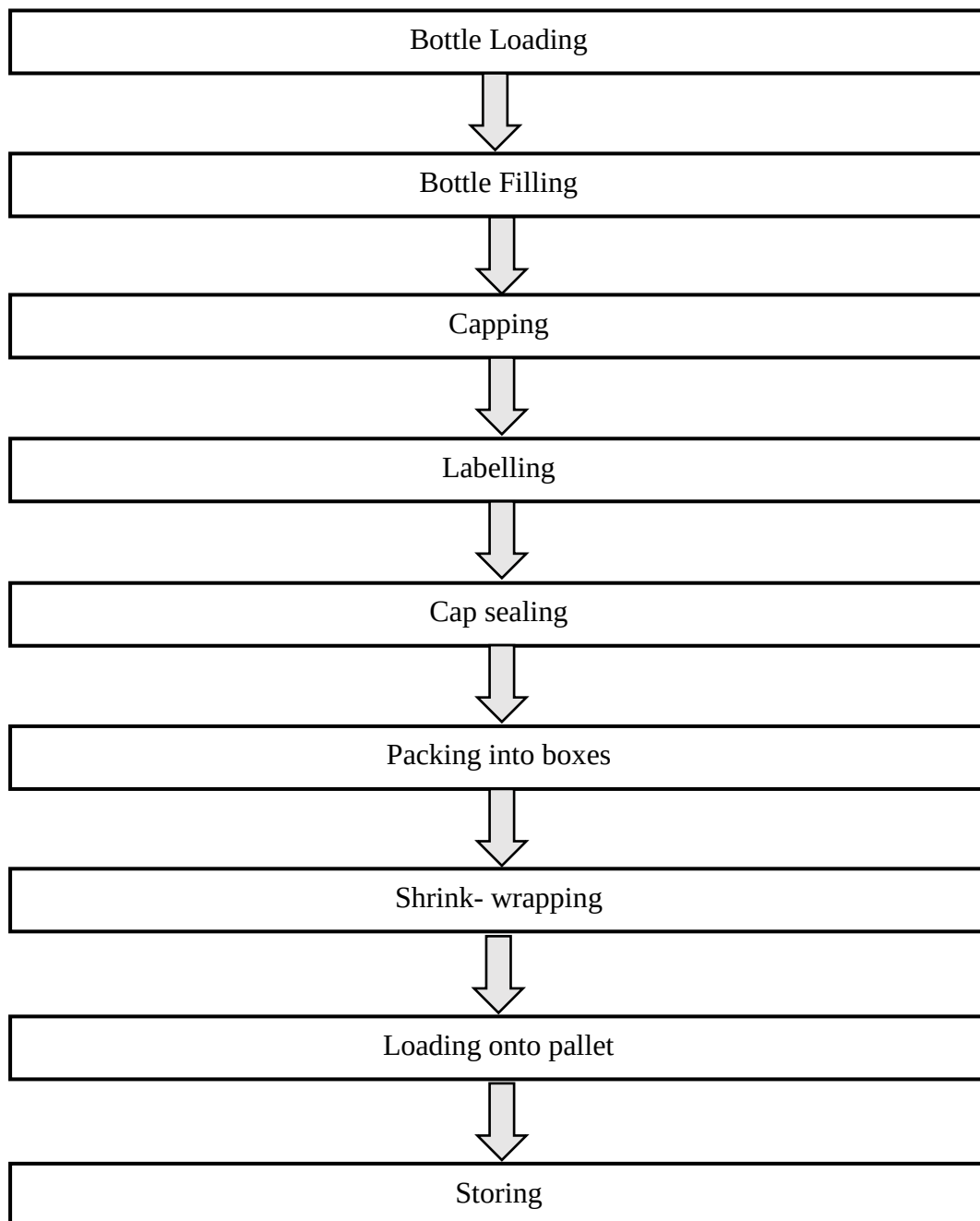
Before the production process in the EAC department begins, the works such as folding the carton trays, cap sealing, loading the bottles on the conveyer and packing the products into the boxes will be assigned to the operators by the End Line Assistant Supervisor.

Firstly, the machine will be set up by the engineering technician. They will adjust the size of the conveyer according to the type of bottle, put the caps in the cap compartment of the machine and adjust the sensor at the labelling unit. They also will load the soy sauce drum at the respective area, outside the EAC chamber. Meanwhile, at the same time the worker will fold the carton trays into boxes and load the bottles on the conveyer.

When the line begins, the bottles on the conveyer will be sanitised by using P3 Oxonia solution. Then, the sanitised bottles will next go to the filler section for filling of soy sauce. The bottles that have been filled, will then undergo the capping process. Next, the bottles will proceed to the labeller unit where the caps on the bottles will be printed with the details such as expired date, batch number and the price. Label is then put when the bottle on the conveyer is detected by the sensor. The next process is cap sealing. The workers that stand beside the conveyer will insert the cap seals into the bottles before they go inside the heat chamber for cap seal shrinking.

The following process is the packing of the products into the boxes. At this section, the operator needs to select the products that meet the specification before packing them into the boxes. One QA technician will inspect again the boxes to ensure the good quality of the finished products before shrink-wrapping is done. The products that have been shrink-wrapped will then be arranged on the pallet for storing.

The flow of the process in the EAC department is as below:



3.1.2 Task Description

1. Preparation of packaging materials

- Take the bundles of carton tray from the store according to the type of bottles used.
- Put the sticker on every carton tray. Each month has different colour of sticker. For instance, blue sticker for June and orange for August.
- Fold the carton tray into box.
- Staple the box
- Put the boxes on the conveyer for packing task.



Figure 4: Folding of carton trays into boxes by a worker

2. Loading of bottles on the conveyer

- Put on the mask and gloves during loading the bottles on the conveyer.
- Unwrap the cover of the bottles on the pallet and put it aside properly.
- Take the bottles on the pallet and arrange them on the conveyer carefully.
- Ask the forklift driver to load the bottles pallet at the bottle section when the current bottles are about to run out.
- The number of bottles left in the pallet needs to be counted and reported to the supervisor at the end of session.
- The bottles left in the pallet needs to be wrapped properly to avoid any damage and other matter.

- Put the trash such as plastic wrapper and rope from the bottle pallet at the designated area.



Figure 5: Loading of the bottles by a worker

3. Cap sealing of the bottles

- After filling and capping process of the bottles by EAC filler machine, insert the cap into the bottles.
- During this process, the caps and labels on the bottles are inspected to ensure they meet the specification.

Specification:

- a) Cap : - The cap has printed expired date, price and batch number
 - Caps are fully and properly inserted at the mouth of the bottles.
- b) Label: - No crumple and slanted label



Figure 6: Cap sealing of the bottles by a worker

4. Packing of bottles in the boxes

- Select the bottles that meet the specification and ensure the boxes are packed with the right number of bottles. For example, 12 bottles need to be packed for 640 ml round bottle.
- The specification:
 - The cap seal well shrinks around the neck of the bottle and cap.
 - The cap is printed with clear, neat and sufficient required details and properly fitted into the bottle.
 - The label has no sign of any stains, no damage and in good slanting tolerance.



Figure 7: Packing of bottles in the box by a worker

3.1.3 Assessment in EAC Department

Challenges

1. Hot working environment

At the EAC department, there is no air-conditioning system and there are only fans. Not all areas of the department can be reached or covered with the fans. Therefore, most of the time, I always in sweat during completing my tasks.

2. Miscommunication during folding of carton trays and loading of bottles.

As I was a newbie at the department, I always asked to the other operator about the type of carton trays used before folding them into boxes. There was one time, when the operator told me the wrong information about the product and carton trays needed to be used. We ended up folding some amount of wrong carton trays and needed to start again when the other operator who was responsible in packing noticed about this matter.

Then, during my first task of loading the bottles on the conveyer, there was also miscommunication on dumping the trashes of plastic wrapper and rope from the pallet. I was informed from one of the operators to dump all the trash at the same place. However, after few times dumping the trashes at the same place, I was told that the rope and the plastic wrapper should be dumped at different location.

3. Body ache during and after the bottle loading task

My body aches a lot when I did the bottle loading. This is because sometimes I need to bend my body to take the bottles at the lower part of the pallet. Meanwhile, I also need to step on and step down the bench repetitively to reach and take the bottles at the high part of the pallet. This repetitive and fast movement affected me so much when I needed to the task for the whole day and for the following days.

4. Fast and repetitive work

At the beginning of the task such as loading the bottle on the conveyer, it was quite challenging as to keep my pace as fast as the line was. Repetitive work for the whole day also made me worn out. However, I managed to cope with the challenge after doing it few times.

Knowledges/ Skills Gain

There are a lot of things that I had learnt during my internship period at EAC department. First and foremost, I learnt on the process flow of the finished products in the EAC department. It starts with the filling of the soy sauce till storing of it at the store. I also found out that the loaded bottles on the conveyer will be rinsed and sanitized with P3 oxonia solution. As for the caps, they are rinsed with steam before capping process is done.

Then, I also learnt the technique of folding the carton trays as there are few types of carton tray with different folding patterns. As to keep the boxes intact, I also learnt on the correct technique of using the stapler as it was a new device to me. If I handled it wrongly, the carton tray would have some damage and may not properly stay connected.

Furthermore, I also learnt on the standard quality of the products at Kong Guan company. Even to the trivial thing such as putting the monthly stickers on the boxes needs to be taken seriously and ensures it is standardized to each other. I learnt that when it comes to the quality of the products, slight mistake or damage is already considered big.

Moreover, as to keep myself at ease, I always make sure to upgrade my performance while working on my task. I managed to handle my time wisely when the production line is working on. For example, during folding the carton tray, I would make sure to finish my task ahead of time as it will be easy for me to go the restroom or to pray without worrying about short of boxes for packing. Last but not least, I learnt that an effective communication is vital in keeping the smoothness of a process.

3.2 INVOLVEMENT IN QUALITY ASSURANCE

3.2.1 Description of activities

1. Inspection of incoming items

In the Quality Assurance department, I had been given responsibility by my supervisor to do the quality assurance inspection of the incoming items. The incoming items included raw materials, food chemical, packaging materials, labels, shrink wrapper, pallet and others. All the data of the incoming items will be recorded in the incoming log book. I also needed to fill in the PRP form and hand in to my supervisor. The PRP form contains the specification for the incoming items.

There are a lot of raw materials used in my company such as wheat, salt, sugar, soy bean, seed koji, celite, caramel, MSG, yeast extract, malt extract, calamansi puree, chilli powder, salted plum, soy powder, garlic flakes and vinegar. When those materials come, I would need to do the inspection according to the procedure. Then, one of the raw materials that I need to do the test is soy bean which requires me to do the soaking test.

As for the packaging materials, they include bottles, tubs, carton trays, cap seals and caps. There are few types of bottles used in bottling the products in my company which are glass bottles and PET bottles that come with several shape and size. The bottles required me to do the measurement, leaking test and sliding test only for the glass bottles. All the packaging materials listed above need to be recorded their dimension and checked for their Certificate of Analysis. The other things that need leaking test are also tubs and caps. Cap seals would require me to do the shrinking test.

During inspection, there would be a process of approval or rejection of items. The items that meet the major specification of quality assurance would be put with approved sticker. Meanwhile, for the items that fail to meet the specification, will be reported to the supervisor and obtain the approval from the Head of Department (HOD) to reject. After rejection has been approved, rejected form and rejection notice need to be written. A copy of rejection notice will be sent to the Finance and Purchasing departments. The items also would be put with reject stickers and a copy of rejected form.

2. Personal Hygiene Inspection

During this inspection, three interns including me were involved. We were needed to go to the departments involved to check the personal hygiene and take the fingerprints of the worker by using BPA or MAC agar.

During the personnel attire and self-hygiene inspection, there were few things that needed to be checked which were:

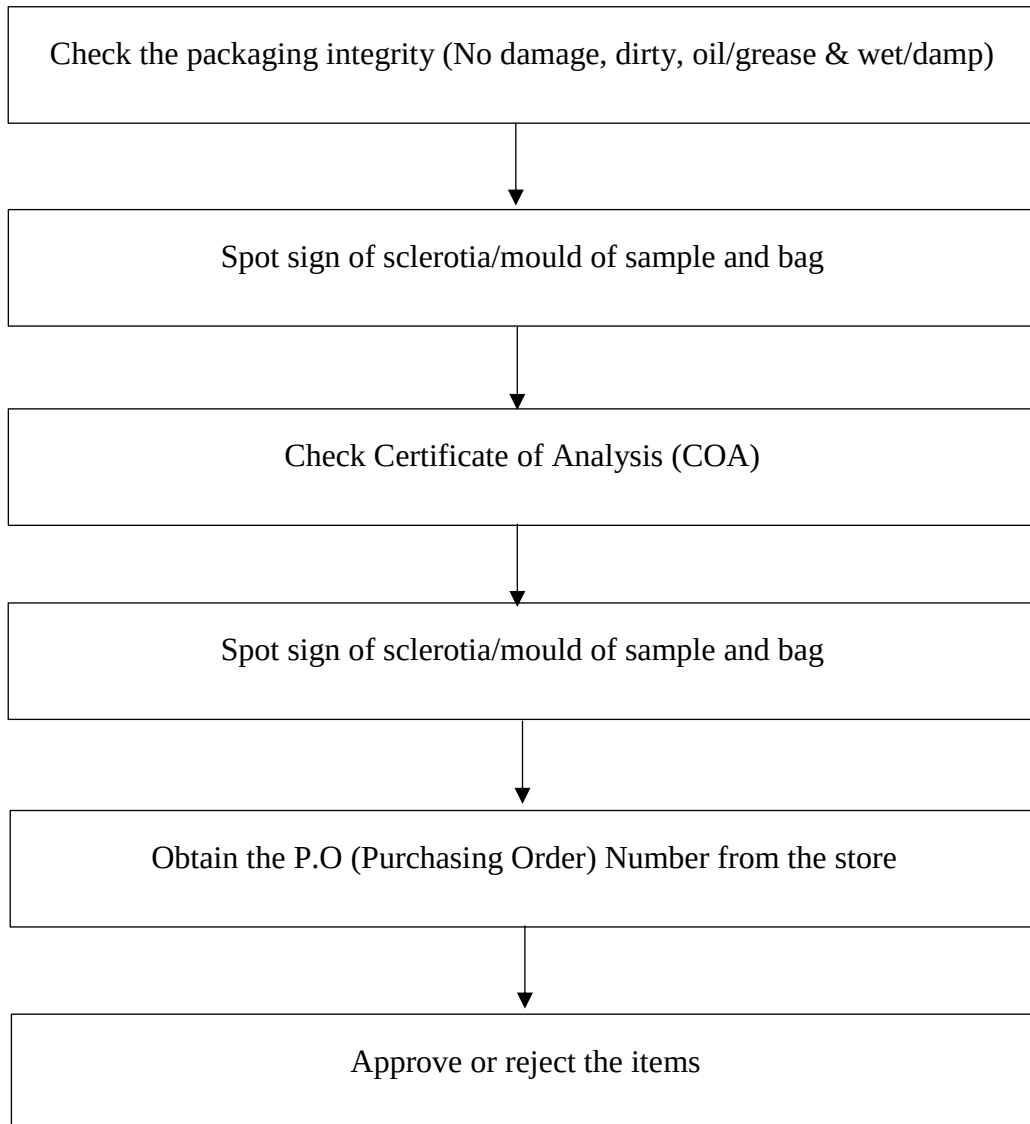
- Cleanliness and the length of the nails
- Proper shoes according to the field of works is worn.
- The head gear is worn properly.
- Ensure no jewelleries such as ring, necklace and earring are worn by the personnel.

3. Filling and documentation

During this activity, I needed to organize the forms in the file according to date. I also needed to identify the missing information or forms in the file and make a short note on it to alert the QA technician during reviewing.

3.2.2 Inspection of Raw Material

The procedures of inspecting the raw materials are as below:



3.2.3 Inspection of bottles

There are a few types of bottles used for Kong Guan products. The bottles are glass bottles and PET bottle. There are two types of glass bottle which are round and square bottle. These bottles come with 2 different size which are big and small. For the round glass bottles, there are 330 ml and 640 ml round bottles while the square glass bottles are 375 ml and 750 ml square bottles.

As for the PET bottles, there are 3 types of them which are P672ml PET bottle from Enhance, P672ml PET bottle from Mayplas and 350 ml PET bottle. The difference between Mayplas and Enhance bottles are the neck of the bottles and the type of products used. All the bottles will undergo leaking test by using vacuum desiccator. Then, for the sliding test, only glass bottles are involved. The weight and the dimension of the bottles will be recorded and checked with the Certificate of Analysis.



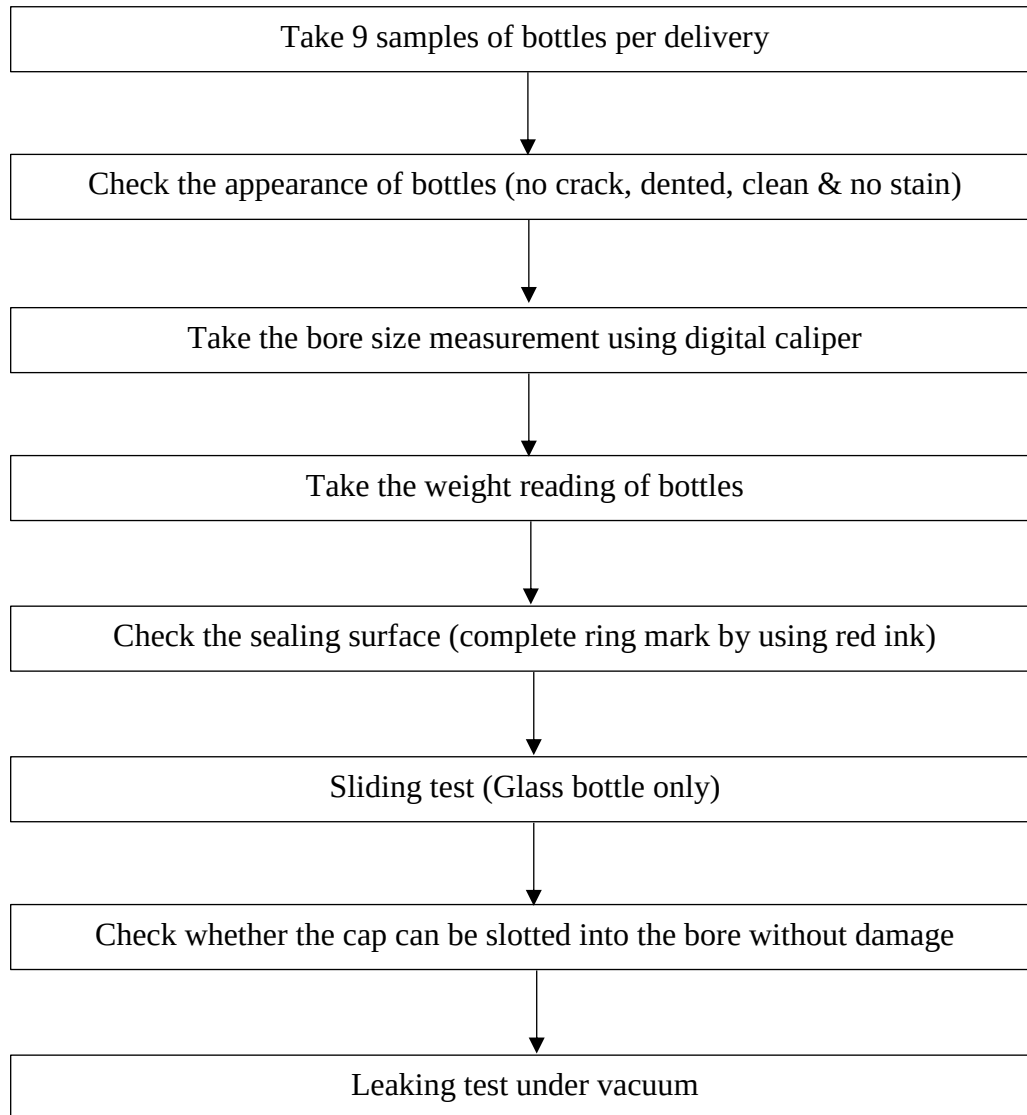
Figure 8: Glass bottles



Figure 9: PET bottle

a) Procedures

The procedures for inspection of the bottle are as below:



b) Sliding Test

Sliding test is done when there is a rough bottle during inspection. Sliding tool is used to perform this test. The normal reading of the protractor is between 1° - 10° . Meanwhile, the bottle is considered to has rough surface when the reading of the protractor greater than 10° . Therefore, the purpose of sliding test is to determine the roughness of the glass bottles.

The procedures of the test are as below:

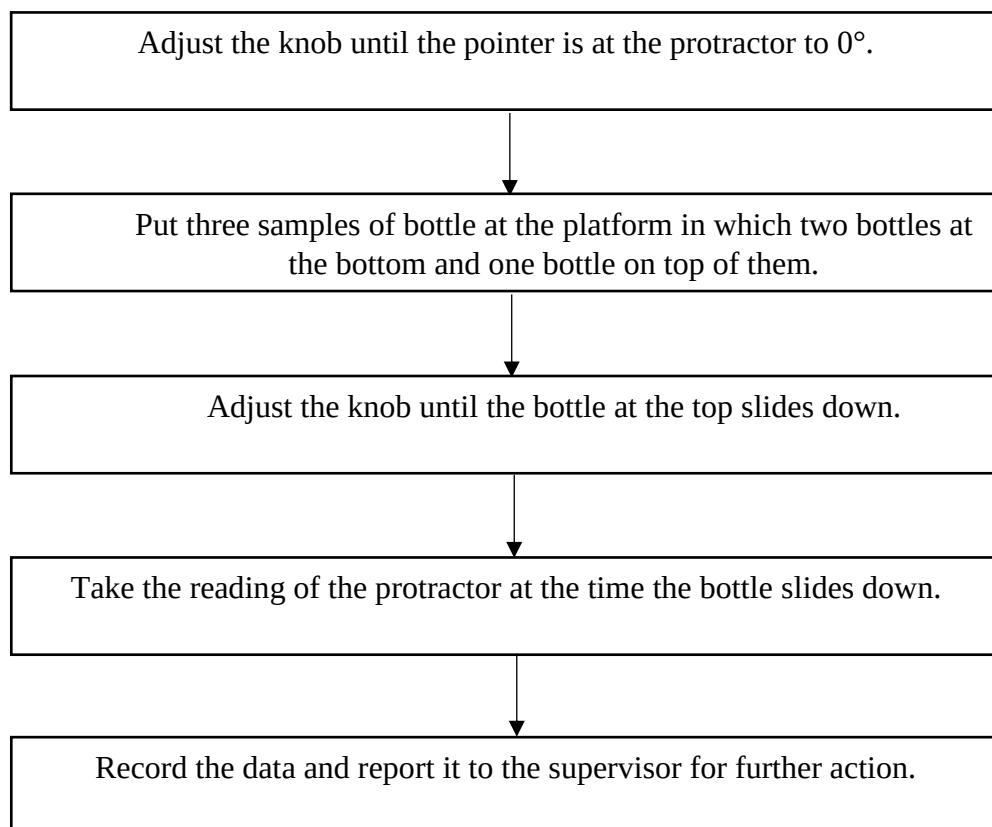




Figure 10: The sliding tool used in the test



Figure 11: The position of bottles on the platform



Figure 12: The position of bottles after sliding

c) Leaking test

The purpose of leaking test is to check the strength of the bottles under vacuum pressure. The apparatus used in this test is vacuum desiccator. The bottles pass the leaking test if there is no sign of water in the desiccator after vacuum is applied. Caps and tubs are other items that require leaking test to be carried out.

The procedures for the leaking test are as below:

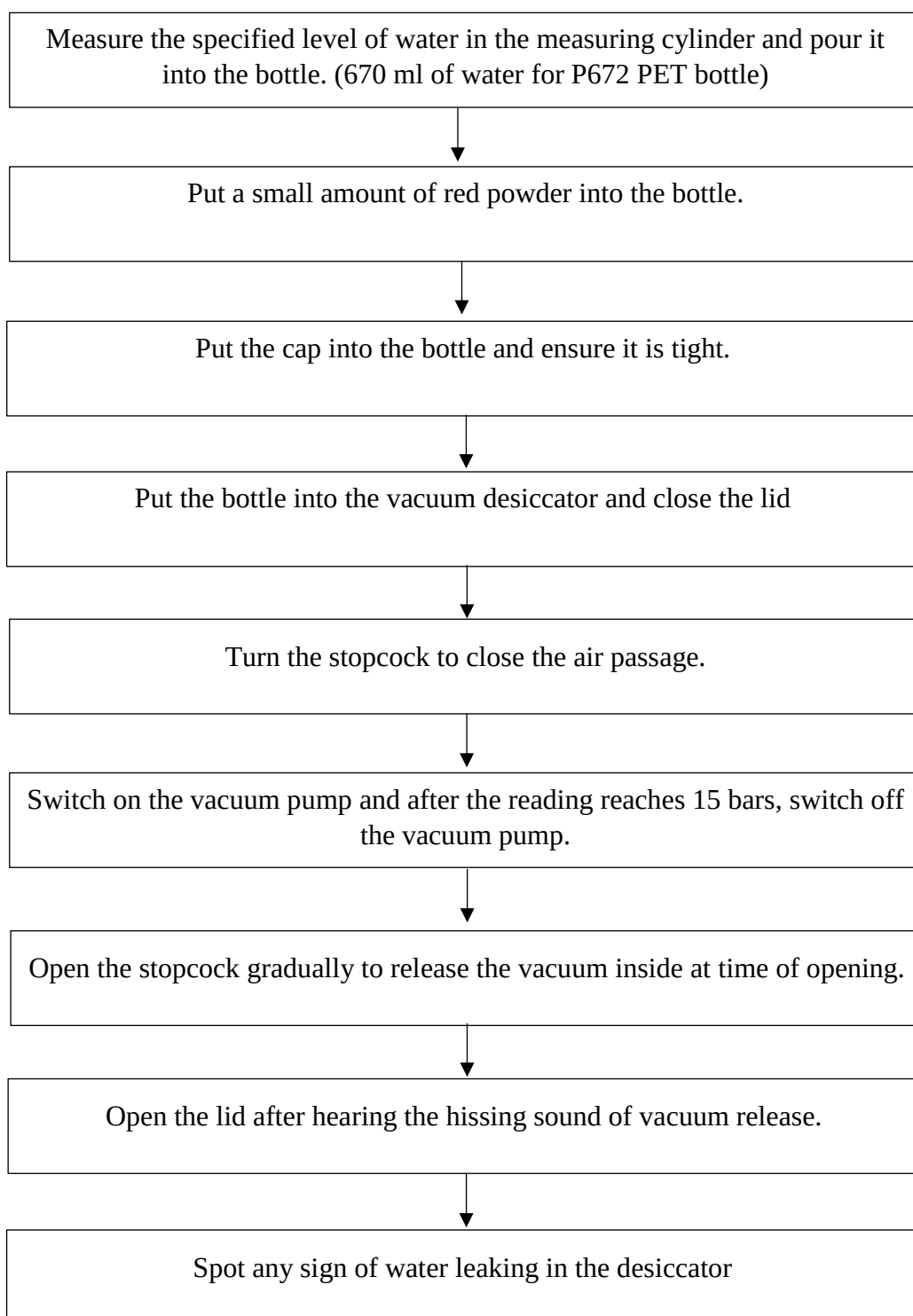




Figure 13: Mixture of red powder and water in the bottles



Figure 14: The bottles with their caps on.



Figure 15: The bottles in the vacuum desiccator.

3.2.4 Inspection of Labels

As there are many different products, every product has their own label and characteristics. Label inspection is done manually. It is important to check it strictly as to prevent any mistake on the label. As for the colour, the correctness of label colour is vital as to prevent consumer from suspecting about the originality of the product. Then, it is also to prevent outsider from taking advantage on manufacturing fake products in the market if there is no uniformity in product labels.

The printed information that should be on the label are Halal logo, HACCP logo, ISO 9001:2015 logo, Mesti logo, nutritional data, weight/ volume, ingredient list, manufacturer address, phone number, email and importer address. Each label may have different printed item on it.

The procedures on inspection of label are as below:

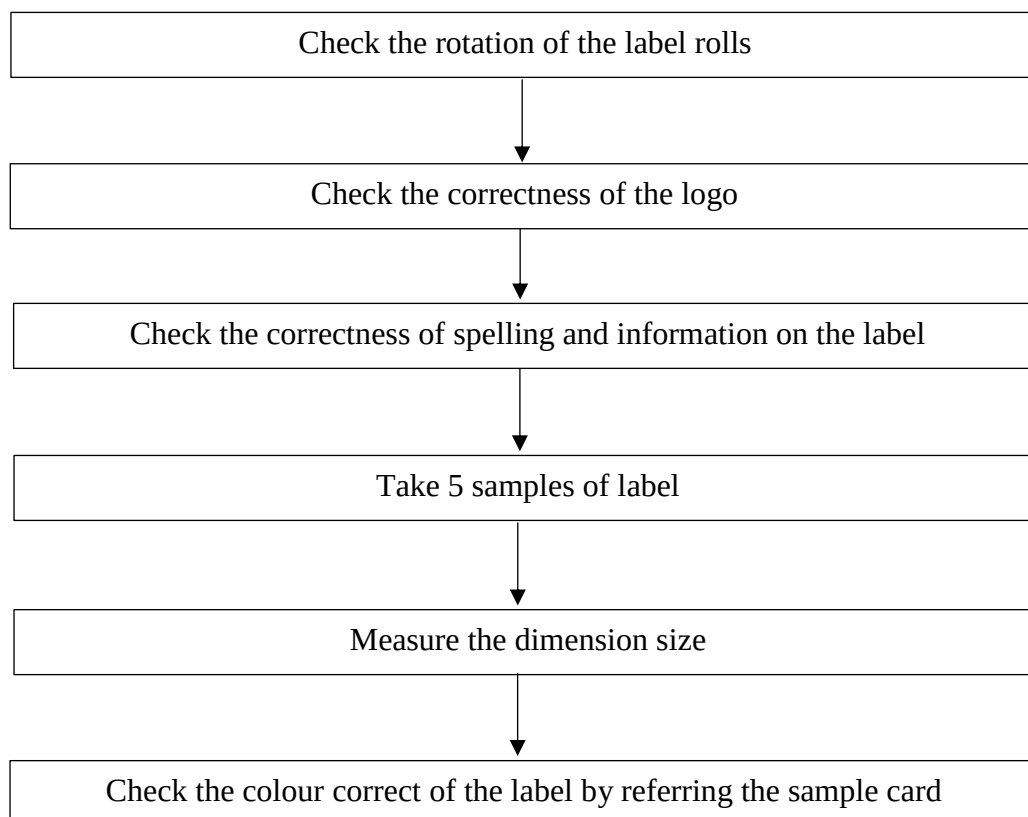




Figure 16: Label for one of distributor product



Figure 17: Sample card of label

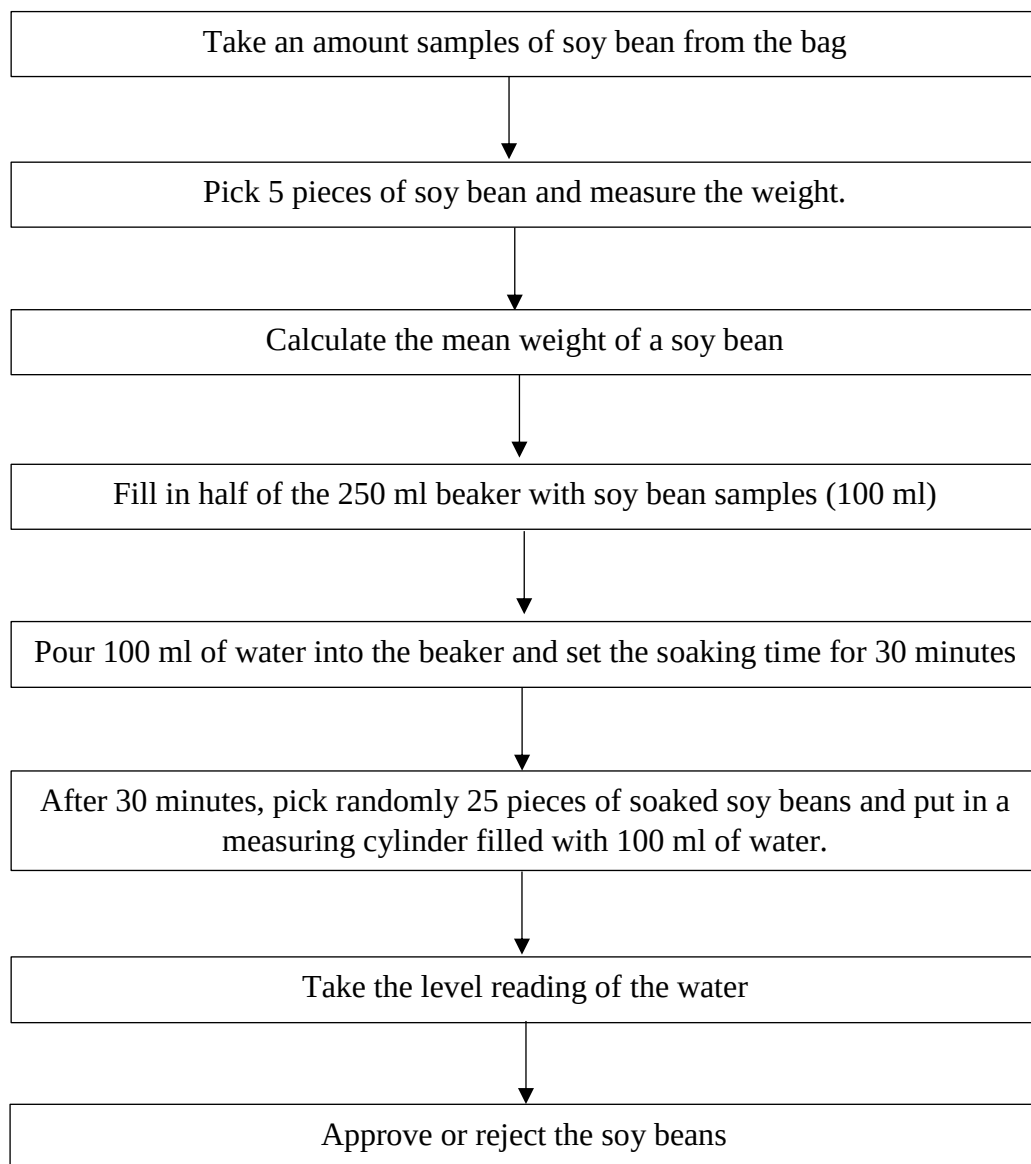


Figure 18: Approved label

3.2.5 Soaking Test for Soy Bean

A soaking test is carried out on the soy beans after the procedures for the inspection of raw materials are done. The passing mark for the test is 110 ml to 150 ml. If the reading of water level in the measuring cylinder is lower than 110 ml, it indicates the soy beans are too hard. Meanwhile, if it is higher than 150 ml, it indicates the soy beans are too soft.

The procedures for the soaking test are as below:



3.2.6 Inspection of caps

There are more than 50 products of soy sauce that are bottled. Some of the soy sauce are filled in the round glass bottle and some in the square glass bottle. The soy sauce is also filled in the PET bottle. For round glass bottle, it uses M2900 flip top cap that comes with four different colours which are yellow, maroon, gold and red. Yellow cap is used for light soy sauce while red cap is for thick soy sauce. For maroon and gold cap, they are quite special as they are used for distributor products. Maroon cap is used for distributor named Teo Hong Tai from Kuching, Sarawak. Then, for gold cap, it is used for distributor products named Dayet Sdn Bhd and Torymas Enterprise Sdn Bhd which are from Sibul, Sarawak and Miri, Sarawak respectively.

For square glass bottles, the designated caps for them come with two types which are flip top cap without hole and flip top cap with hole. The caps also have two colours, red and yellow which are for thick soy sauce and light soy sauce respectively. Square glass bottle flip top cap without hole is used for overseas products while the flip top cap with hole is used for local products.

For PET bottles, there are three types of cap used which are type A, B and C. The different for those types is the inner seal of the cap. For type A, it comes with two colours which are red and maroon. It is specialized for thick soy sauce products with different grade. The red cap is used for 2nd grade of camel brand thick soy sauce while the maroon cap is for 3rd camel brand thick soy sauce. For type B cap, it also comes with 2 colours which are red and yellow which indicate thick soy sauce and light soy sauce respectively. This type of cap is used for NTUC products from Singapore. For type C, it is used for light soy sauce with different types of brand. It comes with 3 colours which are yellow, blue and green. The yellow cap is for dog brand, blue cap for double camel brand and green for single camel brand.



Figure 19: M2900 flip top cap round glass bottle



Figure 20: Square glass bottle flip top cap

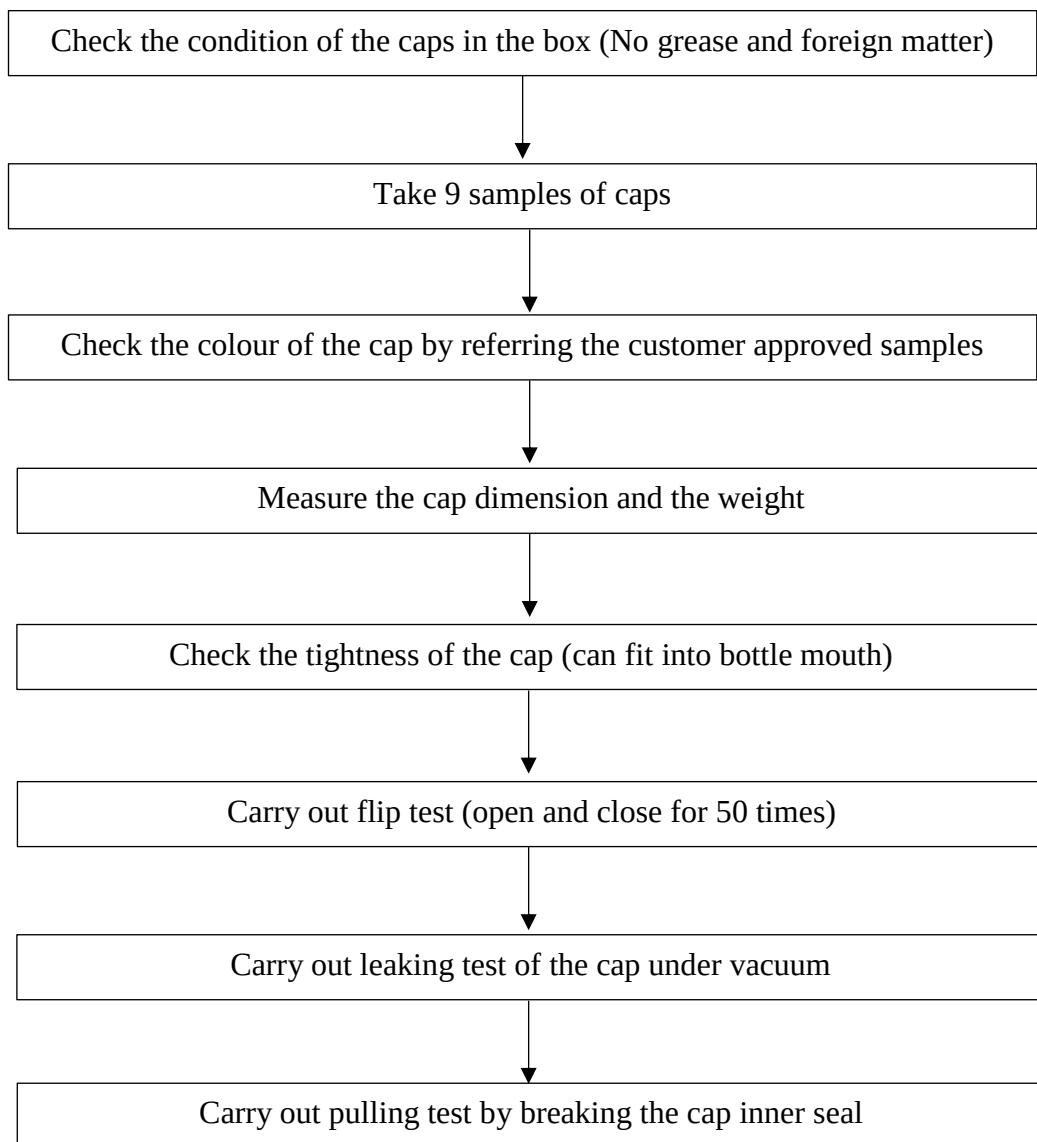


Figure 21: M3500 flip top cap (back side)



Figure 22: M3500 flip top cap (front side)

The procedure for inspection of cap are as below:



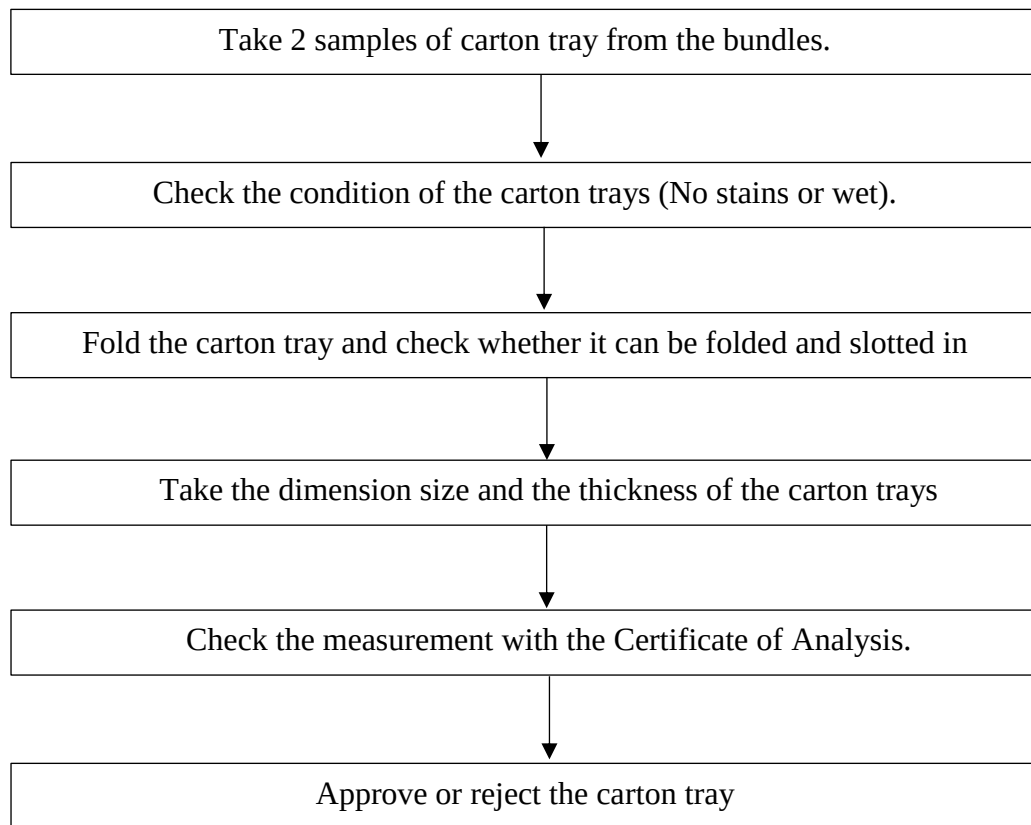
3.2.7 Inspection of carton tray

There are a few types of carton trays used in packing our products which depends on the type of bottles and the brands itself. The details are as in table 1 below:

Table 2: Type of carton trays used for different bottles and brands

No.	Type of bottles	Type of carton trays
	Kong Guan Products/ Distributor Products	
1.	640 ml round bottle	12 B/RD carton tray
2.	330 ml round bottle	24 S/RD carton tray
3.	750 ml common square bottle	12 B/SQ carton tray
4.	375 ml common square bottle	24 B/SQ carton tray
5.	P672 ml PET bottle (Mayplas)	670 ml carton tray
6.	5 litre tubs	5 lit carton tray
NTUC Products		
7.	P672 ml PET bottle (Enhance)	Superior light 8888030005351 (Yellow)
8.		Standard light 8888030005349 (Orange)
9.		Superior dark 8888030005350 (Red)
10.		Standard dark 8888030005348 (Green)
A.Clouet Products		
11.	640 ml round bottle	Ayam Brand Cair 12 x 630 ml carton tray
12.		Ayam Brand Pekat 12 x 630 ml carton tray
13.	330 ml round bottle	Ayam Brand Cair 24 x 330 ml carton tray
14.		Ayam Brand Pekat 24 x 330 ml carton tray

The procedures for inspection of carton trays are as below:



- ❖ For NTUC products, check the colour correctness of the carton trays by referring the approved carton tray sample. The bar correctness of the bar code also needs to be checked.

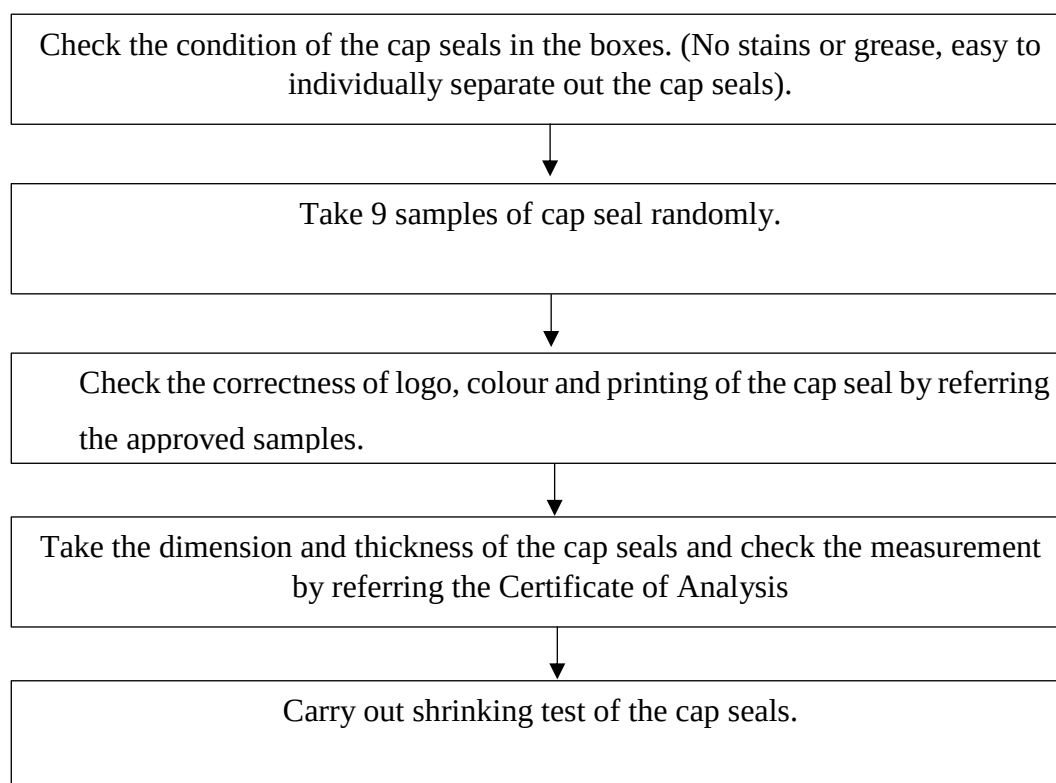
3.2.8 Inspection of cap seal

Cap sealing is done after the process of labelling. The purpose of cap sealing is to increase the security of the products. There are several cap seals used in our production of soy sauce. The types of cap seal and their products are shown in Table 3. For cap seal, shrinking test is carried out to check whether it can shrink well or not.

Table 3: The types of cap seal and their products

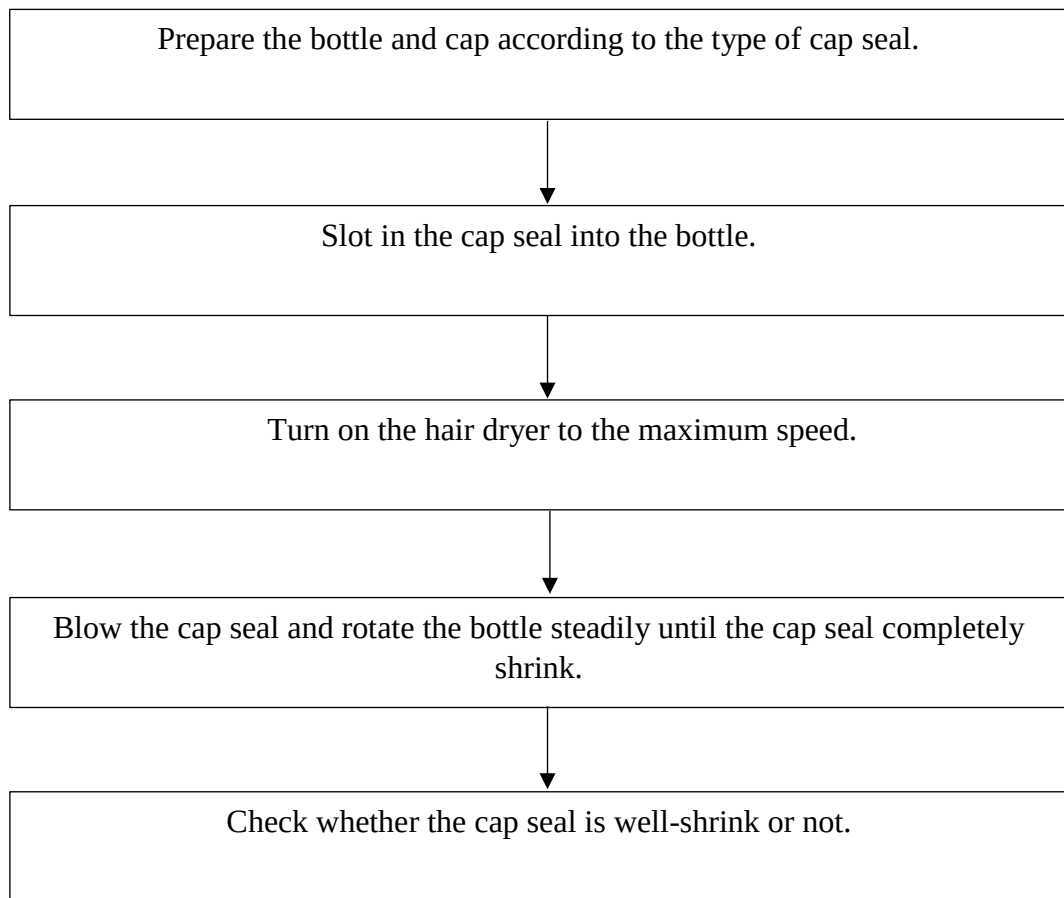
No.	Type of cap seal	Type of Product
	White/ Red Double Camel cap seal	Light soy sauce (2 nd grade)
	Red/ Yellow Double Camel cap seal	Thick soy sauce (2 nd grade)
	Yellow/ Red Double Camel cap seal	Chilli sauce
	Brown/ White Double Camel cap seal	Thick Soy Sauce (3 rd grade)
	Kampung Brand cap seal	Kampung Sweet Soy Sauce
	Transparent NO MSG ADDED cap seal	1 st grade soy sauce
	Ayam Brand cap seal (2 types)	A.Clouet products

The procedures for inspection of cap seal are as below:



Shrinking test Procedure:

The procedures for the shrinking test are as below:



3.2.9 Personal Hygiene Inspection

This inspection only involves the food handlers from EAC, Dark Sauce, Press and N.K departments. This inspection is done to ensure the operators follow the attire and self-hygiene rules in the food premise and to detect the types of microbes present on their hands during handling the works. For microbe detection, two types of agar in the petri dish are used to take the fingerprint samples of the personnel. The agar used are BPA and MAC agar.

BPA agar which stands for Baird-Parker agar is an elective medium for the detection and enumeration of coagulase-positive staphylococci from food samples .The agar is opaque, and light yellow in colour with no precipitate, chips or debris (Catalog.hardydiagnostics.com, 2019). The presence of the bacteria is indicated by the black and hexagon shape of spots. As for MAC agar, it stands for MacConkey which is used to detect lactose non-fermenting gram-negative bacteria such as *Salmonella typhimurium* (Aryal, 2018). The appearance of agar is transparent, slightly opalescent, and pink in colour. The presence of the *Salmonella* will cause it to develop into transparent, colourless colonies with no precipitated zone (Catalog.hardydiagnostics.com, n.d.). BPA agar is used in the direct contact food department such as N.K and press while MAC agar is for finished products departments such as EAC and Dark Sauce. The different use of agar is due to the probability of microbes available in the department.



Figure 23: The appearance of *Salmonella* on MAC agar after 24 hrs incubation



Figure 24: The appearance of *Staphylococcus* on BPA agar after 24 hrs incubation

The procedures for personal hygiene inspection are as below:

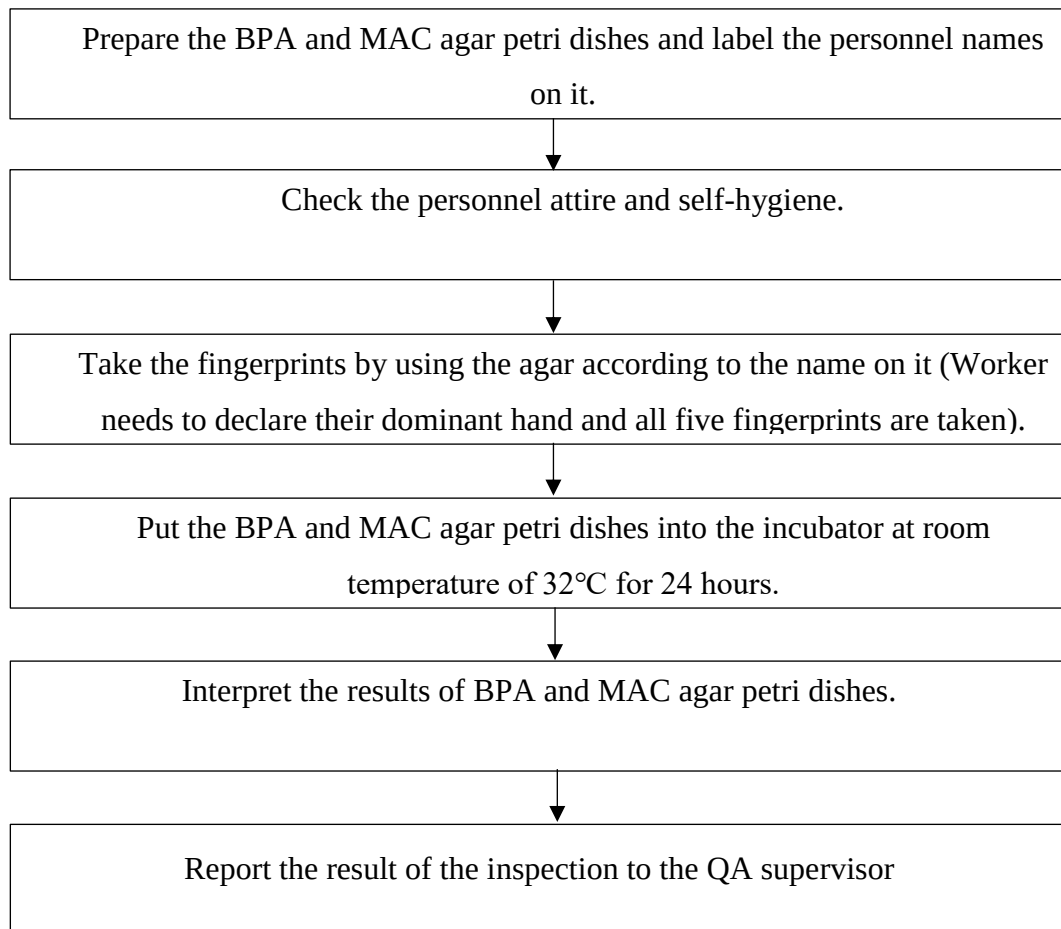


Figure 25: Nail Inspection



Figure 26: Attire Inspection (The man on the right side did not wear head gear.

3.2.10 Assessment in QA department

Challenges

1. Too many incoming items to be inspected in one day

Sometimes in one day, there were many items needed to inspect and samples to be taken. Therefore, there were times I needed to do my inspection and sample taking for the next day as I cannot handle it in one day.

2. The incoming items came at the very end of the working hour.

There was sometimes the supplier sent the items, a few minutes before my working hour end. As I did not realize about this delivery, the inspection and the sample taking were done for the next day.

3. Store keeper already kept the items before inspection and sample taking were done.

It was quite hard when the items that I had not inspected yet, were already in the store. This was because, I would struggle a lot in finding it as I did not know the location, and the quantity of it. It was also hard as they already wrapped the items and I needed to tear out the wrapper carefully to take the sample. Besides, it was also time- consuming especially when the distance between the items was quite close to each other as I needed to identify which items had not yet approved.

4. Fail to approve the items on time due to the Purchasing Order (P.O) number.

P.O number is needed to be written on the approve sticker before it is put on the item. As the items came at the end of my working hour, I would need to inspect the items for the next day. However, if I received the PRP form from the purchasing staff quite late, it would delay my work in approving the items.

5. Production workers took the items that had not yet approved.

The duration for approving the items is for 3 days. Sometimes, there were items that needed to get the approval from the Head of department to accept or reject especially when the items did not meet the specification. The decision may come out late. The late of the approving or rejecting the items had caused the production workers to take the items without even checking the presence of approve sticker on it.

Knowledge/ Skills Gain

There are a lot of things that I have learnt in QA department. First and foremost, I learnt about the procedures of the inspection of incoming items. There were a few things that I needed to remember so the process during inspection will be smooth and easy. Then, I also learnt on efficient time management as to ensure I approve the items as fast as I can to avoid operators from using the items unapproved.

Moreover, I was taught by my supervisor and colleague to be firm and honest on my decision especially in rejection and approving the items. This is important as to avoid any problem in the future and to be blamed by the production or store department for any low quality of the items.

Communication is vital in making efficient process. For my task, I often needed to communicate with the store keeper, purchasing staff, supervisor, Head of Department and sometimes with the operator. I learnt on to confidently voice out my opinions or questions whenever necessary. Good attitude during the communication is also important as to gain respect and trust from others.

Lastly, as to ensure I approve the items on time, I needed to be proactive and diligent in updating the incoming of items with the store keeper. I also needed to stay alert with the incoming items even there was a schedule for it as sometimes the supplier did not follow the schedule.

3.3 INVOLVEMENT IN WASTEWATER DEPARTMENT

3.3.1 Wastewater Treatment Process Description

All the wastewater from 7 departments are treated in the wastewater department. In our company, the wastewater treatment system was developed by the Danish engineer from 10 years ago. It uses economical system yet greener and cleaner system for treating the wastewater to be discharged to the drain.

All departments have the pit tanks which collect the wastewater and the wastewater in the pit tank is called pit water. Firstly, the pit water from 7 different pit tanks will be transferred into the collection tank. Then, from the collection tank, the wastewater will be filtered in the small filter. During this filtration, the filtrate and solid waste will be separated. The solid waste which is separated from the wastewater in the filter press, is scrapped and discharge into the plastic bag.

The filtrate then is transferred into the primary culture tank. After being cultured in the culture tank, it will be transferred to the EQ tank and next to the SBR tank. In the SBR tank, the wastewater will undergo aeration process to activate the sludge until it becomes mature. The sludge is matured when it turns black in colour.

There are 13 SBR tanks and each of them needs to be tested for their pH, sludge volume (SV) and density oxygen (DO). The observation on the thickness of the foam and the colour of supernatant are also done. The matured wastewater from the SBR tank is then transferred and collected to the transit tank.

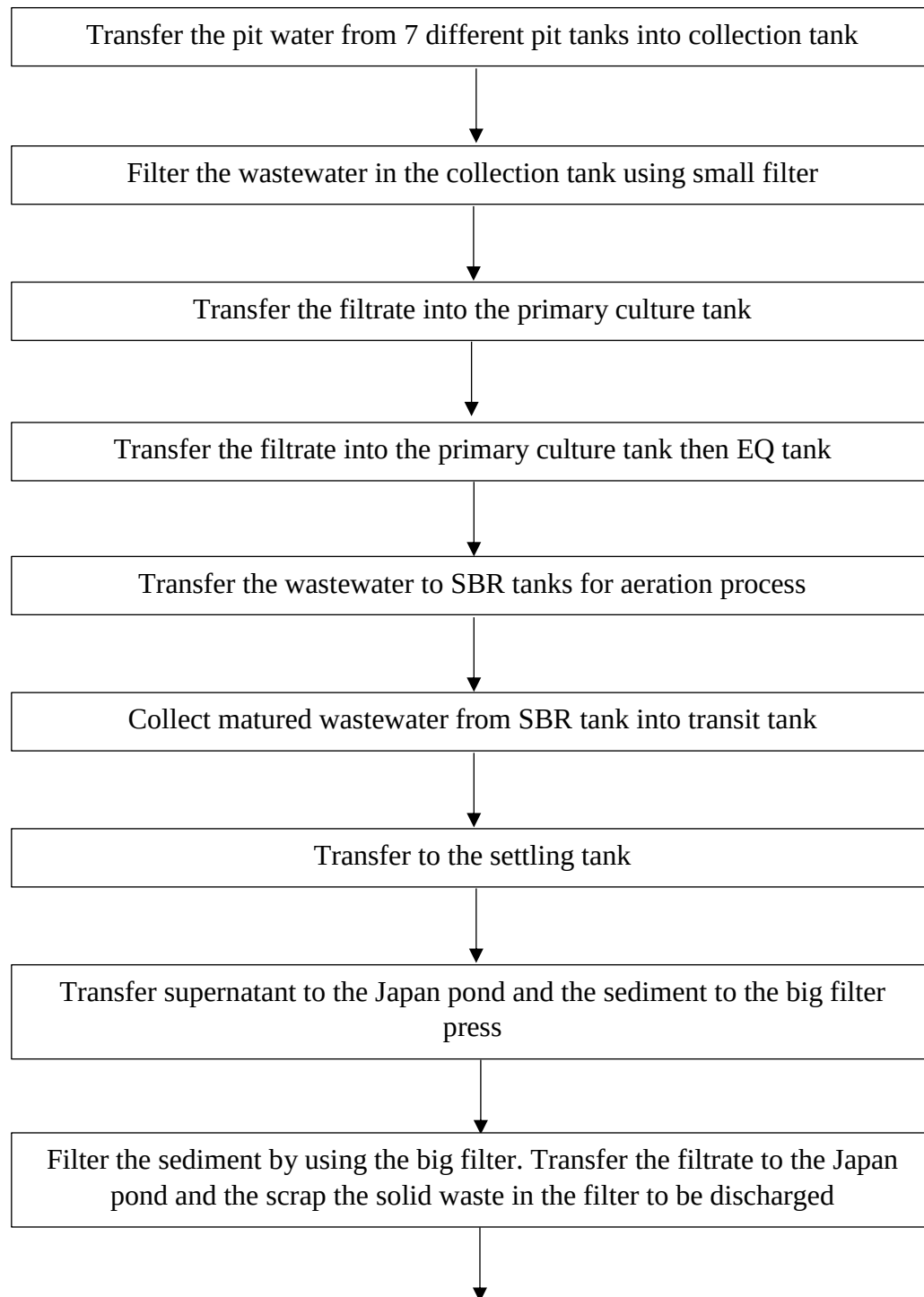
The next process is the wastewater will be transferred to the settling tank. In the settling tank, the wastewater will go through sedimentation process and becomes two layers which are supernatant and sediment. The supernatant will be transferred to the Japan pond while the sediment will be filtered by using big filter press.

For big filter press, it filters out the clear filtrate from the sediment and the solid waste that is filtered will be scrapped and removed. In the Japan pond, the sewage will be pumped into the transit tanks and the foams floating in the Japan pond will be scooped out into the plastic for discharge.

If the water samples in each of the transit tank pass the colour requirement, it will then proceed to the final discharge point. It is considered pass if the colour of the filtrate is yellow hue and a fail if it is greenish tinge. Failed filtrate will be transferred back to the primary culture tank.

Lastly, at the final discharge point, the filtrate from the transit tanks will be diluted with plenty of clean water. If the treated water is clear, it will be discharged to the drain.

The process flow in the wastewater treatment is as below:



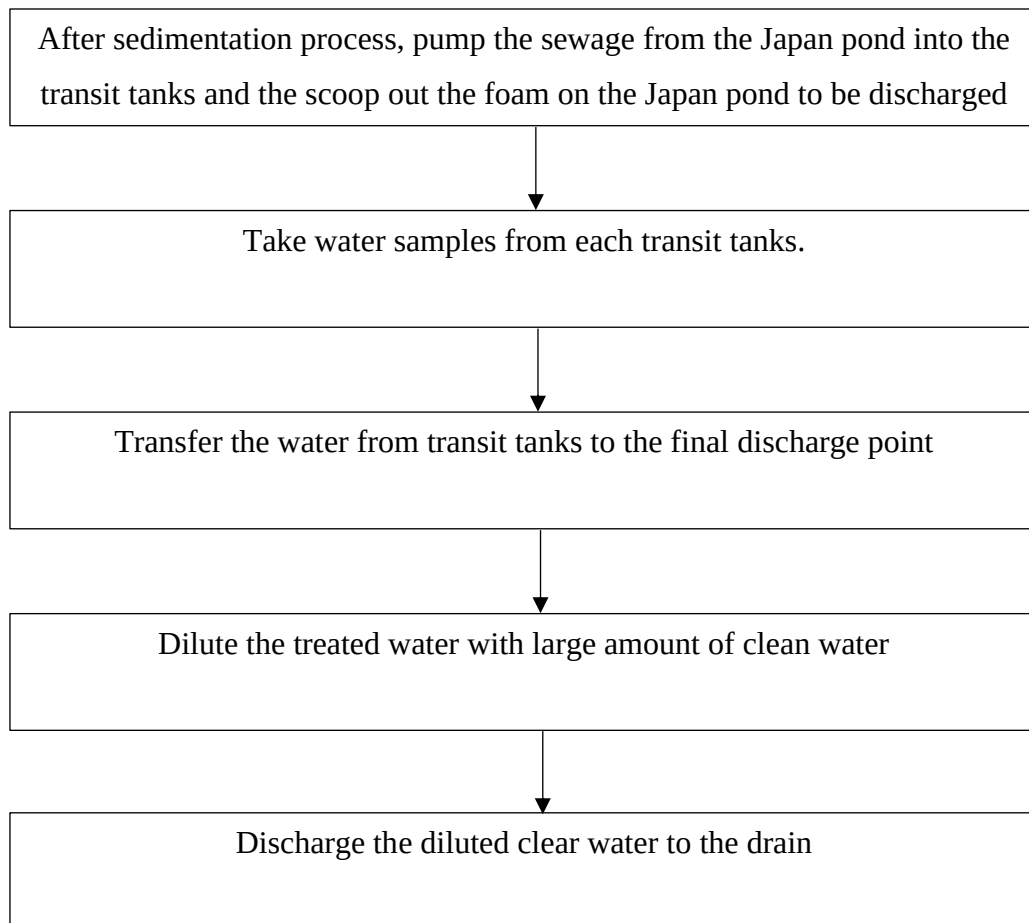




Figure 27: Pit tank



Figure 28: Collection tank



Figure 29: Small filter



Figure 30: Culture tanks



Figure 31: SBR tanks



Figure 32: Transit tanks



Figure 33: Settling tanks



Figure 34: Big Filter Press



Figure 35: Japan pond



Figure 36: Final Discharge Point

3.3.2 Inspection of tanks

In this inspection, 16 tanks are tested for their pH value, sludge volume (SV) and density oxygen (DO). The thickness of the foam and the colour of supernatant are also observed. The tanks involve are primary and secondary culture, 1 EQ tank and 13 SBR tanks. The procedures are as below.

Procedure:

A. Obtain samples

1. Scoop out the liquid in the tank by using ladle.
2. Pour it into the labelled 1L measuring cylinder until it is half-filled.
3. Repeat step 1 and pour into the measuring cylinder until it reaches 1L.
4. Repeat steps 1-3 for another tanks.

B. Measurement of pH

5. Calibrate the pH meter then remove the cover.
6. Dip the probe into the sample and record the pH value.
7. Wipe the probe by using tissue before dipping into other samples.
8. Repeat steps 6-7 for the other samples.

C. Measurement of Sludge Volume (SV)

9. Settle the samples for 30 minutes.
10. Place the eye on the meniscus level of the sediment.
11. Record the SV value.

D. Measure Density Oxygen (DO)

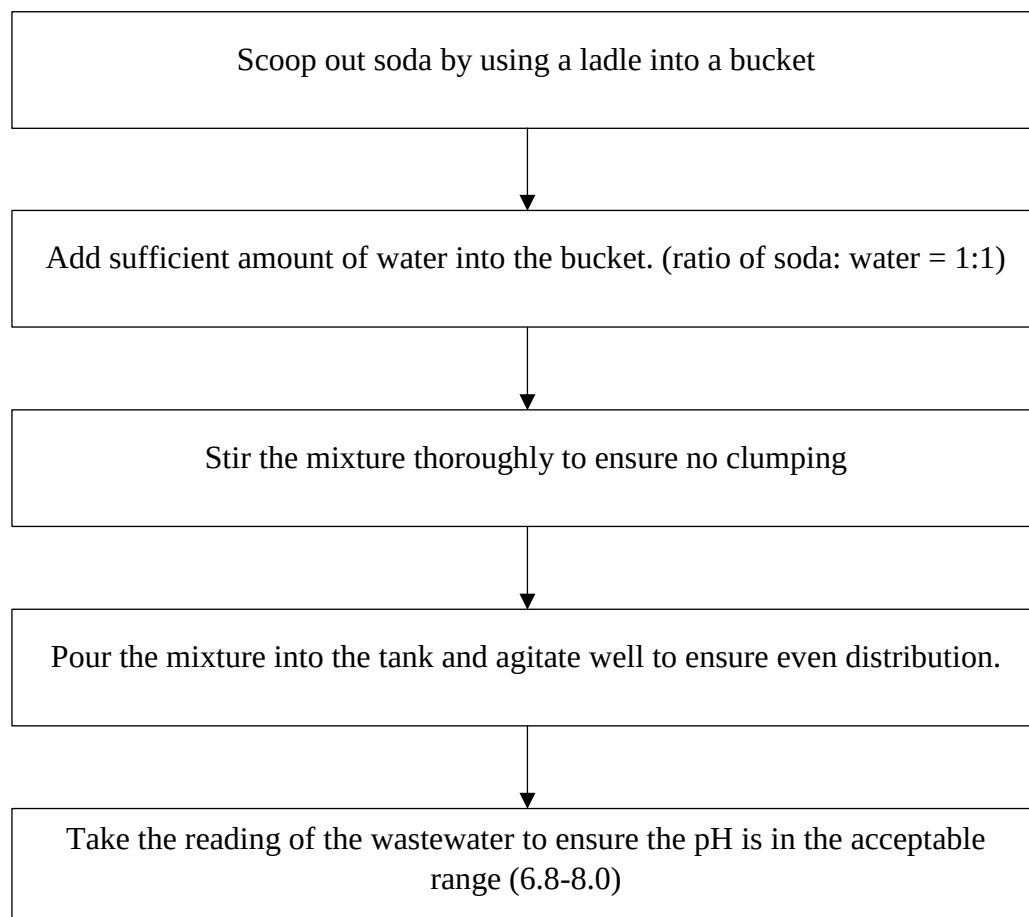
12. Calibrate the DO meter then remove the probe guard.
13. Dip the probe into the tank until it submerges in the liquid.
14. Record the DO value.
15. Wipe the probe by using tissue before dipping into other tanks.
16. Repeat steps 13-15 for other tanks.
17. Clean the prove and cover the probe with probe guard.

E. Observation

18. Observe the colour of the supernatant in each measuring cylinder.
19. Record whether it is yellow, brown or dark brown.
20. Observe the thickness of the foam and the colour in each tank.
21. Record whether it is thin or thick and white, brown and black in colour.

3.3.3 Corrective Action for pH value

It is required for all the tanks to have reading of pH value in the range between 6.8 to 8.0. This is because the bacteria in the wastewater in the tanks works best at alkaline medium. Lower pH reading which is acidic medium inhibits the microbiological activities of the bacteria as it is an unfavourable environment for the bacteria to live. At acidic environment, the bacteria will die. The bacteria in the wastewater is important as it is needed to digest the nutrients in the wastewater until matured wastewater is achieved. Matured wastewater means the nutrients in it have completely depleted. Therefore, acidic medium of the wastewater can be corrected by adding the mixture of soda. Below is the procedure for corrective action on pH value.



3.3.4 Assessment in Wastewater Department

Challenges

1. Bad odour from the wastewater

The wastewater smelt so bad. After my task at this department ended, I needed to change my attire to the new ones as I needed to proceed with my tasks at QA department.

2. Trouble in taking the water samples from the tanks.

It was quite hard to take the water sample as the piping at the tanks were quite messy. The ladle was long as to ease the water samples taking in the tank. However, it was inconvenient after the water was in the ladle as it was quite heavy, and the messy piping around worsen the situation.

3. Presence of thick foam in the tank and the operator did not want to demonstrate the right way to remove the foam.

During the samples taking, there were tanks that had thick foam. It was so thick that even after I scooped deep inside the tank, I would end up only obtain the foam. I asked the operator to solve this matter and teach me to do it, but she only told me the way, without even showed it. Finally, I managed to obtain the samples with the help of my senior colleague. As the foam was quite thick, it was quite time-consuming for taking 16 samples of wastewater.

Knowledges/ Skills Gain

Even though I only went to wastewater treatment department twice, a lot of things I had learnt during my time there. First and foremost, I learnt on the management of wastewater in my company. There were quite a lot of processes done for clean and safe water could be discharge. I also could see the technology used there and how it is working. The next thing I learnt was the corrective action to be carried out when the pH deviated from the desired range.

Moreover, I able to differentiate between the matured and non-matured wastewater. I also learnt on why there was a presence of thick foam in the tank and the way to solve. Furthermore, I also had been demonstrated by the operator on cleaning up the small filter.

3.4 MINI PROJECT (PRODUCT REFERENCE CARD & PRODUCT BOOKLET)

3.4.1 Project Background

The purpose of making the product reference card is to make as a reference to the production workers in the EAC department. In the reference card, it comprises product code, picture of product, type of carton tray, cap seal, cap and bottles used. It is also being categorized according to their type of products.

This reference card able to help the production workers in the EAC department from making mistakes in organizing the required items for the product. For instance, they might wrongly use Mayplas PET bottle for filling sauce for NTUC products which use Enhance PET bottle. As for the product booklet, it is for all departments. My company would like all workers know about the products that are produced in Kong Guan company.

The differences between product reference card and product booklet are in term of size and the item itself. Product booklet is smaller and is the result of photoshoot with the reference card. Meanwhile, product reference card is bigger which is in A4 size and the details such as cap and cap seal are in 3D shape. Lastly, product reference card is only for EAC department while product booklet is for all the department.

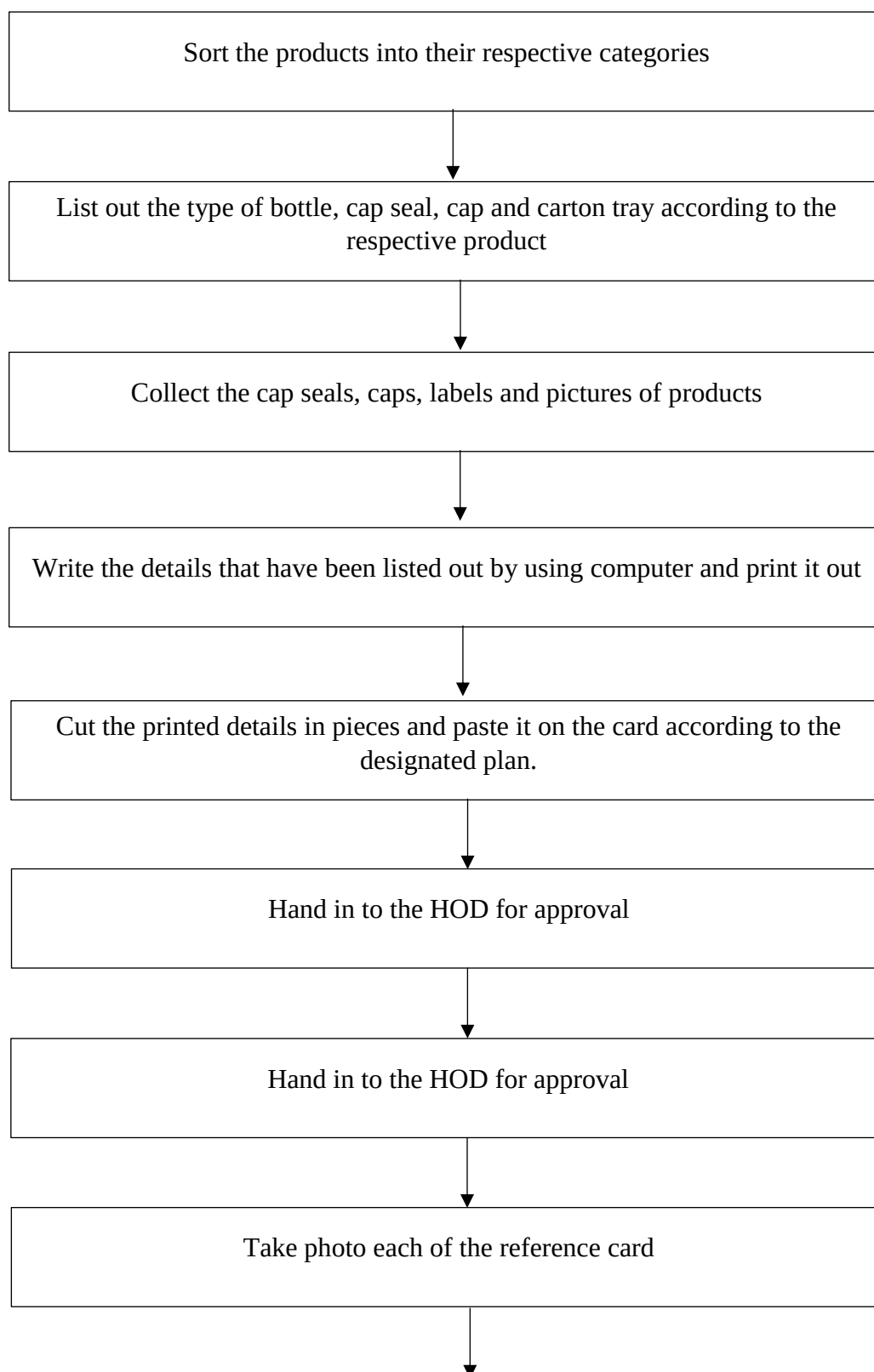


Figure 37: The display of product reference cards on the wall in QA lab



Figure 38: Product Booklet

3.4.2 Procedures



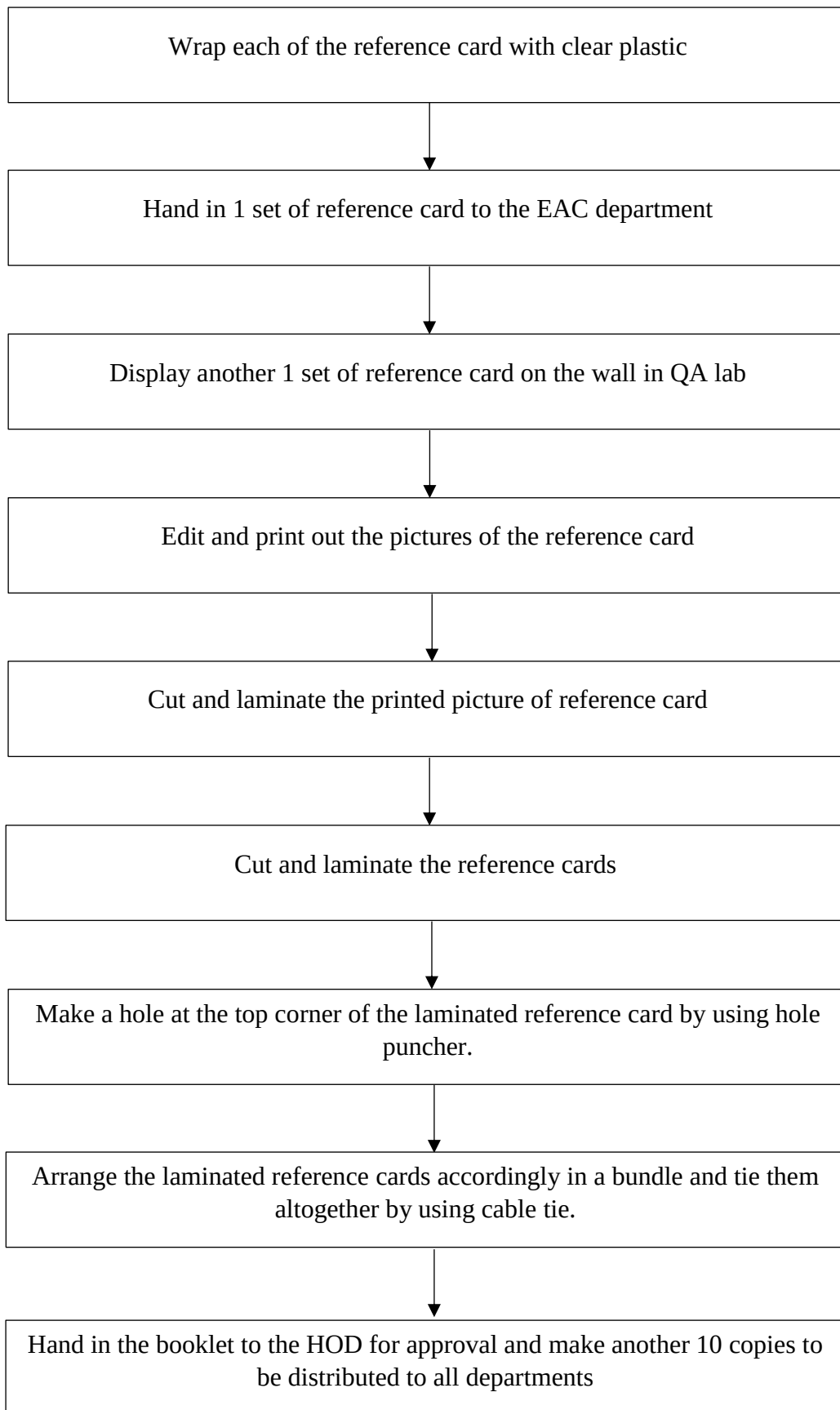




Figure 39: One of the reference cards for distributor product



Figure 40: One of the reference cards for A.Clouet products



Figure 41: One of reference cards for NTUC products

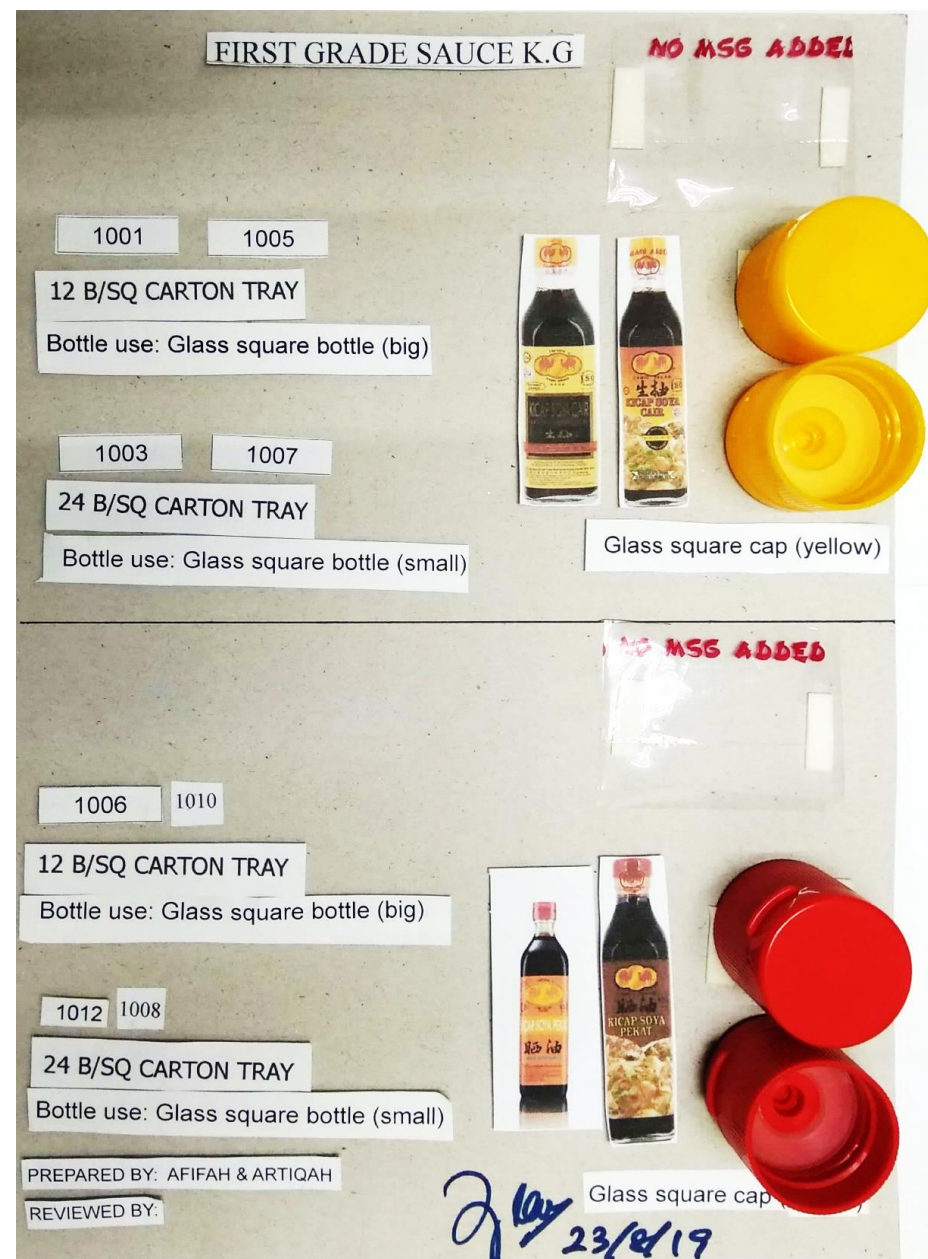


Figure 42: Reference card for first grade sauce



Figure 43: One of the reference cards for Kong Guan product



Figure 44: One of the reference cards for Kong Guan product

CHAPTER 4

4.0 CONCLUSION

As a conclusion, I learnt a lot of new things during my 10 weeks of internship at Kong Guan Sauce & Food Mfg. Co. Sdn. Bhd. It was a wonderful and precious moment to be there as an intern. I had been exposed with the real working culture and I also met a lot of people with variety of personalities. As Kong Guan company is a HACCP and ISO 9001:2015 certified company, I could see and learn how hard they were trying to comply with the regulations and improve their quality products as to meet the customer satisfaction.

Most of my internship period, I was placed under Quality Assurance department. A lot of things had been taught by the senior colleague including to run the test and inspection. Even for my mini project, I received a lot of guides and helps from the senior colleague. Even though it was a simple mini project, it was one of the measures from QA department to ensure the smoothness of flow process in Kong Guan company. Furthermore, I also learnt that every task should be carried out seriously and with integrity. As during the inspection of packaging materials, only basic measurements were done. However, this task should not be taken lightly as wrong data and judgement would affect the quality of the products.

Moreover, this training also had improved and polished my interpersonal skills, communication, adaptability and ability to work in a team. As an intern, I would need to do lot of different things, appoint at different departments and get sudden task from my supervisor. As to make my work easier, I needed to adapt myself quickly in anything that I did. When I was in the EAC department, I learnt to be more considerate and work in the team especially when the line was still on going even my working hour ended. I would do the overtime as to ease the production process.

As for my opinion in this internship, even though I am not really exposed to the engineering part in this company, I am glad to be a part of Kong Guan family as I gained a lot of valuable things that I cannot obtain during my study. Then, I think it is important for student to experience the hardship of being an operator and able to do the task as well. Next, student should be proactive and have the courage to learn new things even it is not related to the field of study. Lastly, a positive attitude should always be practised by the student especially in the interaction and for the given task. Overall, this industrial training had given me the exposure to the industry.

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APPENDIX

The procedures for tubs filling are as below:

1. Steam tubs according to the product target
2. Up and down tubs to remove the residue steam water.
3. Close the mouth tub with cap
4. Start filling the tub according to the product weight.
5. Switch on the seal machine.
6. Arrange the finished products in line at the conveyer.
7. Tighten the cap tub.
8. Scan the cap by using the seal machine for 3 seconds until beep sound is heard.
9. Select randomly 1 product to confirm the sealing is perfect.
10. Replace with the new seal cap if there is broken after checking.



Figure 45: Steaming of the tubs



Figure 46: Removing of steam residue water



Figure 47: Filling of the sauce into the tubs.



Figure 48: The finished products on the conveyer



Figure 49: The sealing of the caps



Figure 50: The checking of sealing on one of the products

