RAM'S ASSORTED COLD STORAGE LIMITED

(*Formerly Name as* SURYO UDYOG LTD.)

Approval No.335

HACCP MANUAL

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Managing Director

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Declaration

I am pleased to declare that this HACCP manual is authentic, original and the procedure and activities enumerated in this manual are true & correct.

This manual complies with USFDA HACCP/ GMP regulation (21 CFR, part110) and / or codex alimentary guidelines on GMP (EC directives, 91/493/EEC and 94/356/EC).The manual further covers procedure of SOP, SSOP & quality control program etc.

This manual also cover requirement of EIC (Export Inspection Council) Govt. of India.

This is the fifth reviewed manual and procedure outline in this manual are mandatory and shall be followed by all the employees of M/s. RAM'S ASSORTED COLD STORAGE LTD. This shall be vogue of for a period of 24 month from 01.10.2015 to 30.09.2017
Issued by

Date 01.10.2015

Mr. Aditya Dash

Managing Director

 # Area affected by recent revision are identified suitably.

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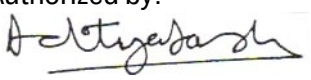

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SCOPE

HACCP system is basically the techniques implemented in our sea food processing establishment to ensure the total safety of the end products. It is a system standard a scientifically proved programme, internationally acclaimed and accepted practices to ensure the hygiene of the food processing establishments and there by achieve the safety of the products. It is a preventive system, designed to identify hazards, ongoing monitoring and systematically documentary the total activities in the prescribed formats by the individuals responsible. A regulation of codex alimentary commissions and their internationally accepted practices is the basic guidelines adopted to identify the systems.

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QUALITY POLICY

Quality speaks for itself

Ram's Assorted Cold Storage Ltd. are committed to guarantee customers satisfaction for every single use of product by providing quality, legal and safe wholesome seafood by timely processing and in time delivery which is achieved through effective team work and continual improvement.

ADITYA DASH

MANAGING D I R E C T O R
RAM'S ASSORTED COLD STORAGE LTD.

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QUALITY OBJECTIVE

THE QUALITY OBJECTIVE OF THE VARIOUS PRODUCTS ARE AS FOLLOWS.

PRODUCT	YIELD %
HLSO BLACK TIGER	65% - 67%
HLSO EZ PL BLACK TIGER	62% - 65%
PDTON BLACK TIGER	55% - 58%
PDTOFF BLACK TIGER	54% - 56%
PUD BLACK TIGER	48% - 50%
HLSO VANNAMEI	71% - 75%
HLSO EZ PL VANNAMEI	70% - 73%
PDTON VANNAMEI	66% - 68%
PDTOFF VANNAMEI	62% - 65%
PUD VANNAMEI	58% - 60%
PD SEA CAUGHT MATERIAL	46% - 50%

- *To Achieve Finished Product TPC Level Below 5,00,000 cfu/gm from 20% to 18%.*
- *To maintain a temperature of < 4^0C right from procurement to freezing.*
- *The above quality objectives are monitored and maintained quarterly by General Manager.*

*** The Yield in percentage may be varying with various products, grade, and size and packing style.

Signature of Management Representative

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FOOD SAFETY OBJECTIVES

The food safety objectives are as follows,

- To control the total bacteria count in the finish product to less than $2x10^5$ cfu /gm.
- To achieve the total hours of food safety training to minimum 12 hours per year per employee.
- Not more than 4 delayed orders for food safety reasons in the year..
- To reduce the incidence of customer complaints to 10% by the end of the year.
- To ensure 100% investigation of customer complaints & written response within 7days.
- Not more than 1% of packed products are returned because of failing packaging per month.

❖ ***The above food safety objectives are monitored and maintained quarterly by General Manager.***

Signature of Management Representative

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Managing Director

BRIEF HISTORY

SURYA's maiden venture was Prawn Exports. Initially the fledgling company had to surmount innumerable obstacles and overcome stubborn resistance, especially from well established multinationals. Undaunted, **SURYA** forged ahead inexorably setting new milestones in its pursuit of excellence. Under the dynamic and innovative leadership of Mr.Amarendra Dash and backed by a team of highly qualified personnel **SURYA**'s growth exploded from a modest Rs.1Crore in 1980 to a phenomenal Rs.100 Crores in 2003.

The products are marketed under **"SURYA"** Brand for better market accessibility and acceptance. Adhering to strict packing norms, the company produces products of same quality standards for which **"SURYA"** has been recognized in world market.

Surmounting innumerable obstacles **"SURYA"** has forged ahead undaunted setting new milestones in its pursuit of excellence. Catering to a diversified world market, from Australia through Europe to USA, Japan, Middle East, consistency of quality has been the hallmark of **"SURYA"** products. Marketing with the same brand name **"SURYA"** since its inception in 1980 is the testimony to its worldwide acceptance.

The Processing Unit has been leased out to M/s. **Ram's Assorted Cold Storage Ltd**. The lease agreement is a wet lease agreement. Along with the Plant Machinery & other fixed asset. Ram's Assorted Cold Storage Ltd. will use Suryo Udyog's employees for ongoing operations.

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PREFACE

What is HACCP?

HACCP is an acronym that stands for Hazard Analysis and Critical Control Point. HACCP is a preventive system of hazard control. Food processors use it to ensure safer food for consumers. The HACCP system is designed to identify hazards, establish critical control points and control measures and to monitor these controls. Hazards can be harmful biological, chemical and physical contaminants.

HACCP Prerequisite Programs

In order for HACCP to be successful, it must be built upon a firm foundation of (i) compliance with current Good Manufacturing Practices (GMPs) and acceptable Sanitation Standard Operating Procedures (SSOPs), (ii) Trained company personnel, and (iii) Management commitment at the highest level.

Seven Principles of HACCP

There are seven basic principles of HACCP as under:

Principle 1. **Hazards Analysis**

Conduct a hazard analysis. Prepare a list of steps in the process where significant hazards could occur and describe the preventive measures.

Hazard : A biological, Chemical or Physical property that may cause a food to be unsafe for consumption

Principle 2. **Critical Control Point Identification**

Identify the critical control points in the process

Critical Control Point: A point, step or procedure at which control can be applied and a food-safety hazard can be prevented eliminated or reduced to acceptable levels.

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Principle 3. **Establish Critical Limits**

Establish Critical Limits for preventive measures associated with each identified critical control point.

Critical Limit: It means a creation that must be met for each preventive measures associated with a critical control point.

Principle 4. **Establish Monitoring Requirements**

Establish Critical Control Point monitoring requirements. Establish procedures for using the results of monitoring to adjust the process and maintain control.

Monitor: To conduct a planned sequence of observations or measurements to assess whether a critical control point is under control and to produce an accurate record for future use in verification.

Principle 5. **Establish Corrective Actions**

Establish corrective actions to be taken when monitoring indicates that there is a deviation from an established critical limit.

Corrective Action : Procedures followed when a deviation from a critical limit occurs at a critical control point.

Principle 6. **Establish Verification Procedures**

Establish procedures for verification that the HACCP system is working correctly.

Verification: The use of methods, procedures or tests, in addition to those used in monitoring, that determine if the HACCP system is in compliance with the HACCP plan and/or whether the plan needs modification and revalidation.

Principle 7. **Establish Record-Keeping Procedures**

Establish effective record-keeping procedures that document the HACCP system.

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During the hazard analysis and subsequent HACCP plan design and application, consideration must be given to a number of factors. These include; the impact of raw materials, ingredients, and good manufacturing practices, the role of manufacturing processes to control hazards; the likely end-use of the product; consumer populations at risk; and epidemiological data relative to food safety.

The intent of the HACCP system is to focus control at the critical control points for minimizing the greatest risks to product safety. Redesign of the operation should be considered if a significant hazard is identified but no critical control points are found.

Flexibility within the context of the operation should be maintained in the application of HACCP to each specific operation. The HACCP plan should be reviewed and necessary changes made to it when a modification is made to the product or a manufacturing step, which changes the significance of a hazard(s), or alters the control or monitoring activities of a Critical Control Point.

HAZARDS

A hazard is a biological, chemical or physical property that may cause a food to be unsafe for consumption.

To perform a hazard analysis for the development of a HACCP plan, knowledge of potential hazard is very essential. The HACCP plan is designed to control all "significant" food-safety hazards. Food safety hazards are categorized into three classes they are Biological, Chemical and Physical.

It is important to understand that, for the purpose of HACCP, hazards only refer to the conditions or contaminants in food that can cause illness or injury to people. Many conditions are highly undesirable in food, such as the presence of insects, hair, filth or spoilage. Economic fraud and violations of regulatory food standards are equally undesirable. All of these defects must be controlled in food processing.

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CHEMICAL HAZARDS

Chemical contamination can happen at any stage in food production and processing, including harvesting and growing (aquaculture). Chemicals are not hazardous if properly used or controlled. Potential risk to consumers increase when chemicals are not controlled or the recommended treatment rates are exceeded. The presence of a chemical may not always represent a hazard. The amount of the chemical may determine whether it is a hazard or not. Some may require exposure over prolonged periods to have a toxic effect. Regulatory limits are set for some of those contaminants.

BIOLOGICAL HAZARDS

Food born biological hazards include bacterial virus and parasitic organisms. Bacterial Pathogens comprise the majority of food born diseases. Many of these pathogens occur naturally in the environment. Most are killed or inactivated by adequate cooling or cooking. A certain level of pathogens can be expected with some raw foods. Temperature abuse i.e holding high temperature can significantly multiply number or activates pathogens. Parasites are most often host specific fish born parasites in products that are intended to be eaten raw or to be cooked can be killed by effective freezing techniques.

PHYSICAL HAZARDS

Physical hazards include any potentially harmful extraneous matter not normally found in food. Metal-to-metal contact, especially in mechanical cutting and blending operations and with equipment that has part that can break or fall off, such as wire-mesh belts, can introduce metal fragments into products. Such fragments serve as a hazard to the consumer. This hazard can be controlled by subjecting the product to metal detection devices or by regular inspection of at-risk equipment for signs of damage.

ECONOMICAL HAZARDS

Another significant hazard can be effect the commercialbility of the product due to mistake of product description i.e. non-conformity of product declaration vis-a-vis, weight count, etc. This hazard can be the result of the workmanship during course of production and can be controlled by proper supervision.

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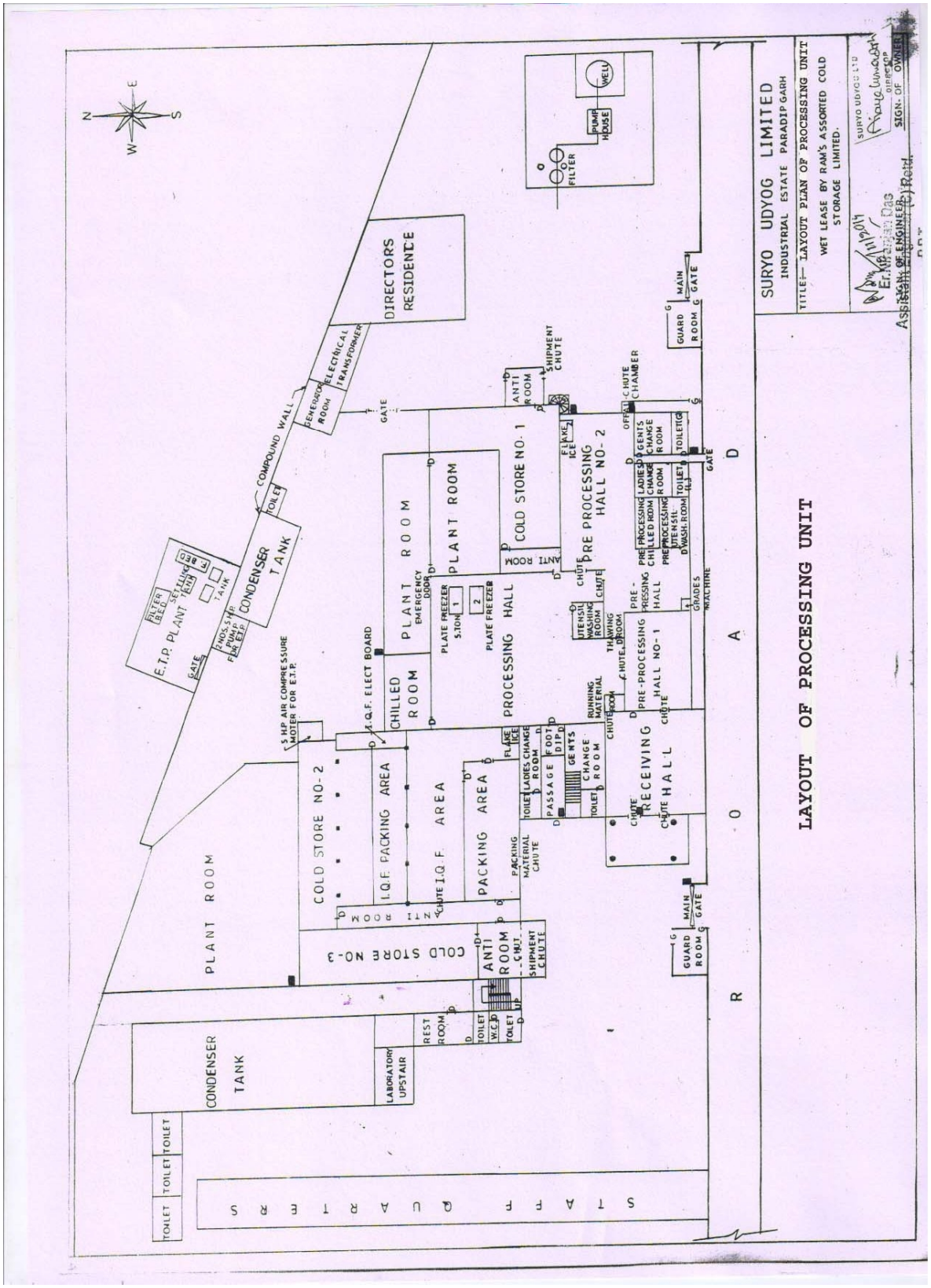
LAYOUT OF THE PROCESSING UNIT



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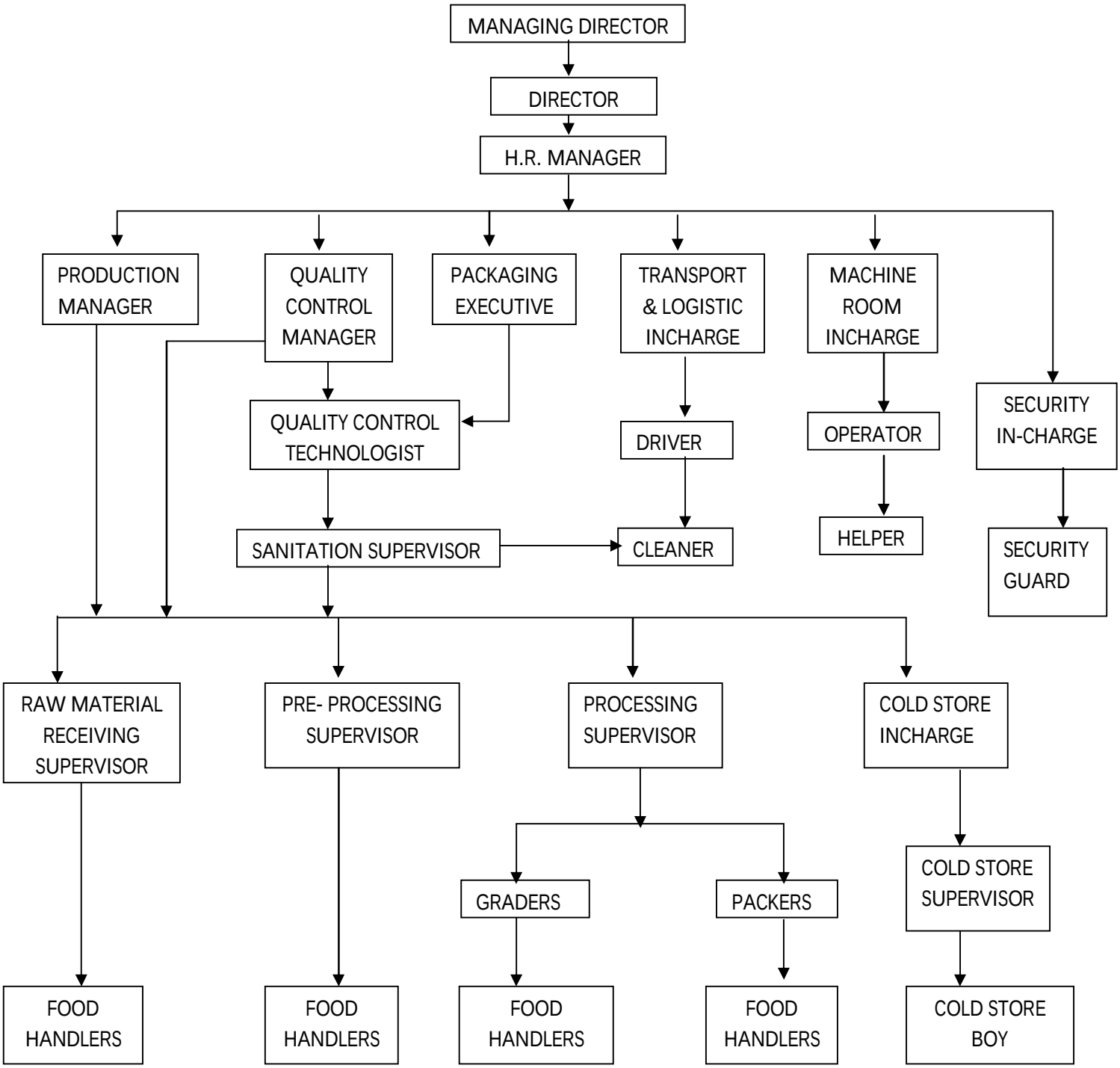
ORGANISATION CHART



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HACCP TEAM RESPONSIBILITY

The HACCP team has been formed and approved by the Managing director of the company, keeping in mind the management's commitment to implements the quality system in totally. Managing Director is the chief authority for the welfare official staff & workers as well as administrative, financial sanction for implementing the quality system of our company. The General Manager is the HACCP team leader. In the absence of team leader, the HACCP team leader, the quality control Manager will have the team leader responsibilities and the same shall be communicated to the HACCP team time to time. Others member in the team are the departments head of following areas

HACCP / FOOD SAFETY TEAM

As it is a collective effort or teamwork to produce a good product, the following are the responsibilities so the team members to do so.

Sl. No.	Name	Designation	Role in the Team	Qualification	Experience
1	Subrat Kumar Dash	Production Manger	Team Leader	B. Sc.	19Yrs
2	Rasmi Ranjan Samal	Q.C. Manager	Member	B. Sc.	10Yrs
3	Samarendra Mahapatra	Q.C. Tech.	Member	B. Sc.	4Yrs
4	Prabira Ku Behera	Q.C. Tech.	Member	B. Sc.	3Yrs
5	Madhusmita Jena	Q.C. Tech.	Member	B. Sc.	3Yrs
6	Rudra Pratap Mishra	Machine Room In-charge	Member	I.T.I.(Ref/AC)	35Yrs
7	Shasikanta Behera	Cold-store & Packaging Incharge	Member	B.A.	12 Yrs

Sl No.	Designation	HACCP Designation	Responsibility
1.	Production Manager	Team leader	Implementation of GMP, SSOP, SOPS & SOP for raw material receiving / pre processing / processing activities & co- coordinating with purchasing center. And also periodic review of HACCP, Periodic Q.C review. Customer interaction/recall recruitment. Audit review GMP, SSOP,SOPS & personnel hygiene maintenance Skill training to achieve objectives production speed & liaisons with Govt. Authorities for inspection, approval etc. In his absence Quality control manger will be responsible.

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Sl No.	Designation	HACCP Designation	Responsibility
2.	Quality control Manager	Member	HACCP documentation & updating monthly audit. Reviews & training monitoring of HACCP, SSOP, SOP, QMS activities. Supervises the online inspection of the product. Plant approval status with EIA/MPEDA etc. Carried out the internal audit .Buyer specification for products. In his absence Q.C technologist will be responsible.
3.	Q.C. Technologist	Member	HACCP documentation & updating monthly audit. Reviews & training monitoring of HACCP, SSOP, SOP, QMS activities. Supervises the online inspection of the product. Plant approval status with EIA/MPEDA etc. Carried out the internal audit. Buyer specification for products. In his absence Q.C Manager will be responsible.
4.	Machine Room In-charge	Member	GMP plant machineries, maintenance of ice, water, gas & power plumbing insulation and refrigeration. Preventive maintenance of all the equipment. In his absence operator will be responsible.
5.	Cold Store In-charge	Member	Implementation of SOP for cold stores. Monitoring & verification of loading / unloading .verification of cold stores temperature. Up to date of FIFO system in cold stores. Maintenance of non conformity, sample bank, shelf life study. Follow up of up to date packing specification. Up to date CCP of metal detection status. In his absence cold store supervisor will be responsible.
6.	H.R. Manager		Recruit & training of employee. Liasoning with govt. Office. Involved in factory administration.
7.	H & S supervisor		Reports to Q.C. Manager & Q.C. Technologists in day to day operations. Reviews the day to day hygiene & sanitation of the plant. Trained the workers for personal hygiene & cleanliness.
8.	Security In-charge		When the product comes to the factory to security department is also responsible for all type of documents verification and record keeping When the visitors come to factory, the visitors log book shall be maintained by the security department. When the finished products are completed as per the buyer's P.O, it should be loaded in refrigerated container; the security officer should be present at that time.

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CHAPTER –I

GOOD MANUFACTURING PRACTICES (GMP)

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GOOD MANUFACTURING PRACTICES (GMP)

Good manufacturing practices are a part of pre-requisite program of HACCP. GMP broadly covers the aspects of the plant environment. Personal Hygiene and process control(e.g. temp. control during processing and/or storage). To produce safe food the unit has laid the following GMP to ensure that the material is received. Processed, packed and stored under constant sanitary conditions which prevent contamination with chemical, micro-organism, filth or anything else.

GMP broadly covers the following 7 aspects.

1. Personnel Hygiene:
2. Building Design and Facilities.
3. Sanitary Facilities & control.
4. Sanitary Operation.
5. Equipments & Calibration.
6. Production & Process Control.
7. Warehousing & Distribution.

1. Personnel Hygiene:

The unit takes precaution measure to ensure:

Disease control: The unit employs only those personnel free from contagious disease, open wounds or carriers of pathogenic bacteria. Blood, urine, stool, etc are performed on yearly basis for all workers and records maintained in the Health Cards. All workers are given medical certificate by a registered Doctor engaged by the company declaring that worker is fit to handle food products. Any worker or member of his/her family suffering from communicable diseases is given compulsory medical leave. Before joining the duty, the worker has to submit 'fitness certificate' from the Doctor engaged by the company. All the workers are compulsorily examined once in 3 months basis, apart from the daily supervision on personal hygiene. Health Card is maintained for each worker (Annexure-XVII).

Cleanliness: It is ensured that all workers working in direct contact of food maintain the hygienic practices. It is essential for all workers to use full set of sanitized dress that includes aprons, head gears, mouth caps and gloves. No worker is allowed to join duty with open wounds. Technologist/supervisor ensures that no workers with unsecured jewellary or nail polish. For each absence from work area, the worker washes and sanitizes hand properly before starting work again.

The change rooms are equipped with liquid soap, disposable towels, hand dryers and uniform hangers in adequate numbers. Eating food, chewing tobacco and other in sanitary practices are strictly prohibited.

Education and Training: All the food handlers and workers responsible for sanitation failures or food contamination are provided need based in house training apart from training organized by the MPEDA and EIA from time to time. Technologists are sent to participate in seminars/training program for keeping abreast with the latest developments.

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2. **Building design and facilities**

Plant and Ground: The premise of the plant is separated with boundary walls and grounds are maintained to exclude pests, animals and other sources of contamination. Sufficient spaces are provided for Roads, yard and packing area. All these facilities are maintained properly. The proper drainage facilities are provided to prevent contamination of food by seepage, food borne filth or by providing beading place for pests. For this purpose effluent treatment plant is installed. The drainage line of processing and pre-processing section are separated from other sources like rain water to avoid overload to the ETP. Overhanging of trees, grasses, weeds nearest to the processing area are regularly cut to avoid breeding grounds of pests.

Plant construction and design: The different sections of building are so constructed as to reduce the potential contamination of the food, food contact surfaces and food packaging materials. All entry points having direct access to the exterior are provided with self-closing doors and air curtains with automatic systems. All machines are so installed that floors, ceiling and walls are easily cleaned and sanitized daily. Adequate working space is provided for workers and materials movement without causing any contamination of food. Adequate ventilation with adequate numbers of exhaust fans are provided to minimize odour and waste vapor. Sufficient lighting are provided with protective covers to avoid contamination through possible glass breakage. Floor are washable and sloped towards the drain to avoid water stagnation. Walls are washable up to 1.5 Meter freight and light coloured. Wall to wall and wall to floor are rounded up. Building is designed such a way to preclude pest and rodent. Fly catchers are provided at all entry points and weekly before starting of work, the same are cleaned and inspected to locate any possible failure of mechanism. All the outlet of drains are covered with the system comprising of an inner iron grill outer sieve to prevent rodent entry. Rodent traps are used and placed every day and inspected next day for any catch. Records are maintained (Annexure-XIV).

3. **Sanitary Operation**

Building, fixtures and other facilities within the unit are maintained in satisfactory sanitary condition. Washing and cleaning of utensils, food contact surfaces, lights and other physical facilities are made every day as laid down schedule strictly. A sanitary supervisor is required only for this specific purpose.

Storage of Toxic materials and sanitizing agents: All incoming chemicals, sanitizing agents are accompanied by labels of manufacturing date, expiry date and batch no. Each batch of hypochlorite is checked for its strength once in 15 days or against each lot whichever is earlier and entered in the register . Master stock of sanitizing agent and chemicals are kept in the chemical store with proper labeling as dry chemical/wet chemical and edible/non-edible under lock and key. A stock register is maintained (Annexure-XXXIV).

Sanitation of food contact surfaces: All food contact surfaces are made of non-toxic, non-corrosive type materials and designed to such a way so that these are cleaned and sanitized easily. Before starting of day's production and after completion of each shift and at each break, all food contact surfaces are cleaned and sanitized according to the laid down cleaning schedule and recorded the same.

Storage and handling of cleaned potable utensils and equipments: Cleaned and sanitized utensils and equipments are kept on the pellets. Separate stands are provided to keep cleaned trays and pans. Care is taken, the same not to come contact with the floor. Water from the working tables is drained out directly to the drain through pipes to avoid the contamination of sanitized utensils due to floor wash.

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4. Sanitary facilities and controls

The food is handled in safe sanitary condition to prevent contamination. The unit is equipped with the following sanitary facilities.

Water supply and Ice manufacturing: Water derived from the ground water source (bore well) treated through WTP including UV treatment and supplied to all sections of the unit.

The quality of ice and water is tested fortnightly in the in-house laboratory of the unit and recorded. Portability of water & ice is tested for all chemicals and microbiological factors annually by an out-side laboratory or Govt. Agency. Ice are carried to the pre-processing section by trolley. Ice not kept in the floor. The same are carried in the processing section by trolley.

Plumbing: Plumbing route is adequately designed and installed such a way so that sufficient quantity of water is carried to required area throughout the unit. Covered drains, provided for discharging used water from the unit to the Effluent Treatment Plant. Adequate drainage facilities are provided in the raw material washing area where more water is used. Drain pipes are connected from working tables directly to the drain to avoid floor splash.

Toilet facilities: The unit is provided with adequate numbers of sanitary type toilet facilities with self closing door. Wash basins with foot operated tap, liquid soap, disposable towels are provided near the toilet for washing and sanitizing hands after using the toilets. Foot operated bins are also used to collect the used towels. All the toilets are cleaned as per laid down schedule. The same is verified and recorded by the Technologist. The entrance of the toilet does not have direct access to the food handling section.

Hand washing facilities: Washing facilities with adequate liquid soap and disposable towels are provided in all the change room. Each wash basin is provided non hand operated taps to prevent contamination. Foot operated bins are provided in the change room to collect sanitized towels after use. Sign boards are displayed in all sections and change rooms to educate the food handles on satisfactory sanitation and hygienic practices.

Rubbish and offal disposal: Rubbish and offal residues from various sections are stored in a covered vat at a distance away from the unit. The local municipality empties the vat at regular interval.

5. Equipment and Utensils

All the equipments are made of non-toxic and non-corrosive materials. Care is taken for appropriate installation of plant equipments so as to provide adequate space for sanitization. The chill rooms, freezers ad cold storages are provided with temperature recording devices. The chill rooms and freezers are fitted with dial thermometers and cold storages are fitted with thermograph i.e. automatic temperature recording system. All such pressure and temperature-measuring devices are calibrated in house using standard thermometer on a monthly basis. Besides the calibration is also done by out-side govt. approved agency once in a year. The same is recorded in the register (Annexure-XVI). All the equipments used in the laboratory are calibrated regularly once in a year by external agency as well as the calibration is also done on monthly basis by the technologists using standard thermometer.

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6. **Production and Process control**

Adequate quality control measures exercised in receiving, holding, segregation, packing, freezing, storing of food materials with a minimum time duration of 7 to 8 hours from receiving to storage, so as to ensure that the food is not contaminated due to unsafe condition. All the precautionary measures are taken to perform the processing activities under safe sanitary conditions to produce safe food, Before receiving the raw materials are being classified accordingly such as wild catch & farm raised. For the wild catch the MPEDA vessel log book is maintained whereas for farm raised the pre-harvesting lobotomy test report to produce for the particular materials of the pond, and the pond should be registered under **costal aquaculture authority of India (CAAI) or** any Govt. Authority. Microbiological, filth and decomposition tests are conducted at specific stages to identify sanitary failures and contamination. After receipt of raw materials in the unit, the same is inspected for various quality parameters including deterioration and objectionable foreign matter for screening and sorting out any possible materials that may injurious to health. Temperature of materials, ice content, condition of ice & packing materials and type of transport are verified and recorded in the receiving log (Annexure-I). Washing and cleaning of food contact surface and materials are performed with required level of chlorinated potable water. Adequate care is taken at all the stage of process line to prevent possible contamination and growth of pathogen with a temperature maintenance of +4^{o}C each processing stage.

Freezing is strictly monitored and records maintained thereof. Required temperature of chill rooms 0 to 4^{o}C and cold storages –18^{o}C are maintained strictly through time temperature control to prevent the growth of pathogen. Corrective actions are employed following fluctuations from the operating limit in any stage to ensure a safe disposition of the affected product produced during the deviation. All controls in the process line by microbiological testing both at raw material and end product stage by the technologist. Effective measures are taken to prevent the inclusion of metal fragments or other extraneous materials in food. Maintenance work is carried out for all the plant equipments and machineries for ensure continuous process capability and smooth operation of plant. All maintenance work are classified as under:

i. **Preventive maintenance:** A systematic procedure is adopted wherein the condition of the unit is constantly watched and preventive actions are taken to reduce the incidence of breakdown. Preventive maintenance schedules are prepared for daily and once in a year. All the machinery equipments are maintained accordingly to the preventive maintenance schedule and all the activities are recorded in the maintenance log (Annexure-XXXIX).

ii. **Breakdown maintenance:** In case any breakdown of any equipment/machinery the same is attended properly. Such event and subsequent restoration of the machine to serviceable condition is recorded in the maintenance log. The nature and extent of breakdown maintenance is analyzed annually by the mechanical department to identify the root cause and appropriate corrective/preventive action. Such analysis is carried out in the form of annual breakdown analysis format.

7. **Warehousing and distribution -**Handling and storage of finished products are performed in separate area under extreme sanitary control. Strict supervisory check is performed in all the steps to ensure no cross contamination occurs at these steps. Insulated/refrigerated vehicles transport the finished products and time temperature abuse is avoided to provide a safe and wholesome food to the consumers.

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CHAPTER – II

SANITATION STANDARED OPERATING PROCEDURES (SSOP)

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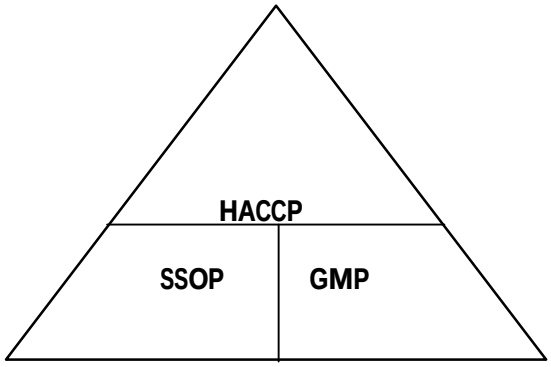
SANITATION STANDARD OPERATING PROCEDURE

Good Manufacturing Practices (GMPs) and Sanitation Standard Operating Procedures (SSOPs) are the prerequisite for the success of HACCP. Good Manufacturing Practices broadly covers the aspects of the plant environment, personal hygiene & process controls (e.g. temperature controls during processing and/or storage). SSOPs are the component of GMPs. SSOPs covers the set objectives for sanitary handling and processing of food and the cleanliness of the plant environment and establish procedures to meet them. The relationship for SSOPs & GMPs with the HACCP plan can be illustrated as under.



SSOPs can be virtually covering the following sanitary aspect.

1. Safety of water & Ice.
2. Condition and cleanliness of food-contact surfaces including Utensils, glows And other outer garments.
3. Prevention of cross-contamination.
4. Maintenance of hand washing, hand sanitizing and toilet facilities.
5. Protection of food ,food packaging materials and food contact surfaces from Adulterants.
6. Labeling, storage and use of toxic compounds.
7. Employee health conditions.
8. Exclusion of pests.
9. Waste disposal.

Authorized by:-

Managing Director

1. Safety of water & Ice

WATER : Water used in different sections of the processing units are drawn from ground water source and after passing through difference stages of filtration and purification including UV Treatment is used for processing, peeling, washing, cleaning & ice making. The different water lines are marked by separate colour code i.e. Blue for UV and Green for Non-UV.

These operations of water treatment plant including filter back wash are performed by Assistant Mechanic. Chlorine dosing in WTP is checked by the Technologist. The strength of chlorine in water used for various sections checked by the technologist at specified intervals and recorded in the register of "chlorine level in water (Annexure VII). The strength of the Sodium hydrochloride, which used for chlorination of water is also tested by the technologist in the laboratory once in a 15 days and recorded in the same register.

Microbiological verification: Safety of water is ensured both by internal and external certification. Samples of water are drawn section wise against respective tap nos, fortnightly by the technologist and tested for microbial factors. Testing of the portability of water and ice is also done once in 2 year as per EU Directives No.98/83/EC in EIC Approved Laboratory like EIA, Interfield Lab and Sea Lab.

The unit has the following number of water storage tanks for the circulation of treated water to various sections.

No.of Tanks	Capacity
1.	18,000 Ltrs(Overhead Tank)
2.	21,060 Ltrs(Overhead Tank)

Both the tanks are cleaned fortnightly against schedule which is clearly displayed at the tank side and is followed strictly.

i) OVERHEAD TANK CLEANING SCHEDULE: Overhead tank is cleaned fortnightly against schedule date for particular tank. The water in the tank is completely drained out by opening the drain valve. Then one worker enters into the tank with sanitized hands and feet with an empty bucket with the help of a casual (Aluminium) ladder. He sucks the left water with the help of a sponge pad and put the soaked water in the bucket. Then the bucket is disposed off outside by another worker

present on the roof of the tank. The inside surface, roof and 4 walls are scrubbed with a hard brush and washed with liquid detergent (teepol). The tanks are then flushed with water to remove traces of detergent. Then 100ppm of sodium hypo chloride solution apply in the inside area of the tank for 15minute. Finally rinsed with potable water to remove traces of chlorine and kept open for sometime till the smell of chlorine goes. Then the tank is locked. The same is recorded in the overhead tank cleaning record (Annexure-XII).

ICE: For ice manufacture water is drawn through the same procedure and the factory has following capacity in ice.

2no.s of flake ice each have 10MT per day.

Flake Ice is extensively used both in processing and pre-processing.

Records: WTP operation log, Overhead tank cleaning log, Laboratory analysis report, Test Reports from Govt. Laboratory.

2. **Condition and cleanliness of food-contact surfaces**

All food contact surfaces of plant equipment and utensils, including equipment used for ice production and storage, are designed of such material and workmanship that can be cleaned easily and surfaces made of nontoxic materials and designed to withstand the intended use of cleaning compounds and sanitizing agents. Cleaning and sanitizing is done before starting of day's production and after completion of every shift as well as at each break. Cleaning and sanitizing touches all the areas of the factory starting from pre-processing, receiving, processing, change room, foot-dip, filth washing and grading machine room, ice plant area, freezers, air blast freezer, Ante room of cold storage and air blast freezer, toilets and factory premises, rest room etc. all the utensils, tables, trays, weighing balance etc. Following measures are taken to meet the specifications of satisfactory sanitary and hygienic condition of the plant.

1) All utensils, crates, tubs and equipments are rinsed with potable chlorinated water by using jet spray.

2) Liquid detergent (Teepol) is applied and left for 10 minutes;

3) Manual scrubbing with plastic brush, pads, etc. to remove organic soils (oils, fats, grease, proteins etc) and Inorganic soils (rust, salt, hard waste, scale etc.)
4) Rinsed completely with potable water of all these areas and equipments and drained.
5) Any areas that need re-cleaning are cleaned with liquid detergent until properly cleaned. These areas again rinse with potable water.
6) All equipments & utensils are rinsed with chlorinated water (50-100ppm Chlorine) and left for 10 minutes;
7) rinsed all these areas and equipments with potable water and drained;
8) The sanitizer (chlorine) is used in different areas and different equipments in accordance with the E.I.A. specifications.
9) Chlorine doses for this purpose is prepared in accordance with the following.

Floor washing	-	100 - 200 ppm
Table washing	-	50 - 100 ppm
Utensils washing	-	50 - 100 ppm
Tray washing	-	50 - 100 ppm
Equipment washing	-	50 - 100 ppm
Processing Water	-	< 2 ppm
Glaze Water	-	< 2 ppm
Ice Manufacturing	-	< 2 ppm
Foot Dip	-	50 to 100 ppm
Hand Dip	-	20 ppm

The cold storages are emptied and cleaned using the same method mentioned above once in a year. All the electric equipments are also cleaned manually once in a month. The fly-catchers, air curtain cleaned weekly basis.

Note: Processing will not resume until the plant conditions are determined to be satisfactory.

Record: Washing/Cleaning schedule (Annexure-VI)

3. **Prevention of Cross-contamination**

Supervision of high and low risk area: All high risk areas are segregated from each other in such a way that workers from one area cannot move into the other section, such areas are partitioned by permanent walls leaving chutes. All raw materials passage is only chute to prevent any possible human movement. Workers of different section are provided with separate colour coding.

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4. Maintenance of hand-washing, hand-sanitizing and toilet facilities

All workers are individually provided with caps, mouth guard, aprons, which are, sanitized daily by an outside laundry. Non-disposal items are staged in bins with instruction to send it for laundry. Each worker is provided with separate lockers for keeping the sanitized clothes and street clothes. A separate laundry log is maintained by the technologist to keep a check on the entire procedure (Annexure-XXX).

Employees are trained in all aspects of sanitation and personal hygiene. Usage of sanitized protective dresses is mandatory. Extra care is taken regarding cleaning and sanitization of hand and feet after using toilets. Technologist keeps watch on the above and records his observation in the personnel hygiene report (Annexure-IX).

Hand washing facilities: All the entry points, wash basin with non hand operated taps are provided for washing the hands. Workers use this facilities before commencing each day's work on every occasion, after visiting toilet, before resuming work and after each absence from work place. Disposable towels are provided to dry their hands.

Workers take the following measures to wash their hands:

a. Palms and arms from the elbow down are rinsed with fresh water.

b. Soap is applied.

c. Fingers, nails, arms from the elbow down are washed lather on and around.

d. Palm and hand are rinsed with fresh water.

e. Single used disposable towels are used to dry palm and hand.

f. Used towels are thrown in foot-operated bins.

g. Prominent sign boards are displayed inside the rooms for guidance.

Foot washing facilities: Foot dips with adequate strength of chlorinated water are provided for workers to sanitize their feet before entering into the respective areas.

QC has to check at the entrance point so that the above procedures are strictly followed.

Hand sanitizing facilities: All the entry points, chlorine dips for hand sanitization are provided. All hand dips are maintained at desired level of chlorination. All the workers dip their hands in the hand dip for sanitization before commencing the work. The above aspect are monitored by the Technologist and records are maintained in daily sanitation audit form and daily sanitation report.

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Toilet and Change room facilities: In the change room, separate lockers are provided for each worker for keeping their working clothes and street clothes separately. Shoe racks are also provided to keep the street shoes. It is mandatory for the workers to keep off their street clothes and shoes and keep them in the respective locker and shoe rack and put on sanitized clothes kept in the locker marked for the same. After completion of work, all workers stag their working clothes in bins specially marked for such with an instruction to send the same for laundering. All the toilets and change room are cleaned daily before starting of the work and after every shift. Technologist supervises the cleaning of change room and records his observation in the daily sanitation report (Annexure-VIII).

Hand washing facilities such as washbasin, non-hand operated taps; soap dispensers disposable towels and foot-operated bins are provided in the change room. Workers use the above facilities to wash and sanitize their hands. Workers are trained to properly wash and sanitize themselves.

5. **Protection of food, food packaging material and food contact surfaces from Adulteration.**

Proper care is taken to protect Raw material food contact surfaces from adulterants. Q.C Department monitors & ensures the following:

a) Cleaning compounds and sanitizing agents are used before and after the processing hours with no material on processing floor. These cleaning compounds are labeled and stored properly in the "wet chemical store" under supervision.

b) Food & Food contact surfaces are protected from lubricants and stored separately with proper labeling in the plant section. Any maintenance or repair of machinery is done only in the presence of plant-in-charge & Q.C dept before or after the processing hour.

c) Under Contract, herbal based pesticide control is conducted by independent agency. Pesticides are not stored inside factory premises. Pesticide control operations are conducted on weekly basis with prior concurrence with Q.C. Dept. When processing activities are not on.

d) Maintenance Dept regularly monitors the ventilation system to ensure adequate ventilation, airflow, air-pressure that prevents or inhibits the formation of condensates in the processing & storage areas.

e) Q.C. Dept supervises flooring cleaning conducted by water jets and manual brushing using chlorinated water (100-200 ppm) and ensures no material is on floor so as to protect material from floor splash.

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6. **Proper Labeling, storage and use of toxic compounds**

a. Proper labeling of containers.

Original container labels should show

i) Name of compounds or solution.

ii) Name & address of manufacturer or manufactured for or packed for or distributed by and appropriate instruction for proper use

b. Working container labels must shows

c. Proper storage of toxic compounds.

- Room with limited access.
- Segregate food grade from nonfood grade lubricants.
- Keep toxic compounds away from equipments of other food contact surfaces.

d. Proper use of toxic compounds

- Use as per manufacturer instructions.

e. Frequency of monitoring.

All chemicals sanitizing agents, pesticides, liquid soap, and chlorine are kept separately being identified as wet and dry chemical with proper marking and labeling of edible and non-edible variety under lock and key. For everyday use, the Q.C. Department takes care to release the required quantity for usage. Records are maintained in chemical store issue register (Annexure-X). Portable trolley with pressure wash also used for this purpose.

7. **Employee Health Conditions**

All workers are trained through GMP for personal cleanliness and hygiene. Registered Medical Practitioner engaged by the company compulsorily examines all workers on a monthly basis and health card is maintained for the same. Stools and urine of each worker are examined once in a year. Any worker or member of his/her family suffering from diseases is given compulsory medical leave.

Before they join duty, they have to submit 'fitness certificate' of the attending Doctor engaged by the company. Recurrence of infectious diseases for more than two times is viewed serious and in such case he/she is not allowed to work in the unit. Display boards are given at different points of the processing area and peeling area for workers awareness.

Records: Health Card, Monthly Medical Checkup Report, and Personnel Hygiene Report.

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8. Exclusion of pests

Authorized pest control agency is given annual contract with condition that the system to be monitored for effective pest control once daily. The agency in this regard has given a certificate of declaration that they use approved chemical for the said job. For control of rodents, cockroach, lizard, spider, flies mosquitoes and etc. the unit also uses rodent traps and fly catchers. The rodent traps are marked and kept according to the rodent map. The technologists monitor the entire operation with the assistance of the supervisors. Fly catchers are cleaned on weekly basis and rodent traps are cleaned on daily basis and records are maintained against corresponding number of bait stations and fly catchers by the supervisor and verified by the technologist (Annexure-XIII). External Govt. approved agency contracted for treatment of external premises.

Records: Pest control log, Flycatcher register, Rodent trap register.

9. Waste Disposal

Wastes in the pre-processing section are collected in the black polythene bags. The bags are immediately closed at the neck and put into marked leak proof covered tubs. The tubs are removed through waste disposal chute and carried out by waste disposal van at frequent intervals. Tubs used for waste are cleaned and sanitized at an appropriate frequency to minimize contamination. Waste in the processing section if any are disposed off in polythene bags. The bags are closed at the neck and put into a covered tub. The cleaning team removes the polythene bags after the end of every shift. Before on set of the days work and between every shift the technologist visits to the every area and records his observation in the daily sanitation report (Annexure-VIII). Exclusive covered vans are used for waste disposal and dumping in Government demarcated areas, or given to parties on demand for reprocessing for poultry feed purpose. Vehicles ply at regular intervals between factory and dumping grounds.

For better personal and production habits training are organized by MPEDA once in a year or more in our factory.

Once every morning after cleaning and sanitizing, Technologist perform a pre-operational sanitation audit to verify all the equipments and areas are sufficiently cleaned and sanitized and accordingly maintained the daily sanitation report, personal hygiene report. If anything has not been cleaned satisfactory that will be marked in the report and take immediate and necessary steps to re-clean and re-sanitize in the same day or after complete of the production work. No production to resume tills the plant conditions determined to be satisfactory.

To verify the effectiveness of the cleaning and sanitizing the Technologist have collected swab samples for microbiological test once in fifteen days. All the test results are recorded in the sanitary register. This result is used to guide for improvement in areas of cleaning, sanitation and personnel habit. A sanitary supervisor who is specifically given the sole responsibility supervises the entire hygienic condition of the factory.

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RISK ANALYSIS

The HACCP Team conducted brain strong session to identify all the hazards likely to happen in each processing step. Finally, they enlisted potential hazards by considering the hazards from the angles.

1. What is the likelihood of it happening?
2. How severe are the consequence?
3. If it happens, how many people affected

Scoring has given as Low=1, Medium=2 & High=3
Based on the score of each category will be multiplied to arrive a total score of each step and categorizing each step based upon the score into potential hazards or not.

(I) Potential hazards when score 18 or above.

(II) Non potential hazards when score below 18

Process step	Hazards	Likelihood	Severity	People affected
Raw material receiving step	If the material are temperature <4^{0}c, there is possibility of microbial growth. Supplied raw material may contain sulphite and prohibited antibiotics /pesticides.	3	3	3
Weighing /washing	If water is not properly disinfected, there is chance of microbial contamination.	1	1	3
Grading/ freezing	If water do not adhere GMP, (SOP) there is chance of cross contamination.	1	1	2
Metal detection	Inclusion of any metal in any form may cause injury to the consumer.	3	3	3
Labeling	Shrimps is an allergen	3	3	3

Scoring:
Raw material receiving step : 27
Weighing /washing : 3
Grading /freezing : 2
Metal detection : 27
Labeling : 27

By risk assessment, it is concluded that the following hazards are enlisted as potential hazards
(I) Raw material receiving step.
(II) Metal detection
(III) Labeling

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HAZARD ANALYSIS WORK SHEET FOR WATER & ICE

Firm Name: Ram's Assorted Cold Storage Ltd. Management: water treatment plant

Firm Address: Industrial Estate, Paradipgarh, Jagatsinghpur Storage :Over head tank

Distribution : As per plumbing diagram

Sl no	Entity	Identify potential hazards introduced controlled or enhanced at this step	Whether it is significant or not	Justification for decision in column no .3	What preventive measure(s) can be applied to prevent the significant hazard?	Is this step critical control point?
	Water & Ice	**Biological** Presence of pathogens	No	Ground water is drawn from bore well & collected at the first filtration plant through spring basis. The water is passed through water treatment plant with softener/chlorine dosing, & water passing through UV light. Over head tanks are cleaned as per schedule. Sanitary surveillance of water & ice is carried out once in 6month & once in a 2 year, water & ice sent to outside approved lab for testing of EC rule of 98/83/EC. Treated water as above is used for ice manufacturing & flake ice machine are well maintain (SSOP).		No
		Chemical	No	Water is tested for all chemical parameter once in 6 month & once in a 2 year as per 98/83/EC at approved lab.		No
		Physical Extraneous matter	No	Controlled through water treatment plant & the flake ice machine are well maintained (SSOP)		No

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Managing Director

HAZARD ANALYSIS WORKSHEET FOR ADDITIVES

Firm Name: Ram's Assorted Cold Storage Ltd.
Address: Industrial Estate, Paradipgarh, Jagatsingpur

Types of additives: USFDA or EU approved additives and salt
Storage : Chemical Room
Distribution: Used as per buyer requirement

Sl no	Entity	Identify potential hazards introduced controlled or enhanced at this step	Whether it is significant or not	Justification for decision in column no .3	What preventive measure(s) can be applied to prevent the significant hazard?	Is this step critical control point?
	Additives & salt	**Biological** Presence of pathogens	No	Only USFDA or EU approved additives (CARNAL, non phosphate, & iodised salt) are used. Supplier test certificate is checked. Salt is test for staphylococcus & sulfite reducing clostridium once in six month at approved lab. If the same batch of salt is being used for more than six month , sample shall be collected after purchase of the next batch. Sample from different container shall be drawn so that a composite sample is collected for this purpose.	……	No
		Chemical Nil	No	Only USFDA or EU approved additives(CARNAL, non phosphate & iodised salt) are used. Supplier test certificate is checked . Additives are monitored once in six month by drawing sample, specially from finished product of shrimps for testing sulfite & added phosphate. The representative sample are drawn from a selected code at random. From the carton are selected, composite sample is drawn from testing the additives.	……	No
		Physical Extraneous matter	No	Only USFDA or EU approved additives (CARNAL, non phosphate & iodised salt) are used. Supplier test certificate is checked. Only sealed bag are accepted, any damage & seal broken material is send back to supplier. Stored in our chemical room, maintain through SSOP.	…….	No

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Managing Director

HAZARD ANALYSIS WORKSHEET FOR PACKING MATERIAL

Firm Name: Ram‟s Assorted Cold Storage Ltd.
Firm Address: Industrial Estate, Paradipgarh, Jagatsingpur

Types of additives: Food grade corrugated fiber master cartons board, inner cartons/paper duplex inner Master carton, poly bags etc
Storage : Packing material room
Distribution : used as per buyer requirement

Sl no	Entity	Identify potential hazards introduced controlled or enhanced at this step	Whether it is significant or not	Justification for decision in column no .3	What preventive measure(s) can be applied to prevent the significant hazard?	Is this step critical control point?
	Packing mateial	**Biological** Presence of pathogens	No	Food grade packing material is used. There is no history of presence of any biological hazards in packaging materials. Packaging materials are stored in our packing material store. (maintain through SOP.)	…….	No
		Chemical Nil	No	Food grade packaging material is used. There is no history of presence of any chemical hazards in packaging material. Food grade printing /marking ink & HDP/LDP are used.	…….	No
		Physical Extraneous matter	No	Packaging material are stored in packing material room, properly covered with polythene sheet. Storing & racking is done brand wise/ product wise /lot wise. So that mixing of brand /variety & lot shall be avoided.(maintain through SSOP & SOP)	…….	No

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PRODUCT PROFILE

The manual cover details of the following products those are being processed in this facility have been covered under this manual:

Line	Type of Freezing	Species
1.	*Block Freezing Raw*	Penaeus monodon Penaeus indicus Penaeus semisulcatus Parapenaeupsis stylifera Litopenaeus vannamei Metapenaeus affinis Metapenaeus monoceros Metapenaeus dobsoni
2.	*Individual Quick Freezing Raw*	Penaeus monodon Penaeus indicus Penaeus semisulcatus Parapenaeupsis stylifera Litopenaeus vannamei Metapenaeus affinis Metapenaeus monoceros Metapenaeus dobsoni

Authorized by:-

Managing Director

CHAPTER – III

FRESH FROZEN RAW AQUACULTURE SHRIMPS BLOCK FROZEN

Authorized by:-

Managing Director

DESCRIPTION OF RAW BLOCK FROZEN AQUACULTURE SHRIMPS

Source of Raw Material	Fresh raw material purchased from registered farms having preharvest testing of antibiotic report. (Aquaculture material)
Product	Fresh block frozen raw shrimps
Varieties	Head on – shrimps (H/on)
	Headless Shell-on Shrimps (HL, EZ PEEL)
	Peeled Deveined Tail-on (PDTO, Round cut)
	Peeled Deveined Tail-on (BUTTERFLY 70% Cut)
	Peeled Undeveined Tail-off (PUD, Round cut)
Packing	6 x 1.816Kg, 10x2Kg, 6x1.2Kg,6x1Kg, 10x4lbs etc., (Type of pack and Pouch / M/c as per buyer's requirements)
Storage conditions	At or below -18°c
Shelf life of the product	24 months from the production date or as per the specification of Importing countries.
Method of Preservation	Contact Plate Freezer (Block freezing)
Additives used	Salt and Sodium-Tri-Poly-Phosphate(STTP) as per buyer's requirement
Distribution	To be distributed through refrigerated vehicle or container, maintain below -18°c
Intended use by customer	To be consumed by general public When thawing, we recommend ….. Place Bag of shrimps overnight into the refrigerator or empty desire amount into a container of cool water for approximately 5 minutes drain. It's now ready for cooking. Re-freezing thawed product is not recommended.

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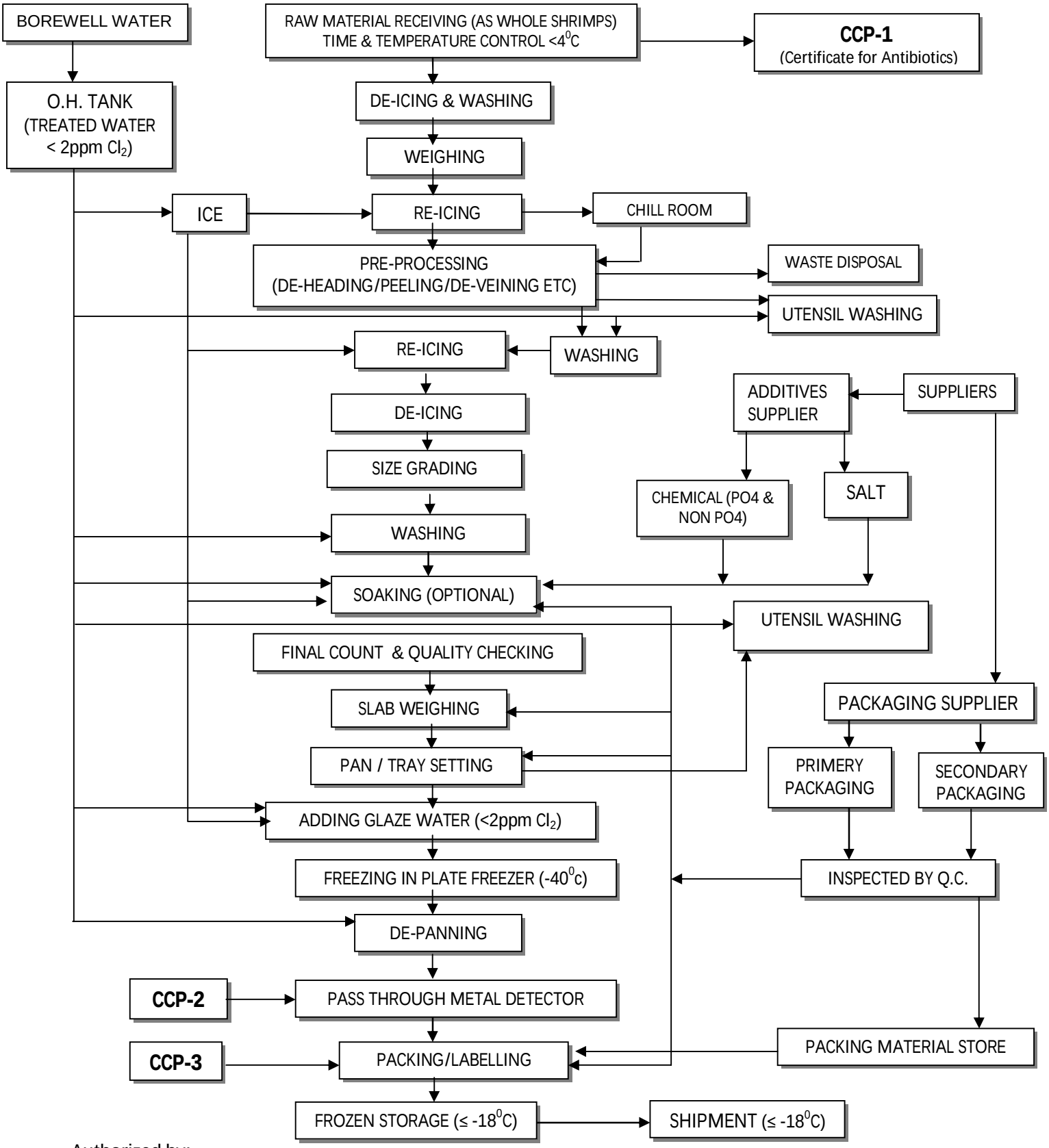
PRODUCTION FLOW CHART FOR FRESH FROZEN RAW AQUACULTURE SHRIMPS (BLOCK FROZEN)



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PROCESSING STEPS OF FRESH FROZEN RAW SHRIMPS (PROCESS DESCRIPTION)

- ❒ The heads alone of the prawns are removed, leaving the entire shells and tails intact;
- ❒ The vein (intestine) is pulled out as far as possible from the severed head portion; hanging meat along with the red membrane is removed.
- ❒ Washed well after de-heading;
- ❒ Discolored, bruised and soft-shelled pieces at the grading time are discarded.
- ❒ After grading, the HL/PUD/PD/PDTO are packed in doubly waxed duplex board cartons of 1.8 Kg/ pan of 2 Kg made of stainless steel (or as per buyers requirement) each with declared size, grade.
- ❒ For peeled shrimps the shell is completely removed and either or vein is removed by sharp knife. Dehydrated & discolored smelling pieces are segregated and rejected.
- ❒ Peeled material is thoroughly washed in perforated tub and re-iced properly.
- ❒ Graded materials are packed in duplex cartons with top layered arranged up to 80/120 and jumble pack for 100/200.
- ❒ Packing is in a parallel style with uniform arrangement, no cross packing.
- ❒ Add ice cold glaze water (2 ppm chlorine);
- ❒ In HL type of product, the flavor and nutrients is maximum due to the protection offered by the shell.

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Managing Director

On- Site Verification Process Flow For Block Frozen Aquaculture Shrimps

Whole shrimps are received at the receiving room through landing platform of Pre-Processing section. Each batch of raw materials are properly deiced and check temperature $<4^0$C and washed with potable water. Materials supplied by different suppliers are tagged with labels with detailed information and certificate of antibiotics. Materials of a particular variety are accepted at a time after satisfying the raw material acceptance criteria (Appendix-III) and rejected the materials which are not satisfied the acceptance criteria. Rejected materials are taken in crates with tag rejected and handed over to the agent/supplier after the batch is over. Purchase supervisor accepts the materials based on accepting criteria and records his observation in the raw material receiving log (Annexure-I). After proper washing with chlorinated water of < 2 ppm. strength and weighing, the head on materials are adequately iced in sanitized crates and kept in the chilled room of pre-processing section, maintained the temperature below $+4^0$C or sent to the preprocessing section directly, if no more balance material is there. This operation is completed within minimum time. A time temperature log for the chill room is maintained by the supervisor to keep a check on temperature abuse. At the time of deheading or peeling etc, adequate and experienced workers are engaged to ensure quick completion of the activity. During the operation, adequate flake ice is used to maintain the temperature below $+4^0$C. The headless or peeled materials are further washed with Chlorinated water of <2 ppm. Strength and adequately iced in sanitized crates. Raw material samples drawn for microbiological/antibiotic test as per the schedule.

After receiving in the processing section, prior to grading each crate of material is de-iced and washed with chlorinated potable water. To minimize the cumulative exposure of material to high temperature, delay during manual grading is avoided. The graded materials are adequately iced and kept in plastic crates. To avoid time temperature abuse, excess materials are stored in the chill room or insulated boxes in the processing section with adequate ice. For time temperature log of chill room maintained to keep a check of temperature abuse.

The graded headless materials are deiced and taken for wash to remove the filth. In case of peeled materials, after deicing the materials are fed into the automatic grading cum filth washing machine to remove the filth. Prior final weighment of the slabs each individual grade of single variety is washed with chlorinated water <2 ppm. Strength and taken on perforated table to drain out the excess water. At this stage the code slip in addition to the mandatory information also incorporated.

Before weighment, the materials are taken for final grade checking and colour segregation. Following weighment, slabs are taken to a setting table to arrange the materials in pan/inner cartons. Technologists inspects the processed slabs to check the count, weight and other quality parameters and records the observation in the register of processing (Annexure-III). After packing chilled glaze water with < 2 ppm. Chlorine level is poured into the slabs. These slabs then taken to pre-cooled plate plate freezer for freezing. The slabs are frozen at - 40^oC in 90 minutes. A logbook for plate freezer is maintained by the production supervisor to ensure the proper freezing of the materials (Annexure-XV).

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Upon unloading, slabs are taken to the anteroom for final packing. Hardness of slabs are checked. Ante room temperature is always maintained. Properly dressed store boys are allowed to handle the finished products. In case of pan freezing, slabs are taken out with depanning machine and packed in laminated inner carton. All slabs are put into master carton bearing describe packing, declaration for particular varieties as per requirements. Master Cartons are stored in cold storage maintained at below – 18^0C. Records of cold storage are maintained through an automatic temperature recording thermograph.
Following the days production, the product is tested code wise, type wise of Organoleptic and Bacteriological examination by approved technologist (Lab). The same are recorded . A particular lot is approved for shipment if the lot satisfies the quality criteria of the competent authority and that of the importing country.

Besides as per our practice samples are drawn randomly for test of antibiotic residue to a level of 0.1 ppb by HPLC-LCMSMS Method particularly for chloramphenicol and nitrofuran groups in EIC approved Laboratory. Records are maintained by technologists. For any type of products, materials are accepted on supplier's guarantee. Pesticides, antibiotics drug and heavy metals (Hg, As, Cd, Pb, Ni, Cr & Sn) salts and STPP are tested as follows:

Antibiotics, Heavy Metals and Pesticides residue is tested at EIC approved LAB for raw material once in two months and covering different sources/suppliers on rotation basis and also finished products testing is done consignment-wise before each shipment.

SALT-Salt is tested for staphylloccous and sulphite reducing clostridium once in six months if same batch is continued otherwise tested every batch at EIC approved laboratories.

STPP-The permissible percentage of phosphate in finished products are tested once in six month by EIC approved laboratory. Antibiotics, Heavy Metals and Pesticides are sent to EIA / SEA LAB/TA LAB/INTERFIELD LAB for residue analysis as specified by the local EIA for which the sample is drawn by EIA.

Authorized by:-

Managing Director

HAZARD ANALYSIS WORKSHEET
FOR FRESH FROZEN RAW AQUACULTURE SHRIMPS (BLOCK FROZEN)

Firm Name:
RAM'S ASSORTED COLD STORAGE LTD.
Approval No. : 335
Firm Address:
1065/1066/1067/1017 Industrial Estate, Paradeepgarh, Paradeep, Jagatsingpur, Odisha, India (Pin- 754141)

Product Description: Block Frozen (H/ON, H/L, PD, PUD, PDTO, EZPEEL) Aquaculture Shrimp
Method of Distribution: Stored & Distributed In Refr Igerated Container Below -18^{0}c.
Intended User: General Public / Restaurant
Intended Use: To Be Thawed & Cooked Before Consumption

(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Receiving whole shrimps at raw material receiving section	**Biological** Bacterial pathogen growth	Yes	Likelihood-H Severity-H	Raw materials is always having high load of pathogen	Proper time temperature control Raw materials temp <4^{0}C if more reject the lot. Controlled by GAP at farm . GMP SSOP, SOP at processing plant.	Yes CCP-1
	Chemical Antibiotic residue Pesticide Sulphite	Yes	Likelihood-H Severity-H	Antibiotic residue/pesticide residue/sulphite residue are toxic & potential allergen and that may cause cancer.	(1) Pre-harvesting certificate from MPEDA authorize Lab. For antibiotics test report by ELISA kit. Once in two month interval for pesticides and Heavy metals. (2) Supplier Declaration	Yes CCP-1
	Physical Metal fragment, stone ,plastic, wood & objection able foreign materials	No	Likelihood- L Severity-H	All sorts of physical contamination are possible & cause injuries to consumer acceptance.	. . . . .	No
	Quality Organoleptic	No	Likelihood- M Severity-L	Affects finished products quality due to improper handling ,lack of improper icing, improper storage in crates	. . . . .	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Deicing, washing , Weighing	**Biological** Bacterial pathogen growth	No	Likelihood-M Severity-H	From food contact surfaces ,workers handling , time delay ,temperature fluctuation .proper layer icing, maintained temperature below 4^0c	. . . .	No
	Chemical NIL	No	. . . . .	No chemical contamination at this step.	. . . . .	No
	Physical NIL	No	. . . . .	No Physical contamination at this step.	. . . . .	No
	Quality Organoleptic	No	Likelihood- L Severity-L	Maintain raw material temperature below 4^0c	. . ..	No
Re-icing/ Chill room	**Biological** Bacterial pathogen growth	No	Likelihood- L Severity-L	Proper time temperature control (SSOP) Food contact surfaces Contaminate ice may cause pathogen growth.	. . ..	No
	Chemical NIL	No	. . . . .	No chemical contamination at this step.	. . . . .	No
	Physical Foreign material	No	Likelihood- L Severity-H	From food contact surface like broken plastic & metal pieces etc	. . . . .	No
	Quality Organoleptic	No	Likelihood- L Severity-M	From temperature abuse of the raw material may affect the quality.	. . ..	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Deheading / peeling / deveining / filth washing etc.	**Biological** Bacterial pathogen growth	No	Likelihood-L Severity-L	From food contact surface , time temperature control ,proper layer icing & using chill water.	. . . .	No
	Chemical NIL	No	. . . . .	No source of chemical contamination.	. . . . .	No
	Physical NIL	No	. . . . .	From the damage food contact surface (table) metal fragment. All tables are made by stainless steel.	. . . . .	No
	Quality Organoleptic	No	. . . . .	Hanging meat / red meat may affect consumer acceptance. proper trimming of red meat, SOP if deheading procedure	. . ..	No
Deicing & size grading	**Biological** Bacterial pathogen growth	No	Likelihood- L Severity-H	From food contact surface & personnel hygiene, proper time /temperature control. Proper icing of grading materials.	. . ..	No
	Chemical NIL	No	. . . . .	No chemical contamination at this step.	. . . . .	No
	Physical NIL	No	. .....	From the damage food contact surface (table) metal fragment. All tables are made by stainless steel.	. . . . .	No
	Quality Organoleptic	No	Likelihood- L Severity-M	Wrong grading, defective/wrong pieces may exceed the specification,/ uniformity ratio. Proper sorting /checking using trained man power. Proper labeling of source code.	. . ..	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Additive Inspection	**Biological** Bacterial pathogen growth	No	Likelihood-L Severity-H	In salt clostridium bacteria may be chance. Lot wise analysis of clostridium bacteria by external lab.	. . . .	No
	Chemical Food Grade	No	Likelihood-L Severity-H	Salt & carnal might have health hazards chemicals. MSDS /food grade certificate from manufacturer/ suppliers.	. . . . .	No
	Physical Pest infestation	No	Likelihood-L Severity-H	From pest infestation & other physical character may affect quality of the products.	. . . . .	No
	Quality Free flow, moisture, appearance	No	Likelihood-L Severity-H	Quality of salt, carnal additives is inspected as per sampling plan & recorded.	. . ..	No
Treatment (Optional)	**Biological** Bacterial pathogen growth	No	Likelihood- L Severity-H	May contaminated water causes pathogen growth. Proper schedule & monitoring of hygiene & sanitation activity, time /temperature control.	. . ..	No
	Chemical Salt, Carnal	No	Likelihood- L Severity-H	Excess salt & phosphate residue may lead to buyer non-acceptance. Use of quantified chemicals, adherence to treatment specs and issue register & also additional checking to be done.	. . . . .	No
	Physical NIL	No	……	No source of physical contamination.	. . ..	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
	Quality Organoleptic	No	Likelihood-L Severity-H	Treatment may generate defective pieces. Gentle agitation through agitator & trained employees involved in this process. Excessive use of chemical will lead to bitter test and loss of texture.	……..	No But this step consider as CQP.
Washing /Draining /Final count & Quality checking and Sorting	**Biological** Bacterial pathogen	No	Likelihood-H Severity-H	From food handlers personnel hygiene & food contact surface. All food handlers should be checked personnel hygiene and the same recorded. Food contact surface sanitized as written procedure.	……..	No
	Chemical NIL	No	…….	No chemical contamination at this step.	…….	No
	Physical NIL	No	…….	From food contact surface , from food handlers . crates & nets are made by as per policy monitoring & verification(broken & damaged in place and also to avoid metal fragment table to make by SS. To avoid unsecure jewellery all food handler are checked before enter the processing area and recorded the same.	…….	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
	Quality Organoleptic	No	Likelihood-L Severity-L	More defective pieces may be goes to on slab. Trained /skilled employees are provided to check the defective pieces. Randomly checking of pre freezing inspection & same to be recorded.	……..	No But this step consider as CQP.
Weighing / Pan setting & Glazing	**Biological** Bacterial pathogen	No	Likelihood-L Severity-L	From food contact surface of pan, lids etc. From Personnel hygiene of food handlers. Proper cleaning & sanitization of pan lids & polythene cover. Periodical hand sanitation.	……..	No
	Chemical NIL	No	…….	No source of chemical contamination.	……	No
	Physical NIL	No	…….	No source of physical contamination.	……	No
	Quality Organoleptic	No	Likelihood-L Severity-L	Improper arrangement may affect customer satisfaction. Top & bottom flat setting.	……	No
Freezing	**Biological** NIL	No	……..	No biological contamination in this step -40^{0}C freezing activity in place.	……..	No
	Chemical NIL	No	……..	No source of chemical contamination.	……..	No
	Physical NIL	No	……	No source of physical contamination.	……	No
	Quality Improper freezing	No	Likelihood-L Severity-H	Time & temperature fluctuation of block freezers may lead in to improper freezing.	……	No But this step consider as CQP

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De-panning	**Biological** Bacterial pathogen	No	Likelihood-H Severity-H	From food contact surface pan, lid covers, personnel. Use only sanitized pan cover, lids etc. Proper hand washing.	……..	No
	Chemical NIL	No	…….	No source of chemical contamination.	……	No
	Physical NIL	No	…….	No source of physical contamination.	……	No
	Quality Organoleptic	No	……..	Due to over defrosting glaze will affect. Ensure the uniform spray of water.	……	No
Pass through Metal Detector	**Biological** NIL	No	……..	No source of biological contamination.	……..	No
	Chemical NIL	No	……..	No source of chemical contamination.	……..	No
	Physical Metal fragments	Yes	Likelihood-H Severity-H	Metal fragments may contaminate the product. It is hazardous to health.	Continuously all pouches pass through metal detector & record. Metal detector is periodically calibrated as per written procedure.	**YES** **CCP-2**
	Quality Improper freezing	No	……..	……..	……	No
Packing Material Inspection	**Biological** NIL	No	……	Internal bacteriological report.	……	No
	Chemical Toxic printing ink	Yes	Likelihood-L Severity- M	Toxic printing ink may cause health hazard	No toxic printing ink used in printing & food grade materials are used	No

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	Physical Damage	No	Likelihood-L Severity-M	Damage packing materials from suppliers. External quality report for packing material. Declaration from manufacturer/Supplier.	……..	No
	Quality Quality of packing material	No	Likelihood-L Severity-M	Poor quality of packing material may affects the customer satisfaction. External quality report for packing material. Declartion from manufacturer /supplier.	……	No
Label Inspection	**Biological** Bacterial pathogen	No	Likelihood-L Severity-M	Packing supplier poor handling their facility may chance microbial contamination.	……..	No
	Chemical Toxic printing ink	Yes	Likelihood-L Severity- M	Toxic printing ink may cause health hazard.	No toxic printing ink used in printing & food grade materials is used.	No
	Physical Labeling	Yes	Likelihood-H Severity- H	As shrimps is allergen	Label check record.	**Yes CCP-3**
	Quality Quality of labels	No	Likelihood-L Severity- M	Poor quality printing, poor presentation of label may affect the customer specification. Label inspection to be carried out and compare with matter label.	……	No

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Cold Storage	**Biological** NIL	No	……	Not likely to occur because of cold storage are designed & maintained .Time & temperature monitoring & recording physical verification.	……..	No
	Chemical NIL	No	…….	No chemical contamination at this step.	……	No
	Physical Temperature	No	Likelihood-H Severity-H	Temperature fluctuation from cold store may affect the product quality. Cold store temperature are maintained at -180c. Automatic temperature monitoring device connected with computer.	……	No
	Quality Appearance	No	Likelihood-H Severity- H	Improper maintenance of cold store may affect the quality of the product. Cold store is properly maintained FIFO system is followed.	……	No
Shipment	**Biological** NIL	No	……	Final product covered with protected polythene/ inner carton/ master carton and closed with self adhesive tape.	……	No
	Chemical NIL	No	……	No chemical contamination in this step.	……	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
	Physical Nil	No	……	Not likely occur because frozen storage is maintained at -180 c temperature.	……..	No
	Quality Appearance	No	Likelihood-L Severity- L	Improper handling ,temperature abuse and carton quality design ,product may affect the customer satisfaction . Monitoring of incoming cartons, loading operation & temperature recording.	……	No But this step consider as CQP

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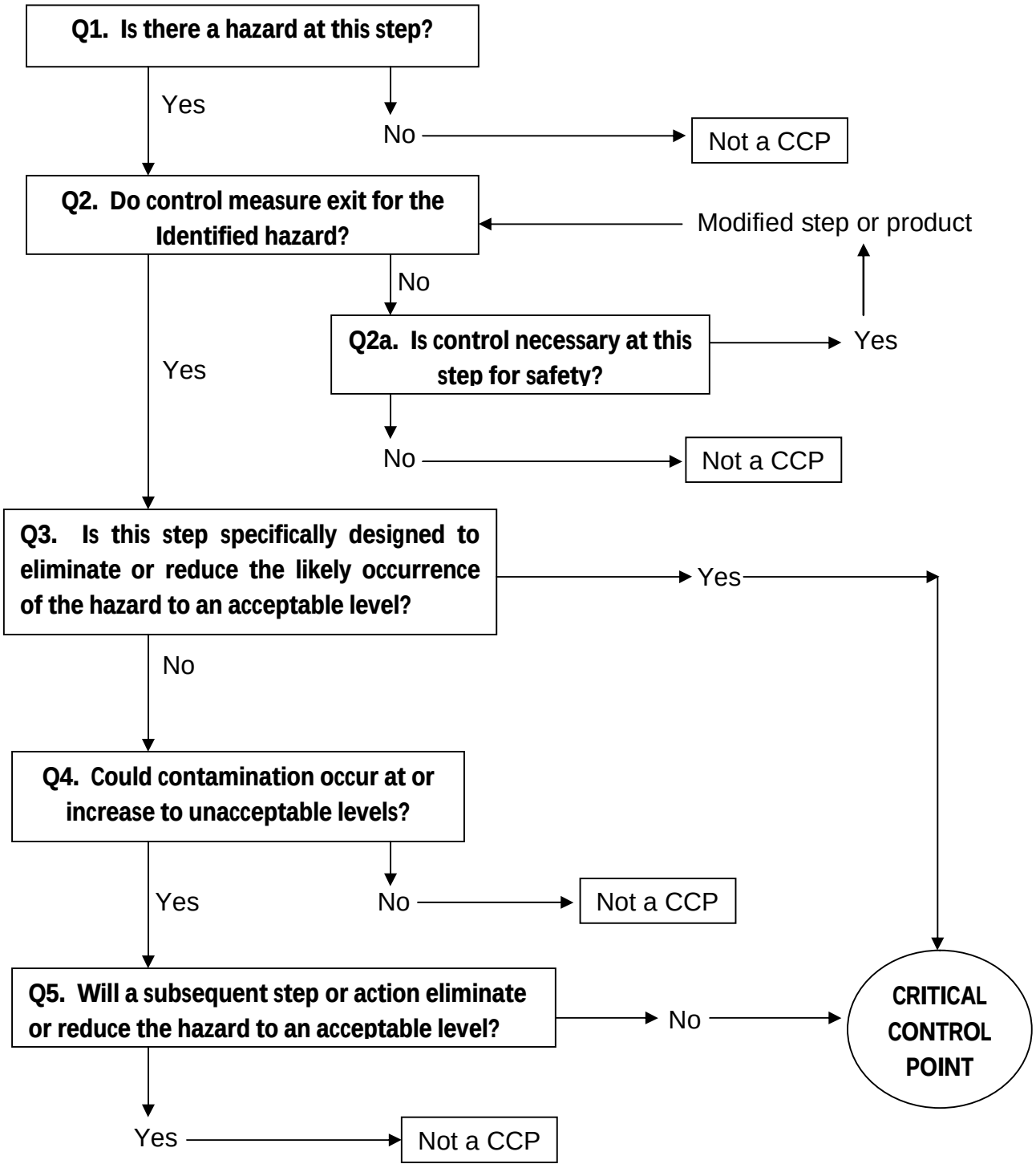
CCP DECISION TREE



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CCP – DECISION TREE ANALYSIS

The decision tree is applied to all steps of hazard analysis worksheet and not limited to CCP alone. Following is CCP determination for block raw frozen aqua-culture shrimps:

Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Raw material receiving	**Biological** - pathogen	Y	Y	Y	…	…	CCP	Survival of pathogenic bacteria from harvesting area at farm.
	Chemical -Antibiotic -pesticides -Sulphite -Herbicides	Y	Y	Y	…	…	CCP	Farm shrimps may have sulphite, pesticides, herbicides & antibiotic residues. It may cause illness to the consumer. Sulphite agents may cause allergic type reaction. There is no further step to control the hazard.
	Physical -Glass -wood -stone -plastic	Y	Y	N	Y	Y	….	…….
	Quality Black spot	Y	Y	N	Y	Y	….	…….
Chill storage	**Biological** - Pathogen	Y	Y	N	Y	Y	….	…..
	Chemical Nil	…	….	….	…..	….	….	……
	Physical Nil	…	…..	……	….	….	….	……
	Quality Nil	…	….	….	….	….	….	…….
De icing / washing	**Biological** - Pathogen	Y	Y	N	Y	Y	…..	……..
	Chemical Nil	…	….	….	….	…..	…..	……..
	Physical Nil	….	……	….	…	….	……	……
	Quality Organoleptic	Y	Y	N	Y	Y	….	…….
Deheading	**Biological** Pathogen	Y	Y	N	Y	Y	…..	…….
	Chemical Nil	….	….	….	…..	….	….	…….
	Physical Nil	….	….	…..	….	…..	…..	…….
	Quality Organoleptic	Y	Y	N	Y	Y	……	…….

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Grading	**Biological** - pathogen	Y	Y	N	Y	Y	….	……
	Chemical NIL	….	….	….	….	….	…..	…….
	Physical NIL	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	N	Y	Y	…..	…….
Peeling	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	N	Y	Y	Not a CCP	…….
Washing	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	……
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	…	….	….	…..	…..	…….
Additives inspection	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical -phosphate -salt	Y	Y	N	Y	Y	Not a CCP	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	….	…..	….	…..	…..	…….

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Treatment	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical -phosphate	Y	Y	N	Y	Y	Not a CCP	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	Y	N	N	CQP	Excess residue of phosphate may lead to no acceptance.
Final checking/ weighing	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	…	….	….	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	Y	N	N	CQP	Defective pieces may be fed in to block
Pan setting	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…….
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	…	….	….	…..	…..	…….
Freezing	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	…	….	…	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Improper freezing	Y	Y	Y	N	N	CQP	Improper freezing affects the product & buyer acceptance.

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
De panning	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Slab size & Appearance	Y	Y	N	Y	Y	Not a CCP	…….
Metal detector	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Metal fragment	Y	Y	Y	….	….	CCP-2	Metal fragments may come into product.
	Quality Nil	….	….	….	…	….	……	…….
Packing material inspection	**Biological** Nil	Y	Y	N	Y	Y	Not a CCP	…….
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Quality of packing material	Y	Y	N	Y	Y	Not a CCP	…….
Packing /Labeling	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	…	….	….	….	….	….	…….
	Physical Labeling	Y	Y	Y	…	…	**CCP-3**	As shrimps is allergen
	Quality Improper labeling	Y	Y	Y	N	N	CQP	Improper labeling will lead to wrong identification of product.

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Cold storage	**Biological** NIL	…..	…..	…..	…..	…..	……	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	…..	….	….	…..	….	…..	…….
Shipment	**Biological** Nil	….	….	…..	…..	….	……	…..
	Chemical Nil	… .	….	…	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Damage carton	Y	Y	N	Y	Y	CQP	Improper labeling, temperature abuse & carton quality may damage product.

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JUSTIFICATION OF CCP

Block freezing (Aquaculture)

Process step	CCP	Justification	
CCP-1 Raw material shrimps	Growth of pathogen	Growth of microbial pathogen	This is the last stage at which hazards can be controlled , hence this steps is Critical Control Point.(CCP)
	Antibiotics	Presence of antibiotics reduces the resistance of immune system of human body.	
	Pesticides	Presence of pesticides causes cancer in the lungs run in human body.	
	Sulphites	Presence of sulphite causes allergy to some consumer.	
	Herbicides	Presence of herbicides such as pendimethiline which causes severe illness to consumer.	
CCP-2 Metal Detection	Metal fragment	Presence of metal causes physical injury to the consumer.	This is the last stage at which hazards can be controlled , hence this steps is Critical Control Point.(CCP)
CCP-3 Labeling	***Shrimps*** ***Clostridium botulinum*** toxin formation during storage	As Shrimps is allergen ***C. botulinium*** toxic formation during finished product storage which leads to symptoms like weakness, vertigo, swallowing and frequently abdominal swelling, consumption, paralysis & death.	This is the last stage at which hazards can be controlled , hence this steps is Critical

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JUSTIFICATION

Block freezing Aquaculture (Critical limit)

PROCESS STEP	CCP	CRITICAL LIMIT	REFERENCE
CCP-1 Raw material Receiving	Growth of microbial pathogen.	Temperature of the material should be <40C	USFDA Regulation and Codex alimentarius guidelines 5.3(CAS.RCP 1-1969, Rev. 4-2003)
	Antibiotics	**Maximum permissible limit** Chloramphenicol - Nil Nitrofuran - Nil Oxytetracycline - Absent Sulphonamide – Absent	**Detection Limit:** Chlorampehnicol : 0.3ppb Nitrofuran :1.0ppb
	Pesticides	**Maximum permissible limit** BHC, Aldrin ,Dieldrin - 0.3 ppb DDT - 5.0ppm	
	Sulphites	Maximum permissible limit is – Nil	
	Herbicides	Maximum permissible limit is – Nil	
CCP-2 Metal Detector	Metal fragment	Ferrous : 1.2mm Non ferrous : 2.0mm Stainless Steel : 2.0mm	Codex alimentarius guidelines 5.2.5 (CAC/ RCP1 -1969, Rev.4-2003)
CCP-3 Labeling	Shrimps Finished product Storage (***Clostridium botulinum***)	All finished product labels must **contain shrimps** declaration on labels. Maximum cooler temperature - 18^0C	Codex alimentarius guidelines 5.2.5 (CAC/ RCP1-1969, Rev.4-2003)

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JUSTIFICATION OF CQP

Block Freezing (Aquaculture)

PROCESS STEP	HAZARDS	CRITICAL LIMIT	JUSTIFICATION
CQP-1 Chemical treatment	Residual phosphate in excess of the critical limit.	5000ppm	Agreement with buyers.
CQP-2 Final checking	Organoleptically defective pieces.	As per finished product specification.	Agreement with buyers
CQP-3 Freezing	Improper freezing.	Core temperature of product must be not less than -18^0C	In-house / industry specification.
CQP-4 Weighing / packing / labeling	1.Short weight 2. Wrong labeling / packing.	As per buyer's specification.	Agreement with buyers
CQP-5 Shipment	1. Core temperature of product while loading. 2. Master carton quality while loading.	Must not be less than -18^0C. Damaged / quality compromised cartons.	In-house / industry / Buyer's specification.

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Managing Director

HACCP PLAN FOR RAW AQUACULTURE SHRIMPS (BLOCK FROZEN)

Firm Name: **RAM'S ASSORTED COLD STORAGE LTD.** Approval no.- **335**	Product Description: **BLOCK FROZEN (H/ON, H/L, PD, PUD, PDTO, EZPEEL) AQUACULTURE SHRIMP**
Firm Address: **1065/1066/1067/1017 Industrial Estate, Paradeepgarh, Paradeep, Jagatsingpur, Odissa, India (Pin- 754141)**	Method of Storage and Distribution**: STORED AND DISTRIBUTED IN REFRIGERATED CONTAINER BELOW -18^{0}C.**
	Intended User : **GENERAL PUBLIC / RESTURANT**
	Intended User : **TO BE THAWED & COOKED BEFORE CONSUMPTION.**

1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CCP-1 Raw material head on receiving stage	**Antibiotics** Chloramphenicol, NitroFuran & Nitrofuran metabolites (AOZ,AMOZ ,AHD,SEM) Oxytetracycline Sulphonamides.	Absent	Presence of antibiotics	Pre harvesting test certificates from competent Lab. Ensure supplier declaration certificate. Antibiotic testing of material through internal lab & once in a two months from external competent lab.	Every lot received and each consignment wise and code wise. External testing once in two month to cover all suppliers	Q.C. Technologists	Reject lot if not accompanied by certificate. Stop all purchases from supplier if tests are positive.	Antibiotic test reports.	1.Verification of monitoring records within 7 days by Q.A manager. 2. Raw material analysis report.(testing in an EIC approved lab once in two month for antibiotics. 3.Consignment wise checking of antibiotic in finished product in an EIC approved lab. 4. Supplier guarantee letter/Supplier Lab. Antibiotic report. 5. ELISA antibiotic testing.
	Pesticides & Herbicides BHC, ENDRIN DEILDRIN, ALDRIN, DDT,PENDIMETHALIN	Absent	Presence of pesticides	Declaration from supplier for non usage of pesticides and other banned chemical.	Daily source of raw material testing.	Q.C. Technologists	Remove the supplier from approved list if it is positive, action will be taken against supplier. If it is positive, action will be taken against suppliers.	External test report for pesticides once in a two month	Review the external lab reports done once in two months BHC, Endrin ,Deildrin, Aldrin :10 ppb DDT :10ppb Pendimethalin :10 pbb
	Sulphite	Absent	Residue of sulphite content.	Do the sulphite analysis test.	Each lot of raw material received.	Q.C. Technologists	Remove the supplier from approved list.	Sulphite test recod .	Review sulphite analysis test report.

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1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CCP-1 Raw material head on receiving stage	**Biological** Growth of microbial pathogen	Temperature of raw material should be $<4^0$c	Temperature of Raw material	By thermometer	Each lot of raw material received.	Q.C. Technologists	Reject the lot if raw material temperature is $>4^0$c	Raw material receiving register. Bacterological register. Thermometer calibration record.	Review of the: Raw material temperature records. Bacterological register. Thermometer calibration record.
CCP-2 Metal detection	Metal Fragment	Fe : 1.2mm Non Fe : 2.0mm SS : 2.0mm	Metal Fragments	Each block passing through metal detector	Continuously	Packing supervisor	The detected slab are removed and put in a locked box. The production manager /general manager unlock the box and defrost the slab. Divided in to 4 parts. Pass each individual piece through metal detector. If any individual detected, take the pieces cut with knife and analysis metal fragment. Then take out defected pieces. Before passed slab also take & recheck /pass through metal detector.	Metal detector records.	CCP-2 verification of metal detection Before starting the process pre operation checking has done with standard test pad then also periodically verification carried out every 30 minutes. Verification done once in a week.

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1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CCP-3 (Packing material & Labeling)	**Shrimps,** ***c.botulinum*** toxin formation during finished product storage.	All finished product labeled with "**contains shrimps**" All finished product labeled with "Keep Frozen at below -18^{0}C"	Finished product labeling statement "contains Shrimp" & " Keep Frozen at or below -18^{0}C"	By visual	One label from each bag /cartoons labels at receipt.	Supervisor/ QA/ QC / Production In-charge/ Package executive/ Managing Director	Segregate & re- labeling it properly.	Label check record	Review in once in a week

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HACCP PLAN FORM FOR AQUACULTURE SHRIMPS (BLOCK)

1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CQP-1 Chemical treatment	Phosphate residue	Max. 5000 ppm	Phosphate residue testing.	Chemical analysis through strip method.	Daily source wise.	Q.C Technologist	If phosphate exceeds limit label on the master carton level of ppm .	Soaking monitoring records.	Phosphate residual reports are verified by Q.C manager.
CQP-2 Final checking	Organoleptic	20%	Checking of defective pieces.	By online checking .	continuously	Q.C Technologist	Continuous training to improve skill.	pre-freezing inspection record (Block)	Daily verification of pre freezing inspection record.
CQP-3 Freezing	Improper freezing	Min -18^{0}c	Temperature monitoring of frozen products.	Check freezing time and core temperature of product.	continuously	Production supervisor.	Segregate improperly frozen product & re-freeze.	Monitoring record for freezing block.	Daily verification of freezing monitoring record.
CQP-4 Weighing/ packing /labeling	Wrong labeling & packing	Nil	Labeling & packing operation.	By visual check of packing process	continuously	Production & packing supervisor	Check for any mislabeling, printing and correct it.	Block packing record.	Daily verification of packing record.
CQP-5 Shipment	Temperature	-18^{0}C	Monitoring loading temperature	Check temperature of container & cargo.	Every shipment	Cold store supervisor / Q.C technologist	Stop loading until the temperature is achieved.	Shipment details record.	Q.C to verify shipment detail record for each shipment.

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PREDETERMINED CORRECTIVE /PREVENTIVE ACTION

1. WHEN ANTIBIOTIC/SULPHITE RESIDUE (CCP-1) EXCEED CRITICAL LIMIT

A. **IMMEDIATE CORRECTIVE ACTION**: Identify affected lots through, source code and withdraw day code and withdraw all such lots from the processing floor as well as cold stores.

Tally the total withdrawn lots for quantity.

B. PREVENTIVE ACTION: The supplier is traced back from the source –code and /or day code and removed from approved suppliers list to get rid of unworthy business alliance (his supplier declaration proves his untrustworthiness)

C. CORRECTIVE ACTION RECORDS: CCP verification & corrective action reports for Antibiotic and sulphites.

2. WHEN METAL DETECTION EXCEED (CCP-2) CRITICAL LIMITS

A. IMMEDIATE CORRECTIVE ACTION: The detected pouches / slabs are keeping as non-conformance in de marked cold store area.

B. PREVENTIVE ACTION: The entire process line is traced and checked thoroughly for any possibility of loose metal, rust scrap etc. and any such situation upon notice is corrected.

C. CORRECTIVE ACTION RECORDS: An NCR is raised and corrective action with regard to the same is reported back using the CCP verification and corrective action format for metal detector.

3. WHEN PACKING MATERIAL & LABELING (CCP-3) CRITICAL LIMITS

A. IMMEDIATE CORRECTIVE ACTION: Segregate and return or destroy any label stock or pre- labels packing stock that does not contain the proper statement.

Determine and correct the cause of improper labels.

B. PREVENTIVE ACTION:

i. Finished products label for the presence of a “keep frozen” & “Contains shrimps” statement.
ii. Visual examination.
iii. Representative number of package from each lot products.
iv. Any person who has an understanding of the natural of controls.

C. CORRECTIVE ACTION RECORD: Record of labeling checks.

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CHAPTER – IV

FRESH FROZEN RAW AQUACULTURE SHRIMPS IQF

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PRODUCT DESCRIPTION OF RAW FROZEN AQUACULTURE SHRIMPS (IQF)

Source of Raw Material	Fresh raw material purchased from registered farms having pre-harvest testing of antibiotic report. (Aquaculture material)
Product	IQF Raw Shrimps
Varieties	Head on – shrimps (H/on)
	Headless Shell-on Shrimps (HL, EZ PEEL)
	Peeled Deveined Tail-on (PDTO, Round cut)
	Peeled Deveined Tail-on (BUTTERFLY 90% Cut)
	Peeled Undeveined Tail-off (PUD, Round cut)
Packing	5 x 2Lbs, 10x2Lbs, 6x1.2Kg,10x1Kg, 10x1lb, etc., (Type of pack and Pouch / M/c as per buyer's requirements)
Storage conditions	-18 Degree centigrade
Shelf life of the product	24 months from the production date or as per the specification of Importing countries.
Method of Preservation	Individual Quick Freezing (IQF)
Additives used	Salt and Sodium-Tri-Poly-Phosphate (STTP) as per buyer's requirement
Distribution	To be distributed through refrigerated carriers maintain -18ºC
Intended use by customer	To be consumed by general public When thawing, we recommend ….. Place Bag of shrimps overnight into the refrigerator or empty desire amount into a container of cool water for approximately 5 minutes drain. It's now ready for cooking. Re-freezing thawed product is not recommended.

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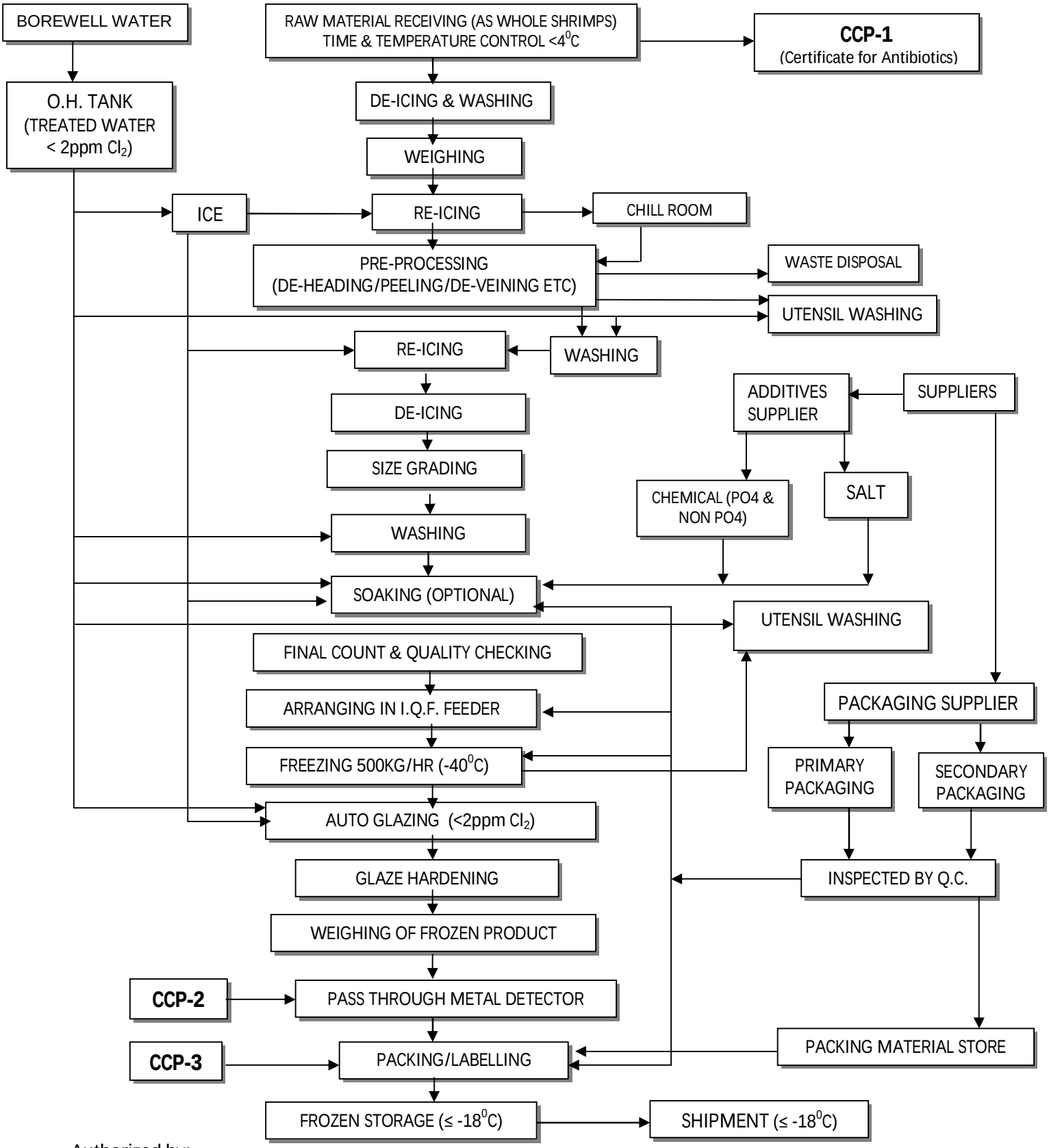
PRODUCTION FLOW CHART FOR FRESH FROZEN RAW AQUACULTURE SHRIMPS (I.Q.F.)



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PROCESSING STEPS OF FRESH FROZEN RAW SHRIMPS (PROCESS DESCRIPTION)

- ❒ The heads alone of the prawns are removed, leaving the entire shells and tails intact;
- ❒ The vein (intestine) is pulled out as far as possible from the severed head portion; hanging meat along with the red membrane is removed.
- ❒ Washed well after de-heading;
- ❒ Discolored, bruised and soft-shelled pieces at the grading time are discarded.
- ❒ For IQF products, size, grade and variety-wise the materials are graded and soaking (optional) with 2% salt, 3% STPP, 40% Water and 60% Ice and stirring for 1 and ½ hour) and then fed to the IQF feeder individually before freezing and then only the frozen products are weighed, glazed and packed as per buyer's requirement.
- ❒ For peeled shrimps the shell is completely removed and either or vein is removed by sharp knife. Dehydrated & discolored smelling pieces are segregated and rejected.
- ❒ Peeled material is thoroughly washed in perforated tub and re-iced properly.
- ❒ Graded materials fed to the IQF feeder individually before freezing and then only the frozen products are weighed, glazed and packed as per buyer's requirement.
- ❒ In HL type of product, the flavor and nutrients is maximum due to the protection offered by the shell.

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ON- SITE VERIFICATION PROCESS FLOW FOR I.Q.F. AQUACULTURE SHRIMPS

Whole shrimps are received at the receiving room through landing platform of Pre-Processing section. Each batch of raw materials are properly deiced and check temperature $<4^0$C and washed with potable water. Materials supplied by different suppliers are tagged with labels with detailed information. Materials of a particular variety are accepted at a time after satisfying the raw material acceptance criteria (Appendix-III) and rejected the materials which are not satisfied the acceptance criteria. Rejected materials are taken in crates with tag rejected and handed over to the agent/supplier after the batch is over. Purchase supervisor accepts the materials based on accepting criteria and records his observation in the raw material receiving log (Annexure-I). After proper washing with chlorinated water of < 2 ppm. strength and weighing, the head on materials are adequately iced in sanitized crates and kept in the chilled room of pre-processing section, maintained the temperature below $+4^0$C or sent to the preprocessing section directly, if no more balance material is there. This operation is completed within minimum time. A time temperature log for the chill room is maintained by the supervisor to keep a check on temperature abuse. At the time of deheading or peeling etc, adequate and experienced workers are engaged to ensure quick completion of the activity. During the operation, adequate flake ice is used to maintain the temperature below $+4^0$C. The headless or peeled materials are further washed with Chlorinated water of <2 ppm. Strength and adequately iced in sanitized crates. Raw material samples drawn for microbiological/antibiotic test as per the schedule.

After receiving in the processing section, prior to grading each crate of material is de-iced and washed with chlorinated potable water. To minimize the cumulative exposure of material to high temperature, delay during manual grading is avoided. The graded materials are adequately iced and kept in plastic crates. To avoid time temperature abuse, excess materials are stored in the chill room or insulated boxes in the processing section with adequate ice. For time temperature log of chill room maintained to keep a check of temperature abuse.

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The graded headless materials are deiced and taken for wash to remove the filth. In case of peeled materials, after deicing the materials are fed into the automatic grading cum filth washing machine to remove the filth. Prior final weighment of the slabs each individual grade of single variety is washed with chlorinated water <2 ppm. Strength and taken on perforated table to drain out the excess water. At this stage the code slip in addition to the mandatory information also incorporated.

For IQF products the washed products are directly fed to the IQF feeder and after freezing the materials are weighed and glazed and then packed into the master carton as per the buyer's specification. Master Cartons are stored in cold storage maintained at below – 18^0C. Records of cold storage are maintained through an automatic temperature recording thermograph (Annexure-XXXV).

Following the days production, the product is tested code wise, type wise of Organoleptic and Bacteriological examination by approved technologist (Lab). The same are recorded (Annexure-XVIII,XIX,XX,XXI,XXII,). A particular lot is approved for shipment if the lot satisfies the quality criteria of the competent authority and that of the importing country.

Besides as per our practice samples are drawn randomly for test of antibiotic residue to a level of .01 ppb by HPLC-LCMSMS Method particularly for chloramphenicol and nitrofuran groups in EIC approved Laboratory. Records are maintained by technologists. For any type of products, materials are accepted on supplier's guarantee. Pesticides, antibiotics drug and heavy metals (Hg, As, Cd, Pb, Ni, Cr & Sn) salts and STPP are tested as follows:

Antibiotics, Heavy Metals and Pesticides residue is tested at EIC approved LAB for raw material once in two months and covering different sources/suppliers on rotation basis and also finished products testing is done consignment-wise before each shipment.

SALT-Salt is tested for staphylloccous and sulphite reducing clostridium once in six months if same batch is continued otherwise tested every batch at EIC approved laboratories.

STPP-The permissible percentage of phosphate in finished products are tested once in six month by EIC approved laboratory. Antibiotics, Heavy Metals and Pesticides are sent to EIA / SEA LAB for residue analysis as specified by the local EIA for which the sample is drawn by EIA.

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HAZARD ANALYSIS WORKSHEET
FOR FRESH FROZEN RAW AQUACULTURE SHRIMPS (IQF)

Firm Name:
RAM'S ASSORTED COLD STORAGE LTD.
Approval No. : 335
Firm Address:
1065/1066/1067/1017 Industrial Estate, Paradeepgarh, Paradeep, Jagatsingpur, Odisha, India (Pin- 754141)

Product Description: Block Frozen (H/ON, H/L, PD, PUD, PDTO, EZPEEL) Aquaculture Shrimp
Method of Distribution: Stored & Distributed In Refr Igerated Container Below -18^{0}c.
Intended User: General Public / Restaurant
Intended Use: To Be Thawed & Cooked Before Consumption

(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Receiving whole shrimps at raw material receiving section	**Biological** Bacterial pathogen growth	Yes	Likelihood-H Severity-H	Raw materials is always having high load of pathogen	Proper time temperature control. Raw materials temp <4^{0}C if more reject the lot. Controlled by GAP at farm . GMP SSOP, SOP at processing plant.	Yes CCP-1
	Chemical Antibiotic residue Pesticide Sulphite	Yes	Likelihood-H Severity-H	Antibiotic residue/pesticide residue/sulphite residue are toxic & potential allergen and that may cause cancer.	(1) Pre-harvesting certificate from MPEDA authorize Lab. For antibiotics test report by ELISA kit. Once in two month interval for pesticides and Heavy metals. (2) Supplier Declaration	Yes CCP-1
	Physical Metal fragment, stone ,plastic, wood & objection able foreign materials	No	Likelihood- L Severity-H	All sorts of physical contamination are possible & cause injuries to consumer acceptance.	. . . . .	No
	Quality Organoleptic	No	Likelihood- M Severity-L	Affects finished products quality due to improper handling ,lack of improper icing, improper storage in crates	. . . . .	No

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Deicing, washing , Weighing	**Biological** Bacterial pathogen growth	No	Likelihood-M Severity-H	From food contact surfaces ,workers handling , time delay ,temperature fluctuation .proper layer icing, maintained temperature below 4^0c	. . . .	No
	Chemical NIL	No	. . . . .	No chemical contamination at this step.	. . . . .	No
	Physical NIL	No	. . . . .	No Physical contamination at this step.	. . . . .	No
	Quality Organoleptic	No	Likelihood- L Severity-L	Maintain raw material temperature below 4^0c	. . ..	No
Re-icing/ Chill room	**Biological** Bacterial pathogen growth	No	Likelihood- L Severity-L	Proper time temperature control (SSOP) Food contact surfaces Contaminate ice may cause pathogen growth.	. . ..	No
	Chemical NIL	No	. . . . .	No chemical contamination at this step.	. . . . .	No
	Physical Foreign material	No	Likelihood- L Severity-H	From food contact surface like broken plastic & metal pieces etc	. . . . .	No
	Quality Organoleptic	No	Likelihood- L Severity-M	From temperature abuse of the raw material may affect the quality.	. . ..	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Deheading / peeling / deveining / filth washing etc.	**Biological** Bacterial pathogen growth	No	Likelihood-L Severity-L	From food contact surface , time temperature control ,proper layer icing & using chill water.	. . . .	No
	Chemical NIL	No	. . . . .	No source of chemical contamination.	. . . . .	No
	Physical NIL	No	. . . . .	From the damage food contact surface (table) metal fragment. All tables are made by stainless steel.	. . . . .	No
	Quality Organoleptic	No	. . . . .	Hanging meat / red meat may affect consumer acceptance. proper trimming of red meat, SOP if deheading procedure	. . ..	No
Deicing & size grading	**Biological** Bacterial pathogen growth	No	Likelihood- L Severity-H	From food contact surface & personnel hygiene, proper time /temperature control. Proper icing of grading materials.	. . ..	No
	Chemical NIL	No	. . . . .	No chemical contamination at this step.	. . . . .	No
	Physical NIL	No	. .....	From the damage food contact surface (table) metal fragment. All tables are made by stainless steel.	. . . . .	No
	Quality Organoleptic	No	Likelihood- L Severity-M	Wrong grading, defective/wrong pieces may exceed the specification,/ uniformity ratio. Proper sorting /checking using trained man power. Proper labeling of source code.	. . ..	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Additive Inspection	**Biological** Bacterial pathogen growth	No	Likelihood-L Severity-H	In salt clostridium bacteria may be chance. Lot wise analysis of clostridium bacteria by external lab.	. . . .	No
	Chemical Food Grade	No	Likelihood-L Severity-H	Salt & carnal might have health hazards chemicals. MSDS / food grade certificate from manufacturer / suppliers.	. . . . .	No
	Physical Pest infestation	No	Likelihood-L Severity-H	From pest infestation & other physical character may affect quality of the products.	. . . . .	No
	Quality Free flow, moisture, appearance	No	Likelihood-L Severity-H	Quality of salt, carnal additives is inspected as per sampling plan & recorded.	. . ..	No
Treatment (Optional)	**Biological** Bacterial pathogen growth	No	Likelihood- L Severity-H	May contaminated water causes pathogen growth. Proper schedule & monitoring of hygiene & sanitation activity, time /temperature control.	. . ..	No
	Chemical Salt, Carnal	No	Likelihood- L Severity-H	Excess salt & phosphate residue may lead to buyer non-acceptance. Use of quantified chemicals, adherence to treatment specs and issue register & also additional checking to be done.	. . . . .	No
	Physical NIL	No	……	No source of physical contamination.	. . ..	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
	Quality Organoleptic	No	Likelihood-L Severity-H	Treatment may generate defective pieces. Gentle agitation through agitator & trained employees involved in this process. Excessive use of chemical will lead to bitter test and loss of texture.	……..	No But this step consider as CQP.
Washing /Draining /Final count & Quality checking and Sorting	**Biological** Bacterial pathogen	No	Likelihood-H Severity-H	From food handlers personnel hygiene & food contact surface. All food handlers should be checked personnel hygiene and the same recorded. Food contact surface sanitized as written procedure.	……..	No
	Chemical NIL	No	…….	No chemical contamination at this step.	…….	No
	Physical NIL	No	…….	From food contact surface , from food handlers . crates & nets are made by as per policy monitoring & verification(broken & damaged in place and also to avoid metal fragment table to make by SS. To avoid unsecure jewellery all food handler are checked before enter the processing area and recorded the same.	…….	No

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	Quality Organoleptic	No	Likelihood-L Severity-L	More defective pieces may be goes to on slab. Trained /skilled employees are provided to check the defective pieces. Randomly checking of pre freezing inspection & same to be recorded.	……..	No But this step consider as CQP.
Arranging in IQF Feeder	**Biological** Bacterial pathogen	No	Likelihood-L Severity-L	From food contact surface of trays, nets etc. From Personnel hygiene of food handlers. Proper cleaning & sanitization of trays & nets. Periodical hand sanitation.	……..	No
	Chemical NIL	No	…….	No source of chemical contamination.	……	No
	Physical NIL	No	…….	No source of physical contamination.	……	No
	Quality Organoleptic	No	……	Improper arrangement may affect customer satisfaction. Individual quick frozen to avoid clumping of pieces.	……	No
Freezing	**Biological** NIL	No	……..	No biological contamination in this step -40^{0}C freezing activity in place.	……..	No
	Chemical NIL	No	……..	No source of chemical contamination.	……..	No
	Physical NIL	No	……	No source of physical contamination.	……	No
	Quality Improper freezing	No	Likelihood-L Severity-H	Time & temperature fluctuation of IQF freezer may lead in to improper freezing. Controlled, monitor time & temp. of IQF freezer.	……	No But this step consider as CQP

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Auto-glazing	**Biological** Bacterial pathogen	Yes	Likelihood-L Severity-L	Addition of microbes thorough impure water. Controlled by SSOP, regular cleaning of chilling tanks and spray nozzles. in house bacterlogical report. .	……..	No
	Chemical NIL	No	…….	No source of chemical contamination.	…….	No
	Physical NIL	No	…….	No source of physical contamination.	…….	No
	Quality NIL	No	……..	Due to over defrosting glaze will affect. Ensure the uniform spray of water.	…….	No
Glaze hardening	**Biological** NIL	No	……..	No source of microbial contamination. -40^{0}C hardening in place.	……..	No
	Chemical NIL	No	……..	No source of chemical contamination.	……..	No
	Physical NIL	No	……	No source of physical contamination	…….	NO
	Quality NIL	No	…….	…….	……	No
Packing material inspection	**Biological** NIL	No	…….	Internal bacteriological report.	…….	No
	Chemical Toxic printing ink	Yes	Likelihood-L Severity- M	Toxic printing ink may cause health hazard	No toxic printing ink used in printing & food grade materials are used	No
	Physical Damage	No	Likelihood-L Severity-M	Damage packing materials from suppliers. External quality report for packing material. Declaration from manufacturer/Supplier.	……..	No

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
	Quality Quality of packing material	No	Likelihood-L Severity-M	Poor quality of packing material may affects the customer satisfaction. External quality report for packing material. Declartion from manufacturer /supplier.	……..	No
Weighing / pouching	**Biological** Bacterial pathogen	Yes	Likelihood-L Severity-L	Packing supplier poor handling their facility may chance microbial contamination.	……..	No
	Chemical Nil	No	……	No source of chemical contamination at this sep.	……	No
	Physical Nil	No	……	No source of physical contamination at this step.	……	No
	Quality Pouch sealing	Yes	Likelihood-L Severity- M	Improper sealing of pouches may affect customer satisfaction. Use only very good condition sealer & also check the status of the sealing. Confirmed to customer specification.	Control by GMP	No
Metal Detector	**Biological** Nil	No	……	No source of microbial contamination at this step.	……	No
	Chemical Nil	No	……..	No source of chemical contamination at this sep.	……	No
	Physical Metal fragments	Yes	Likelihood-H Severity- H	Metal fragment may contaminate the product. It is hazard to health.	Continuously all pouches pass through metal detector & record. Metal detector also calibrated.	Yes CCP-2
	Quality Nil	No	……..	……	……	No

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Packing & Labeling	**Biological** NIL	No	Likelihood-L Severity –M	Packing supplier poor handling their facility may chance microbial contamination.	……..	No
	Chemical Toxic printing ink	Yes	Likelihood-L Severity –M	Toxic printing ink may cause health hazard.	No toxic printing ink used in printing &food grade materials used.	No
	Physical Labeling	Yes	Likelihood-H Severity –H	As shrimps is allergen	Label check record	Yes CCP-3
	Quality Quality of labels / Packing material	No	Likelihood-L Severity –M	Poor quality of printing, poor presentation of label may affect the customer specification. Label inspection to be carried out and compare with matter label.	……..	No
Cold Storage	**Biological** NIL	No	……	Not likely to occur because of cold storage are designed & maintained. Time & temperature monitoring and recording physical verification.	……	No
	Chemical NIL	No	……..	No source of chemical contamination.	……..	No
	Physical Temperature	No	Likelihood-H Severity-H	Temperature fluctuation from cold storage may affect the product quality. Cold storage temperature are maintained - 18^0C.automatic temperature monitoring device connected with computer.	……..	No

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
	Quality Appearance	No	Likelihood-H Severity –H	Improper maintenance of cold stores may affect the quality of the products. Cold storage are properly maintained. FIFO system is followed.	……..	No
Shipment	**Biological** NIL	No	……	Final product covered with protected polythene/ inner carton/ master carton and closed with self adhesive tape.	……..	No
	Chemical NIL	No	……..	No chemical contamination in this step.	……	No
	Physical NIL	No	……..	Not likely occur because frozen storage is maintained at -18^0 c temperature.	…….	No
	Quality Temperature abuse and Improper handling	No	Likelihood-H Severity-H	Improper handling, temperature abuse and carton quality design, product may affect the customer satisfaction . Monitoring of incoming cartons, loading operation & temperature recording.	…….	No But this step consider as CQP.

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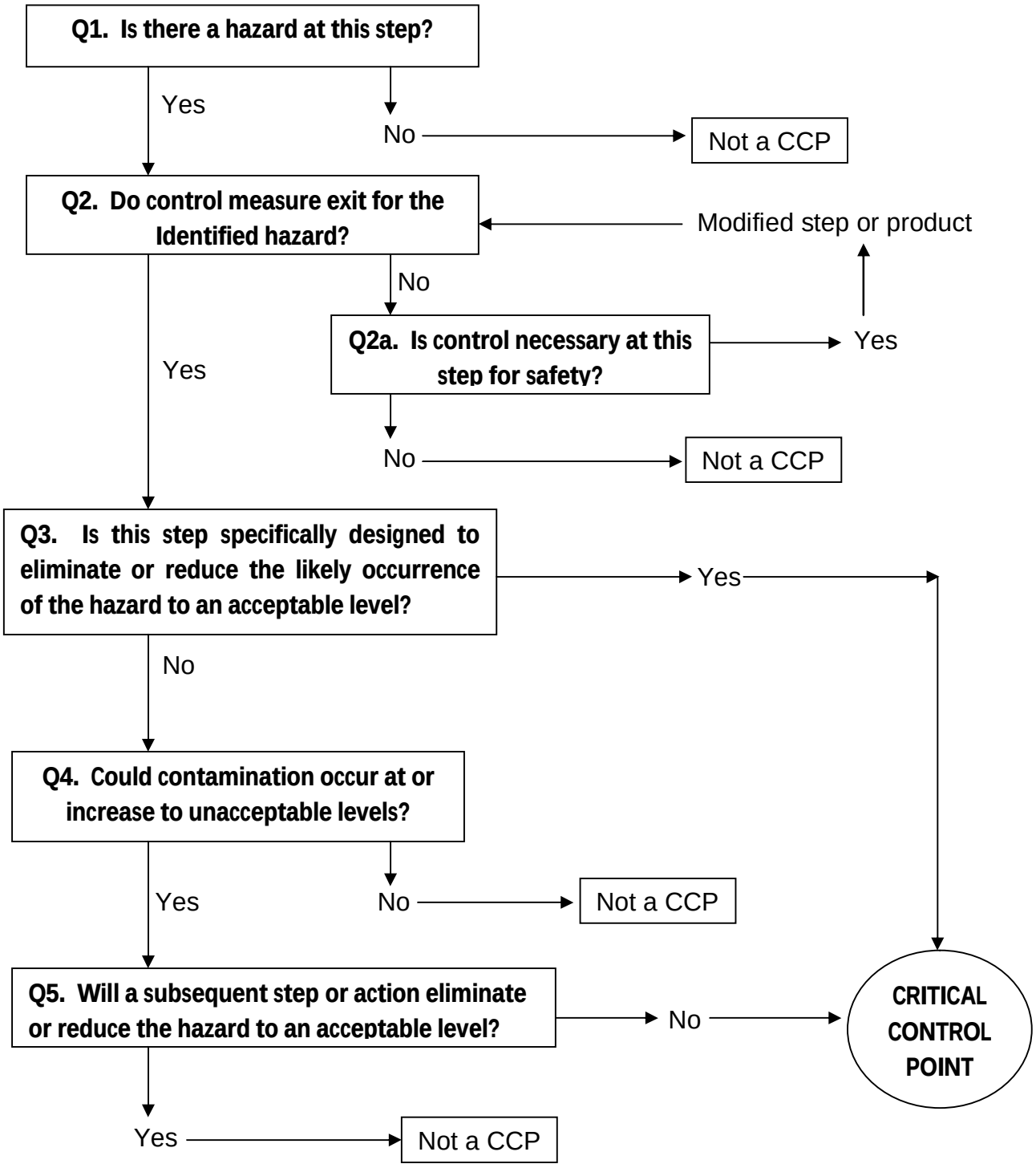
CCP DECISION TREE



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CCP DECISION TREE ANALYSIS

The decision tree is applied to all steps of hazard analysis worksheet and not limited to CCP alone.

Following is CCP determination for IQF raw frozen aqua-culture shrimps:

Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP / CQP or not	Justifying decision for CCP/CQP
Raw material receiving	**Biological** - pathogen	Y	Y	Y	…	…	CCP	Survival of pathogenic bacteria from harvesting area at farm.
	Chemical -Antibiotic -pesticides -Sulphite -Herbicides	Y	Y	Y	…	…	CCP	Farm shrimps may have sulphite, pesticides, herbicides & antibiotic residues. It may cause illness to the consumer. Sulphite agents may cause allergic type reaction. There is no further step to control the hazard.
	Physical -Glass –wood -stone -plastic	Y	Y	N	Y	Y	Not a CCP	…….
	Quality -Black spot	Y	Y	N	Y	Y	Not a CCP	……..
Chill storage	**Biological** -Pathogen	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	…	….	….	…..	….	….	……
	Physical Nil	…	…..	……	….	….	….	……
	Quality Nil	…	….	….	….	….	….	…….
De icing /washing	**Biological** -Pathogen	Y	Y	N	Y	Y	Not a CCP	……..
	Chemical Nil	…	….	….	….	…..	…..	……..
	Physical Nil	….	……	….	…	….	……	……
	Quality Nil	….	….	….	….	…..	….	…….

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP / CQP or not	Justifying decision for CCP/CQP
De heading	**Biological** Pathogen	Y	Y	N	Y	Y	Not a CCP	…….
	Chemical Nil	….	….	….	…..	….	….	…….
	Physical Nil	….	….	…..	….	…..	…..	…….
	Quality Nil	….	….	….	….	….	……	……..
Grading	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…….
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	N	Y	Y	…..	…….
Peeling	**Biological** -Pathogen	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	Y	Y	N	Y	Y	Not a CCP	…….
Washing	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…….
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	…	….	….	…..	…..	…….

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP / CQP or not	Justifying decision for CCP/CQP
Additives inspection	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical -phosphate -salt	Y	Y	N	Y	Y	Not a CCP	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	….	…..	….	…..	…..	…….
Treatment	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical -phosphate	Y	Y	N	Y	Y	Not a CCP	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	N	Y	Y	CQP	Excess residue of phosphate may lead to no acceptance.
Final checking / weighing	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	…	….	…	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	N	Y	Y	CQP	Defective pieces may be fed in to IQF freezer.
Feeding	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…….
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	N	Y	Y	…..	…….

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP / CQP or not	Justifying decision for CCP/CQP
IQF freezing	**Biological** Nil	….	…..	…..	….	….	…..	…….
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Improper freezing	Y	Y	Y	N	N	CQP	Improper / insufficient glaze may affect buyers acceptance & shelf life.
Hardening	**Biological** Nil	….	…..	….	…..	…..	….	…..
	Chemical Nil	….	….	….	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	…..	…..	…..	……	…..	…….
Weighing / Pouching	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality packing	Y	Y	N	Y	Y	CQP.	Packing may affect customer acceptance and reputation.
Metal detector	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Metal fragment	Y	Y	Y	N	N	CCP-2	Metal fragments may come into product.
	Quality Nil	….	….	….	…	….	……	…….

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP / CQP or not	Justifying decision for CCP/CQP
Packing material inspection	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Quality of packing material	Y	Y	N	Y	Y	Not a CCP	…….
Packing /Labeling	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	…	….	….	….	….	….	…….
	Physical Labeling	Y	Y	Y	…	…	**CCP-3**	As shrimps is allergen
	Quality Improper labeling	Y	Y	Y	N	N	CQP	Improper labeling will lead to wrong identification of product.
Cold storage	**Biological** Nil	….	….	….	….	….	….	….
	Chemical Nil	….	….	….	….	….	….	….
	Physical Nil	….	….	….	….	….	….	….
	Quality Nil	….	….	….	….	….	….	….
Shipment	**Biological** Nil	….	….	…..	…..	….	……	…..
	Chemical Nil	…	….	…	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Damage carton	Y	Y	Y	N	N	CQP	Improper labeling, temperature abuse & carton quality may damage product.

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JUSTIFICATION OF CCP
IQF Freezing (Aquaculture)

Processing step	CCP	Justification	
CCP-1 Raw material receiving	Growth of pathogen	Growth of microbial pathogen	This is the last stage at which hazards can be controlled , hence this steps is Critical Control Point.(CCP)
	Antibiotics	Presence of antibiotics reduces the resistance of immune system of human body.	
	Pesticides	Presence of pesticides causes cancer in the lungs run in human body.	
	Sulphite	Presence of sulphite causes allergy to some consumer.	
	Herbicides	Presence of herbicides such as pendimethiline which causes severe illness to consumer.	
CCP-2 Metal Detector	Metal fragment	Presence of metal causes physical injury to the consumer.	This is the last stage at which hazards can be controlled , hence this steps is Critical Control Point.(CCP)
CCP-3 Labeling	***Shrimps*** ***Clostridium botulinum*** toxin formation during storage	As Shrimps is allergen ***C. botulinium*** toxic formation during finished product storage which leads to symptoms like weakness, vertigo, swallowing and frequently abdominal swelling, consumption, paralysis & death.	This is the last stage at which hazards can be controlled , hence this steps is Critical Control Point.(CCP)

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JUSTIFICATION

IQF freezing Aquaculture (Critical limit)

PROCESS STEP	CCP	CRITICAL LIMIT	REFERENCE
CCP-1 Raw material Receiving	Growth of microbial pathogen.	Temperature of the material should be <40C	USFDA Regulation and Codex alimentarius guidelines 5.3(CAS.RCP 1-1969, Rev. 4-2003) **Detection Limit:** Chlorampehnicol : 0.3ppb Nitrofuran :1.0ppb
	Antibiotics	**Maximum permissible limit** Chloramphenicol - Nil Nitrofuran - Nil Oxytetracycline - Absent Sulphonamide – Absent	
	Pesticides	**Maximum permissible limit** BHC, Aldrin ,Dieldrin - 0.3 ppb DDT - 5.0ppm	
	Sulphites	Maximum permissible limit is – Nil	
	Herbicides	Maximum permissible limit is – Nil	
CCP-2 Metal Detector	Metal fragment	Ferrous : 1.2mm Non ferrous : 2.0mm Stainless Steel : 2.0mm	Codex alimentarius guidelines 5.2.5 (CAC/ RCP1 -1969, Rev.4-2003)
CCP-3 Labeling	Shrimps Finished product Storage (***Clostridium botulinum***)	All finished product labels must **contain shrimps** declaration on labels. Maximum cooler temperature - 18^0C	Codex alimentarius guidelines 5.2.5 (CAC/ RCP1-1969, Rev.4-2003)

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JUSTIFICATION OF CQP

IQF Freezing (Aquaculture)

PROCESS STEP	HAZARDS	CRITICAL LIMIT	JUSTIFICATION
CQP-1 Chemical treatment	Residual phosphate in excess of the critical limit.	5000ppm	Agreement with buyers.
CQP-2 Final checking	Organoleptically defective pieces.	As per finished product specification.	Agreement with buyers
CQP-3 Freezing	Improper freezing.	Core temperature of product must be not less than -18^0C	In-house / industry specification.
CQP-4 Glazing	Improper of insufficient glaze.	As per buyer's specification.	Agreement with buyers
CQP-5 Weighing / packing / labeling	1.Short weight 2. Wrong labeling / packing.	As per buyer's specification.	Agreement with buyers
CQP-6 Shipment	1. Core temperature of product while loading. 2. Master carton quality while loading.	Must not be less than -18^0C. Damaged / quality compromised cartons.	In-house / industry / Buyer's specification.

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Managing Director

HACCP PLAN FOR RAW AQUACULTURE SHRIMPS (IQF FROZEN)

Firm Name: **RAM'S ASSORTED COLD STORAGE LTD.** Approval no.- **335**	Product Description: **IQF FROZEN (H/ON, H/L, PD, PUD, PDTO, EZPEEL) AQUACULTURE SHRIMP**
Firm Address: **1065/1066/1067/1017 Industrial Estate, Paradeepgarh, Paradeep, Jagatsingpur, Odissa, India (Pin- 754141)**	Method of Storage and Distribution**: STORED AND DISTRIBUTED IN REFRIGERATED CONTAINER BELOW -18^{0}C.**
	Intended User : **GENERAL PUBLIC / RESTURANT**
	Intended User : **TO BE RHAWED & COOKED BEFORE CONSUMPTION.**

1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CCP-1 Raw material head on receiving stage	**Antibiotics** Chloramphenicol, NitroFuran & Nitrofuran metabolites (AOZ,AMOZ ,AHD,SEM) Oxytetracycline Sulphonamides.	Absent	Presence of antibiotics	Pre harvesting test certificates from competent Lab. Ensure supplier declaration certificate. Antibiotic testing of material through internal lab & once in a two months from external competent lab.	Every lot received and each consignment wise and code wise. External testing once in two month to cover all suppliers	Q.C. Technologists	Reject lot if not accompanied by certificate. Stop all purchases from supplier if tests are positive. Remove the supplier from approved list if it is positive, action will be taken against supplier.	Antibiotic test reports.	1.Verification of monitoring records within 7 days by Q.A manager. 2. Raw material analysis report.(testing in an EIC approved lab once in two month for antibiotics. 3.Consignment wise checking of antibiotic in finished product in an EIC approved lab. 4. Supplier guarantee letter/Supplier Lab Antibiotic report . 5. ELISA antibiotic testing.
	Pesticides & Herbicides BHC, ENDRIN DEILDRIN, ALDRIN, DDT,PENDIMETHALIN	Absent	Presence of pesticides	Declaration from supplier for non usage of pesticides and other banned chemical.	Daily source of raw material testing.	Q.C. Technologists	If it is positive, action will be taken against suppliers.	External test report for pesticides once in a two month	Review the external lab reports done once in two months BHC, Endrin ,Deildrin, Aldrin :10 ppb DDT :10ppb Pendimethalin :10 pbb
	Sulphite	Absent	Residue of sulphite content.	Do the sulphite analysis test.	Each lot of raw material received.	Q.C. Technologists	Remove the supplier from approved list.	Sulphite test recod .	Review sulphite analysis test report.

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1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CCP-1 Raw material head on receiving stage	**Biological** Growth of microbial pathogen	Temperature of raw material should be $<4^0$c	Temperature of Raw material	By thermometer	Each lot of raw material received.	Q.C. Technologists	Reject the lot if raw material temperature is $>4^0$c	Raw material receiving register. Bacterological register. Thermometer calibration record.	Review of the: Raw material temperature records. Bacterological register. Thermometer calibration record.
CCP-2 Metal detection	Metal Fragment	Fe : 1.2mm Non Fe : 2.0mm SS : 2.0mm	Metal Fragments	Each block passing through metal detector	Continuously	Packing supervisor	The detected slab are removed and put in a locked box. The production manager /general manager unlock the box and defrost the slab. Divided in to 4 parts. Pass each individual piece through metal detector. If any individual detected, take the pieces cut with knife and analysis metal fragment. Then take out defected pieces. Before passed slab also take & recheck /pass through metal detector.	Metal detector records.	CCP-2 verification of metal detection Before starting the process pre operation checking has done with standard test pad then also periodically verification carried out every 30 minutes. Verification done once in a week.

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1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CCP-3 (Packing material & Labeling)	**Shrimps,** ***c.botulinum*** toxin formation during finished product storage.	All finished product labeled with "**contains shrimps**" All finished product labeled with "Keep Frozen at below -18^{0}C"	Finished product labeling statement "contains Shrimp" & " Keep Frozen at or below -18^{0}C"	By visual	One label from each bag /cartoons labels at receipt.	Supervisor/ QA/ QC / Production In-charge/ Package executive/ Managing Director	Segregate & re- labeling it properly.	Label check record	Review in once in a week

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Managing Director

HACCP PLAN FORM FOR AQUACULTURE SHRIMPS (IQF)

1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CQP-1 Chemical treatment	Phosphate residue	Max. 5000 ppm	Phosphate residue testing.	Chemical analysis through strip method.	Daily source wise.	Q.C Technologist	If phosphate exceeds limit label on the master carton level of ppm .	Soaking monitoring records.	Phosphate residual reports are verified by Q.C manager.
CQP-2 Final checking	Organoleptic	20%	Checking of defective pieces.	By online checking .	continuously	Q.C Technologist	Continuous training to improve skill.	pre-freezing inspection record (Block)	Daily verification of pre freezing inspection record.
CQP-3 Freezing	Improper freezing	Min -18^{0}c	Temperature monitoring of frozen products.	Check freezing time and core temperature of product.	continuously	Production supervisor.	Segregate improperly frozen product & re-freeze.	Monitoring record for freezing block.	Daily verification of freezing monitoring record.
CQP-4 Glazing	Improper Glaze	As per customer specification.	Temperature of glaze water. On choke the nozzles, belt speed.	Controlling of time, temp., belt speed & cleaning of nozzles.	continuously	Production supervisor. Q.C Technologist	If glaze is less than required send product for re glazing.	Freezing monitoring and process control.(IQF line)	Daily verification of freezing monitoring & process control records.
CQP-5 Weighing/ packing /labeling	Wrong labeling & packing	Nil	Labeling & packing operation.	By visual check of packing process	continuously	Production & packing supervisor	Check for any mislabeling, printing and correct it.	Block packing record.	Daily verification of packing record.
CQP-6 Shipment	Temperature	-18^{0}C	Monitoring loading temperature	Check temperature of container & cargo.	Every shipment	Cold store supervisor / Q.C technologist	Stop loading until the temperature is achieved.	Shipment details record.	Q.C to verify shipment detail record for each shipment.

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PREDETERMINED CORRECTIVE /PREVENTIVE ACTION

1. WHEN ANTIBIOTIC/SULPHITE RESIDUE (CCP-1) EXCEED CRITICAL LIMIT

A. **IMMEDIATE CORRECTIVE ACTION**: Identify affected lots through, source code and withdraw day code and withdraw all such lots from the processing floor as well as cold stores.

Tally the total withdrawn lots for quantity.

B. PREVENTIVE ACTION: The supplier is traced back from the source –code and /or day code and removed from approved suppliers list to get rid of unworthy business alliance (his supplier declaration proves his untrustworthiness)

C. CORRECTIVE ACTION RECORDS: CCP verification & corrective action reports for Antibiotic and sulphites.

2. WHEN METAL DETECTION EXCEED (CCP-2) CRITICAL LIMITS

A. IMMEDIATE CORRECTIVE ACTION: The detected pouches /slabs are keeping as non-conformance in de marked cold store area.

B. PREVENTIVE ACTION: The entire process line is traced and checked thoroughly for any possibility of loose metal, rust scrap etc. and any such situation upon notice is corrected.

C. CORRECTIVE ACTION RECORDS: An NCR is raised and corrective action with regard to the same is reported back using the CCP verification and corrective action format for metal detector.

3. WHEN PACKING MATERIAL & LABELING (CCP-3) CRITICAL LIMITS

A. IMMEDIATE CORRECTIVE ACTION: Segregate and return or destroy any label stock or pre- labels packing stock that does not contain the proper statement.

Determine and correct the cause of improper labels.

B. PREVENTIVE ACTION:

i. Finished products label for the presence of a “keep frozen” & “contains shrimps” statement.
ii. Visual examination.
iii. Representative number of package from each lot products.
iv. Any person who has an understanding of the natural of controls.

C. CORRECTIVE ACTION RECORD: Record of labeling checks.

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Managing Director

CHAPTER – V

FRESH FROZEN RAW SEA CAUGHT/WILD CAUGHT SHRIMPS BLOCK FREEZING

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Managing Director

PRODUCT DESCRIPTION OF RAW BLOCK FROZEN SEA CAUGHT/WILD CAUGHT SHRIMPS

Source of Raw Material	Fresh raw material purchased from approved suppliers having registered vessel. (Sea catch/ Wild catch material)
Product	Fresh block frozen raw shrimps
Varieties	Head on – shrimps (H/on)
	Headless Shell-on Shrimps (HL, EZ PEEL)
	Peeled Deveined Tail-on (PDTO, Round cut)
	Peeled Deveined Tail-on (BUTTERFLY 70% Cut)
	Peeled Undeveined Tail-off (PUD, Round cut)
Packing	6 x 1.816Kg, 10x2Kg, 6x1.2Kg,6x1Kg, 10x4lbs etc., (Type of pack and Pouch / M/c as per buyer's requirements)
Storage conditions	At or below -18°c
Shelf life of the product	24 months from the production date or as per the specification of Importing countries.
Method of Preservation	Contact Plate Freezer (Block freezing)
Additives used	Salt and Sodium-Tri-Poly-Phosphate(STTP) as per buyer's requirement
Distribution	To be distributed through refrigerated vehicle or container, maintain below -18°c
Intended use by customer	To be consumed by general public When thawing, we recommend ….. Place Bag of shrimps overnight into the refrigerator or empty desire amount into a container of cool water for approximately 5 minutes drain. It's now ready for cooking. Re-freezing thawed product is not recommended. Re-freezing thawed product is not recommended.

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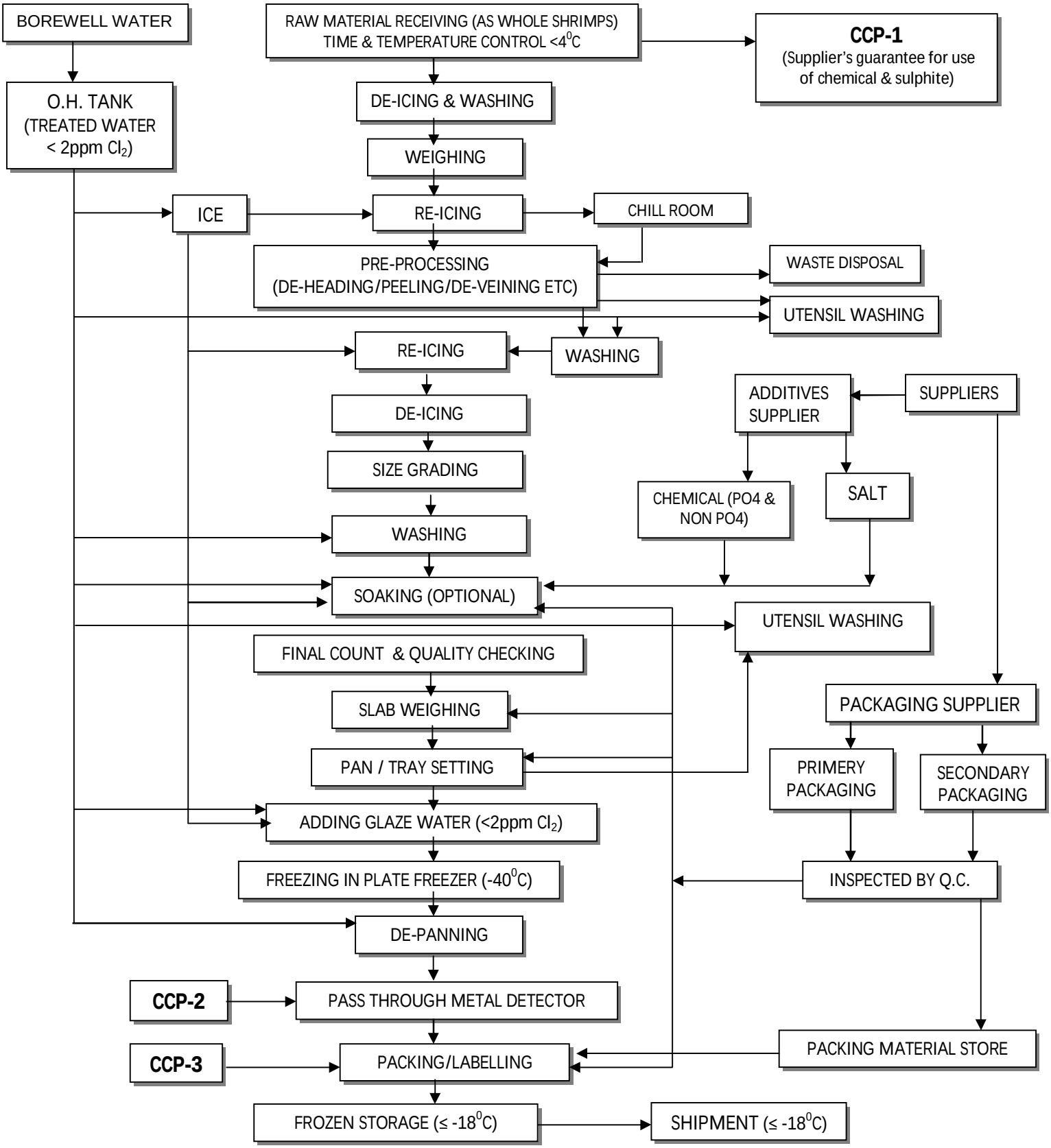
Managing Director

PRODUCTION FLOW CHART FOR FRESH FROZEN RAW SEA CAUGHT/WILD CAUGHT SHRIMPS (BLOCK FROZEN)



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PROCESSING STEPS OF FRESH FROZEN RAW SHRIMPS (PROCESS DESCRIPTION)

- ❒ The heads alone of the prawns are removed, leaving the entire shells and tails intact;
- ❒ The vein (intestine) is pulled out as far as possible from the severed head portion; hanging meat along with the red membrane is removed.
- ❒ Washed well after de-heading;
- ❒ Discolored, bruised and soft-shelled pieces at the grading time are discarded.
- ❒ After grading, the HL/PUD/PD/PDTO are packed in doubly waxed duplex board cartons of 1.8 Kg/ pan of 2 Kg made of stainless steel (or as per buyers requirement) each with declared size, grade.
- ❒ For peeled shrimps the shell is completely removed and either or vein is removed by sharp knife. Dehydrated & discolored smelling pieces are segregated and rejected.
- ❒ Peeled material is thoroughly washed in perforated tub and re-iced properly.
- ❒ Graded materials are packed in duplex cartons with top layered arranged up to 80/120 and jumble pack for 100/200.
- ❒ Packing is in a parallel style with uniform arrangement, no cross packing.
- ❒ Add ice cold glaze water (2 ppm chlorine);
- ❒ In HL type of product, the flavor and nutrients is maximum due to the protection offered by the shell.

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On- Site Verification Process Flow For Block Frozen Sea Cught/Wild Caught Shrimps

Whole shrimps are received at the receiving room through landing platform of Pre-Processing section. Each batch of raw materials are properly deiced and check temperature $<4^0$C and washed with potable water. Materials supplied by different suppliers are tagged with labels with detailed information and certificate of antibiotics. Materials of a particular variety are accepted at a time after satisfying the raw material acceptance criteria (Appendix-III) and rejected the materials which are not satisfied the acceptance criteria. Rejected materials are taken in crates with tag rejected and handed over to the agent/supplier after the batch is over. Purchase supervisor accepts the materials based on accepting criteria and records his observation in the raw material receiving log (Annexure-I). After proper washing with chlorinated water of < 2 ppm. strength and weighing, the head on materials are adequately iced in sanitized crates and kept in the chilled room of pre-processing section, maintained the temperature below $+4^0$C or sent to the preprocessing section directly, if no more balance material is there. This operation is completed within minimum time. A time temperature log for the chill room is maintained by the supervisor to keep a check on temperature abuse. At the time of deheading or peeling etc, adequate and experienced workers are engaged to ensure quick completion of the activity. During the operation, adequate flake ice is used to maintain the temperature below $+4^0$C. The headless or peeled materials are further washed with Chlorinated water of <2 ppm. Strength and adequately iced in sanitized crates. Raw material samples drawn for microbiological/antibiotic test as per the schedule.

After receiving in the processing section, prior to grading each crate of material is de-iced and washed with chlorinated potable water. To minimize the cumulative exposure of material to high temperature, delay during manual grading is avoided. The graded materials are adequately iced and kept in plastic crates. To avoid time temperature abuse, excess materials are stored in the chill room or insulated boxes in the processing section with adequate ice. For time temperature log of chill room maintained to keep a check of temperature abuse.

The graded headless materials are deiced and taken for wash to remove the filth. In case of peeled materials, after deicing the materials are fed into the automatic grading cum filth washing machine to remove the filth. Prior final weighment of the slabs each individual grade of single variety is washed with chlorinated water <2 ppm. Strength and taken on perforated table to drain out the excess water. At this stage the code slip in addition to the mandatory information also incorporated.

Before weighment, the materials are taken for final grade checking and colour segregation. Following weighment, slabs are taken to a setting table to arrange the materials in pan/inner cartons. Technologists inspects the processed slabs to check the count, weight and other quality parameters and records the observation in the register of processing (Annexure-III). After packing chilled glaze water with < 2 ppm. Chlorine level is poured into the slabs. These slabs then taken to pre-cooled plate plate freezer for freezing. The slabs are frozen at - 40^oC in 90 minutes. A logbook for plate freezer is maintained by the production supervisor to ensure the proper freezing of the materials (Annexure-XV).

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Upon unloading, slabs are taken to the anteroom for final packing. Hardness of slabs are checked. Ante room temperature is always maintained. Properly dressed store boys are allowed to handle the finished products. In case of pan freezing, slabs are taken out with depanning machine and packed in laminated inner carton. All slabs are put into master carton bearing describe packing, declaration for particular varieties as per requirements. Master Cartons are stored in cold storage maintained at below – 18^0C. Records of cold storage are maintained through an automatic temperature recording thermograph.
Following the days production, the product is tested code wise, type wise of Organoleptic and Bacteriological examination by approved technologist (Lab). The same are recorded . A particular lot is approved for shipment if the lot satisfies the quality criteria of the competent authority and that of the importing country.

Besides as per our practice samples are drawn randomly for test of antibiotic residue to a level of 0.1 ppb by HPLC-LCMSMS Method particularly for chloramphenicol and nitrofuran groups in EIC approved Laboratory. Records are maintained by technologists. For any type of products, materials are accepted on supplier's guarantee. Pesticides, antibiotics drug and heavy metals (Hg, As, Cd, Pb, Ni, Cr & Sn) salts and STPP are tested as follows:

Antibiotics, Heavy Metals and Pesticides residue is tested at EIC approved LAB for raw material once in two months and covering different sources/suppliers on rotation basis and also finished products testing is done consignment-wise before each shipment.

SALT-Salt is tested for staphylloccous and sulphite reducing clostridium once in six months if same batch is continued otherwise tested every batch at EIC approved laboratories.

STPP-The permissible percentage of phosphate in finished products are tested once in six month by EIC approved laboratory. Antibiotics, Heavy Metals and Pesticides are sent to EIA / SEA LAB/TA LAB/INTERFIELD LAB for residue analysis as specified by the local EIA for which the sample is drawn by EIA.

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HAZARD ANALYSIS WORKSHEET
FOR FRESH FROZEN RAW SEA CAUGHT/WILD CAUGHT SHRIMPS (BLOCK FROZEN)

Firm Name:
RAM'S ASSORTED COLD STORAGE LTD.
Approval No. : 335
Firm Address:
1065/1066/1067/1017 Industrial Estate, Paradeepgarh, Paradeep, Jagatsingpur, Odisha, India (Pin- 754141)

Product Description: Block Frozen (H/ON, H/L, PD, PUD, PDTO, EZPEEL) Sea caught/ Wild caught Shrimp
Method of Distribution: Stored & Distributed In Refr Igerated Container Below -18^{0}c.
Intended User: General Public / Restaurant
Intended Use: To Be Thawed & Cooked Before

(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Receiving whole shrimps at raw material receiving section	**Biological** Bacterial pathogen growth	Yes	Likelihood-H Severity-H	Raw materials is always having high load of pathogen	Proper time temperature control Raw materials temp <4^{0}C if more reject the lot. Controlled by GAP at farm . GMP SSOP, SOP at processing plant.	Yes CCP-1
	Chemical Sulphite	Yes	Likelihood-H Severity-H	Sulphite residue are toxic & potential allergen and that may cause cancer.	Supplier Declaration	Yes CCP-1
	Physical Metal fragment, stone ,plastic ,wood & objection able foreign materials	No	Likelihood- L Severity-H	All sorts of physical contamination are possible & cause injuries to consumer acceptance.	……	No
	Quality Organoleptic	No	Likelihood-M Severity -H	Affects finished products quality due to improper handling ,lack of improper icing, improper storage in crates	…….	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Deicing, washing , Weighing	**Biological** Bacterial pathogen growth	No	Likelihood-M Severity -H	From food contact surfaces , workers handling , time delay , temperature fluctuation . proper layer icing, maintained temperature below 4^0c	…….	No
	Chemical Nil	No	……..	No chemical contamination at this step.	……..	No
	Physical Nil	No	……..	No physical contamination at this step	……	No
	Quality oraganoleptic	No	Likelihood –L Severity - L	Maintain raw material temperature below 4^0c	……..	No
Re-icing/ chill room	**Biological** Bacterial pathogen	No	Likelihood-L Severity -L	Proper time temperature control (SSOP) Food contact surfaces Contaminate ice may cause pathogen growth.	……..	No
	Chemical Nil	No	……..	No chemical contamination at this step.	……..	No
	Physical Foreign material	No	Likelihood-L Severity -H	From food contact surface like broken plastic & metal pieces etc	…….	No
	Quality Temperature	No	Likelihood-L Severity -M	From temperature abuse of the raw material may affect the quality.	…….	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
De heading / peeling / deveining / filth washing etc.	**Biological** Bacterial pathogen	No	Likelihood-M Severity-H	From food contact surface, time temperature control, proper layer icing & using chill water.	……..	No
	Chemical Nil	No	……..	No source of chemical contamination.	……..	No
	Physical Nil	No	……..	From the damage food contact surface (table) metal fragment. All tables are made by stainless steel.	…….	No
	Quality Oranganoleptic	No	Likelihood-L Severity-L	Hanging meat / red meat may affect consumer acceptance. proper trimming of red meat, SOP if deheading procedure	…….	No
Deicing & size grading	**Biological** Bacterial pathogen	No	Likelihood –L Severity -H	From food contact surface & personnel hygiene, proper time /temperature control. Proper icing of grading materials.	……..	No
	Chemical Nil	No	……..	No source chemical contamination.	…….	No
	Physical Nil	No	…….	From the damage food contact surface (table) metal fragment. All tables are made by stainless steel.	……..	No
	Quality Organoleptic	No	Likelihood-L Severity -M	Wrong grading, defective/wrong pieces may exceed the specification,/ uniformity ratio. Proper sorting /checking using trained man power. Proper labeling of source code.	……..	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Additives inspection	**Biological** Bacterial pathogen	No	Likelihood-L Severity -H	In salt clostridium bacteria may be chance. Lot wise analysis of clostridium bacteria by external lab.	……..	NO
	Chemical Food grade	No	Likelihood-L Severity -H	Salt & carnal might have health hazards chemicals. MSDS /food grade certificate from manufacturer/ suppliers.	……..	No
	Physical Pest infestation	No	Likelihood-L Severity -H	From pest infestation & other physical character may affect quality of the products.	…….	No
	Quality Free flow, moisture , appearance	No	Likelihood –L Severity -H	Quality of salt, carnal additives is inspected as per sampling plan & recorded.	……..	No
Treatment	**Biological** Bacterial pathogen	No	Likelihood-L Severity-H	May contaminated water causes pathogen growth. Proper schedule & monitoring of hygiene & sanitation activity, time /temperature control.	…….	No
	Chemical Salt, carnal	No	Likelihood-L Severity- H	Excess salt & phosphate residue may lead to buyer non-acceptance. Use of quantified chemicals, adherence to treatment specs and issue register & also additional checking to be done.	…….	No
	Physical Nil	No	…….	No source of physical contamination	…….	No
	Quality Organoleptic	No	Likelihood-L Severity-H	Treatment may generate defective pieces. Gentle agitation through agitator & trained employees involved in this process. Excessive use of chemical will lead to bitter test and loss of texture.	……..	No But this step consider as CQP.

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Washing / Draining / Final count & sorting	**Biological** Bacterial pathogen	No	Likelihood-H Severity-H	From food handlers personnel hygiene & food contact surface. All food handlers should be checked personnel hygiene and the same recorded. Food contact surface sanitized as written procedure.	……..	No
	Chemical Nil	No	…….	No chemical contamination at this step.	……..	No
	Physical Nil	No	.....	From food contact surface, from food handlers. crates & nets are made by as per policy monitoring & verification(broken & damaged in place and also to avoid metal fragment table to make by SS. To avoid unsecure jewellery all food handler are checked before enter the processing area and recorded the same.	……..	No
	Quality Organoleptic	No	Likelihood –L Severity-L	More defective pieces may be goes to on slab. Trained /skilled employees are provided to check the defective pieces. Randomly checking of pre freezing inspection & same to be recorded.	……..	No But this step consider as CQP
Weighing / pan setting and glazing	**Biological** Bacterial pathogen	No	Likelihood-L Severity-L	From food contact surface of pan, lids etc. From Personnel hygiene of food handlers. Proper cleaning & sanitization of pan lids & polythene cover. Periodical hand sanitation.	……..	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
	Chemical Nil	No	……	No source of chemical contamination.	……..	No
	Physical Nil	No	……	No source of physical contamination.	……..	No
	Quality Organoleptic	No	Likelihood –L Severity-L	Improper arrangement may affect customer satisfaction. Top & bottom flat setting.	……..	No
Freezing	**Biological** Nil	No	……..	No biological contamination in this step -400C freezing activity in place.	……	No
	Chemical Nil	No	……..	No source of chemical contamination.	……	No
	Physical Nil	No	……..	No source of physical contamination.	……..	No
	Quality Improper freezing	No	Likelihood-L Severity-H	Time & temperature fluctuation of block freezers may lead in to improper freezing.	……..	No But this step consider as CQP
De Panning	**Biological** Bacterial pathogen	No	Likelihood-H Severity-H	From food contact surface pan, lid covers, personnel. Use only sanitized pan cover, lids etc. Proper hand washing.	……	No
	Chemical Nil	No	……..	No source of chemical contamination.	……..	No
	Physical Nil	No	……	No source of physical contamination.	……	No
	Quality Nil	No	……..	Due to over defrosting glaze will affect. Ensure the uniform spray of water.	……..	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Metal detector	**Biological** Nil	No	……	No source of microbial contamination.	…….	No
	Chemical Nil	No	…….	No source of chemical contamination.	…….	No
	Physical Metal fragment	Yes	Likelihood-H Severity-H	Metal fragments may contaminate the product. It is hazardous to health.	Continuously all pouches pass through metal detector & record. Metal detector is periodically calibrated as per written procedure.	Yes CCP-2
	Quality Nil	No	……..	…….	…….	No
Packing material inspection	**Biological** Nil	No	……..	Internal bacteriological report.	…….	No
	Chemical Toxic printing ink	Yes	Likelihood-L Severity- M	Toxic printing ink may cause health hazard	No toxic printing ink used in printing & food grade materials are used.	No
	Physical Damage	No	Likelihood-L Severity-M	Damage packing materials from suppliers. External quality report for packing material. Declaration from manufacturer/Supplier.	……..	No
	Quality Quality of packing material	No	Likelihood-L Severity-M	Poor quality of packing material may affects the customer satisfaction. External quality report for packing material. Declartion from manufacturer /supplier.	…….	No

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INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Label inspection	**Biological** Bacterial pathogen	No	Likelihood-L Severity-L	Packing supplier poor handling their facility may chance microbial contamination.	……..	No
	Chemical Toxic printing ink	Yes	Likelihood-L Severity- M	Toxic printing ink may cause health hazard	No toxic printing ink used in printing & food grade materials is used.	No
	Physical Labeling	Yes	Likelihood-H Severity-H	As shrimps is allergen	Label check record	Yes CCP-3
	Quality Quality of labels	No	Likelihood-L Severity -L	Poor quality printing, poor presentation of label may affect the customer specification. Label inspection to be carried out and compare with matter label.	……..	No
Cold storage	**Biological** Nil	No	……..	Not likely to occur because of cold storage are designed & maintained .Time & temperature monitoring & recording physical verification.	……..	No
	Chemical Nil	No	……..	No chemical contamination at this step.	……..	No
	Physical Temperature	No	Likelihood-H Severity-H	Temperature fluctuation from cold store may affect the product quality. Cold store temperature are maintained at -180c. Automatic temperature monitoring device connected with computer.	…….	No

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
	Quality Appearance	No	Likelihood-H Severity- H	Improper maintenance of cold store may affect the quality of the product. Cold store is properly maintained FIFO system is followed.	…….	No
Shipment	**Biological** Nil	No	……..	Final product covered with protected polythene/ inner carton/ master carton and closed with self adhesive tape.	……..	No
	Chemical Nil	No	……..	No chemical contamination in this step.	…….	No
	Physical Nil	No	…….	Not likely occur because frozen storage is maintained at -180 c temperature.	…….	Nil
	Quality Temperature abuse and Improper handling	No	Likelihood-L Severity-L	Improper handling, temperature abuse and carton quality design, product may affect the customer satisfaction . Monitoring of incoming cartons, loading operation & temperature recording.	…….	No But this step consider as CQP.

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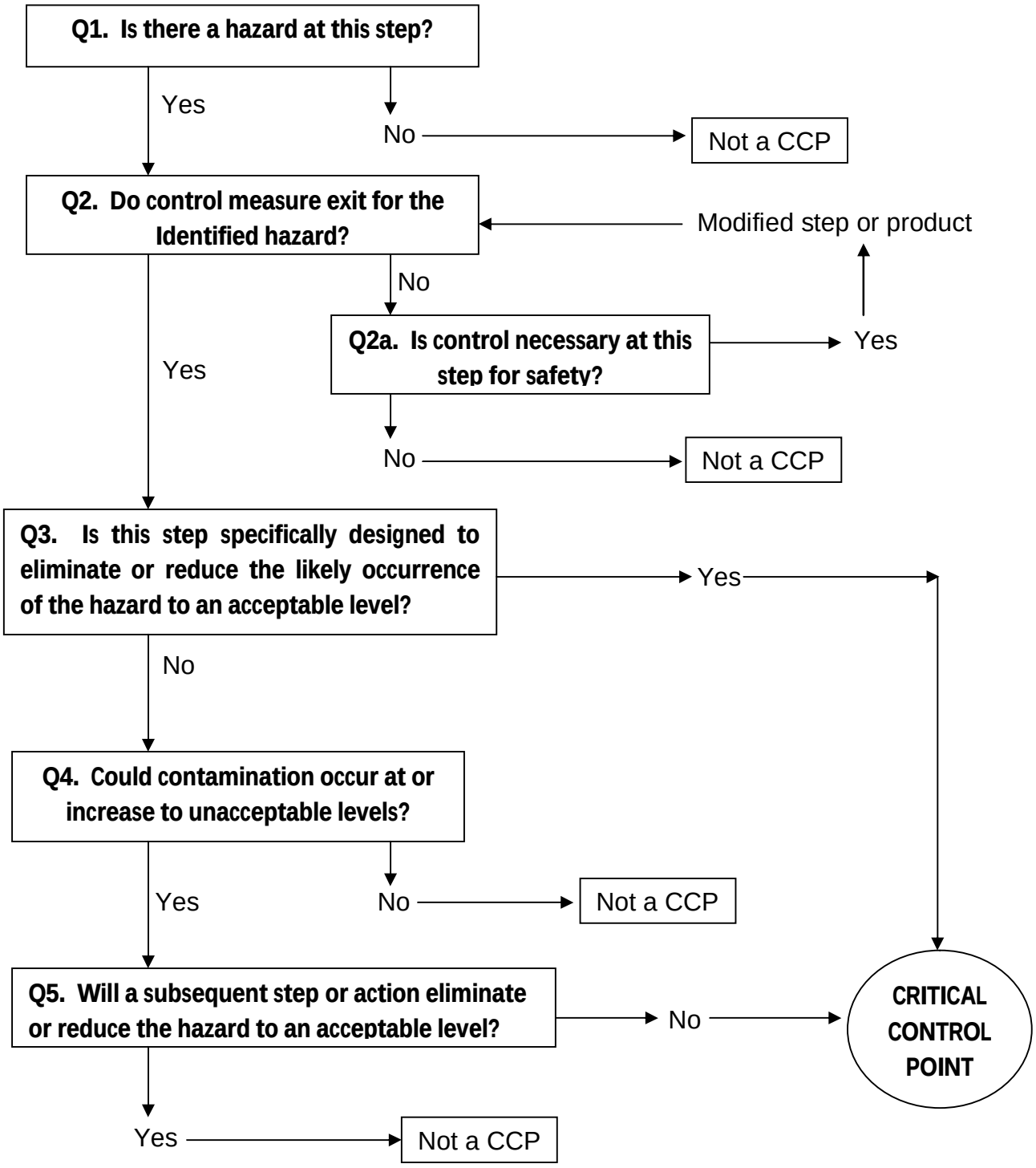
CCP DECISION TREE



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CCP – DECISION TREE ANALYSIS

The decision tree is applied to all steps of hazard analysis worksheet and not limited to CCP alone. Following is CCP determination for block raw frozen Sea caught/Wild caught shrimps:

Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Raw material receiving	**Biological** - pathogen	Y	Y	Y	N	N	CCP	Survival of pathogenic bacteria from fishing vessel or landing area.
	Chemical Sulphite	Y	Y	Y	N	N	CCP	Shrimps may have sulphite residues. It may cause illness to the consumer. Sulphite agents may cause allergic type reaction. There is no further step to control the hazard.
	Physical -Glass -wood -stone -plastic	Y	Y	N	Y	Y	….	…….
	Quality Black spot	Y	Y	N	Y	Y	….	…….
Chill storage	**Biological** - Pathogen	Y	Y	N	Y	Y	….	…..
	Chemical Nil	…	….	….	…..	….	….	……
	Physical Nil	…	…..	……	….	….	….	……
	Quality Nil	…	….	….	….	….	….	…….
De icing / washing	**Biological** - Pathogen	Y	Y	N	Y	Y	…..	……..
	Chemical Nil	…	….	….	….	…..	…..	……..
	Physical Nil	….	……	….	…	….	……	……
	Quality Organoleptic	Y	Y	N	Y	Y	….	…….
Deheading	**Biological** Pathogen	Y	Y	N	Y	Y	…..	…….
	Chemical Nil	….	….	….	…..	….	….	…….
	Physical Nil	….	….	…..	….	…..	…..	…….
	Quality Organoleptic	Y	Y	N	Y	Y	……	…….

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Grading	**Biological** - pathogen	Y	Y	N	Y	Y	….	……
	Chemical NIL	….	….	….	….	….	…..	…….
	Physical NIL	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	N	Y	Y	…..	…….
Washing	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	……
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	…	….	….	…..	…..	…….
Additives inspection	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical -phosphate -salt	Y	Y	N	Y	Y	Not a CCP	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	….	…..	….	…..	…..	…….
Treatment	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical -phosphate	Y	Y	N	Y	Y	Not a CCP	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	Y	N	N	CQP	Excess residue of phosphate may lead to no acceptance.

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Final checking/ weighing	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	…	….	….	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	Y	N	N	CQP	Defective pieces may be fed in to IQF freezer.
Label Inspection	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	……
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	…	….	….	…..	…..	…….
Feeding	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	……
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	N	Y	Y	Not a CCP	…….
IQF freezing	**Biological** Nil	….	…..	…..	….	….	…..	……
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Improper freezing	Y	Y	Y	N	N	CQP	Improper / insufficient glaze may affect buyer's acceptance & shelf life.
Hardening	**Biological** Nil	…..	…..	……	…..	…..	….	…..
	Chemical Nil	….	….	….	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality	….	…..	…..	…..	……	…..	……..

Authorized by:-

Managing Director

	Nil							
Process step	**Hazard**	**Q1 (Y/N)**	**Q2 (Y/N)**	**Q3 (Y/N)**	**Q4 (Y/N)**	**Q5 (Y/N)**	**CCP /CQP or not**	**Justifying decision for CCP/CQP**
Weighing / Pouching	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality packing	Y	Y	Y	N	N	CQP.	Packing may affect customer acceptance and reputation.
Metal detector	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Metal fragment	Y	Y	Y	N	N	CCP-2	Metal fragments may come into product.
	Quality Nil	….	….	….	…	….	……	…….
Packing material inspection	**Biological** Nil	Y	Y	N	Y	Y	Not a CCP	……..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Quality of packing material	Y	Y	N	Y	Y	Not a CCP	…….
Packing /Labeling	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	…	….	….	….	….	….	…….
	Physical Label	Y	Y	Y	…..	…..	CCP-3	As shrimps is allergen
	Quality Improper labeling	Y	Y	Y	N	N	CQP	Improper labeling will lead to wrong identification of product.

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Cold storage	**Biological** NIL	…..	…..	…..	…..	…..	……	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	…..	….	….	…..	….	…..	…….
Shipment	**Biological** Nil	….	….	…..	…..	….	……	…..
	Chemical Nil	… .	….	…	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Damage carton	Y	Y	N	Y	Y	CQP	Improper labeling, temperature abuse & carton quality may damage product.

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JUSTIFICATION OF CCP
Block freezing (Sea Caught/wild Caught)

Process step	CCP	Justification	
CCP-1 Raw material shrimps	Growth of pathogen	Growth of microbial pathogen	This is the last stage at which hazards can be controlled , hence this steps is Critical Control Point.(CCP)
	Sulphite	Presence of sulphite causes allergy to some consumer.	
CCP-2 Metal Detection	Metal fragment	Presence of metal causes physical injury to the consumer.	This is the last stage at which hazards can be controlled , hence this steps is Critical Control Point.(CCP)
CCP-3 Labeling	***Shrimps*** ***Clostridium botulinum*** toxin formation during storage	As Shrimps is allergen ***C. botulinium*** toxic formation during finished product storage which leads to symptoms like weakness, vertigo, swallowing and frequently abdominal swelling, consumption, paralysis & death.	This is the last stage at which hazards can be controlled , hence this steps is Critical

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JUSTIFICATION

Block freezing Sea caught / Wild caught (Critical limit)

PROCESS STEP	CCP	CRITICAL LIMIT	REFERENCE
CCP-1 Raw material Receiving	Growth of microbial pathogen.	Temperature of the material should be <40C	USFDA Regulation and Codex alimentarius guidelines 5.3(CAS.RCP 1-1969, Rev. 4-2003)
	Sulphites	Maximum permissible limit is – Nil	
CCP-2 Metal Detector	Metal fragment	Ferrous : 1.2mm Non ferrous : 2.0mm Stainless Steel : 2.0mm	Codex alimentarius guidelines 5.2.5 (CAC/ RCP1 -1969, Rev.4-2003)
CCP-3 Labeling	Shrimps Finished product Storage (***Clostridium botulinum***)	All finished product labels must "**contain shrimps"** declaration on labels. Maximum cooler temperature -18^{0}C	Codex alimentarius guidelines 5.2.5 (CAC/ RCP1-1969, Rev.4-2003)

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JUSTIFICATION OF CQP

Block Freezing (Sea caught / Wild caught)

PROCESS STEP	HAZARDS	CRITICAL LIMIT	JUSTIFICATION
CQP-1 Chemical treatment	Residual phosphate in excess of the critical limit.	5000ppm	Agreement with buyers.
CQP-2 Final checking	Organoleptically defective pieces.	As per finished product specification.	Agreement with buyers
CQP-3 Freezing	Improper freezing.	Core temperature of product must be not less than -18^0C	In-house / industry specification.
CQP-4 Weighing / packing / labeling	1.Short weight 2. Wrong labeling / packing.	As per buyer's specification.	Agreement with buyers
CQP-5 Shipment	1. Core temperature of product while loading. 2. Master carton quality while loading.	Must not be less than -18^0C. Damaged / quality compromised cartons.	In-house / industry / Buyer's specification.

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HACCP PLAN FOR RAW SEA CAUGHT/WILD CAUGHT SHRIMPS (BLOCK FROZEN)

Firm Name: **RAM'S ASSORTED COLD STORAGE LTD.** Approval no.- **335**	Product Description: **BLOCK FROZEN (H/ON, H/L, PD, PUD, PDTO, EZPEEL) Sea caught / Wild caught Shrimp**
Firm Address: **1065/1066/1067/1017 Industrial Estate, Paradeepgarh, Paradeep, Jagatsingpur, Odissa, India (Pin- 754141)**	Method of Storage and Distribution**: STORED AND DISTRIBUTED IN REFRIGERATED CONTAINER BELOW -18^{0}C.**
	Intended User : **GENERAL PUBLIC / RESTURANT**
	Intended User : **TO BE THAWED & COOKED BEFORE CONSUMPTION.**

1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CCP-1 Raw material head on receiving stage	**Sulphite**	Absent	Residue of sulphite content.	Do the sulphite analysis test.	Each lot of raw material received .	Q.C Technologist	If it is positive action will be taken against suppliers. Remove the supplier from approved list.	Sulphite test recod .	Review sulphite analysis test report.
	Biological Growth of microbial pathogen	Temperature of raw material should be <4^{0}c	Temperature of raw material	By thermo meter	Each lot of raw material received	Q .C Technologist	Reject the lot if raw material temperature is >4^{0}C	Raw material receiving register Bacterological register. Thermometer calibration record	Review of the: Raw material temperature records. Bacterological register Thermometer calibration record.

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1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CCP-2 Metal detection	Metal fragment	Fe :1.2mm Non Fe :2.0mm SS: 2.0mm	Metal fragments	Each block passing through metal detector	Continuously	Packing supervisor	The detected slab are removed and put in a locked box. The production manager /general manager unlock the box and defrost the slab. Divided in to 4 parts. Pass each individual piece through metal detector. If any individual detected, take the pieces cut with knife and analysis metal fragment. Then take out defected pieces. Before passed slab also take & recheck /pass through metal detector.	Metal detector records.	CCP-2 verification of metal detection Before starting the process pre operation checking has done with standard test pad then also periodically verification carried out every 30 minutes. Verification done once in a week.
CCP-3 (Packing material & Labeling)	**Shrimps,** ***c.botulinum*** toxin formation during finished product storage.	All finished product labeled with "containing shrimps" All finished product labeled with "Keep Frozen at below -18^{0}C"	Finished product labeling statement "contains Shrimp" & " Keep Frozen at or below -18^{0}C"	By visual	Label on each cartons	Supervisor/ QA/ QC / Production In-charge/ Package executive/ Managing Director	Segregate & re-labeling it properly.	Label check record	Review in once in a week

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Managing Director

HACCP PLAN FORM FOR SEA CAUGHT/WILD CAUGHT SHRIMPS (BLOCK)

1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CQP-1 Chemical treatment	Phosphate residue	Max. 5000 ppm	Phosphate residue testing.	Chemical analysis through strip method.	Daily source wise.	Q.C Technologist	If phosphate exceeds limit label on the master carton level of ppm	Soaking monitoring records.	Phosphate residual reports are verified by Q.A manager.
CQP-2 Final checking	Organoleptic	20%	Checking of defective pieces.	By online checking.	continuously	Q.C Technologist	Continuous training to improve skill.	pre-freezing inspection record(Block)	Daily verification of pre freezing inspection record.
CQP-3 Freezing	Improper freezing	Min -18^{0}c	Temperature monitoring of frozen products.	Check freezing time and core temperature of product.	continuously	Production supervisor.	Segregate improperly frozen product & re-freeze.	Monitoring record for freezing block.	Daily verification of freezing monitoring record.
CQP-4 Weighing / packing / labeling	Wrong labeling & packing	Nil	Labeling & packing operation.	by visual check of packing process	continuously	Production & packing supervisor	Check for any mislabeling, printing and correct it.	Block packing record.	Daily verification of packing record.
CQP-5 Shipment	Temperature	-18^{0}C	Monitoring loading temperature	Check temperature of container & cargo.	Every shipment	Cold store supervisor / Q.C technologist	Stop loading until the temperature is achieved.	Shipment details record.	Q.A to verify shipment detail record for each shipment.

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PREDETERMINED CORRECTIVE /PREVENTIVE ACTION

1. WHEN ANTIBIOTIC/SULPHITE RESIDUE (CCP-1) EXCEED CRITICAL LIMIT

A. **IMMEDIATE CORRECTIVE ACTION**: Identify affected lots through, source code and withdraw day code and withdraw all such lots from the processing floor as well as cold stores.

Tally the total withdrawn lots for quantity.

B. PREVENTIVE ACTION: The supplier is traced back from the source –code and /or day code and removed from approved suppliers list to get rid of unworthy business alliance (his supplier declaration proves his untrustworthiness)

C. CORRECTIVE ACTION RECORDS: CCP verification & corrective action reports for Antibiotic and sulphites.

2. WHEN METAL DETECTION EXCEED (CCP-2) CRITICAL LIMITS

A. IMMEDIATE CORRECTIVE ACTION: The detected pouches /slabs are keeping as non-conformance in de marked cold store area.

B. PREVENTIVE ACTION: The entire process line is traced and checked thoroughly for any possibility of loose metal, rust scrap etc. and any such situation upon notice is corrected.

C. CORRECTIVE ACTION RECORDS: An NCR is raised and corrective action with regard to the same is reported back using the CCP verification and corrective action format for metal detector.

3. WHEN PACKING MATERIAL & LABELING (CCP-3) CRITICAL LIMITS

A. IMMEDIATE CORRECTIVE ACTION: Segregate and return or destroy any label stock or pre- labels packing stock that does not contain the proper statement.

Determine and correct the cause of improper labels.

B. PREVENTIVE ACTION:

i. Finished products label for the presence of a “keep frozen” & “contains shrimp” statement.
ii. Visual examination.
iii. Representative number of package from each lot products.
iv. Any person who has an understanding of the natural of controls.

C. CORRECTIVE ACTION RECORD: Record of labeling checks.

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CHAPTER – VI

FRESH FROZEN RAW SEA CAUGHT/WILD CAUGHT SHRIMPS IQF

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PRODUCT DESCRIPTION OF RAW FROZEN SEA CAUGHT/WILD CAUGHT SHRIMPS (IQF)

Source of Raw Material	Fresh raw material purchased from approved suppliers having registered vessel. (Sea caught/Wild caught)
Product	IQF Raw Shrimps
Varieties	Head on – shrimps (H/on)
	Headless Shell-on Shrimps (HL, EZ PEEL)
	Peeled Deveined Tail-on (PDTO, Round cut)
	Peeled Deveined Tail-on (BUTTERFLY 90% Cut)
	Peeled Undeveined Tail-off (PUD, Round cut)
Packing	5 x 2Lbs, 10x2Lbs, 6x1.2Kg,10x1Kg, 10x1lb, etc., (Type of pack and Pouch / M/c as per buyer's requirements)
Storage conditions	-18 Degree centigrade
Shelf life of the product	24 months from the production date or as per the specification of Importing countries.
Method of Preservation	Individual Quick Freezing (IQF)
Additives used	Salt and Sodium-Tri-Poly-Phosphate (STTP) as per buyer's requirement
Distribution	To be distributed through refrigerated carriers maintain -18ºC
Intended use by customer	To be consumed by general public When thawing, we recommend ….. Place Bag of shrimps overnight into the refrigerator or empty desire amount into a container of cool water for approximately 5 minutes drain. It's now ready for cooking. Re-freezing thawed product is not recommended.

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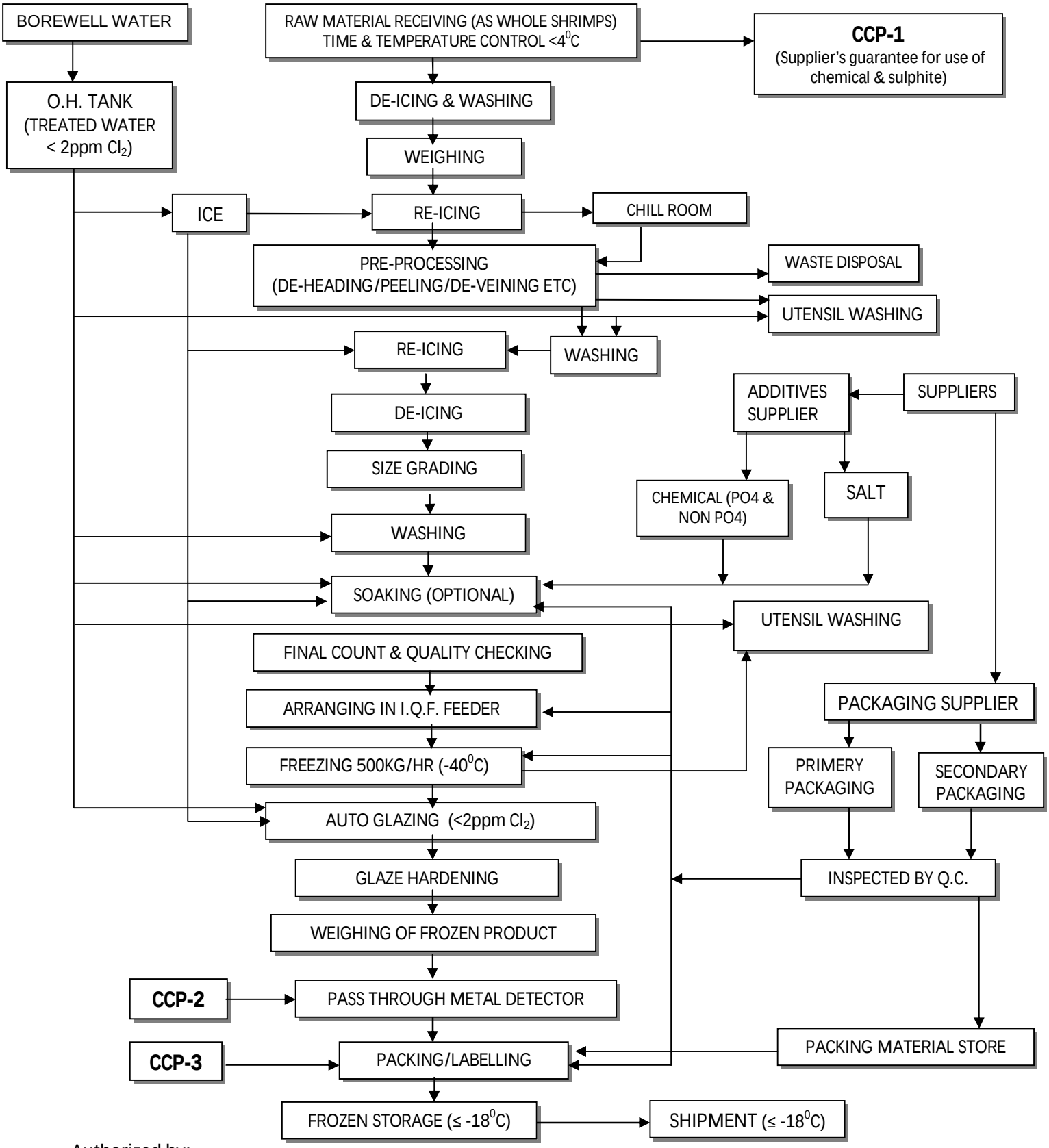
PRODUCTION FLOW CHART FOR FRESH FROZEN RAW AQUACULTURE SHRIMPS (I.Q.F.)



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PROCESSING STEPS OF FRESH FROZEN RAW SHRIMPS (PROCESS DESCRIPTION)

- ❒ The heads alone of the prawns are removed, leaving the entire shells and tails intact;
- ❒ The vein (intestine) is pulled out as far as possible from the severed head portion; hanging meat along with the red membrane is removed.
- ❒ Washed well after de-heading;
- ❒ Discolored, bruised and soft-shelled pieces at the grading time are discarded.
- ❒ For IQF products, size, grade and variety-wise the materials are graded and soaking (optional) with 2% salt, 3% STPP, 40% Water and 60% Ice and stirring for 1 and ½ hour) and then fed to the IQF feeder individually before freezing and then only the frozen products are weighed, glazed and packed as per buyer's requirement.
- ❒ For peeled shrimps the shell is completely removed and either or vein is removed by sharp knife. Dehydrated & discolored smelling pieces are segregated and rejected.
- ❒ Peeled material is thoroughly washed in perforated tub and re-iced properly.
- ❒ Graded materials fed to the IQF feeder individually before freezing and then only the frozen products are weighed, glazed and packed as per buyer's requirement.
- ❒ In HL type of product, the flavor and nutrients is maximum due to the protection offered by the shell.

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ON- SITE VERIFICATION PROCESS FLOW FOR I.Q.F. SEA CAUGHT / WILD CAUGHT SHRIMPS

Whole shrimps are received at the receiving room through landing platform of Pre-Processing section. Each batch of raw materials are properly deiced and check temperature $<4^0$C and washed with potable water. Materials supplied by different suppliers are tagged with labels with detailed information. Materials of a particular variety are accepted at a time after satisfying the raw material acceptance criteria (Appendix-III) and rejected the materials which are not satisfied the acceptance criteria. Rejected materials are taken in crates with tag rejected and handed over to the agent/supplier after the batch is over. Purchase supervisor accepts the materials based on accepting criteria and records his observation in the raw material receiving log (Annexure-I). After proper washing with chlorinated water of < 2 ppm. strength and weighing, the head on materials are adequately iced in sanitized crates and kept in the chilled room of pre-processing section, maintained the temperature below $+4^0$C or sent to the preprocessing section directly, if no more balance material is there. This operation is completed within minimum time. A time temperature log for the chill room is maintained by the supervisor to keep a check on temperature abuse. At the time of deheading or peeling etc, adequate and experienced workers are engaged to ensure quick completion of the activity. During the operation, adequate flake ice is used to maintain the temperature below $+4^0$C. The headless or peeled materials are further washed with Chlorinated water of <2 ppm. Strength and adequately iced in sanitized crates. Raw material samples drawn for microbiological/antibiotic test as per the schedule.

After receiving in the processing section, prior to grading each crate of material is de-iced and washed with chlorinated potable water. To minimize the cumulative exposure of material to high temperature, delay during manual grading is avoided. The graded materials are adequately iced and kept in plastic crates. To avoid time temperature abuse, excess materials are stored in the chill room or insulated boxes in the processing section with adequate ice. For time temperature log of chill room maintained to keep a check of temperature abuse.

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The graded headless materials are deiced and taken for wash to remove the filth. In case of peeled materials, after deicing the materials are fed into the automatic grading cum filth washing machine to remove the filth. Prior final weighment of the slabs each individual grade of single variety is washed with chlorinated water <2 ppm. Strength and taken on perforated table to drain out the excess water. At this stage the code slip in addition to the mandatory information also incorporated.

For IQF products the washed products are directly fed to the IQF feeder and after freezing the materials are weighed and glazed and then packed into the master carton as per the buyer's specification. Master Cartons are stored in cold storage maintained at below – 18^0C. Records of cold storage are maintained through an automatic temperature recording thermograph (Annexure-XXXV).

Following the days production, the product is tested code wise, type wise of Organoleptic and Bacteriological examination by approved technologist (Lab). The same are recorded (Annexure-XVIII,XIX,XX,XXI,XXII,). A particular lot is approved for shipment if the lot satisfies the quality criteria of the competent authority and that of the importing country.

Besides as per our practice samples are drawn randomly for test of antibiotic residue to a level of .01 ppb by HPLC-LCMSMS Method particularly for chloramphenicol and nitrofuran groups in EIC approved Laboratory. Records are maintained by technologists. For any type of products, materials are accepted on supplier's guarantee. Pesticides, antibiotics drug and heavy metals (Hg, As, Cd, Pb, Ni, Cr & Sn) salts and STPP are tested as follows:

Antibiotics, Heavy Metals and Pesticides residue is tested at EIC approved LAB for raw material once in two months and covering different sources/suppliers on rotation basis and also finished products testing is done consignment-wise before each shipment.

SALT-Salt is tested for staphylloccous and sulphite reducing clostridium once in six months if same batch is continued otherwise tested every batch at EIC approved laboratories.

STPP-The permissible percentage of phosphate in finished products are tested once in six month by EIC approved laboratory. Antibiotics, Heavy Metals and Pesticides are sent to EIA / SEA LAB for residue analysis as specified by the local EIA for which the sample is drawn by EIA.

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HAZARD ANALYSIS WORKSHEET
FOR FRESH FROZEN RAW SEA CAUGHT/WILD CAUGHT SHRIMPS (IQF)

Firm Name:
RAM'S ASSORTED COLD STORAGE LTD.
Approval No. : 335
Firm Address:
1065/1066/1067/1017 Industrial Estate, Paradeepgarh, Paradeep, Jagatsingpur, Odisha, India (Pin- 754141)

Product Description: Block Frozen (H/ON, H/L, PD, PUD, PDTO, EZPEEL) Sea caught/Wild caught Shrimp
Method of Distribution: Stored & Distributed In Refr Igerated Container Below -18^{0}c.
Intended User: General Public / Restaurant
Intended Use: To Be Thawed & Cooked Before Consumption

(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Receiving whole shrimps at raw material receiving section	**Biological** Bacterial pathogen growth	Yes	Likelihood-H Severity-H	Raw materials is always having high load of pathogen	Proper time temperature control Raw materials temp <4^{0}C if more reject the lot. Controlled by GAP at farm . GMP SSOP, SOP at processing plant.	Yes CCP-1
	Chemical Sulphite	Yes	Likelihood-H Severity-H	Sulphite residue are toxic & potential allergen and that may cause cancer.	Supplier Declaration	Yes CCP-1
	Physical Metal fragment, stone ,plastic , wood & objection able foreign materials	No	Likelihood- L Severity-H	All sorts of physical contamination are possible & cause injuries to consumer acceptance.	……	No
	Quality Organoleptic	No	Likelihood-M Severity -H	Affects finished products quality due to improper handling ,lack of improper icing, improper storage in crates.	…….	No

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Managing Director

(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Deicing, washing , Weighing	**Biological** Bacterial pathogen growth	No	Likelihood-M Severity -H	From food contact surfaces , workers handling , time delay , temperature fluctuation . proper layer icing, maintained temperature below 4^0c	…….	No
	Chemical Nil	No	……..	No chemical contamination at this step.	……..	No
	Physical Nil	No	……..	No physical contamination at this step	……	No
	Quality oraganoleptic	No	Likelihood –L Severity - L	Maintain raw material temperature below 4^0c	……..	No
Re-icing/ chill room	**Biological** Bacterial pathogen	No	Likelihood-L Severity -L	Proper time temperature control (SSOP) Food contact surfaces Contaminate ice may cause pathogen growth.	…….	No
	Chemical Nil	No	……..	No chemical contamination at this step.	……..	No
	Physical Foreign material	No	Likelihood-L Severity -H	From food contact surface like broken plastic & metal pieces etc	……	No
	Quality Temperature	No	Likelihood-L Severity -M	From temperature abuse of the raw material may affect the quality.	……	No

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
De heading / peeling / deveining / filth washing etc.	**Biological** Bacterial pathogen	No	Likelihood-M Severity-H	From food contact surface, time temperature control, proper layer icing & using chill water.	……..	No
	Chemical Nil	No	……..	No source of chemical contamination.	……..	No
	Physical Nil	No	……..	From the damage food contact surface (table) metal fragment. All tables are made by stainless steel.	…….	No
	Quality Oranganoleptic	No	Likelihood-L Severity-L	Hanging meat / red meat may affect consumer acceptance. proper trimming of red meat, SOP if de heading procedure	…….	No
Deicing & size grading	**Biological** Bacterial pathogen	No	Likelihood –L Severity -H	From food contact surface & personnel hygiene, proper time /temperature control. Proper icing of grading materials.	……..	No
	Chemical Nil	No	……..	No source chemical contamination.	…….	No
	Physical Nil	No	…….	From the damage food contact surface (table) metal fragment. All tables are made by stainless steel.	……..	No
	Quality Organoleptic	No	Likelihood-L Severity -M	Wrong grading, defective/wrong pieces may exceed the specification,/ uniformity ratio. Proper sorting /checking using trained man power. Proper labeling of source code.	……..	No

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Managing Director

(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Additives inspection	**Biological** Bacterial pathogen	No	Likelihood-L Severity -H	In salt clostridium bacteria may be chance. Lot wise analysis of clostridium bacteria by external lab.	……..	NO
	Chemical Food grade	No	Likelihood-L Severity -H	Salt & carnal might have health hazards chemicals. MSDS /food grade certificate from manufacturer/ suppliers.	……..	No
	Physical Pest infestation	No	Likelihood-L Severity -H	From pest infestation & other physical character may affect quality of the products.	…….	No
	Quality Free flow, moisture , appearance	No	Likelihood –L Severity -H	Quality of salt, carnal additives is inspected as per sampling plan & recorded.	……..	No
Treatment	**Biological** Bacterial pathogen	No	Likelihood-L Severity-H	May contaminated water causes pathogen growth. Proper schedule & monitoring of hygiene & sanitation activity, time /temperature control.	…….	No
	Chemical Salt, carnal	No	Likelihood-L Severity- H	Excess salt & phosphate residue may lead to buyer non-acceptance. Use of quantified chemicals, adherence to treatment specs and issue register & also additional checking to be done.	…….	No
	Physical Nil	No	…….	No source of physical contamination	…….	No
	Quality organoleptic	No	Likelihood-L Severity-H	Treatment may generate defective pieces. Gentle agitation through agitator & trained employees involved in this process. Excessive use of chemical will lead to bitter test and loss of texture.	……..	No But this step consider as CQP.

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Washing / Draining / Final count & sorting	**Biological** Bacterial pathogen	No	Likelihood-H Severity-H	From food handlers personnel hygiene & food contact surface. All food handlers should be checked personnel hygiene and the same recorded. Food contact surface sanitized as written procedure.	……..	No
	Chemical Nil	No	…….	No chemical contamination at this step.	……..	No
	Physical Nil	No	.....	From food contact surface, from food handlers. crates & nets are made by as per policy monitoring & verification(broken & damaged in place and also to avoid metal fragment table to make by SS. To avoid unsecure jewellery all food handler are checked before enter the processing area and recorded the same.	……..	No
	Quality Organoleptic	No	Likelihood –L Severity-L	More defective pieces may be goes to on slab. Trained /skilled employees are provided to check the defective pieces. Randomly checking of pre freezing inspection & same to be recorded.	……..	No But this step consider as CQP

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Arranging in IQF feeder	**Biological** Bacterial pathogen	No	Likelihood-L Severity-L	From food contact surface of trays, nets etc. From Personnel hygiene of food handlers. Proper cleaning & sanitization of trays & nets. Periodical hand sanitation.	…….	No
	Chemical Nil	No	…….	No source of chemical contamination.	……..	No
	Physical Nil	No	…….	No source of physical contamination.	……..	No
	Quality Nil	No	……	Improper arrangement may affect customer satisfaction. Individual quick frozen to avoid clumping of pieces.	……..	No
Freezing	**Biological** Nil	No	…….	No biological contamination in this step -40^{0}C freezing activity in place.	…….	No
	Chemical Nil	No	…….	No source of chemical contamination.	…….	No
	Physical Nil	No	……..	No source of physical contamination.	…….	No
	Quality Improper freezing	No	Likelihood-L Severity-H	Time & temperature fluctuation of IQF freezer may lead in to improper freezing. Controlled, monitor time & temperature of IQF freezer.	……..	No But this step consider as CQP

Authorized by:-

Managing Director

(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Glazing	**Biological** Bacterial pathogen	Yes	Likelihood-L Severity-L	Addition of microbes thorough impure water. Controlled by SSOP, regular cleaning of chilling tanks and spray nozzles. in house bacterlogical report.	…….	No
	Chemical Nil	No	…….	No source of chemical contamination.	…….	No
	Physical Nil	No	…….	No source of physical contamination.	…….	No
	Quality Nil	No	……..	Due to over defrosting glaze will affect. Ensure the uniform spray of water. controlled by SOP.	……..	No But this step consider as CQP.
Glaze Hardening	**Biological** Nil	No	……	No source of microbial contamination. -40^{0}C hardening in place.	…….	No
	Chemical Nil	No	…….	No source of chemical contamination.	……	No
	Physical Nil	No	……..	No source of physical contamination.	……..	No
	Quality Nil	No	……..	…….	…….	No
Packing material inspection	**Biological** Nil	No	……..	Internal bacteriological report.	…….	No
	Chemical Toxic printing ink	Yes	Likelihood-L Severity- M	Toxic printing ink may cause health hazard	No toxic printing ink used in printing & food grade materials are used.	No
	Physical Damage	No	Likelihood-L Severity-M	Damage packing materials from suppliers. External quality report for packing material. Declaration from manufacturer/Supplier.	……..	No

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(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
	Quality Quality of packing material	No	Likelihood-L Severity-M	Poor quality of packing material may affects the customer satisfaction. External quality report for packing material. Declaration from manufacturer /supplier.	…….	No
Pouching/ Weighing	**Biological** Bacterial pathogen	Yes	Likelihood-L Severity-L	Packing supplier poor handling their facility may chance microbial contamination.	……..	No
	Chemical Nil	No	……	No source of chemical contamination at this sep.	……..	No
	Physical Nil	No	…….	No source of physical contamination at this step.	……..	No
	Quality Pouch sealing	Yes	Likelihood-L Severity -M	Improper sealing of pouches may affect customer satisfaction. Use only very good condition sealer & also check the status of the sealing. Confirmed to customer specification.	Controlled by GMP.	No
Metal detection	**Biological** Nil	No	……..	No source of microbial contamination at this step.	……..	No
	Chemical Nil	No	……..	No chemical contamination at this step.	……..	No
	Physical Metal fragment	Yes	Likelihood-H Severity-H	Metal fragment may contaminate the product. It is hazard to health.	Continuously all pouches pass through metal detector & record. Metal detector also calibrated.	Yes CCP-2
	Quality Nil	No	……	……	……	No

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Managing Director

(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Packing material inspection	**Biological** Nil	No	……..	Internal bacteriological report.	…….	No
	Chemical Toxic printing ink	Yes	Likelihood-L Severity- M	Toxic printing ink may cause health hazard	No toxic printing ink used in printing & food grade materials are used.	No
	Physical Damage	No	Likelihood-L Severity-M	Damage packing materials from suppliers. External quality report for packing material. Declaration from manufacturer/Supplier.	……..	No
	Quality Quality of packing material	No	Likelihood-L Severity-M	Poor quality of packing material may affects the customer satisfaction. External quality report for packing material. Declartion from manufacturer /supplier.	…….	No
Label inspection	**Biological** Bacterial pathogen	No	Likelihood-L Severity-L	Packing supplier poor handling their facility may chance microbial contamination.	……..	No
	Chemical Toxic printing ink	Yes	Likelihood-L Severity- M	Toxic printing ink may cause health hazard	No toxic printing ink used in printing & food grade materials is used.	No
	Physical Label	Yes	Likelihood-H Severity-H	As shrimps is allergen	Label check record	Yes CCP-3
	Quality Quality of labels	No	Likelihood-L Severity -L	Poor quality printing, poor presentation of label may affect the customer specification. Label inspection to be carried out and compare with matter label.	……..	No

Authorized by:-

Managing Director

(1)	(2)	(3)	(4)	(5)	(6)	(7)
INGREDIENT/ PROCESSING STEP	IDENTIFY POTENTIAL HAZARDS INTERODUCED CONTROLLED OR ENHANCED AT THIS STEP	ARE ANY POTENTIAL FOOD SAFETY HAZARDOUS SIGNIFICANT (YES/NO)	INDICATE LIKELIHOOD & SEVERITY PF HAZARD, HIGH-H; MEDIUM-M; LOW-L	JUSTIFY YOUR FOOD SAFETY HAZARDS FOR COLUMN 3	WHAT CONTROL CRITICAL DECISION MEASURES CAN BE APPLIED FOR THE SIGNIFICANT HAZARDS	IS THIS STEP CCP/CQP (YES/NO)
Cold storage	**Biological** Nil	No	……..	Not likely to occur because of cold storage are designed & maintained .Time & temperature monitoring & recording physical verification.	……..	No
	Chemical Nil	No	……..	No chemical contamination at this step.	……..	No
	Physical Temperature	No	Likelihood-H Severity-H	Temperature fluctuation from cold store may affect the product quality. Cold store temperature are maintained at -180c. Automatic temperature monitoring device connected with computer.	…….	No
	Quality Appearance	No	Likelihood-H Severity- H	Improper maintenance of cold store may affect the quality of the product. Cold store is properly maintained FIFO system is followed.	…….	No
Shipment	**Biological** Nil	No	……..	Final product covered with protected polythene/ inner carton/ master carton and closed with self adhesive tape.	……..	No
	Chemical Nil	No	……..	No chemical contamination in this step.	…….	No
	Physical Nil	No	…….	Not likely occur because frozen storage is maintained at -180 c temperature.	…….	Nil
	Quality Temperature abuse and Improper handling	No	Likelihood-L Severity-L	Improper handling, temperature abuse and carton quality design, product may affect the customer satisfaction . Monitoring of incoming cartons, loading operation & temperature recording.	…….	No But this step consider as CQP.

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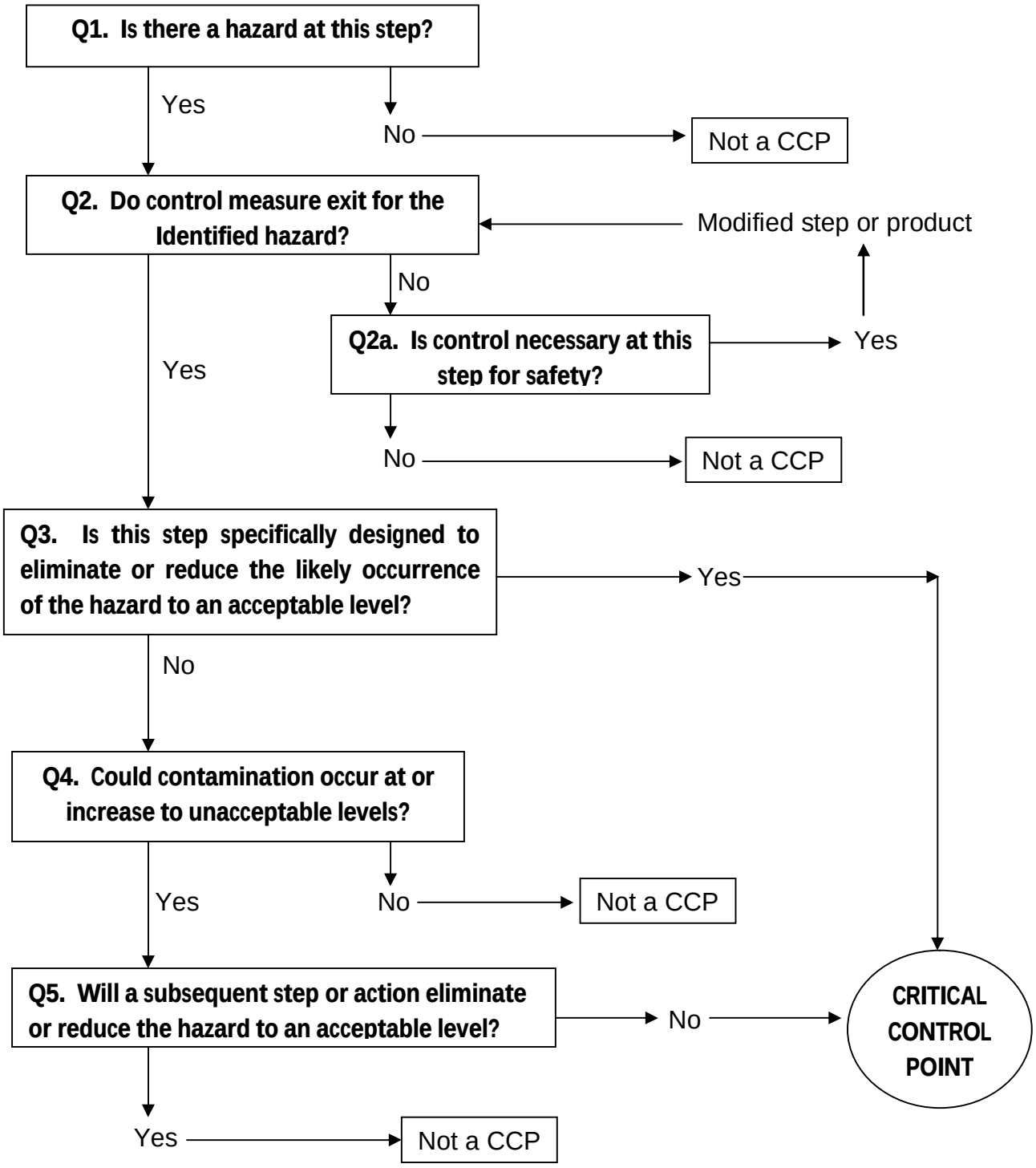
Managing Director

CCP DECISION TREE



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Managing Director

CCP – DECISION TREE ANALYSIS

The decision tree is applied to all steps of hazard analysis worksheet and not limited to CCP alone. Following is CCP determination for IQF raw frozen Sea caught/Wild caught shrimps:

Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Raw material receiving	**Biological** - pathogen	Y	Y	Y	N	N	CCP	Survival of pathogenic bacteria from fishing vessel or landing area.
	Chemical Sulphite	Y	Y	Y	N	N	CCP	Shrimps may have sulphite residues. It may cause illness to the consumer. Sulphite agents may cause allergic type reaction. There is no further step to control the hazard.
	Physical -Glass -wood -stone -plastic	Y	Y	N	Y	Y	….	…….
	Quality Black spot	Y	Y	N	Y	Y	….	…….
Chill storage	**Biological** - Pathogen	Y	Y	N	Y	Y	….	…..
	Chemical Nil	…	….	….	…..	….	….	……
	Physical Nil	…	…..	……	….	….	….	……
	Quality Nil	…	….	….	….	….	….	…….
De icing / washing	**Biological** - Pathogen	Y	Y	N	Y	Y	…..	……..
	Chemical Nil	…	….	….	….	…..	…..	……..
	Physical Nil	….	……	….	…	….	……	……
	Quality Organoleptic	Y	Y	N	Y	Y	….	…….
Deheading	**Biological** Pathogen	Y	Y	N	Y	Y	…..	…….
	Chemical Nil	….	….	….	…..	….	….	…….
	Physical Nil	….	….	…..	….	…..	…..	…….
	Quality Organoleptic	Y	Y	N	Y	Y	……	…….

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Grading	**Biological** - pathogen	Y	Y	N	Y	Y	….	……
	Chemical NIL	….	….	….	….	….	…..	…….
	Physical NIL	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	N	Y	Y	…..	…….
Washing	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	……
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	…	….	….	…..	…..	…….
Additives inspection	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical -phosphate -salt	Y	Y	N	Y	Y	Not a CCP	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	….	…..	….	…..	…..	…….
Treatment	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical -phosphate	Y	Y	N	Y	Y	Not a CCP	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	Y	N	N	CQP	Excess residue of phosphate may lead to no acceptance.

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Final checking/ weighing	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	…	….	….	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	Y	N	N	CQP	Defective pieces may be fed in to block
Feeding	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…….
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Organoleptic	Y	Y	N	Y	Y	Not a CCP	…….
IQF freezing	**Biological** Nil	….	…..	…..	….	….	…..	…….
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Improper freezing	Y	Y	Y	N	N	CQP	Improper /insufficient glaze may affect buyer's acceptance & shelf life.
Hardening	**Biological** Nil	…..	…..	……	…..	…..	….	……
	Chemical Nil	….	….	…..	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Nil	….	…..	…..	…..	….	…..	…..

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Managing Director

Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP /CQP or not	Justifying decision for CCP/CQP
Weighing/ Pouching	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality packing	Y	Y	Y	N	N	CQP.	Packing may affect customer acceptance and reputation.
Metal detector	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Metal fragment	Y	Y	Y	N	N	CCP-2	Metal fragments may come into product.
	Quality Nil	….	….	….	…	….	……	…….
Packing material inspection	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	….	….	….	….	….	…..	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Quality of packing material	Y	Y	N	Y	Y	Not a CCP	…….
Packing /Labeling	**Biological** Pathogens	Y	Y	N	Y	Y	Not a CCP	…..
	Chemical Nil	…	….	…	….	….	….	…….
	Physical Label	Y	Y	Y	…..	…..	CCP-3	As shrimps is allergen
	Quality Improper labeling	Y	Y	Y	N	N	CQP	Improper labeling will lead to wrong identification of product.

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Process step	Hazard	Q1 (Y/N)	Q2 (Y/N)	Q3 (Y/N)	Q4 (Y/N)	Q5 (Y/N)	CCP / CQP or not	Justifying decision for CCP/CQP
Cold storage	**Biological** Nil	….	….	….	….	….	….	….
	Chemical Nil	….	….	….	….	….	….	….
	Physical Nil	….	….	….	….	….	….	….
	Quality Nil	….	….	….	….	….	….	….
Shipment	**Biological** Nil	….	….	…..	…..	….	……	…..
	Chemical Nil	…	….	…	….	….	….	…….
	Physical Nil	….	….	…..	…..	…..	…..	……
	Quality Damage carton	Y	Y	Y	N	N	CQP	Improper labeling, temperature abuse & carton quality may damage product.

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Managing Director

JUSTIFICATION OF CCP
IQF freezing (Sea Caught/wild Caught)

Process step	CCP	Justification	
CCP-1 Raw material shrimps	Growth of pathogen	Growth of microbial pathogen	This is the last stage at which hazards can be controlled , hence this steps is Critical Control Point.(CCP)
	Sulphite	Presence of sulphite causes allergy to some consumer.	
CCP-2 Metal Detection	Metal fragment	Presence of metal causes physical injury to the consumer.	This is the last stage at which hazards can be controlled , hence this steps is Critical Control Point.(CCP)
CCP-3 Labeling	***Shrimps*** ***Clostridium botulinum*** toxin formation during storage	As Shrimps is allergen ***C. botulinium*** toxic formation during finished product storage which leads to symptoms like weakness, vertigo, swallowing and frequently abdominal swelling, consumption, paralysis & death.	This is the last stage at which hazards can be controlled , hence this steps is Critical

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Managing Director

JUSTIFICATION

IQF freezing Sea caught / Wild caught (Critical limit)

PROCESS STEP	CCP	CRITICAL LIMIT	REFERENCE
CCP-1 Raw material Receiving	Growth of microbial pathogen.	Temperature of the material should be <40C	USFDA Regulation and Codex alimentarius guidelines 5.3(CAS.RCP 1-1969, Rev. 4-2003)
	Sulphites	Maximum permissible limit is – Nil	
CCP-2 Metal Detector	Metal fragment	Ferrous : 1.2mm Non ferrous : 2.0mm Stainless Steel : 2.0mm	Codex alimentarius guidelines 5.2.5 (CAC/ RCP1 -1969, Rev.4-2003)
CCP-3 Labeling	Shrimps Finished product Storage **(*Clostridium botulinum*)**	All finished product labels must **contain shrimps** declaration on labels. Maximum cooler temperature -18^{0}C	Codex alimentarius guidelines 5.2.5 (CAC/ RCP1-1969, Rev.4-2003)

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JUSTIFICATION OF CQP

IQF Freezing (Sea caught / Wild caught)

PROCESS STEP	HAZARDS	CRITICAL LIMIT	JUSTIFICATION
CQP-1 Chemical treatment	Residual phosphate in excess of the critical limit.	5000ppm	Agreement with buyers.
CQP-2 Final checking	Organoleptically defective pieces.	As per finished product specification.	Agreement with buyers
CQP-3 Freezing	Improper freezing.	Core temperature of product must be not less than -18^0C	In-house / industry specification.
CQP-4 Glazing	Improper of insufficient glaze.	As per buyer's specification.	Agreement with buyers
CQP-5 Weighing / packing / labeling	1.Short weight 2. Wrong labeling / packing.	As per buyer's specification.	Agreement with buyers
CQP-6 Shipment	1. Core temperature of product while loading. 2. Master carton quality while loading.	Must not be less than -18^0C. Damaged / quality compromised cartons.	In-house / industry / Buyer's specification.

Authorized by:-

Managing Director

HACCP PLAN FOR RAW SEA CAUGHT/WILD CAUGHT SHRIMPS (IQF)

Firm Name: **RAM'S ASSORTED COLD STORAGE LTD.** Approval no.- **335**	Product Description: **IQF FROZEN (H/ON, H/L, PD, PUD, PDTO, EZPEEL) Sea caught / Wild caught Shrimp**
Firm Address: **1065/1066/1067/1017 Industrial Estate, Paradeepgarh, Paradeep, Jagatsingpur, Odissa, India (Pin- 754141)**	Method of Storage and Distribution**: STORED AND DISTRIBUTED IN REFRIGERATED CONTAINER BELOW -18^{0}C.**
	Intended User : **GENERAL PUBLIC / RESTURANT**
	Intended User : **TO BE RHAWED & COOKED BEFORE CONSUMPTION.**

1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CCP-1 Raw material head on receiving stage	**Sulphite**	Absent	Residue of sulphite content.	Do the sulphite analysis test.	Each lot of raw material received .	Q.C Technologist	If it is positive action will be taken against suppliers. Remove the supplier from approved list.	Sulphite test recod .	Review sulphite analysis test report.
	Biological Growth of microbial pathogen	Temperature of raw material should be <4^{0}c	Temperature of raw material	By thermo meter	Each lot of raw material received	Q .C Technologist	Reject the lot if raw material temperature is >4^{0}C	Raw material receiving register Bacterological register. Thermometer calibration record	Review of the: Raw material temperature records. Bacterological register Thermometer calibration record.

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Managing Director

1	2	3	4					5	6
Critical control Point	**Significant hazards**	**Critical limit**	**Monitoring**					**Records**	**Verification**
			What	**How**	**Frequency**	**Who**	**Corrective action**		
CCP-2 Metal detection	Metal fragment	Fe :1.2mm Non Fe :2.0mm SS: 2.0mm	Metal fragments	Each block passing through metal detector	Continuously	Packing supervisor	The detected slab are removed and put in a locked box. The production manager /general manager unlock the box and defrost the slab. Divided in to 4 parts. Pass each individual piece through metal detector. If any individual detected, take the pieces cut with knife and analysis metal fragment. Then take out defected pieces. Before passed slab also take & recheck /pass through metal detector.	Metal detector records.	CCP-2 verification of metal detection Before starting the process pre operation checking has done with standard test pad then also periodically verification carried out every 30 minutes. Verification done once in a week.
CCP-3 (Packing material & Labeling)	**Shrimps,** ***c.botulinum*** toxin formation during finished product storage.	All finished product labeled with "containing shrimps" All finished product labeled with "Keep Frozen at below -18^{0}C"	Finished product labeling statement "contains Shrimp" & " Keep Frozen at or below -18^{0}C"	By visual	Label on each cartons	Supervisor/ QA/ QC / Production In-charge/ Package executive/ Managing Director	Segregate & re-labeling it properly	Label check record	Review in once in a week

Authorized by:-

Managing Director

HACCP PLAN FORM FOR SEA CAUGHT/WILD CAUGHT SHRIMPS (IQF)

1	2	3	4					5	6
Critical control Point	Significant hazards	Critical limit	Monitoring					Records	Verification
			What	How	Frequency	Who	Corrective action		
CQP-1 Chemical treatment	Phosphate residue	Max. 5000 ppm	Phosphate residue testing.	Chemical analysis through strip method.	Daily source wise.	Q.C Technologist	If phosphate exceeds limit label on the master carton level of ppm	Soaking monitoring records.	Phosphate residual reports are verified by Q.A manager.
CQP-2 Final checking	Organoleptic	20%	Checking of defective pieces.	By online checking.	continuously	Q.C Technologist	Continuous training to improve skill.	pre-freezing inspection record(Block)	Daily verification of pre freezing inspection record.
CQP-3 Freezing	Improper freezing	Min -18^{0}c	Temperature monitoring of frozen products.	Check freezing time and core temperature of product.	continuously	Production supervisor.	Segregate improperly frozen product & re-freeze.	Monitoring record for freezing block.	Daily verification of freezing monitoring record.
CQP-4 Glazing	Improper glaze	As per customer specification	Temperature of glaze water. On choke the nozzles, belt speed.	Controlling of time, temp., belt speed & cleaning of nozzles.	continuously	Production supervisor. Q.C Technologist	If glaze is less than required send product for re glazing.	Freezing monitoring and process control. (IQF line)	Daily verification of freezing monitoring & process control records.
CQP-5 Weighing / packing / labeling	Wrong labeling & packing	Nil	Labeling & packing operation.	by visual check of packing process	continuously	Production & packing supervisor	Check for any mislabeling, printing and correct it.	Block packing record.	Daily verification of packing record.
CQP-6 Shipment	Temperature	-18^{0}C	Monitoring loading temperature	Check temperature of container & cargo.	Every shipment	Cold store supervisor / Q.C technologist	Stop loading until the temperature is achieved.	Shipment details record.	Q.A to verify shipment detail record for each shipment.

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Managing Director

PREDETERMINED CORRECTIVE /PREVENTIVE ACTION

1. WHEN ANTIBIOTIC/SULPHITE RESIDUE (CCP-1) EXCEED CRITICAL LIMIT

A. **IMMEDIATE CORRECTIVE ACTION**: Identify affected lots through, source code and withdraw day code and withdraw all such lots from the processing floor as well as cold stores.

Tally the total withdrawn lots for quantity.

B. PREVENTIVE ACTION: The supplier is traced back from the source –code and /or day code and removed from approved suppliers list to get rid of unworthy business alliance (his supplier declaration proves his untrustworthiness)

C. CORRECTIVE ACTION RECORDS: CCP verification & corrective action reports for Antibiotic and sulphites.

2. WHEN METAL DETECTION EXCEED (CCP-2) CRITICAL LIMITS

A. IMMEDIATE CORRECTIVE ACTION: The detected pouches /slabs are keeping as non-conformance in de marked cold store area.

B. PREVENTIVE ACTION: The entire process line is traced and checked thoroughly for any possibility of loose metal, rust scrap etc. and any such situation upon notice is corrected.

C. CORRECTIVE ACTION RECORDS: An NCR is raised and corrective action with regard to the same is reported back using the CCP verification and corrective action format for metal detector.

3. WHEN PACKING MATERIAL & LABELING (CCP-3) CRITICAL LIMITS

A. IMMEDIATE CORRECTIVE ACTION: Segregate and return or destroy any label stock or pre- labels packing stock that does not contain the proper statement.

Determine and correct the cause of improper labels.

B. PREVENTIVE ACTION:

i. Finished products label for the presence of a “keep frozen” & “contains shrimps” statement.
ii. Visual examination.
iii. Representative number of package from each lot products.
iv. Any person who has an understanding of the natural of controls.

C. CORRECTIVE ACTION RECORD: Record of labeling checks.

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SAMPLING PLAN FOR THE ESTABLISHMENT

PARAMETERS	FREQUENCY
Water	Fortnightly by in-house Lab and once in a 2 year & once in 6 monthly As per EU Directive 98/83/EC
Ice	Fortnightly by in-house lab & once in 2 year & once in a 6 month by outside lab as per EU Directive 98/83/EC
Raw material (Sulphite)	Against each lot
Raw material (Antibiotics, Pesticides)	Once in two months for raw material (Aquaculture) for antibiotics, Pesticides, Heavy Metals from different source and supplier rotation-wise
Swab	Fortnightly by in-house laboratory
Finished Product (Organoleptic, Bacteriological, Antibiotics, Heavy Metals)	Organoleptic and Bacteriological on each Production code by in-house Lab. Antibiotics and Heavy Metals are tested at EIC approved lab from different production Codes on rotation basis and Antibiotics and Heavy Metals against each consignment.
Health Cards	Once in a year for each worker including pathological test which is reviewed once In every six months or above when required, besides day to day observations.
Personal Hygiene	Daily basis
Water Tank Cleaning	Once in every 15 days
Calibrations	Once in a year by Govt. approved outside agency as well as in-house calibration on monthly basis or as and when required.
Chlorination (Hand Dip, Foot Dip, Processing Water and Washing Water, etc.)	On starting of the shift, at each work break as well as against requirement
Pest Control (Outside only)	Everyday
Maintenance	Routine maintenance on daily basis and break down maintenance as and when required.
Raw material/Farm Visit	Once in two month rotation-wise

Authorized by:-

Managing Director

CHAPTER – VII

WATER MANAGEMENT SYSTEM

Authorized by:-

Managing Director

The Prime source of water is from bore well at the backyard of the processing factory. The water passes through filtration systems for removal of Iron & the other one is Activated Carbon Filter built by Zeolite India Limited.

Methods of treatment:

1. First by using Electric 5 H.P motor the ground water lifted.
2. The water made to passes through Alum pot then enters composite system which facilitates Iron Removal.
3. After filtering through Iron Removal Filter, the filtered water passed through second filter i.e the activated carbon filter then filtered water automatically chlorinated (by Chlorine doser).
4. Now the final filtered water stored in the over-head tanks.
5. There are two over-heads tanks & separately marked as Tank No.1 (Capacity 18000 Ltrs) & Tank No.2 (Capacity 21060 Ltrs).
6. From the each tank, separate pipe lines are provided to different parts of the processing unit.

   Water used for manufacturing of ice and in the final processing is passed through Ultra Violet Rays to eliminate any trace of bacteria.

7. Each Pipelines or taps are marked as
   A). TANK NO.1
      i. Pre-processing Ladies Change Room – Tap No.1, 2, 3, 4 & 5
      ii. Pre-processing Boys Change Room – Tap No.6, 7, 8 & 9
      iii. Pre-processing Foot Dip – Tap no.10
      iv. Pre-processing Hall – Tap no.11, 12, & 13
      v. Pre-processing Utensil washing room – Tap no.-14
      vi. For PUD Grading-cum-Washing Machine – Tap No.15
      vii. For Receiving section – Tap No.16 & 17
      viii. Ice manufacturing – Tap no.39
      ix. Lawn – Tap no.40 & 41

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B) TANK NO.2

i. Processing Ladies Change Room – Tap No.17, 18, 19, 20, 21 & 22
ii. Processing Boys Change Room – Tap No.23, 24, 25, 26, 27 & 28
iii. Processing Foot Dip – Tap No.29
iv. Processing Hall – Tap No.30, 31, 32, 33, & 34
v. Processing Utensil washing room – Tap No.35
vi. De-Panning Machine – Tap no.36
vii. IQF Hall – Tap no.37
viii. Ice Manufacturing – Tap no.38
ix. Lawn - Tap no.42
x. Laboratory – Tap no.43 & 44
xi. Laundry – Tap no.45
xii. Vehicle Washing – Tap no.-46

8. All the lines used for water intake from Ground Water are Iron Pipes & all other lines are P.V.C pipes.

9. At the time of processing, the treated water in the processing hall once again checked for the chlorine level using chlorine testing kit by the Q.C.Technologists.

10. For proper function the filter (both) washed 2 times per day.

11. A separate filter washing register provided and checked by Q.C. Personal on regular basis.

12. The Q.C.Department checked the quality of water in each 15 days & result are recorded in the separate register "Register for Assessing Sanitary Standard of the Unit".

13. The media of each filter changed every year or as per requirement by observing the test report.

14. The water is also tested in a Govt. approved laboratory as per EU directive 98/83/EC once in 2 year.

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Internal Certification

Water and ice are tested for total plate count, coliform in MPN Index including Vibro Chlorea twice a month (fortnightly) by the technologist and observations recorded in laboratory analysis report.

External Certification

Water and Ice used in the unit is tested for portability in EIA approved Labs (EIA/ Sea Lab / TUV / TA / Interfield Lab) once in 2 year & once in 6 months for 15 parameters as per EU directives 98/83EC standard, reports of such testing are maintained and cross check by the report of Internal Certification. Besides, the EIA also draw one sample against each monitoring.

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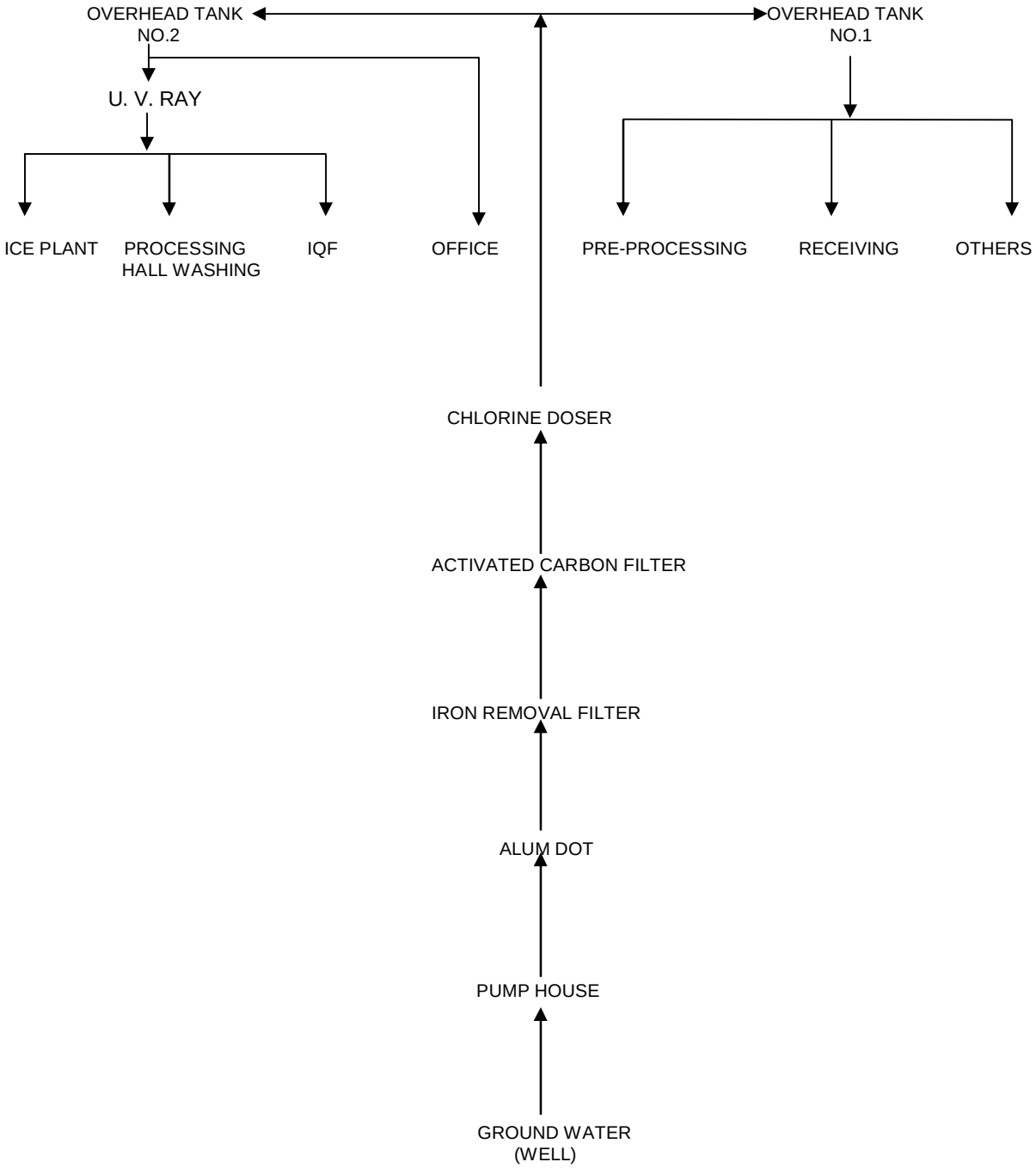
WATER SYSTEM FLOW DIAGRAM



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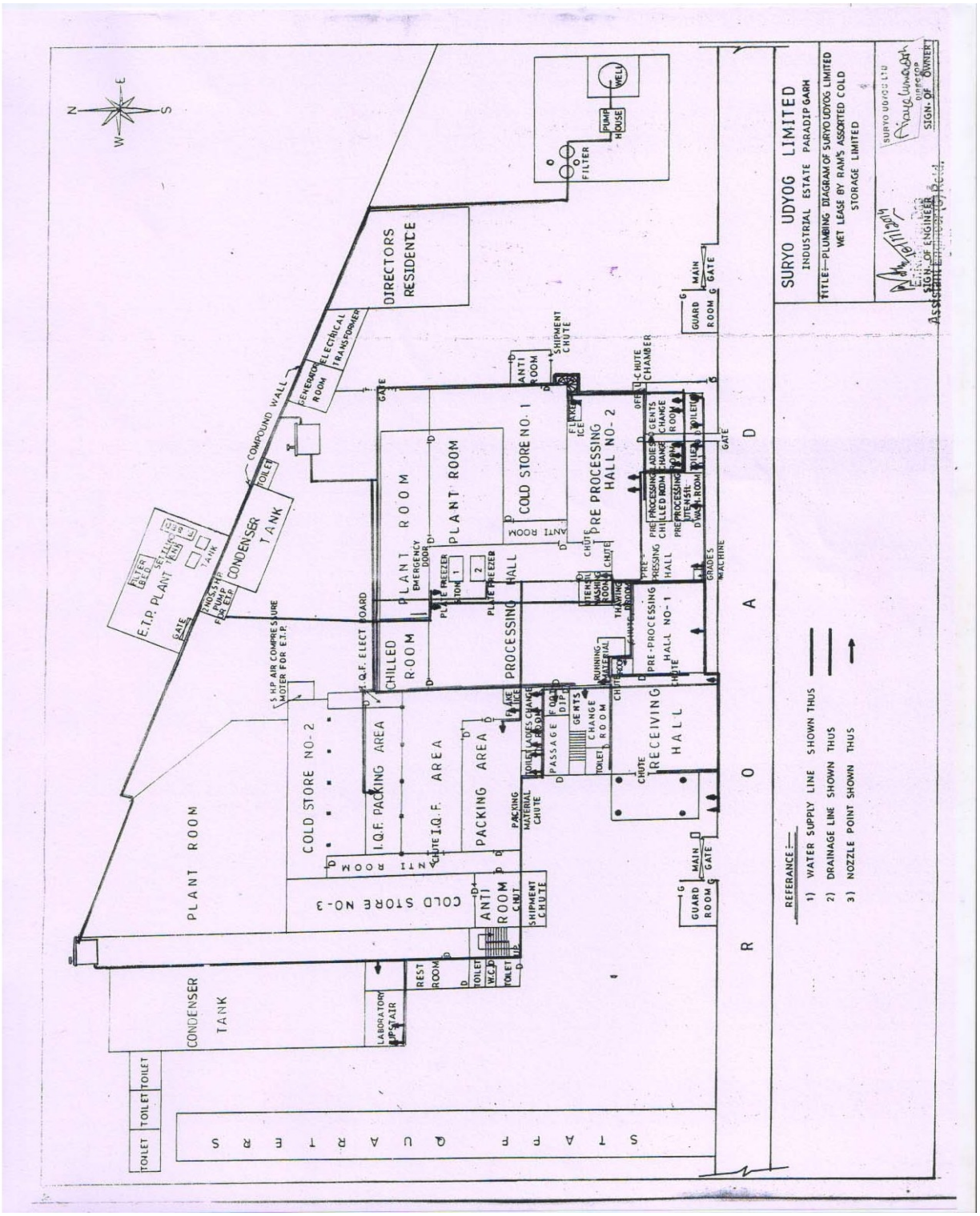
PLUMBING DIAGRAM



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CHAPTER – VIII

EFFLUENT TREATMENT PLANT

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Water drained to the effluent treatment site from the main processing area undergoes the following stages of filtration, sedimentation and treatment in different chambers of the treatment plant.

Screening Chamber: This chamber is provided with plastic nets of different mesh size to facilitate the filtration of the floating solid waste particle, thus preventing their entry into this sedimentation tank.

Settling Tank: In this section the water is treated with required dose of lime and alum to facilitate easier sedimentation/coagulation and to kill traces of bacteria. So when the water enters into this chamber the heavier materials settles at the bottom of the tank.

Aeration Tank: From the Settling tank water is pumped into 1st Filter bed, after passing the filter bed water enters into this chamber. It is devoid of any type of floating particles and almost completely settled requiring sufficient aeration to facilitate the microbiological activity. Here we have provided 2 HP Agitator for the same purpose running almost throughout the day. Besides we also add a regular and required dose alum and lime to make the water suitable for growth of planktons in the next chamber.

Oxidation pond No.1,2,3: From the aeration tank the water is pumped into the 2nd filter bed and then water goes into oxidation pond no.1 where it goes further aeration as well as sedimentation if required. From 1st oxidation pond the water flows into the 2nd oxidation pond and again to aerated. From 2nd oxidation pond the water flows into the 3rd oxidation pond. In pond no.1 & pond no.2 the water is continuously aerated by paddle wheel aerators. Now the water is suitable for discharging to outside. However we use it for plantation purpose inside the factory premises. The filtration and sedimentation tanks are cleaned in regular interval or as and when required. The water particles are sun dried in a pit nearby, and then it is carried to the Govt. dumping yards for waste disposal well away from the factory premises.

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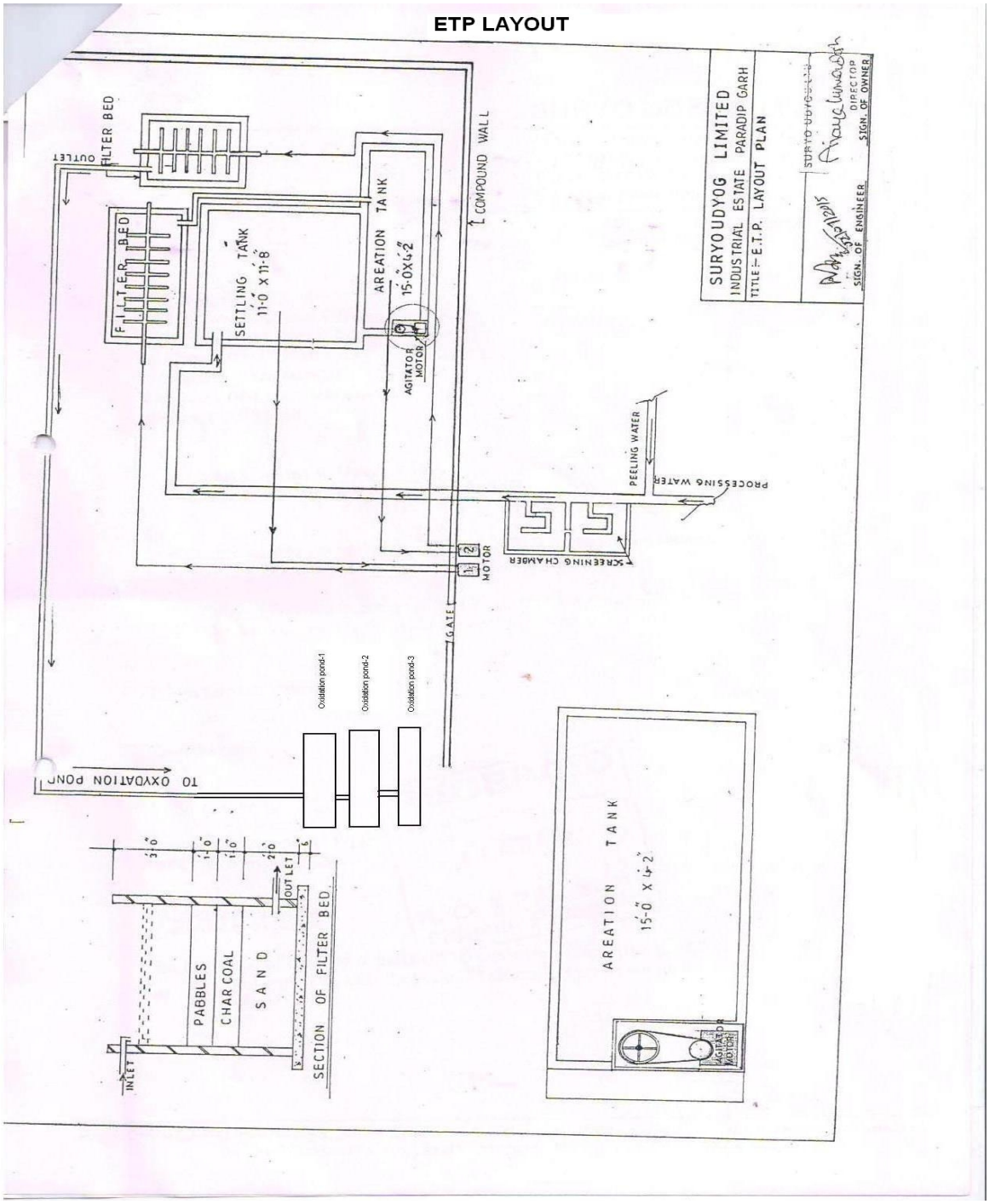

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CHAPTER –IX

PEST CONTROL

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For prevention of pest, the company has made an agreement with an outside agency i.e. Giri Durga Pharma Services, Cuttack. The Agency has provided trained persons with approved chemicals at factory site. The operation is carried out on daily basis starting from morning to evening covering the entire factory premises. The process of pest control comprises the following with a very effective manner.

a) Flies Control,

b) Mosquito Control,

c) Spider control,

d) Lizard and cockroach control,

e) Rodent control

Besides Fly catchers and air curtains are provided at various locations to reduce the risk from pest to nil level. For the same necessary records verified by the QC Technologist is kept in the laboratory.

a) Flies Control:

The fly problem is a recurring problem which needs regular pest control service, flying insect control is difficult to achieve by conventional methods. Application of fog will kill most of the flies in a room, but it can't be used when employees are in the plant also it works only when the fog is in air. Flies are photo-tropic (i.e., get attracted to light). We use Pesto flash to control flies inside the plant.

Flier catcher and air curtain are provided at various locations to reduce the risk from the pest to nil level. As a precautionary measure we have also provided the Pest-o-Flash (Insect catcher) in different position inside the processing area which is mentioned below:

Pesto Flash no. (Insect Catcher)	Location
I.C. No.-1 & 2	Receiving area
I.C. No.-3 & 4	Pre-processing area
I.C. No.-5, 6 & 7	Processing area
I.C. No.-8	Packing area

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b) Mosquito control:

This operation is taken targeting the different stages of the mosquitoes namely:

Larval stages:

These operations is carried out in all the breeding places in the plant premises and nearby area surrounding the property controlling all the aquatic and the larval stages by anti-larval operations weekly once.

Indoor residual spray:

Indoor residual spray is done in the property buildings monthly once.

Adult mosquito control:

Fogging operations is carried out in all offices and all residential quarters and external area building on an alternate day basis. This will also help to control the ingress of the insects from the neighboring areas.

c) Spider control:

Initially the cob-webs if any at the roof and wall junction and all the other surface areas in the entire factory are removed. After cleaning the wall junctions and other area by sanitation and hygiene workers, the pest control person sprays special insecticide formulation at all wall surfaces, walls junction and the entire roof. Necessary precautionary measures are taken to prevent the chemical spilling on material particularly in stores by covering it perfectly. This spray will control spider problem.

d) Lizard and cockroach control:

Disinfestations is done with safe chemical in all resting-places like narrow cracks, crevices and pipes. All the surrounding areas and outside drains, man holes, toilets and office rooms are sprayed. This disinfestations will control the infestation of cockroaches and lizard.

e) Rodent control:

For control of rodents at all major openings of the drainage system rodents traps are laid. Further there is only one outlet from the main processing area for drainage of waste water other drains from different sections are connected to the main drainage system (vide our drainage diagram). All the drains are covered with stainless steel plates. As a precaution measures we have also provided the Rodent traps during night time in different position inside the processing area which are mentioned below.

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RODENT TRAP NO.	LOCATION
RT-1	Factory Main Entrance
RT-2	Receiving Platform
RT-3	Pre-processing Entrance
RT-4	Waste Disposal Chute
RT-5	Pre-processing main drain outlet
RT-6	Processing Entrance
RT-7	Processing main drain outlet
RT-8	Machine Room Entrance
RT-9	Packing material store
RT-10	Office Entrance

All rodents' traps and bat stations are provided with two types of bat in a week.

a. Sunday to Tuesday – Coconut

b. Wednesday to Saturday - Potato

In the next day morning all the traps are collected & checked. A separate register "Rodents Control" now maintained in Quality Control Department. Any rodent trapped is killed and the dead body disposed of or buried at a distant place.

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CHAPTER –X

TRACEABILITY/RE-CALL PROCEDURES/SHELF LIFE STUDY

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Traceability:

Definition: "*A system of recall of product is a pre-requisite programmed (i.e. PRP) for any food processing operation because no process is fail safe. Traceability which includes lot identification by indicating either date of production or by giving batch or code for a lot of consignment is and essential to an effective recall programme*

All products at the time of processing bears a code slip and which represents the following:

a) Processor Code

b) Type of product

c) Size-Grade

d) Date of Production

e) Best before end of 24 months

f) Traceability Code

The products at the time of packing in the master cartons also bear the following important data's on the both side of the Master cartons which are given under:

a) Processor code

b) Type of product

c) Size-Grade

d) Date of production

e) Traceability Code

f) Best before end of 24 months

Traceability is maintained everywhere starting from receiving to shipment, where the product can be traced back up to the name and address of the supplier.

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a) The Director, Factory Manager along with production and quality assurance team will decide if a product recall has to be initiated, be it from a buyer's/importers complaint or from internal findings. Once it is decided to initiate a recall, the quantity of products, species and the variety of product to be recalled is identified.

b) To facilitate recall procedures Ram's Assorted Cold Storage Ltd. will identify the product right from raw material received, production, and lab analysis reports to shipment. This will be facilitated by the following.

- Product identification is done through number coding (batch numbers) on first -come and first-out basis a batch number consists of date, center, variety, total quantity etc.
- Codes are given on the slabs, inner cartons in case of blocks and on the poly bags and master cartons of IQF products.
- Production supervisor will maintain production records for a minimum period of two years.
- Traceability is written in every master carton that indicates the origin of the products.

c) Non-conforming products codes, date of production, type of packing and other relevant details will be communicated timely to the buyer asking him to with draw the product from the market/his cold stores and to destroy the product. The company will maintain records of all buyers/importers names, addresses, telephone numbers, fax numbers, e-mail address to communicate in emergencies.

d) All records pertaining to Recall and destruction of the recalled product is kept in files. These will be made available to all regulatory authorities-national & international/buyers upon request.

e) All records pertaining to HACCP will be maintained for a minimum period of two years from the date of production/shipment.

f) Given training to the team on recall system through annual mock recall is conducted by management team to ensure the effectiveness of the recall system. And also go through with the necessary adjustments or changes.

g) Notification shall be given to the customers as a part of mock recall or in the case of urgent recall, shall be requested to provide information's pertaining to the present status of the cargo as per the break-up at the earliest.

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PRODUCT IDENTIFICATION TRACEABILITY, RECALL & WITHDRAWAL

PROCEDURE Classification of Product Recall:

A product recall (Recall) is a voluntary action taken by Ram's Assorted Cold storage Ltd, Paradipgarh, Paradip, Jagatsingpur or an action taken at the request of the FDA / EU or the buyer to remove from the market or to correct in the field, food products which are contaminated, adulterated, or misbranded and where the violation is more than a minor in fraction and the product is subject to legal action by the FDA / EU or the importing countries government.

A Class I Recall:

A class I Recall is an emergency situation in which there is a reasonable probability that the use of a volatile product will cause serious adverse health consequences or death ie: Botulinum toxin. In Class I recall, top priority will be given to the complete and immediate removal of the recalled product from every level in the distribution chain all the way to the consumer level.

A Class II Recall:

A class II Recall is a priority situation in which a product deficiency may cause temporary or medically reversible adverse health consequences and where the probability of serious adverse health consequences is remote Eg. Salmonella enteritis. In a Class II Recall, product must ordinarily be removed from all levels in the distribution chain.

A Class III Recall:

A Class III Recall is a routine situation in which adverse health consequences of a product deficiency such as adulteration or misbranding are highly improbable or, non-existent Examples of Class III recall are situations involving improperly labeled products or products with filth contamination which contain dust or insect fragments. In a class III Recall, products must ordinarily be removed from the wholesale levels of the distribution chain.

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RECALL PROCESS PROCEDURES

i. Product Complaint Form/ File:

Ram's Assorted Cold storage Ltd, shall maintain complaint log and record all information

ii. Initiation of recall/External Notification of Regulatory Agency:

Any food safety complaints that initiates the recall shall be notified to regulatory agency EIA (Export Inspection Agency) having all the information such as recall reasons, recalled product information total quantity of recalled product quantity distributed at the time of recall, quantity distribution of the recalled product if exported along with address, information on any other product which could be affected by the same hazard.

iii. Preparation of Public Notice:

Ram's Assorted Cold storage Ltd has taken accurate, timely communications with regulatory agencies and releasing recalled Information to public.

iv. Confirmation Letter to Customers:

Ram's Assorted Cold Storage Ltd has providing confirmation letter to customers and provided with "URGENT-PRODUCT RECALL" form. During the event of any food safety complaints this format which was supplied before to our customers dually filled and sent back to us after providing the required information as per the content of the format attached.

v. Product Recovery and Disposition:

Ram's Assorted Cold storage Ltd maintaining the records of supply to different customers are kept till product expiry. Upon receiving the recalled products, it is rechecked by the concern person for the percentage of recovery (shall be 95-100%) type of complaints made by the customers. If the complaints are correct the lot is segregated and kept separately in the non-conformance area with proper labeling. After conducting a meeting with top management, the same lot is destroyed or reworked as per the outcome of the meeting. The total target time for the whole process takes 45 - 60 days. If it is a mock recall it shall take 6 hours and percentage of recovery fixed as more than 98%.

vi. Termination of Recall:

All the corrective measures taken by the team for the disposition of the affected goods is satisfactory and all the data's of quantity recalled are matching then that recall procedure is complete.

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PRODUCT IDENTIFICATION, TRACEABILITY AND RECALL PROCEDURE

Product identification:

- "Q" Mark with Approval Code No. - 335
- "Name and Address" of the processor and exporter – Ram's Assorted Cold Storage Ltd, Paradipgarh, Paradip, Jagatsingpur – 754141, Odisha, India.
- Production Code of the Product – Day code/Julian code/ Regulatory codes.
- Raw material supplying farmers are approved and they are identified by ID numbers and farmed registration no. along with pond no. which is also mentioned in the code slip,
  - Day code – Date, Month, Year.
  - Julian code – Day of the calendar year.
  - Regulatory code – Year, Month code, Date (Example – 2A01)
    (i.e. alphabetic codes against each month is given below)

1. January	- A
2. February	- B
3. March	- C
4. April	- D
5. May	- E
6. June	- F
7. July	- G
8. August	- H
9. September	- J
10. October	- K
11. November	- L
12. December	- M

  - Other codes are maintained as per buyer requirements.

- **Labeling:** Contains production code/grade/variety/RM center code mark, center codes, farmer ID Numbers.

Bhadrak	- BDK
Kendrapara	- KDP
Jagatsinhpur	- JSP
Balasore	- BLS
East Godavari	- EG
West Godavari	- WG
Kakinada	– KKD
North 24 Parganas	- N24pgs
South 24 Parganas	- S24pgs

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PRODUCT IDENTIFICATION, TRACEABLITY AND RECALL PROCEDURE

After shipment if there are any customer complaints HACCP team assembles and take decision as per the following procedures.

STEP TAKEN	HOW	RECORDS
Identifying the nature of complaints	The complaint will be classified into organoleptic, microbiological and chemical based on effective verification.	Customer's communication, if any.
Identification of the lot	The particular lot will be indentified through production codes and will be verified with the shipment tally book	Shipment details.
Traceability	For organoleptic complaints on-line QA check records will be verified,	For online QA check; i. Finished products inspection. ii. In- process product inspection. iii. Raw material QA check list.
	For microbiological complaints lab records will be verified.	For microbiology check; i. TPC, Staphylococcus Areus, E.Coli ii. Salmonella spp iii. Vibro.cholera iv. Sanitation samples for chemical check.
	For chemical complaints additive controls and supplier declaration will be verified.	i. Soaking register ii. Supplier declaration.
Follow up action	If the complaints are genuine and the same are reflected in the re-call procedure findings. The managing Director initiates the necessary corrective action; and HACCP team assembled will verify the system and revise the critical limits and monitoring procedure sampling. Frequency (under the authentication of Director)	

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PRODUCT IDENTIFICATION, TRACEABILITY AND RECALL PROCEDURE
RECALL ACTION TEAM

NAME	RESPONSIBILITY	CONTACT NUMBER
Ajay Dash Director	-Conveying customer complaints -Coordinates with Factory manager -Coordinates with all our buyers. -Price fixing of R.M	Mobile No: (O) Fax no : 06722 230735
Subrat Kumar Dash Production Manager	-Coordinating with all the departments to gather required information. -Final authority to decide on relevant issues. -Mediates between regulatory authority, purchasers and factory Total production planning gathers information regarding packing and raw material arrival from factory and purchase manager coordinates with quality team and production supervisors.	Mobil no. +91 Phone No. : 06722 230735 Fax No.
Rasmi Ranjan Samal Quality Manager	-Verification of all kinds of records. -Tracing the problem /defects in the product. -Modification of the recall system. -Getting all kinds of information regarding quality related matters from the ground level.	Mobile no: +91 Phone No. : 06722 230735

Records: - 1. Mock Recall - RACSL/SOP/
2. Corrective action of product report – RACSL/SOP/

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SHELF-LIFE STUDY

- It is always advisable to cross-check the longevity of own products mentioned on the cartons/duplex (production / expiry date) considering how best the product suits for the time frame.

- This is a study where standard set temperature (-18^0 centigrade) considered as constant i.e. without any fluctuation. But there are some influencing factors which make temperature to fluctuate over a period of 2 years (i.e. the shelf -life set for most of the products)

- There are other factors such as poor handling of the product at different stages of the production which also influences the shelf of a product.

- Considering both factors in mind, a shelf-life study of different products are taken up.

- In this study a particular variety is tested organoleptically for every 6 months from the same lot. & the variations are noted in a file.

- Any considerable change which affects quality over a period of time shall be definitely considered for re-fixation of shelf-life frame.

Records : . 1. Shelf-life study record

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CHAPTER –XI

CCP MONITORING

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CCP MONITORING RECORDS

Definition

To conduct a planned sequence of observation or measurement of control parameters to access whether a CCP is under control and to produce an accurate record for further use in verification.

Purpose

To track the operation of the process and enable the identification of trends towards a critical limit that may trigger process adjustment, and to identify whether there is a loss of control at the Critical Control Point.

PROCESS STEP OF CCP

CCP-1 RAW MATERIAL SHRIMPS

Growth of pathogen: Growth of microbial pathogen.
Antibiotics: Presence of antibiotic reduces the resistance of immune system of human body.
Pesticides: Presence of pesticides causes cancer in the lungs run in human body.
Sulphite : Presence of sulphite causes allergy to some consumer. This the last stage at which the hazard can be control, hence this process step is Critical Control point (CCP).

CCP-2 METAL DETECTION:

Metal fragment: presence of metal causes physically injury to the consumer. This the last stage at which the hazard can be control, hence this process step is Critical Control point (CCP).

CCP-3 LABELING:

Shrimps: Shrimps are allergen.
Clostridium botulinum: toxic formation during finished product storage which leads to symptoms like weakness, vertigo, swallowing and frequently abdominal swelling, consumption, paralysis & death. Hence this is the last stage at which hazards can be controlled, hence this steps is Critical Control Point.(CCP)

Method/Activity

The method of monitoring is designed to provide rapid result so that critical limit failures are detected quickly and an appropriate corrective action instituted before the distribution of the product. The equipment/test kits chosen for monitoring at the CCP are ensured to be accurate through in house calibration. Personnel responsible for monitoring are trained in CCP monitoring techniques and the significance of the same. Each batch of shrimps received by the unit is checked for residual sulphiting agents apart from other quality factors by the Q.C Technologist. Observation is recorded in the Raw Material receiving log. (Annexure-I).

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METAL DETECTION

Procedure:

- Metal detector is used for detecting metal fragments in the finished frozen product.
- Sensitivity of metal detector is set for 1.2 mm ferrous, 2.0mm non-ferrous & 2.0 mm stainless steel metals.
- Frozen bags/slabs are passed through metal detector through the conveyor.
- Metal detector is checked before operation every day.
- It is checked for every one hour during operation.
- Metal detector is checked at the end of operations every day
- Record the time, variety, number of slabs passed, etc in metal detector log. (RACSL/SOP/)
- Hold and evaluate product in which metal fragments are found.
- Corrective action shall be taken if metal detector fails.

Corrective action procedures:

1. The following corrective actions shall be taken when metal fragments found in frozen slabs/bags
   - If metal detected during the process, detector gives alarm and belt gets stopped automatically. Such slabs/bags shall be rechecked once again through metal detector.
   - If found detected again, such slabs/bags shall be thawed & inspected for metal fragments.

1. Take one of the following actions when product is not passed through metal detector;

   - If metal detector fails during production, such slabs/bags shall be isolated in the cold store with clear marking of the area and taken back for passing through metal detector only after repair as per the above procedure.

Preventive action measures: Once in four months plant engineers shall do maintenance work.

Responsibility: Packing supervisor, QA personnel & Plant manager.

Records: *Metal detector record*

LABELING:

Finished product labeling statement "contains Shrimp" & " Keep Frozen at or below -18^{0}C" by visual check all pouches & Cartons by Packing supervisor/Q.C. technologist.

Corrective action procedures:
When wrong labeling are observe, then segregate the lot & re-labeling correctly.

Responsibility: Packing supervisor, QA personnel.

Records*: Label check record*

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CHAPTER –XII

VERIFICATION PROCEDURE

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VERIFICATION PROCEDURE

Definition:
To activity, other than monitoring, that determine the validity of the HACCP plan and that verify the system is working according to the plan.

Description of Verification Activities

Verification should be undertaken by an appropriately qualified individual who are capable of detecting deficiency in the plan or its implementation. Verification should be undertaken at the completion of the HACCP Study, whenever there is a change in product, ingredients, process, etc., in the event of newly identified hazards, and at regular pre-determine intervals. Routine monitoring activities for critical limits should not be confused with verification methods, procedures or activities. The company follows verification activities to access that the HACCP plan is adequate to control the hazards associated with the product and is being followed.

1. **Validation**

The company has ensured that all elements of the plan have a scientific basis and represent a valid approach to control the food safety hazard associated with the process and the product. Initial validation of the plan has been done on scientific data vide codex alimentarius guideline and the guidance of the Competent Authority and other regulatory agencies. Apart from that the company has the policy to perform validation whenever changes in raw materials, finished product/process, and recurring deviations are found.

2. **CCP Verification:**

i) **Calibration:** All the devices used for monitoring are Calibrated to verify that monitoring results are accurate. Dial and MIG thermometers, thermograph is calibrated monthly against standard thermometer recorded in the calibration log (Annexure-XVI)

ii) **Calibration record review:** Records of calibration are reviewed to check the dates, method of calibration and the test result.

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iii) Targeted sampling and testing: Verification of sulphite residual control/ Histamine control at the receiving step is done quarterly in the laboratory to ensure that the results obtained through the original monitoring procedure are accurate.

iv) CCP records review: Both the records generated at the CCP, monitoring and corrective actions are reviewed to verify that CCPs are operating within safety norms and that deviation are taken care of in a safe manner.

3. **HACCP System Audit:**

As part of verification audits are performed to compare the actual practices and procedures of the HACCP system with those written in the HACCP Plan.

Audits are systematic and independent examinations involving on-site observations, interviews and review of records to determine whether the procedures and activities stated in HACCP plan are implemented in the HACCP system. These examinations are usually performed by one or more independent persons who are not involved in implementation of HACCP system.

The HACCP System is reviewed both through on-site verification as well as a schedule system wide verification. The online verification activities include in process inspection, raw material testing (organoleptic & bacteriological) and product testing (organoleptic & bacteriological) and equipment evaluation report (maintenance records).

For the system vide verification, Export Inspection Agency (Govt. of India) competent authority regularly monitors the unit for compliance of the adopted HACCP system. Deviation if any are pointed out, are suitable rectified. The company has the policy of appointing an external auditor of food processing background to undertake a complete audit and review on an annual basis or when there is an occurrence of system failure or a significant change in product and/or process line.

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CHAPTER –XIII

TRAINING

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Training Objective:

The objective is to examine the importance of the training of those engaged in food business operations who come directly or indirectly into contact with food to a level appropriate to the operations they are to perform. Inadequate hygiene training, and/or instruction and supervision of all people involved in food related activities pose a potential threat to the safety of food and its suitability for consumption.

Awareness and Responsibilities:

Food hygiene training is fundamentally important. All personnel should be aware of their role and responsibility in protecting food from contamination or deterioration. Food handlers should have the necessary knowledge and skills to enable them to handle food hygienically. Those who handle strong cleaning chemicals or other potentially hazardous chemicals should be instructed in safe handling techniques. In our processing unit we have arrange in-house training once in a month by qualified, experienced personnel‟s and externally training organized by EIA/MPEDA and the training details are maintained in the *Training Record (Annexure-XXXVIII)*

TRAINING PROGRAMME

Procedure:

- As per schedule, training programme is conducted for all the employees.
- Training is given to all the workers based on their working area/location through their mother tongue.
- The HACCP team shall give training section-wise as per schedule.
- The QA Team shall organize training as per the agenda in the day time only.
- All the employees are trained on company's management policy & on pre-requisite aspects of perishable goods.
- Whenever competent authorities conduct any technical related programme, we make our staff available to attend. Supervisors and housekeeping staff are trained regarding high level of compliancy to achieve clean and safe food.
- Effectiveness Induction training shall be given to the new employees and also, job training in their respective sections before being given individual responsibility.
- Fresher (s) shall be trained on company quality policy and general guide-lines like entry, hand washing, discipline etc.
- The next level training topic includes time-temperature abuse in perishable goods, sanitation and hygiene in work place (both Plant and personnel) ,safe operation of equipments, safe handling of products ,first-aid firefighting, pest control security, recall programmes, company's management policy, etc.
- Efficiency of the training is cross-checked by the following procedure:
    - Trained employees shall be selected randomly.
    - The trainer who has not conducted the training class shall analyze the effectiveness of training.
    - Questionnaire shall be given to recently trained employees on the related training topics
    - Analyze the same based on the no. of correct answers.
    - As per the assessment, an additional training shall be given.

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- Record the efficiency of training programme.
- Training methods and content will be reviewed once in a year.

MONTH	TRAINING	PARTICIPANTS	TRAINER	METHODS
JAN.	Food Safety & Induction Training	Supervisors workers of RM/PPC/PRC /Hygiene Team, machinery, laboratory.	Production & Quality Assurance in charge	Oral with relevant Documents
FEB	House keeping	supervisors	QA in charge	Oral with relevant documents
MAR	Product Recall Training	supervisor	QA in charge & Export Manager	oral
APR	Security System	Supervisors, workers of RM/PPC/PRC, Hygiene team machinery ,office Staff, laboratory staff	H.R. manager, Production ,Quality Assurance in charge & Security Incharge	Oral with relevant Documents
MAY	Hygiene & Sanitation	Supervisors workers of RM/PPC/PRC /Hygiene Team, machinery, laboratory	QA Personnel	Oral with relevant Documents
JUN	Personnel hygiene	Supervisors workers of RM/PPC/PRC /Hygiene Team, machinery, laboratory	QA Personnel	Oral with relevant Documents
JULY	Incident Management	Supervisors ,workers of RM/PPC/PRC/Hygiene Team, machinery laboratory.	H.R. , production manager, & Quality Assurance in charge	Oral with relevant Documents
AUG	Induction Training	Supervisors ,workers of RM/PPC/PRC, Hygiene team, machinery, Laboratory staff.	QA Personnel	Oral with relevant Documents
SEP	Allergens & HACCP	supervisors	QA Personnel	Oral with relevant Procedures
OCT	SOP & SSOP Training	Supervisors workers of RM/PPC/PRC /Hygiene Team, machinery, laboratory	QA Personnel	Oral with relevant Documents
NOV	CCP	Supervisors ,workers of RM/PPC/PRC Hygiene team, machinery, Laboratory staff.	H.R. Manager, Production Manager Q.A manager.	Oral with relevant Procedures
DEC	GMP	Supervisors ,workers of RM/PPC/PRC, Hygiene team, machinery, Laboratory staff.	Production in charge & QA in charge	Oral

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Subjects of training topics:

Importance of personnel hygiene, HACCP, Quality policy, objectives

1. Importance of product/personnel prevention of cross contamination, CCP monitoring of crates/nets/tubs etc.
2. Usage of sanitizers/food &non-food grade chemicals.
3. Handling of shell waste/used gloves/packing materials etc.
4. Material washing of food contact and non food contact surfaces
5. Washing washing/bubble tank washing etc, extraneous physical hazard handling.
6. Proper usage of trolleys/chutes/change rooms/toilets/cupboards etc.
7. Safe handling of the product. **food safety management**
8. IQF machine cleaning
9. Handling of high risk product
10. Pan sanitizing/labeling/setting/importance of glaze water
11. Packing and labeling of duplex/pouches/cartons
12. Handling of packing material
13. Stacking of finished product in cold store
14. Container loading/ non-conformed product/area
15. Safety or security measures in cold store, water, ingredient, personnel, storage, food, shipment
16. Emergency safety measures
17. Loading
18. Time-temperature abuse
19. Good Manufacturing of Products.

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CHAPTER –XIV

BUYER'S COMPLAIN

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BUYER'S COMPLAIN

E-mail/Fax communicates problems pertaining to particular cargo to us from the buyers. On receipt of the complain, it's initially studied by the Export Department. A copy of the same complains send to the factory production and quality control department.

The quality control personnel take up the matter with the production people and ascertain the origin of the problem.

When the problem is supposed to have occurred the supervisors beckoned and apprised of the situation and advised to take necessary care to eliminate such problems.

The complaint also circulated among other concerned production supervisors to take adequate measures to prevent repartition of such problems. The complaint registered and filed with Q.C. Department. Before the next consignment dispatched we call for "Quality Check" Inspectors in addition to our house quality checks. Sometimes buyer's Q.C personnel also take their own inspection at our plant.

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GLASS /PLASTIC POLICY

1. The lay out will indicate the glass and hard plastic presence and its location which are serially numbered. Fittings of glass in partitions, ventilator, doors, etc. at reachable height in the operating areas with glass and hard plastic fittings are serially numbered.

2. The Q.C will conduct daily survey for the entire premises to check the intactness of the glass, hard plastic, ceramic tails and sinks. If broken the root cause analyzed and corrective action will be taken by replacing the same within the shortest possible time.

3. Product in case contaminated with breakage incidents glass and hard plastic will be thoroughly checked for glass and hard plastic pieces are recovered. If the product is contaminated with inseparable glass pieces such product will be discarded completely.

RECORD-Daily HACCP Maintenance

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METAL POLICY

As a principle of seafood Industries, utmost care is taken to keep the product free from metal contamination in order to supply the product to the consumer without contamination with metal fragments by any chance.

RESPONSIBILITY: Q.C and operator.

PROCEDURE: Metal fragments could enter the process from the following sources as a result of damage or broken equipment.

1. Blades and scissor at the time of value addition and packing.
2. Metal fragments detached/broken out of machinery equipments and process table.

A. The metal contamination is controlled by visual inspection during process

B. By passing the finishing product through metal detector

C. At value addition Blades and scissor controlled by number of issued pieces tally with collected ones at the end of the shift.

RECORD-

1. Metal detector record

2. On-line Inspection Report

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Jewellery policy

- The sign board will indicate the jewellery policy in each section before
- Jewelry includes watches, wedding rings, bracelets, necklaces, body Piercings and facial jewelellry.
- Jewellery at work is a major safety hazard and can cause serious injuries.
- Jewellery can get caught in power tools or stuck against objects, conveyors,
  and moving parts of machinery.
- Remove all jewellry and store it or do not bring it to work.
- The H&S supervisor and Q.C Technologist daily monitoring before each shift.

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APPENDIX-I

Amendment sheet for HACCP manual

Serial No	Date of Amendment	Document name	Page No	Nature of change	Authority
1	01.10.2015	HACCP/009/01	2	Declaration	
2.	01.10.2015	HACCP/009/01	3	Quality Policy	
3.	01.10.2015	HACCP/009/01	4	Quality Objective	
4.	01.10.2015	HACCP/009/01	6	Company profile	
5.	01.10.2015	HACCP/009/01	12	Organisation Chart	
6.	01.10.2015	HACCP/009/01	13 &14	HACCP Team Responsibility	
7.	01.10.2015	HACCP/009/01	29	Risk Analysis	
8.	01.10.2015	HACCP/009/01	30	Hazard analysis work sheet for water & ice	
9.	01.10.2015	HACCP/009/01	31	Hazard analysis work sheet for additives	
10.	01.10.2015	HACCP/009/01	32	Hazard analysis work sheet for packing material	
11.	01.10.2015	HACCP/009/01	33	Product profile	
12.	01.10.2015	HACCP/009/01	38,39,98,99	On site verification process flow for block frozen(Aquaculture/Sea caught/Wild caught)	
13.	01.10.2015	HACCP/009/01	68,69,126,127	On site verification process flow for IQF(Aquaculture/Sea caught/Wild caught)	
14.	01.10.2015	HACCP/009/01	50-55,80-85	CCP Decision Tree(Aquaculture)	

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Serial No	Date of Amendment	Document name	Page No	Nature of change	Authority
15.	01.03.2015	HACCP/005/01	109-114, 138-143	CCP Decision Tree(sea caught / wild caught)	
16.	01.03.2015	HACCP/005/01	56-57,115-116	Justification of CCP (Block)	
17.	01.03.2015	HACCP/005/01	86-87,144-145	Justification of CCP (IQF)	
18.	01.03.2015	HACCP/005/01	58,117	Justification of CQP(Block)	
19.	01.03.2015	HACCP/005/01	88,146	Justification of CQP(IQF)	
20.	01.03.2015	HACCP/005/01	59-61	HACCP plan form for Aquaculture shrimps (Block)	
21.	01.03.2015	HACCP/005/01	89-91	HACCP plan form for Aquaculture shrimps (IQF)	
22.	01.03.2015	HACCP/005/01	118-120	HACCP plan form for Sea caught/ wild caught shrimps (Block)	
23.	01.03.2015	HACCP/005/01	147-149	HACCP plan form for Sea caught / Wild Caught shrimps (Block)	
24.	01.03.2015	HACCP/005/01	63,93,121,150	Pre determined corrective / Preventive action	
25.	01.03.2015	HACCP/005/01	151	Sampling plan for the Establishment	
26.	01.03.2015	HACCP/005/01	161-164	Pest Control	
27.	01.03.2015	HACCP/005/01	165-172	Traceability	
28.	01.03.2015	HACCP/005/01	173	Shelf Life Study	
29	01.03.2015	HACCP/005/01	174-176	CCP Monitoring	
30	01.03.2015	HACCP/005/01	180-183	Training	
31.	01.03.2015	HACCP/005/01	188	Jewellery Policy	
32.	08.05.2015	HACCP/005/01	05	Food safety objective	
33.	08.05.2015	HACCP/005/01	36,66,96,124	Temperature for Flow Chart for both Aquaculture & Sea caught	
34.	08.05.2015	HACCP/005/01	172	Recall Action Team	

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APPENDIX-II

LIST OF REGISTER

1. Annexure-I : Raw material receiving log
2. Annexure-II : Sulphite Test report
3. Annexure-III : Register for processing
4. Annexure-IV : Consolidated daily production register
5. Annexure-V : Packing Register
6. Annexure-VI : Washing & Cleaning Schedule (Pre-processing & Processing)
7. Annexure-VII : Chlorine registers (Pre-processing & Processing)
8. Annexure-VIII : Daily sanitation report for processing
9. Annexure-IX : Personnel hygienic report
10. Annexure-X : Chemical Register
11. Annexure-XI : Cleanliness of equipments/utensils
12. Annexure-XII : Overhead tank cleaning register
13. Annexure-XIII : Insect catcher control
14. Annexure-XIV : Rodent control
15. Annexure-XV : Freezer log book
16. Annexure-XVI : Calibration log for laboratory & plant machinery equipment register
17. Annexure-XVII : Health Card
18. Annexure-XVIII : Identification of V.Parahymolyticus Register
19. Annexure-XIX : Register for Bacteriological analysis
20. Annexure-XX : Identification of Salmonella
21. Annexure-XXI : Identification of V.Cholera
22. Annexure-XXII : Register for assessing Sanitary Standards of the unit

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23. Annexure-XXIII	:	Register for analytical report
24. Annexure-XXIV	:	Daily filter washing register
25. Annexure-XXV	:	Raw material inspection registers
26. Annexure-XXVI	:	Cleaning & control of drains
27. Annexure-XXVII	:	Control of Air-Curtains
28. Annexure-XXVIII	:	Offal Disposal and waste bin maintenance
29. Annexure-XXIX	:	Cleaning of floor, ceiling and walls
30. Annexure-XXX	:	Apron and Dress cleaning (Laundry Log)
31. Annexure-XXXI	:	Daily Vehicle Washing Register
32. Annexure-XXXII	:	Laboratory Equipment Register
33. Annexure-XXXIII	:	Packing Material Stock Register
34. Annexure-XXXIV	:	Chemical Stock Register
35. Annexure-XXXV	:	Thermograph Register
36. Annexure-XXXVI	:	Laboratory Media and Reagent Register
37. Annexure-XXXVII	:	Time Temperature Control Register
38. Annexure-XXXVIII	:	Training Record
39. Annexure-XXXIX	:	Plant and Machinery maintenance Register
40. Annexure-XXXX	:	IQF Packing Register

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APPENDIX-III

RECEIVING RAW MATERIAL SPECIFICATIONS

Procedure:
The raw materials are selected on criteria framed by Ram's Assorted Cold Storage Limited. Such criteria are based on standards for receiving the material, processing, packing and microanalysis.

Raw material: Raw materials are received only when it does not exceed the following organoleptic limits.

Characteristics		Limits
Temperature	-	Less than 4°C
Appearance	-	Natural colour with good freshness
Odour	-	Natural Characteristic, Fresh odor
Texture	-	Soft & firm, slightly tough
Dehydration	-	5%
Discoloration	-	5 %
Deterioration	-	Nil
Black spot /tail	-	5 %
Loose shells	-	6 %
Broken& damaged pieces	-	5 %
Back broken	-	5%
Material with fungus	-	10 %
Drooping head (H/ON)	-	15 %
Objectionable foreign matter.	-	Nil
Tolerance Sulphite residue	-	Nil
Antibiotic residue (Chloramphenicol)	-	0.5 ppb (detectable limit)
Nitrofurans (AOZ, AMOZ, SEM & AHD)	-	1.0 ppb (detectable limit)
Muddy smell	-	Absent

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FOOD GRADE CHEMICALS

Sanitizers:

Chlorine:

Chemical	-	sodium hypo chlorite
Colour	-	yellow.
Concentration	-	5-10%
Odour	-	characteristic pungent smell

Salt:

Salt used is of recognized brand and is food grade

Appearance	-	white powder
Purity	-	Not less than 95%
Filth	-	No tolerance limit.

Sodium phosphate:

Sodium phosphate (carnal) used shall be of a recognized brand and of food grade.

Appearance	-	white powder
Filth	-	No tolerance limit
P2 O5	-	60%
Na2 O	-	42%
PH	-	10
Arsenic	-	1 ppm
Lead	-	1 ppm
Cadmium	-	1 ppm
Mercury	-	1 ppm
Heavy metals (as Pb)	-	10 ppm
Fluoride	-	3 ppm

NON FOOD GRADE CHEMICAL

Detergents Soap:

Colour	-	light yellow.
Purity	-	90%
PH	-	7.5 - 9.0

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RECEIVING MATERIAL SPECIFICATIONS

PACKING MATERIAL:

The packing material includes all kind of, duplex cartons, master cartons, polythene sheets and bags.

Duplex cartons:

Parameters		Limits
Material	-	Duplex board
Style of duplex carton	-	One piece staple less, laminated or wax coated with Both sides closing system using folds.
Substance	-	300 gm/m minimum
Bursting strength	-	4 kg/gm/m minimum
Printing detail	-	i. Brand name ii. Type of product iii. Weight of the product iv. Grade/variety/code markings v. Name of the processors vi. Country of origin

Master carton:

Characteristics		Limits
Material	-	E- Flute corrugated fiber board (5 ply cartons)
Style of carton	-	Preferably one piece staple less or buyer needs
Substance	-	Both liners & fluting 120 gm /m 2 minimum
Bursting strength	-	9.5kg /cm minimum
Printing details	-	As above

Quality mark and approval number are as per buyer specification Storage specifications

Polyethylene sheets and Bags:

Characteristics	Sheet	Bags
	Limits	
Low density polyethylene	50 - 200 gauge ± 10%	100-400 gauge ± 10 %
High density polyethylene	50 - 200 gauge ± 10 %	100-400 gauge ± 10 %

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FINISHED PRODUCT SPECIFICATIONS

Procedure:

- The finished product is packed as per authorized specifications and buyer requirements.
- The finished product is specified with type of freezing i.e. block, IQF production code, brand name, packing style, species (common, scientific), buyer name (if necessary)
- Finished product temperature shall be below -18^0C.
- Ram's Assorted Cold Storage Limited is not involved in design and development of any product and all formulations, specifications shall be given by the buyer.

The characteristics of finished product shall be as follows:

ORGANOLEPTIC STANDARD OF FROZEN PRODUCTS:

Factor	Maximum Tolerance Limit
Net weight	As per buyer's specification
Thawed count/LB or KG or Weight per piece	As per buyer's specification
Dehydration	20% for shrimps & 10% for Fishes
Discolouration of shell/meat	20% for shrimps 10% for all other products
Deterioration	5% for countries other than USA 0% for USA
Black spot on shell/meat	10% for HL/HO products 5% for peeled products
Broken & Damage pieces	10% (less than 4 segments taken as Broken)
Legs, Veins, Antenna	10%
Soft shell & Hanging meats	10%
Objection Foreign matter	NIL
Uniformity of size	10%
Texture	Slight toughness for HL Moderate Toughness for peeled products
Weight	Declared weight
Grade	Counts should be within the limit

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BACTERIOLOGICAL STANDARD OF FROZEN PRODUCTS:

TPC at 37^0C	5, 00,000/gms (maximum)
E. coli at 37^0C	20/gm (maximum)
Staphylococcus at 37^0C	100/gm (maximum)
Salmonella	Absent
V. cholerae	Absent
V. parahaemolyticus	Absent

WATER & ICE:

Total plate count at 37°C	-	20 cfu / ml
at 22°C	-	100 cfu / ml
Coli forms	-	Absent/100 ml
E. coli	-	Absent/100 ml
Clostridium perfringens (including spores)	-	Absent/100 ml
Pseudomonas aeruginosa	-	Absent/250 ml

ANTIBIOTIC STANDARDS (DETECTABLE LIMIT):

Chloramphenicol	:	0.5 ppb
Nitrofurans (AOZ, AMOZ, SEM & AHD)	:	1.0 ppb

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APPENDIX-IV

General processing steps and control points

1. Receiving:

After receiving raw material at the receiving area of the unit through insulated vehicles detail analysis to be carried out for the following factors.

a) Material Temperature and Icing Condition
b) Decomposition.
c) Any type of Additives.
d) Microbial Pathogens.
e) Filth and Foreign matter etc.
f) Other Organoleptic Factors.
g) Supplier's Guarantee Certificate
h) Sulphite Test

The following preventive measures to be taken in receiving area.

1) Clean and sanitize the surroundings.
2) To check the functional facilities such as foot dip, hand wash and chlorine dip.
3) Check the effectiveness of air curtain / fly-proofing / pest and vermin control.
4) Check the plumbing route / taps / hoses etc. for cleanliness.
5) Clean and sanitize floors, walls, utensils, weighing machines etc. with required level of chlorinated water before and after each operation.
6) Maintain high degree of personnel cleanliness.
7) Receive fresh shrimps only without any type of colour additives.
8) Check Quality and adequacy of ice and temp. of raw material at temperature $<4^{o}C$
9) Weigh the material accurately.
10) Wash thoroughly with 2 ppm chlorinated water to remove all traces of dirt and filth.
11) Check the organoleptical Quality of the material with a sampling scale of 1 sample (1 Kg) per 500 Kgs.
12) Avoid delay.
13) Draw the samples for bacteriological test and send it to the Laboratory.
14) Dispose of all the waste at frequent intervals.
15) Doing Sulphite Test

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2. Pre-Processing Stage:

Checks should be done for the following: -

1) Temperature abuse
2) Microbial Contamination
3) Foreign Material
4) Filth
5) In sanitary equipments, container, tables etc.

Preventive Measures to be taken: -

1) Check the cleanliness of change room.
2) Check the effectiveness of air curtain/fly proofing, pest and vermin control.
3) Check the cleanliness of plumbing route/taps & hoses.
4) Wash clean and sanitize floor, all types of utensils, tables, Equipments etc. with required level of chlorinated water before starting and after completion of work.
5) Transfer the Peeled/Be-headed material properly iced to processing section after washing with potable water.

3. Processing Stage:

Possible Hazards: -

Physical Hazards i.e.

Foreign Particles, Glass pieces, metal fragments, wood splinters, stone etc…

Bacterial Hazards i.e.

a) E.Coli
b) Staphyllococous
c) Streptococous
d) Salmonella
e) V.C.
f) V.P.

Chemical Hazards i.e.

a) Pesticides, Heavy Metals, Antibiotics
b) Sulphites
c) Excess Chlorine
d) Phosphates(if required as per Buyer's requirement)

Economical Hazards i.e.

a) Improper grading
b) Short weight
c) Improper Marking on Carton etc.

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General Preventive Measures: -

1) Check the effectiveness of fly-proofing, pest and vermin control.
2) Check the cleanliness of plumbing route/taps & hoses.
3) Check the Cleanliness of change room/rest room.
4) Check the cleanliness of foot dip, hand wash and chlorine dip.
5) Maintain high degree of personnel cleanliness.
6) Wash, clean and sanitize all types of utensils, tables floor equipments etc. with required level of chlorinated water before starting and after completion of work.
7) Grade the material according to size and re-check grading accuracy.
8) Store the remaining excess material in chill room or with adequate ice.
9) Ice the graded material properly till take up for packing.
10) Use adequate ice made from 2 ppm chlorinated potable water.
11) Handle the materials carefully.
12) Maintain high degree of personnel hygiene and cleanliness.
13) Clean the table properly after grading.
14) Remove all waste at frequent interval.
15) Wash the graded material with 2 ppm chlorinated water.
16) Transfer the graded material to the packing table and allow to drain water completely.
17) Weigh the material correctly.
18) Weighing scales to be calibrated once in a year by Weight & Measurement Dept. of Govt. of India.
19) Dip the polythene sheets in chlorinated water.
20) Mark the duplex cartons and code slips correctly.
21) Place the code slips at correct position.
22) Arrange the shrimps properly in rows.
23) Pour chilled chlorinated glaze water.
24) Fill the Duplex inner carton in trays.
25) Check the physical and organoleptic factors.
26) Draw samples for bact. analysis.
27) Avoid Delay.
28) Check the temp. gauge and pressure gauge of fresher.
29) Arrange trays in pre-cooled freezer.
30) Freeze the temp. at -40 degree C.
31) Unload the freezer after freezing is completed within 120 Minutes.
32) Check the hardness of slab and core temp. of slabs(-180C).
33) Transfer the slabs to packing section without delay.
34) Clean and sanitize the freezer after each load.

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4. Packing and Storing Stage:

Possible Hazards:

1) Temp abuse.
2) Filth.
3) Defective Packaging
4) In correct labeling
5) Foreign matter
6) Microbial contamination
7) Human Error

Preventive Measure :-

1) Clean and sanitize the packing area before starting of work.
2) Mark Master Cartons properly and neatly.
3) Packed the materials in Master Carton without delay.
4) Handle the product carefully while Packing, Remove all packing waste at frequent intervals.
5) Ensure the Quality of packing materials.
6) Store the packed materials at -18 degree C or below.
7) Stack the product in a identical manner to facilitate proper air circulation.
8) Maintain proper rotation of product (first in-first out)
9) Check the temp. of store every two hours.
10) Defrost the store regularly.

5. Transportation for Shipment:

1) Clean and sanitize vehicle.
2) Transport the finished product only in refrigerated van.
3) Keep the vehicle in good running condition.
4) Delay in transportation should be avoided.

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ORGANOLEPTIC & BACTERIOLOGICAL STANDARD OF FROZEN PRODUCTS

Factor	Maximum Tolerance Limit
Net weight	As per buyer's specification
Thawed count/LB or KG or Weight per piece	As per buyer's specification
Dehydration	20% for shrimps & 10% for Fishes
Discolouration of shell/meat	20% for shrimps 10% for all other products
Deterioration	5% for countries other than USA 0% for USA
Black spot on shell/meat	10% for HL/HO products 5% for peeled products
Broken & Damage pieces	10% (less than 4 segments taken as Broken)
Legs, Veins, Antenna	10%
Soft shell & Hanging meats	10%
Objection Foreign matter	NIL
Uniformity of size	10%
Texture	Slight toughness for HL Moderate Toughness for peeled products
Weight	Declared weight
Grade	Counts should be within the limit
TPC at 37^0C	5, 00,000/gms (maximum)
E. coli at 37^0C	20/gm (maximum)
Staphylococcus at 37^0C	100/gm (maximum)
Salmonella	Absent
V. cholerae	Absent
V. parahaemolyticus	Absent

Authorized by:-

Managing Director

APPENDIX-V

SAMPLING SCALE

WATER & ICE

1. Water using for processing is tested once in every 15 days for microbiological factors i.e. TPC, Coliform, E.coli, V.cholera
2. Ice is tested once in every 15 days for microbiological factors
   i.e. TPC, Coliform, E.coli, V.cholera
3. Swabs of tables, utensils, freezing trays, workers hand are tested once in every 15 days for microbiological factors i.e. TPC,Coliform,E.coli, V.cholera are tested for workers hand only.

   The testing procedure followed and standards used are in accordance with those enlisted in the Bacteriological analysis manual of EIA/CIFT.

RAW MATERIAL

Every day sample drawn from raw materials for organoleptic and bacteriological testing. For bacteriological test, one sample is drawn against any center. Subsequently samples are drawn to cover all the center by one week. If centers are more, technologist may relocate the samples procedure. Organoleptic factors are examined for materials against each center by drawing of 1 kg against each lot of 500 Kg. Records are maintained in the Raw material inspection report against each batch of material received.

For sulphite residue testing one sample is drawn from each lot.

For testing of antibiotics, heavy metals and pesticides one sample is drawn randomly and sent to EIC approved Laboratory for residue analysis.

For visual observation on the process of raw material collection at the source at least we visit a supplier at the procurement center once in a month.

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ON LINE INSPECTION

Apart from sensory evaluation and organoleptic parameters, colour segregation, weights and grades are checked in the in process materials. One sample is drawn against every 250 Kgs. of materials processed.

FINISHED PRODUCTS Bacteriological testing for finished products is conducted type wise against each code of production. Pre-enrichment technique for testing of Salmonella is undertaken for all varieties against each code touching each grade.

For testing of antibiotics, heavy metals and pesticides one sample is drawn randomly and sent to EIC approved Laboratory for residue analysis. Besides before shipment one composite is sent to EIC approved Laboratory for analysis of residues of antibiotics, heavy metals and pesticides comprising the codes to be shipped in that particular consignment.

For the testing of filth and decomposition, following sampling scale is followed.

No. of Cartons	Sub. Sample
1-20	06
21-200	12
101-above	18

Class of decomposition and nature of filth is ascertained using USFDA methodology and records are maintained accordingly.

For all other parameters, guidelines of quality assurance & monitoring system issued by EIC is followed and time to time any amendment in this regard is taken into consideration, keeping in touch with the Regulatory Authorities.

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VALIDATION OF EQUIPMENTS

All the equipments used in our unit the chill rooms, freezers IQF machines and cold storages are provided with temperature recording devices. The chill rooms and freezers, IQFs are fitted with dial thermometers and cold storages are fitted with thermograph i.e. automatic temperature recording system. All such pressure and temperature-measuring devices are calibrated in house using standard thermometer on a monthly basis. Besides the calibration is also done by govt. approved agency once in a year. The same is recorded in the register . All the equipments used in the laboratory are calibrated regularly once in a year by external agency as well as the calibration is also done on monthly basis by the technologists using standard thermometer.

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Internal Audit

Internal audit is conducted as per schedule audit by trained experienced auditors which include surroundings, HACCP, SSOP, G.M.P.

NCR will be raised by auditors will be handed over to concerned department fixing time scale for taking corrective action and implementation

The audit team Handover the copies of follow up actions to be verified in the concerned department. Previous NCRs are checked and follow-up actions are verified pertaining to the concerned department for corrective action. Results of the audit will be brought to the attention of the person responsible for the activity audited and get the signature for acceptance. Verification of the follow up action taken on the NCR raised. Complete audit report will be collected from the auditors and submitted in the Management review meeting. Closing of non conformities from previous audit, verified root cause and actions proposed to prevent recurrence of the same non-Conformance.

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CORRECTIVE ACTION

Definition

Procedure to be taken when monitoring result at the CCP indicates that the same is not under control.

Purpose

To correct and eliminate the cause of deviation and restore process control. To identify the product that was produced during process deviation and determines its safe disposition.

Method/Activity

Corrective action is envisaged to restore control and start of the process without further deviation. The objective is to being the CCP back under control. This would minimize of the amount of non-confirming products as well as safe disposition of the product produced during process deviation if any. All batches of shrimps received are tested for sulphite residue. In case of any incidence of sulphite residue/histamine being found in raw material, the materials are segregated and further sampling is done. Materials with sulphite reside/histamine are kept separately in crates with tag “rejected” and handed over to the suppliers after batch is over.

Authorized by:-

Managing Director

Control of Non-Conformities Material

The maximum tolerance limit of Raw Material Temperature is $<4^0$c,

Sulphite Test(CCP-1) is Absent,

Metal Detector (CCp-2) is 1.2mm for Fe, 2.0mm for NFe & 2.0mm for SS,

Labeling (CCP-3) is all finished product labels must contain shrimps declaration on labels. Maximum cooler temperature -18^0C.

The maximum tolerance limit of the Organoleptical factors like

Dehydration -	20% for shrimps
Discolouration of shell/meat -	20% for shrimps
Deterioration -	5% for countries other than USA 0% for USA
Black spot on shell/meat -	10% for HL/HO products 5% for peeled products
Broken & Damage pieces -	10% (less than 4 segments taken as Broken)
Soft shell & Hanging meats-	10%

The maximum tolerance limit of the Microbiological Parameters are

TPC at 37^0C -	5, 00,000/gms (maximum)
E. coli at 37^0C -	20/gm (maximum)
Staphylococcus at 37^0C -	100/gm (maximum)
Salmonella -	Absent
V. cholerae -	Absent
V. parahaemolyticus -	Absent

The non- conformities materials are those materials which are across the tolerance level of Organoleptical factors , Microbiological Parameters & all the CCP's .If any deviation occurs from the maximum tolerance limit, then that product should be Non-Conformance materials and these materials are stored in the Non-Conformity area. We have a Cold Store in which the non-conformities materials are stored and they are identified.

We observed those materials periodically (for Organoleptic failed material) and according to the observation if they are suitable for production then we take those materials to the Production Line.

By regular monitoring the production line we control the non-conformities materials.

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Authorized by:-

Managing Director