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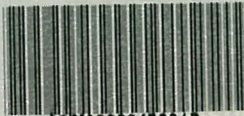
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# Southeast Asian Fish Products

Third Edition, 1996



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Research Department  
Southeast Asian Fisheries Development Center  
Singapore



# SOUTHEAST ASIAN FISH PRODUCTS

Third Edition, 1996

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## **SOUTHEAST ASIAN FISHERIES DEVELOPMENT CENTER**

The Southeast Asian Fisheries Development Center (SEAFDEC) is a technical organisation devoted to the accelerated development of fisheries in the region. The member countries of SEAFDEC are Japan, Brunei Darussalam, Malaysia, Philippines, Singapore, Thailand and Vietnam. SEAFDEC has four departments, viz., the Marine Fisheries Research Department in Singapore, Training Department in Thailand, the Aquaculture Department in the Philippines and Marine Fishery Resources Development and Management Department in Malaysia.

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ISBN 981-00-8230-4

## **ACKNOWLEDGMENT**

The Marine Fisheries Research Department thanks all Council Directors of the Southeast Asian Fisheries Development Center, and Directors-General of Fisheries Departments of participating countries for the generous cooperation provided through the respondents to the survey.

We would like to thank Mr. Tan Sen Min and Dr. Shiro Konagaya, Chief and Deputy Chief of MFRD for their useful comments. We would also like to put in record the very valuable guidance continuously provided by former Chief of MFRD, Mr. Hooi Kok Kuang and Mr. K. Inoue, former Deputy Secretary-General of SEAFDEC. Their genuine concerns and constant contacts have helped to make the compilation of this manual an enjoyable experience.

This compilation will not be a success without the joint efforts of the country coordinators and respondents who are responsible and fast in providing feedback when requested. Thank you very much for your generous cooperation and also for the photographs.

Special thanks to Mr. Ahmad Hazizi bin Aziz of Department of Fisheries, Malaysia, for the interesting slides on fish products.

Note : The mention of trade names in this publication does not imply endorsement of the product.

## **PREFACE**

Fish is a major traditional source of animal protein in the Southeast Asian region. There are many varieties of fresh water and marine fish which is widely accepted by most people and religions.

These fish are also available as traditional fish products and these are listed in this report. They are broadly classified as dried, salted and fermented fish products, minced and powdered fish, and fish sauces, etc. More recently, fish products have been developed to meet the requirements of foreign markets.

In 1976, the SEAFDEC Council requested the government of Japan to send a Survey Mission to SEAFDEC Member Countries to determine the status of fish processing and preservation in order to decide on the priorities of a research and development program. The program identified was carried out by the MFRD.

In 1984, the MFRD was requested to compile an inventory of fish products in Southeast Asia. The objective of the survey was to list the fish products available in countries in the region and the technical problems and constraints in meeting market requirements. That inventory was the first of the compilations which is a comprehensive record of fish products in the region, and will be of interest to researchers, food scientists, fish technologists and administrators. It was also useful for fish traders, and may be used as a reference for further improvement of the quality of these products in the region.

In 1989, another similar survey known as the second inventory was undertaken. The challenge to conduct the second survey was raised at the 20th SEAFDEC Anniversary Seminar on Development of Fish Products in Southeast Asia in October, 1987 in Singapore.

Participants at that Seminar welcomed the publication and recommended periodic updating of information for use by researchers, food scientists, fish technologists, administrators, and fish traders and others in the private sector. At that meeting a Workshop was held to deliberate on the second publication and suggestions for improvement can then be included in the third edition.

This inventory saw the inclusion of participation of Vietnam for the first time. It also introduces to the readers the various types of fish products as consumed in the country.

This third edition (1996) has been published to coincide with the SEAFDEC Seminar on Advances In Fish Processing Technology In Relation to Quality Management In Southeast Asia which will be held in 28 October - 2 November 1996 at Singapore and in conjunction, a Workshop on the Compilation Of Fish Products In Southeast Asia will also be held to share the coordinator's experiences in the compilation of this inventory.

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## INTRODUCTION

The objectives of this survey were to:

1. update information on existing fish products,
2. to document new fish products,
3. identify their quality level, and
4. identify the constraints in their marketing and promotion

Seven ASEAN countries participated in this survey; they were Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.

Based on critical response received to the first edition of this inventory, the products were classified into the following categories (alphabetical):

- a. Boiled
- b. Canned
- c. Comminuted
- d. Cured
- e. Dried
- f. Fermented
- g. Fish Meal
- h. Frozen
- i. Powdered/Flaked
- j. Smoked
- k. Others

The questionnaire was sent in early 1995 to invite the member countries and Indonesia to participate in the survey. Efforts were made to incorporate suggestions from users of the previous inventories and attempted to be as comprehensive as possible in including all the background information on fish products.

This third inventory is designed as a follow up on the first and second inventory and therefore has common and updated features and information. The data is updated to 1993 and NA denotes data not available. This compilation includes details of fish products from the participating countries, and the problems listed by them, information on prices of both raw and finished products are documented, together with related packaging methods and materials, storage conditions and shelf life. The exchange rate was arbitrarily fixed as at December 1995, which was:

US\$1 = Rp2298.3740 = P 25.1845 = M\$2.6912 = S\$1.4023 = B\$1.4023 = B\$25.1845 = DONG 11,000

## OVERVIEW OF FISH PRODUCTS

In this overview, information gathered from the survey on 11 categories of fish products are summarised. They are arranged to facilitate comparison of the same product among ASEAN countries.

### Boiled Products

Boiled products are available in all participating countries except the Philippines and Brunei Darussalam. They are produced either by cooking in boiling water or in steam. They are also generally described by most countries as salted and boiled fish. They can be eaten either plain, with chili paste or curry and are consumed together with rice or porridge. Their retail prices are shown in Table 1. It is interesting to note that the prices of this products have remained the same since 1989 in most countries except for Indonesia where there is an increase of 20% in cost of raw materials (1985:US\$0.59 to 1995:US\$0.71) and 33.5% in boiled fish (1985:US\$1.76 to 1995:US\$2.35).

**TABLE 1. COST OF RAW MATERIALS AND BOILED PRODUCTS**

Category	Product	Local Name	Country	Cost (US\$/kg)	
				Raw Materials	Boiled Products
Boiled	Fish	<i>Ikan pindang</i>	IND	0.71	2.35
Boiled	Fish	<i>Ikan rebus</i>	MAL	NA	NA
Boiled	Fish, cooked	<i>Sek-he</i>	SIN	1.33-2..13	2.13 - 3.19
Boiled	Fish, steamed	<i>Pla nung</i>	THA	0.24-0.71	0.47-1.57
Boiled	Fish, steamed	<i>Ca hap</i>	VIE	NA	NA

Pelagic fish are most commonly used e.g. Indian mackerel (*Rastrelliger kanagurta*), horse mackerel (*Selar*), scad (*Caranx spp.*), anchovy (*Stolephorus spp.*), small trevallies, etc.

The fish is cleaned and arranged on the bamboo baskets or ceramic basins. Salt can be added in between the layers of fish or spread on the fish surface to prevent the skin from peeling during boiling. The fish can be cooked either by immersing the basket of arranged fish into the boiling brine water or by steaming. The cooked product is then prepared for marketing.



Directorate Fish, Indonesia

An example of packed boiled fish sold at the supermarket in Indonesia

Between '88 and '93 Indonesia produced and consumed about 100 345 MT/year of boiled fish compared to Malaysia's 490 MT, Thailand's 4181 MT, and Singapore's 416 MT. The production of this product from 1988-1993 is shown in Table 2.

**TABLE 2. PRODUCTION & EXPORT VOLUME OF BOILED FISH PRODUCTS (MT)**

Category	Product	Country	Production Volume (MT)						Export Volume (MT)					
			1988	1989	1990	1991	1992	1993	1988	1989	1990	1991	1992	1993
Boiled	Fish	IND	93,851	84,279	81,565	107,525	121,778	113,071	NA	NA	NA	NA	NA	NA
Boiled	Fish	MAL	754	12	1,120	72	NA	NA	NA	NA	NA	NA	NA	NA
Boiled	Fish, cooked	SIN	426	490	467	281	NA	NA	Nil	Nil	Nil	Nil	Nil	Nil
Boiled	Fish, steamed	THA	3,876	4,219	3,808	4,297	4,707	NA	NA	NA	NA	NA	NA	NA
Boiled	Fish, steamed	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

As these products are consumed locally in the countries where they are produced, the data on the export volume is therefore not available or zero.

In some countries, the cooked fish is packed in polyethylene bag when sold on-demand. The shelf life of these products varies from a few days to several months depending on the storage conditions, as indicated in Table 3. Only Thailand has indicated the need to improve the processing method and storage life of this product which is the main constraint of the boiled fish.

**TABLE 3. STORAGE CONDITIONS & SHELF LIFE OF BOILED PRODUCTS**

Category	Product	Country	Storage Conditions	Shelf Life
Boiled	Fish	IND	At room temperature.	3-7 days
Boiled	Fish	MAL	Cool dry place of (-4 to 2)°C	3-4 months
Boiled	Fish, cooked	SIN	Refrigerate at 4°C	1 week
Boiled	Fish, steamed	THA	Keep in refrigerator	1 week
Boiled	Fish, steamed	VIE	Cool, well aired condition	1-2 days



MFRD, Singapore

Boiled silver fish

## Canned Products

Canned fish products are processed in Indonesia, Malaysia, Philippines, Thailand and Vietnam. These products are best described as fish which has been processed and sealed hermetically in can containers. The sealed product is subjected to high temperature to destroy the spoilage micro-organisms. It can be consumed directly or re-cooked. The canned fish can be served with salad, dressing or as a spread. The retail prices of raw materials range from 40 cents to \$3.58 per kg while the canned fish products range between 60 cents and \$3.92 per can. These prices are shown in Table 4.

**TABLE 4. COST OF RAW MATERIALS AND CANNED PRODUCTS**

Category	Product	Local Name	Country	Cost (US\$/kg)	
				Raw Material	Canned Product
Canned	Anchovy	<i>Dilis</i>	PHI	NA	NA
Canned	Anchovy in sambal	<i>Sambal ikan bilis</i>	MAL	3.58	NA
Canned	Babyclam	<i>Hoy lai krapong</i>	THA	0.4 - 0.8	NA
Canned	Crab meat	<i>Poo krapong</i>	THA	2 - 3.2	NA
Canned	Fish in tomato sauce	<i>Ikan dalam sos tomato</i>	MAL	NA	NA
Canned	Fish in tomato sauce	<i>Pla krapong</i>	THA	0.4 - 0.8	NA
Canned	Mackerel in tomato sauce	<i>Ca thu dong hop</i>	VIE	NA	NA
Canned	Mackerel, tuna, sardine	<i>Ikan kaleng</i>	IND	0.79, 0.93, 0.29	3.92
Canned	Mackerel in tomato sauce	<i>Galonggong</i>	PHI	0.89 - 1.12	NA
Canned	Milkfish in oil	<i>Bangus</i>	PHI	1.25 - 1.56	NA
Canned	Milkfish in tomato sauce	<i>Bangus</i>	PHI	1.25 - 1.56	NA
Canned	Milkfish, <i>Salmon style</i>	<i>Bangus</i>	PHI	1.25 - 1.56	NA
Canned	Sardine in tomato sauce	<i>Tamban</i>	THA	1.03 - 1.12	NA
Canned	Shrimp	<i>Gung krapong</i>	THA	1.2 - 1.6	NA
Canned	Squid/cuttlefish/octopus	<i>Muck krapong</i>	THA	0.6 - 2	NA
Canned	Tuna	<i>Pla tuna krapong</i>	THA	NA	0.6 - 1.2
Canned	Tuna in oil	<i>Tambacol</i>	PHI	0.89 - 1.12	NA
Canned	Tuna in oil	<i>Ca ngu dong hop</i>	VIE	NA	NA

The principle of canning is similar in most countries. The fish must be cleaned and gutted before use. It is packed in can and precooked in exhaust before filling with sauce, liquid or oil. After seaming, the canned product is sterilized and cooled before labeling.

Thailand's production of canned fish products put it among the world's top producers. Its production and export volume of canned tuna is the largest in the ASEAN countries. The fish canning industries in Thailand plays an active role in the international market especially for canned tuna. Although canned fish products are available in the Philippines, Vietnam and Malaysia, however the production data are not available. The amount of canned fish products produced and exported are shown in Table 5.

TABLE 5. PRODUCTION & EXPORT VOLUME OF CANNED PRODUCTS (MT)

Category	Product	Country	Production Volume (MT)							Export Volume (MT)						
			1988	1989	1990	1991	1992	1993	1988	1989	1990	1991	1992	1993		
Canned	Anchovy	PHI	NA	NA	NA	NA	NA	NA	9	20	9	NA	NA	NA		
Canned	Anchovy in sambal	MAL	NA	NA	NA	NA	NA	NA	25	22	34	26	34	23		
Canned	Babyclam	THA	31,718	28,878	27,846	62,727	74,730	NA	10,022	8,263	9,692	4,386	5,012	3,426		
Canned	Crab meat	THA	26,836	17,796	15,456	14,078	14,262	NA	11,254	8,600	10,041	9,827	9,713	NA		
Canned	Fish in tomato sauce	MAL	NA	NA	NA	NA	NA	NA	4,791	6,831	5,170	7,155	5,729	5,426		
Canned	Fish in tomato sauce	THA	32,553	29,400	42,092	36,241	41,373	NA	14,842	22,491	13,688	28,090	25,853	33,387		
Canned	Mackerel in tomato sauce	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Canned	Mackerel, tuna, sardine	IND	12,285	17,402	18,685	10,556	7,838	20,585	9,523	22,855	21,042	21,288	21,450	26,750		
Canned	Mackerel in tomato sauce	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Canned	Milkfish	PHI	NA	NA	NA	NA	NA	NA	90	42	59	NA	NA	NA		
Canned	Milkfish in tomato sauce	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Canned	Milkfish, <i>Salmon style</i>	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Canned	Sardine in tomato sauce	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Canned	Shrimp	THA	36,062	30,766	37,050	69,883	90,193	NA	21,367	23,133	29,107	35,582	39,316	42,651		
Canned	Squid/cuttlefish/octopus	THA	3,971	4,061	6,375	23,499	15,379	NA	4,207	4,284	4,818	4,471	2,470	2,430		
Canned	Tuna	THA	274,910	331,953	414,634	492,684	430,801	NA	200,967	225,122	232,972	272,800	243,591	229,904		
Canned	Tuna in oil	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Canned	Tuna in oil	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		

The canned product is packed in fiberboard carton box or carton box and stored in a dry place. The shelf life of this product is about 6 months to 1 year at cool dry place as shown in Table 6. Canning is one of the oldest methods to preserve food and the respondents did not indicate any problem in the production of canned products.

**TABLE 6. STORAGE CONDITIONS & SHELF-LIFE OF CANNED PRODUCTS**

Category	Product	Country	Storage Conditions	Shelf-life
Canned	Anchovy	PHI	Room temperature	1 year
Canned	Anchovy in sambal	MAL	Dry place at below 45°C	12 months or more.
Canned	Babyclam	THA	Dry place at below 45°C	1 year
Canned	Crab meat	THA	Dry place at below 45°C	1 year
Canned	Fish in tomato sauce	MAL	Dry place at below 45°C	12 months or more.
Canned	Fish in tomato sauce	THA	Dry place at below 45°C	1 year
Canned	Mackerel in tomato sauce	VIE	Cool, well aired condition	6-12 months
Canned	Mackerel, tuna, sardine	IND	At room temperature.	More than 1 year
Canned	Mackerel in tomato sauce	PHI	Cool, dry place at room temperature	12 months or more.
Canned	Milkfish	PHI	Cool, dry place at room temperature	1-2 years.
Canned	Milkfish in tomato sauce	PHI	Cool dry place at room temperature	12 months or more.
Canned	Milkfish, <i>Salmon style</i>	PHI	Cool, dry place at room temperature	12 months or more.
Canned	Sardine in tomato sauce	PHI	Cool, dry place at room temperature	12 months or more.
Canned	Shrimp	THA	Dry place at below 45°C	1 year
Canned	Squid/cuttlefish/octopus	THA	Dry place at below 45°C	1 year
Canned	Tuna	THA	Dry place at below 45°C	1 year
Canned	Tuna in oil	PHI	Cool, dry place at room temperature	12 months or more.
Canned	Tuna in oil	VIE	Cool, well aired condition	6-12 months



Directorate Fish, Indonesia

Canned Fish

## Comminuted Products

Comminuted products are products made from minced meat and surimi. These products include fishball, fishcake, fish/prawn sausages and burgers, *chikuwa*, imitation crab stick and cuttlefish products. These products are produced and consumed in all the ASEAN countries.

These products can be consumed directly after cooking, or in soups, and cooked with noodles, rice or vegetables. The prices of the raw materials range between 28 cents and \$3.60 while the comminuted products are varies from 8 cents for Malaysia prawn *wantan* to \$10.64/kg for Thailand's imitation crab sticks. Table 7 shows the retail prices of various raw materials and the types of comminuted products.

**TABLE 7. COST OF RAW MATERIALS AND COMMINUTED PRODUCTS**

Category	Product	Local Name	Country	Cost ( US\$/kg )	
				Raw Material	Comminuted Product
Comminuted	Breaded fish finger	NA	SIN	NA	NA
Comminuted	Breaded squid ring	NA	SIN	NA	NA
Comminuted	Cuttlefish ball	<i>Bebola sotong</i>	MAL	NA	2.38
Comminuted	Cuttlefish ball, finger, paste	NA	SIN	NA	NA
Comminuted	Cuttlefish sausage, cocktail	<i>Sosej Sotong</i>	MAL	NA	3.53
Comminuted	Fish burger	<i>Burger ikan</i>	MAL	NA	3.35
Comminuted	Fish burger	<i>Fish burger</i>	PHI	0.89 - 1.12	NA
Comminuted	Fish burger (boneless)	<i>Cha ca phile</i>	VIE	NA	NA
Comminuted	Fish burger (dehead)	<i>Cha ca thirong</i>	VIE	NA	NA
Comminuted	Fish finger	<i>Pla bod chub</i> <i>Kanom pang</i>	THA	1.00 - 1.20	3.50 - 4.00
Comminuted	Fish noodle	<i>Ba mee pla</i>	THA	0.51 - 0.98	NA
Comminuted	Fish sausage	<i>Gio ca</i>	VIE	NA	NA
Comminuted	Fish sausage	<i>Sosej ikan</i>	MAL	0.37	3.35
Comminuted	Fishball	<i>Bakso ikan</i>	IND	0.50	NA
Comminuted	Fishball	<i>Bebola ikan</i>	MAL	NA	NA
Comminuted	Fishball	<i>Bebola ikan</i>	BRU	NA	3.72
Comminuted	Fishball	<i>Bola-bola</i>	PHI	1.12 - 1.25	NA
Comminuted	Fishball	<i>Luk-chin pla</i>	THA	0.51 - 0.98	1.18 - 3.54
Comminuted	Fishball, fishcake, <i>chikuwa</i>	<i>Hi-ei</i>	SIN	NA	2.14 - 2.85
Comminuted	Fishcake	<i>Kek ikan</i>	BRU	NA	3.46
Comminuted	Fishcake	<i>Tauhu ikan</i>	MAL	NA	NA
Comminuted	Imitation crabmeat	<i>Pu Tiun</i>	THA	1.38 - 1.97	6.00 - 10.00
Comminuted	Imitation crabsticks	NA	SIN	1.60 - 2.13	6.38 - 10.64
Comminuted	Minced fish	<i>Nur pla khud</i>	THA	0.60 - 3.60	3.00 - 8.00
Comminuted	Native sausage	<i>Longanisa</i>	PHI	0.89 - 1.12	NA
Comminuted	<i>Otak-otak</i>	<i>Otak-otak</i>	MAL	NA	NA
Comminuted	Prawn ball, finger	NA	SIN	NA	NA
Comminuted	Prawn burger	<i>Burger udang</i>	MAL	NA	4.46
Comminuted	Prawn dumpling	NA	MAL	NA	0.10/piece
Comminuted	Prawn sausage	<i>Sosej Udang</i>	MAL	NA	NA
Comminuted	Prawn <i>wantan</i>	NA	MAL	NA	0.08
Comminuted	Scallop flavour fishcake	NA	MAL	NA	0.09/piece
Comminuted	Surimi	<i>Nur pla bod</i>	THA	0.28 - 0.59	3.00 - 4.00
Comminuted	Surimi	<i>Surumi</i>	VIE	NA	NA

The raw materials used are generally surimi and fishes. Surimi is the name of washed fish mince meat mixed with permitted food additives before freezing. Although other ASEAN countries are producing surimi, Thailand is the only country which indicated it in this survey. However at present, no data is available on the production. The fishes used are threadfin bream (*Nemipterus* spp.), bigeye snapper (*Priacanthus* spp.), jewfish (*Sciaena* spp.) and lizard fish.

Comminuted products are often produced directly from fresh fish. The species used are sharks (*Stegrotoma faceiatom*, *Chiloselyllium* spp.), wolf-herring (*Chirocentrus nudus*), barracuda (*Sphyraena* spp.), bigeye snapper, *Scomberomorus* spp., threadfin bream, lizardfish, round herring (*Dussumieria* spp.), scad, Indian mackerel, tuna (*Thunnus tonggol*, *Euthynnus afinis*, *Katsunwonus pelamis*, *Thunnus alalunga*) and other species.



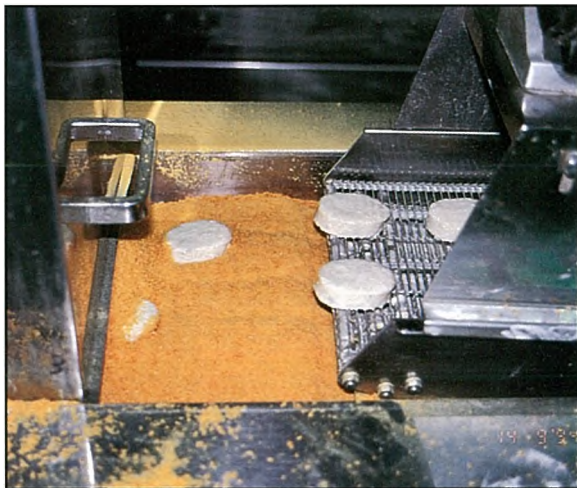
Directorate Fish, Indonesia

Fishballs



The method of processing comminuted products varies according to the different types of products but basically it involves the washing of mince fish, mixing with ingredients, forming, cooking, cooling and packing. The main machinery used are meat-bone separator, mincer, mixing/grinding machine, forming machine, water-bath and cooking facilities. The ingredients used are salt, sugar, oil, flour, monosodium glutamate, water and vegetables, etc.

A variety of comminuted products is indicated in Table 8. However, little data on their production and export is available. In the previous surveys, this problem of insufficient data has been highlighted and it must be stressed again that more attention must be concentrated on this problem (Table 8).



MFRD, Singapore

Battering and breading of fishcake



MFRD, Singapore

Trays of breaded products before freezing



MFRD, Singapore

A range of comminuted products



MFRD, Singapore

Otak fish sausage

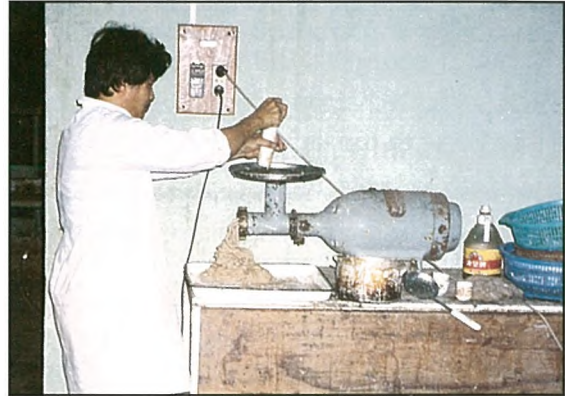
TABLE 8. PRODUCTION &amp; EXPORT VOLUME OF COMMINUTED PRODUCTS (MT)

Category	Product	Country	Production Volume (MT)						Export Volume (MT)					
			1988	1989	1990	1991	1992	1993	1988	1989	1990	1991	1992	1993
Comminuted	Breaded fish finger	SIN	Nil	Nil	48	131	468	653	Nil	Nil	47	131	384	643
Comminuted	Breaded squid ring	SIN	96	125	Nil	291	384	699	96	125	Nil	291	17	699
Comminuted	Cuttiefish ball	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Cuttiefish balls, fingers, paste	SIN	44	95	328	207	606	52	Nil	Nil	22	44	6	52
Comminuted	Cuttiefish sausage and cocktail	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fish burger	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fish burger (boneless)	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fish burger (dehead)	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fish finger	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fish noodle	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fish sausage	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fish sausage	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fishball	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fishball	BRU	NA	NA	NA	38.3	56.69	63.99	NA	NA	NA	NA	NA	NA
Comminuted	Fishball	IND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fishball	MAL	1,949	2,905	4,381	4,944	2,678	3,927	NA	NA	NA	NA	NA	NA
Comminuted	Fishball	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fishball	THA	5,117	6,129	5,962	5,995	6,009	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fishball, fishcake, <i>chikurwa</i>	SIN	638	950	539	298	545	385	38	48	Nil	20	53	98
Comminuted	Fishcake	BRU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Fishcake	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Imitation crabmeat	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Imitation crabsticks	SIN	398	504	440	264	501	Nil	300	351	398	206	182	Nil
Comminuted	Minced fish	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Native sausage	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	<i>Otak-otak</i>	MAL	NA	NA	NA	NA	NA	14	NA	NA	NA	NA	NA	NA
Comminuted	Prawn balls, fingers	SIN	17	18	49	49	103	78	5	3	2	19	468	47
Comminuted	Prawn burger	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Prawn dumpling	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Prawn sausage	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Prawn <i>wartan</i>	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Scallop flavour fish cake	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Surimi	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Comminuted	Surimi	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA



RIMP, Vietnam

a



RIMP, Vietnam

b



RIMP, Vietnam

c



RIMP, Vietnam

d



RIMP, Vietnam

e

### Processing of fried fish burger in Vietnam

- a. Filleting of by-catch
- b. Mincing of fillet
- c. Grinding and mixing by grinder
- d. Manual shaping of fish paste
- e. Fried fish burger

The products are normally packed in polyethylene bag, palm leaf, polystyrene tray covered with wrapping film, vacuum pack or wrapped up at time of sale to consumers. The shelf lives of these products range from a few days at 4-5 °C temperature to 3-12 months when frozen at -18 °C. Table 9 shows the different shelf lives when the products are stored at room temperatures, refrigerated temperatures, in ice or frozen.

Most countries did not indicate problems on this product except Brunei Darussalam which indicated strong competition from the imported products as their product quality is affected due to the lack of hygiene and sanitary practices in plants.

TABLE 9. STORAGE CONDITIONS & SHELF-LIFE OF COMMINUTED PRODUCTS

Category	Product	Country	Storage Conditions	Shelf-life
Comminuted	Breaded fish finger	SIN	Frozen at -18°C	6-12 months
Comminuted	Breaded squid ring	SIN	Frozen at -18°C.	6-12 months
Comminuted	Cuttlefish ball	MAL	Frozen at -20°C	6 months
Comminuted	Cuttlefish ball, finger, paste	SIN	Frozen at -18°C or below.	3-6 months
Comminuted	Cuttlefish sausage and cocktail	MAL	Frozen at -20°C	6 months.
Comminuted	Fish burger	MAL	Frozen at -20°C	6 months
Comminuted	Fish burger	PHI	Store at 2-3°C or -10°C.	1-3 months
Comminuted	Fish burger (boneless)	VIE	Refrigerated at 5°C	7 days
Comminuted	Fish burger (dehead)	VIE	Refrigerated at 5°C	7 days
Comminuted	Fish finger	THA	Refrigerated/frozen at -18°C	15 days/3-4 months
Comminuted	Fish noodle	THA	Room temp./refrigerator	3 / 7 days
Comminuted	Fish sausage	MAL	Frozen at -20°C	6 months
Comminuted	Fish sausage	VIE	Refrigerated at 5°C	3 days
Comminuted	Fishball	BRU	Refrigerator	1-3 days
Comminuted	Fishball	IND	Store in ice or refrigerator	1 week
Comminuted	Fishball	MAL	Refrigerator	5-7 days
Comminuted	Fishball	PHI	Stored at 5°C.	1-6 days
Comminuted	Fishball	THA	Store in ice or refrigerator	3-5 days
Comminuted	Fishballs, fishcakes, <i>chikuwa</i>	SIN	Refrigerated at 4°C	2-3 days
Comminuted	Fishcake	BRU	Refrigerator	1-2 weeks
Comminuted	Fishcake	MAL	Refrigerator	5-7 days
Comminuted	Imitation crabmeat	THA	Keep in freezer	3-5 months
Comminuted	Imitation crabsticks	SIN	Frozen at -18°C	6-12 months
Comminuted	Minced fish	THA	Store in ice	1-3 day
Comminuted	Native sausage	PHI	Stored at 5°C	1-6 days
Comminuted	<i>Otak-otak</i>	MAL	Refrigerator	3-5 days
Comminuted	Prawn ball, finger	SIN	Frozen at -18°C	6-12 months
Comminuted	Prawn burger	MAL	Frozen at -20°C	6 months
Comminuted	Prawn dumpling	MAL	Frozen at -20°C	3 months
Comminuted	Prawn sausage	MAL	Frozen at -20°C	6 months
Comminuted	Prawn <i>wantan</i>	MAL	Frozen at -20°C	3 months
Comminuted	Scallop flavour fish cake	MAL	Frozen at -20°C	6 months
Comminuted	Surimi	THA	Frozen at -18°C	3-5 months
Comminuted	Surimi	VIE	Frozen at -18°C	3 months

## Cured Products

Cured products have previously been documented and are produced and consumed in the Philippines. They are generally processed by pickling or salting without drying and is known in the Philippines as *Kench-style* cured fish. The fishes used are skipjack, herring, roundscad, sardine and mackerel. The data on the cost of the raw materials and products is not available

The ingredients used for processing the cured products are mainly fish and salt. The processing generally involves washing the raw materials and saturating it with salt. It is then washed with 2% salt. The salt water is drained away before packing the fish in wooden boxes. It is packed in layers of fish and salt. The equipment used are simple, viz. barrel, jar, pot or tank.



Pickled mussel

FTDI, DOF, Thailand



Cured mantis shrimps and small crabs sold in a local market.

FTDI, DOF, Thailand

The *Kench-style* cured fish is produced mainly for local consumption. Data for production and export volume is not available. The cured product is usually packed in glass bottles, wooden boxes or plastic containers. The shelf life of this product is about 2 -3 days at room temperature or 7 days at chilled condition. The product can be eaten after wet curing for 1 day.

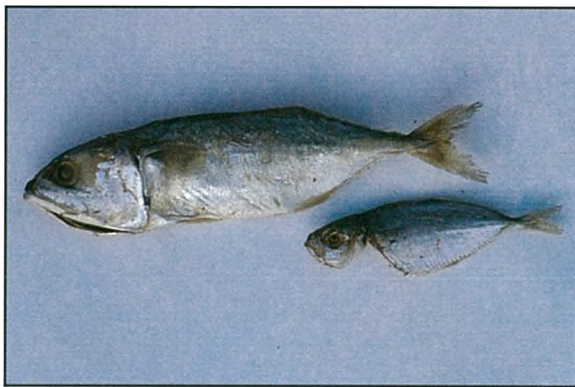
The problems encountered in this production are mainly concerned with handling and sanitation. This resulted in reddening, souring, salt burn or slimy products. The quality of the product can be improved looking into the methods of processing, handling, transportation, marketing and packaging.

In Thailand, cured fish products are in high demand but the supply of the raw material depends very much on its seasonal availability. This product is very popular in the coastal areas of the country.

## Dried Products

Dried product is one of the most widely processed and popular products in all the participating countries. The products are commonly described by most countries as salted dried product. They can be cooked in many ways such as deep or shallow fried, broiled, steamed or boiled before serving. For consumption, it can be used in soup, porridge, cooked with noodles, vegetables, meat and many local dishes.

The prices of raw materials vary widely - from 26 cents for jelly fish from Malaysia to a high price of \$106.38 for raw shark fin from Singapore. The price of shark fin as an end product is not available, but the price of dried products ranged from 71 cents for salted fish to \$14.49 for dried cuttlefish. Retail prices for raw materials and dried products are shown in Table 10.



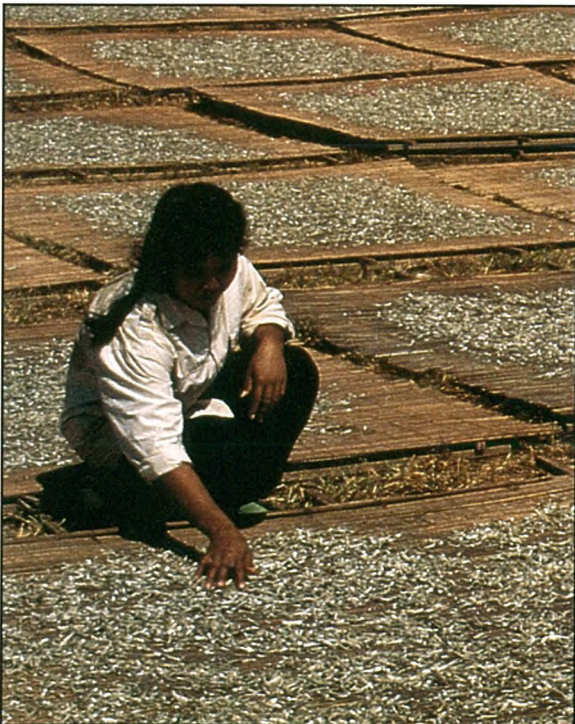
MFRD, Singapore

Dried salted fish



DOF, Malaysia

Sun-drying of fish



DOF, Malaysia

Sun-drying of anchovies



DOF, Malaysia

Sun-drying of cuttlefish

**TABLE 10. COST OF RAW MATERIALS AND DRIED PRODUCTS**

Category	Product	Local Name	Country	Cost (US\$/kg)	
				Raw Material	Dried Product
Dried	Abalone	<i>Bao ngu kho</i>	VIE	NA	NA
Dried	Abalone	<i>Sapas</i>	PHI	NA	NA
Dried	Anchovy	<i>Ikan bilis/ Bilis kering</i>	MAL	0.48	3.40
Dried	Anchovy	<i>Pusu kering</i>	IND	2.14 - 2.50	4.29 - 7.13
Dried	Barracuda	<i>Torcillo</i>	PHI	1.12	1.78
Dried	Big-eye scad	<i>Matambaka</i>	PHI	1.12	1.56
Dried	Blue mussel clam	<i>Trai vem kho</i>	VIE	NA	NA
Dried	Chilled-sour salted fish	<i>Liking</i>	BRU	0.48	3.56
Dried	Cockle	<i>Kerang kering</i>	MAL	NA	NA
Dried	Crevalle	<i>Salay-salay</i>	PHI	1.03	1.56
Dried	Cuttlefish	<i>Sotong kering</i>	MAL	1.86	14.49
Dried	Cuttlefish, skinned	<i>Muc Kho lot da</i>	VIE	NA	NA
Dried	Deep-bodied herring	<i>Lapad</i>	PHI	1.12	1.78
Dried	Fimbriated herring	<i>Tonsoy</i>	PHI	1.12	1.78
Dried	Fish	<i>Lalap</i>	BRU	5.92	4.42
Dried	Fish maw	<i>Bong ca kho</i>	VIE	NA	NA
Dried	Hairtail	<i>Balila</i>	PHI	1.12	1.56
Dried	Indian sardine	<i>Tamban</i>	PHI	1.56	2.01
Dried	Jelly fish	<i>Mang ka proon hang</i>	THA	NA	4.00 - 5.00
Dried	Jelly fish	<i>Sua Kho</i>	VIE	NA	NA
Dried	Jelly fish	<i>Ubur- ubur</i>	MAL	0.26	1.90
Dried	Lizard fish	<i>Kalaso</i>	PHI	1.03	1.56
Dried	Long tailed nemipterid	<i>Bisugo</i>	PHI	1.56	2.01
Dried	Mackerel	<i>Hasa-hasa, alumahan, tangigue</i>	PHI	NA	NA
Dried	Milkfish	<i>Daeng na bangus</i>	PHI	1.56	2.01 - 2.23
Dried	Oyster	<i>Hau kho</i>	VIE	NA	NA
Dried	Prawn	<i>Udang kering</i>	MAL	1.41	9.40
Dried	Roundscad	<i>Galonggong</i>	PHI	1.12	1.56
Dried	Salted dried fish, split	<i>Ca Kho mo phanh</i>	VIE	NA	NA
Dried	Salted dried fish, headed	<i>Ca kho khong dau</i>	VIE	NA	NA
Dried	Salted dried fish, whole	<i>Ca kho nguyen oon</i>	VIE	NA	NA
Dried	Salted fish	<i>Ikan kering/ masin</i>	MAL	NA	2.81
Dried	Salted fish	<i>Ikan masin</i>	BRU	NA	NA
Dried	Salted fish	<i>Kering / Asin</i>	IND	0.36 - 1.07	0.71 - 4.28
Dried	Salted fish	<i>Pla chom</i>	THA	0.50 - 3.00	2.80 - 10.00
Dried	Salted freshwater fish	<i>Pla cham</i>	THA	1.00 - 2.50	3.00 - 10.00
Dried	Scallop flesh	<i>Coi diep kho</i>	VIE	NA	NA
Dried	Sea cucumber	<i>Hai sam kho</i>	VIE	NA	NA
Dried	Sea cucumber	<i>Hai-sim</i>	SIN	5.69 - 18.97	NA
Dried	Sea horse	<i>Ca ngva kho</i>	VIE	NA	NA
Dried	Seasoned fish	<i>Ca thieu cho tam gia vi</i>	VIE	NA	NA
Dried	Shark fin	<i>Vay ca nham Kho</i>	VIE	NA	NA
Dried	Shark fin	<i>Vay ca nham Kho</i>	VIE	NA	NA
Dried	Shark fin	<i>He-chi</i>	SIN	53.19 - 106.38	NA
Dried	Shark fin	<i>Pinatuyong palikpik ng pating</i>	PHI	0.45 - 0.67	5.35 - 5.80
Dried	Shellfish	<i>Hoi hang</i>	THA	1.00 - 2.00	5 - 6
Dried	Shellfish	<i>Siput kering</i>	MAL	NA	NA
Dried	Shrimp	<i>Hibe</i>	PHI	1.34 - 1.56	2.68
Dried	Shrimp	<i>Khong hang</i>	THA	1.80 - 3.00	10.00 - 14.00
Dried	Shrimp	<i>Udang Kering</i>	BRU	NA	NA
Dried	Shrimp, peeled	<i>Tom Kho boc non</i>	VIE	NA	NA
Dried	Slipmouth	<i>Sap-sap</i>	PHI	1.12	1.78
Dried	Squid	<i>Pla muk hang</i>	THA	0.70 - 2.50	8.00 - 10.00
Dried	Squid	<i>Pusit</i>	PHI	2.23 - 2.68	8.02
Dried	Squid ring	<i>Muc Khoanh Kho tam gia vi</i>	VIE	NA	NA
Dried	Squid, whole	<i>Muc Kho nguyen con</i>	VIE	NA	NA
Dried	Squid, crimped	<i>Muc Kho tam gia vi</i>	VIE	NA	NA
Dried	Striped mackerel	<i>Alumanhan</i>	PHI	1.56	2.23
Dried	Urchin	<i>Cau gai kho</i>	VIE	NA	NA

The raw materials used are generally fish, shrimp and squid. Salt is commonly used to process the dried product. The processing involves mainly washing or cleaning of the raw materials, precooking, soaking with brine, boiling and finally drying. The dried products are then ready for sale and consumption.

It can be noted again that Indonesia produces the largest volume of salted fish products, and that this is an important product for local consumption. Details are shown together with the production and export figures of other countries in Table 11. The dried products are usually packed in polyethylene bags, hard cardboard boxes, wooden boxes, braided rattan/bamboo baskets, paper bags, sacks, barrels or containers during transportation. They are sometimes displayed at the retail outlets without packaging.



DOF, Malaysia

a



DOF, Malaysia

b



DOF, Malaysia

c



DOF, Malaysia

d

**Salted jelly fish processing**

- a. Fresh jelly fish
- b. Salting
- c. Draining of excess water
- d. Final product for export



TABLE 11. PRODUCTION & EXPORT VOLUME OF DRIED PRODUCTS (MT)

Category	Product	Country	Production Volume (MT)							Export Volume (MT)						
			1988	1989	1990	1991	1992	1993	1998	1989	1990	1991	1992	1993		
Dried	Abalone	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Abalone	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Anchovy	IND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Anchovy	MAL	10,689	7,510	4,175	8,929	4,719	NA	NA	NA	NA	NA	NA	NA		
Dried	Anchovy	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Barracuda	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Big-eye scad	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Blue mussel clam	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Chilled-sour salted fish	BRU	NA	NA	NA	NA	1.93	NA	NA	NA	NA	NA	NA	NA		
Dried	Cockle	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Crevalle	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Cuttlefish	MAL	102	121	327	47	44	164	111	265	132	122	39	NA		
Dried	Cuttlefish, skinned	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Deep-bodied herring	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Fimbriated herring	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Fish	BRU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Fish maw	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Hairtail	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Herring	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Indian sardine	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Jelly fish	MAL	781	367	668	186	332	178	556	1,475	2,254	2,370	2,276	NA		
Dried	Jelly fish	THA	18,352	15,888	13,882	54,957	102,168	NA	NA	NA	NA	NA	NA	NA		
Dried	Jelly fish	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Lizard fish	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Long tailed nemipterid	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Mackerel	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Milkfish	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Oyster	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Prawn	MAL	688	1,378	1,178	889	824	750	399	654	1,085	386	265	NA		
Dried	Roundsad	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Salted dried fish, split	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Salted dried fish, whole	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Salted dried fish, headed	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Salted fish	BRU	NA	NA	NA	25.2	2.09	1.71	NA	NA	NA	NA	NA	NA		
Dried	Salted fish	IND	409,557	439,550	430,872	445,724	480,687	537,363	8,740	8,520	10,050	12,360	18,620	NA		
Dried	Salted fish	MAL	6,785	4,735	5,137	6,657	4,111	4,288	548	286	237	214	133	NA		
Dried	Salted fish	THA	56,686	63,175	65,218	60,541	53,163	NA	14,543	17,866	22,553	19,426	18,953	NA		
Dried	Salted freshwater fish	THA	22,485	19,961	23,100	22,572	18,365	NA	NA	NA	NA	NA	NA	NA		
Dried	Scallop flesh	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Sea cucumber	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Sea cucumber	SIN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Sea cucumber	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Sea horse	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Seasoned fish	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Shark fin	STN	21	28	23	Nil	25	Nil	Nil	Nil	Nil	Nil	Nil	Nil		
Dried	Shark fin	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Shark fin	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Shellfish	MAL	13	13	10	26	32	8	61	102	116	6	56	NA		
Dried	Shellfish	THA	2,662	2,669	2,947	2,938	3,024	NA	NA	NA	NA	NA	NA	NA		
Dried	Shrimp	BRU	NA	NA	NA	25.2	2.09	1.71	NA	NA	NA	NA	NA	NA		
Dried	Shrimp	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Shrimp	THA	25,205	31,083	27,765	26,716	37,723	NA	4,340	2,681	2,748	2,251	3,322	NA		
Dried	Shrimp, peeled	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Slipmouth	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Squid	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Squid	THA	34,481	34,728	33,955	34,505	35,184	NA	4,903	3,901	2,765	3,402	2,430	NA		
Dried	Squid ring	VIE	NA	NA	NA	NA	NA	NA	4,213	3,171	5,814	9,500	20,135	NA		
Dried	Squid, crimped	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		
Dried	Squid, whole	VIE	NA	NA	NA	NA	NA	NA	4,213	3,171	5,814	9,500	20,135	NA		
Dried	Striped mackerel	PHI	NA	NA	NA	NA	NA	NA	4,213	3,171	5,814	9,500	20,135	NA		
Dried	Urchin	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA		

The shelf life of dried products depends on the condition of the final products e.g. the moisture content. Except for Brunei's dried chilled-sour fish which is semi-dried resulting in a shelf life 2-3 weeks, most of the dried products were reported to have a good shelf life of 6 to 12 months (Table 12). These dried products are commonly used in seafood dishes as they impart special flavours which are favoured by seafood connoisseurs.

**TABLE 12. STORAGE CONDITIONS & SHELF-LIFE OF DRIED PRODUCTS**

Category	Product	Country	Storage Conditions	Shelf-life
Dried	Abalone	PHI	Clean, cool and dry place	A few months
Dried	Abalone	VIE	Dry, well aired place at room temperature	2 months
Dried	Anchovy	IND	Cool, dry place	6 months
Dried	Anchovy	MAL	Cool dry place	1-6 months
Dried	Anchovy	PHI	Room temperature / 10 -18°C	9-25 weeks
Dried	Barracuda	PHI	Clean, dry, cool place	A few months
Dried	Big-eye scad	PHI	Clean, dry, cool place	A few months
Dried	Blue mussel clam	VIE	Dry, well aired place at room temperature	2 months
Dried	Chilled-sour salted fish	BRU	Cool dry place	2-3 weeks
Dried	Cockle	MAL	Cool dry place	1-6 months
Dried	Crevalle	PHI	Clean, dry, cool place	A few months
Dried	Cuttlefish	MAL	Cool dry place	1-6 months
Dried	Cuttlefish, skinned	VIE	Dry, well aired place at room temperature	12 months
Dried	Deep-bodied herring	PHI	Clean, cool and dry place	A few months
Dried	Fimbriated herring	PHI	Clean, dry, cool place	A few months
Dried	Fish	BRU	Cool and dry place	1 month
Dried	Fish maw	VIE	Dry, well aired place at room temperature	12 months
Dried	Hairtail	PHI	Store in clean, dry, cool place	A few months
Dried	Herring	PHI	Room temperature / 10 -18°C	9-25 weeks
Dried	Indian sardine	PHI	Store in clean, dry, cool place	A few months
Dried	Jelly fish	MAL	Cool dry place	1-6 months
Dried	Jelly fish	THA	Room temperature with ventilated area	3-6 months
Dried	Jelly fish	VIE	Dry, well aired place at room temperature	3 months
Dried	Lizard fish	PHI	Clean, dry, cool place	A few months
Dried	Long tailed nemipterid	PHI	Clean, dry, cool place	A few months
Dried	Mackerel	PHI	Room temperature / 10 -18°C	9-25 weeks
Dried	Milkfish	PHI	Room temperature or refrigeration	42 or 49 days respectively
Dried	Oyster	VIE	Dry, well aired place at room temperature	2 months
Dried	Prawn	MAL	Cool dry place	3-6 months
Dried	Roundscad	PHI	Clean, dry, cool place	A few months
Dried	Salted dried fish, split	VIE	Dry place at room temperature	6 months
Dried	Salted dried fish, whole	VIE	Dry place at room temperature	2 months
Dried	Salted dried fish, headed	VIE	Dry place at room temperature	12 months
Dried	Salted fish	BRU	Cool dry place	2-3 months
Dried	Salted fish	IND	Room temperature	2-3 months
Dried	Salted fish	MAL	Cool dry place	6 months
Dried	Salted fish	THA	Room temperature with ventilated area	3-6 months
Dried	Salted freshwater fish	THA	Chilled room or ventilated room temperature	3-6 or 1-3 months respectively
Dried	Scallop flesh	VIE	Dry, well aired place at room temperature	2 months
Dried	Sea cucumber	PHI	Room temperature / Keep refrigerated	6 months
Dried	Sea cucumber	SIN	Keep in cool dry place at room temperature	Indefinite
Dried	Sea cucumber	VIE	Dry, well aired place at room temperature	2 months
Dried	Sea horse	VIE	Dry, well aired place at room temperature	6-12 months
Dried	Seasoned fish	VIE	Dry place at room temperature	6 months
Dried	Shark fin	PHI	Clean, dry, cool place	A few months
Dried	Shark fin	SIN	Cool dry place at room temperature	Indefinite
Dried	Shark fin	VIE	Dry, well aired place at room temperature	12 months
Dried	Shellfish	MAL	Cool dry place	1-6 months
Dried	Shellfish	THA	Well ventilated room	3-6 months
Dried	Shrimp	BRU	Cool dry place	2-3 months
Dried	Shrimp	PHI	Clean, dry, cool place	A few months
Dried	Shrimp	THA	Chilled room or ventilated room temperature	3-6 or 1-3 months respectively
Dried	Shrimp, peeled	VIE	Dry, well aired place at room temperature	2 months
Dried	Slipmouth	PHI	Clean, dry, cool place	A few months
Dried	Squid	PHI	Clean, dry, cool place	A few months
Dried	Squid	THA	Well ventilated room	3-6 months
Dried	Squid ring	VIE	Dry place at room temperature	12 months
Dried	Squid, crimped	VIE	Dry, well aired place at room temperature	12 months
Dried	Squid, whole	VIE	Dry, well aired place at room temperature	12 months
Dried	Striped mackerel	PHI	Clean, dry, cool place	A few months
Dried	Urchin	VIE	Dry, well aired place at room temperature	NA



MFRD, Singapore

Dried anchovies sold in a market



FTDI, DOF, Thailand

Traditional fish products for export

## Fermented Products

Fermented products are processed in all countries surveyed except Singapore. The products are generally processed by the addition of salt to fish or shrimp or the liquefaction of fish, which is then allowed to ferment. This will result in the production of fermented fish, fish paste or shrimp paste; fermentation of the liquefaction of fish will give rise to fish sauce. The fermented products can be eaten with rice, cooked with vegetables, prepared with onion, chill, spices or used in other ways. The lowest cost of raw material cost is 20 cents for fish sauce from Thailand and the end products range from \$0.20-1.20 per 750 ml-bottle of fish sauce. Reported retail prices are shown in Table 13.

TABLE 13. COST OF RAW MATERIALS AND FERMENTED PRODUCTS.

Category	Product	Local Name	Country	Cost (US\$/kg)	
				Raw Material	Fermented Product
Fermented	Acidified shrimp	<i>Tom chua</i>	VIE	NA	NA
Fermented	Anchovy	<i>Budu</i>	MAL	0.37	NA
Fermented	Fish	<i>Pla chao</i>	THA	NIL	NIL
Fermented	Fish	<i>Products Borong Isda</i>	PHI	NA	NA
Fermented	Fish	<i>Pla-ra</i>	THA	0.50 - 2.50	1.50 - 4.00
Fermented	Fish	<i>Pla som , Pla jom, Som fak</i>	THA	NIL	NIL
Fermented	Fish	<i>Budu Ikan</i>	BRU	NA	1.07
Fermented	Fish	<i>Peda</i>	IND	0.79	1.00
Fermented	Fish sauce powder	<i>Nuoc mam</i>	VIE	NA	NA
Fermented	Fish meal	<i>Bot ca</i>	VIE	NA	NA
Fermented	Fish paste	<i>Terasi (belachan)</i>	IND	0.64	3.93
Fermented	Fish sauce	<i>Kecap ikan</i>	IND	0.79	0.93
Fermented	Fish sauce	<i>Patis</i>	PHI	0.89 - 1.12	0.45
Fermented	Fish sauce	<i>Budu ( Muslim sauce)</i>	THA	0.20 - 0.40	0.80 - 1.20
Fermented	Fish sauce	<i>Nam Pla</i>	THA	0.20 - 0.40	0.20 - 1.00 / 750 ml-bottle
Fermented	Fish stomach	<i>Budu perut ikan</i>	BRU	NA	1.07
Fermented	Milkfish	<i>Bangus</i>	PHI	NA	NA
Fermented	Mussel	<i>Budu Kupang</i>	BRU	NA	1.07
Fermented	Pickled prawn	<i>Cincajuk</i>	MAL	0.61	NA
Fermented	Pickled shrimp	<i>Cincajuk</i>	BRU	0.91	1.07
Fermented	Prawn paste	<i>Otak udang</i>	MAL	NA	NA
Fermented	Salted Fish Patis	<i>Patis</i>	PHI	NA	NA
Fermented	Shrimp paste	<i>Belacan</i>	BRU	0.91	6.38
Fermented	Shrimp paste	<i>Belacan</i>	MAL	0.22	2.04
Fermented	Shrimp paste	<i>Kapi</i>	THA	0.80 - 1.0	4.0 - 8.0
Fermented	Shrimp paste	<i>Bagoong alamang</i>	PHI	0.45	0.89
Fermented	Stiff shrimp paste	<i>Mam tom dec</i>	VIE	NA	NA
Fermented	Weak shrimp suspension	<i>Mam tom loang</i>	VIE	NA	NA



DOF, Malaysia

Fermentation of fish sauce, a traditional product.



FTDI,DOF, Thailand

a



FTDI,DOF, Thailand

e



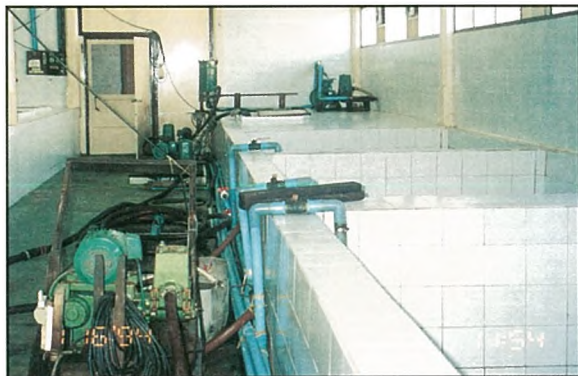
FTDI,DOF, Thailand

b



FTDI,DOF, Thailand

f



FTDI,DOF, Thailand

c



FTDI,DOF, Thailand

g



FTDI,DOF, Thailand

d



FTDI,DOF, Thailand

h

**Commercial production of fish sauce**

- a. Marine salt.
- b. Fish sauce in fermentation tanks.
- c. Pumping of filtered fish sauce.
- d. Blending of fish sauce with sugar.
- e. Mechanical washing of bottles.
- f. Filling of fish sauce by machine.
- g. Packing line.
- h. Packing for distribution.

The raw materials used are shrimp, prawn, mussel and fish e.g. anchovy (*Stolephorous spp.*), sardine (*Sardinella spp.*) and mackerel. The processing of these fermented products begins with washing the raw material and draining away liquid. The material is mixed with salt and fried rice powder. Depending on types of products, the mixture are packed in plastic bags, bamboo baskets, wooden tubs; and allowed to ferment at room temperature. They can also be sun-dried or left to ferment in fermenting vat, earthenware jar, concrete tank, plastic drum, oil drum or oil can.

Fermented fish products are popular and consumed widely in all the ASEAN countries and are very important in this market. However, there is an increasing trend in the export of this product especially in Indonesia, Thailand and Malaysia. The production and export volumes of various fermented product are shown in Table 14.



DOF, Malaysia

Cottage industry for fish sauce fermentation.



DOF, Malaysia

An example of Vietnamese bottled fish sauce.

**TABLE 14 . PRODUCTION & EXPORT VOLUME OF FERMENTED PRODUCTS (MT)**

Category	Product	Country	Production Volume (MT)										Export Volume (MT)								
			1988	1989	1990	1991	1992	1993	1988	1989	1990	1991	1992	1993							
Fermented	Acidified shrimp	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Fermented	Anchovy	MAL	86	199	515	158	196	134	2	18	28	28	28	28	28	28	28	28	28	45	
Fermented	Fish	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish ( <i>Pla chao</i> )	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish ( <i>Pla-ra</i> )	THA	8,629	11,446	11,550	5,436	6,304	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish ( <i>Pla som, pla jom, som fak</i> )	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish	BRU	NA	NA	NA	7.0	7.24	2.21	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish	IND	4,746	10,724	7,960	5,220	9,008	7,891	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Fermented	Fish sauce	VIE	NA	NA	105,076 *	136,200 *	143,552 *	150,000 *	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish meal	VIE	NA	NA	1856	8000	25470	14200	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	14,000	14,000
Fermented	Fish paste	IND	18,560	22,054	31,029	16,792	18,283	22,323	NA	1,169,190	291,980	2,879,500	4,649,558	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish sauce	IND	1,854	1,920	1,481	1,684	1,941	424	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish sauce	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish sauce ( <i>Budu</i> )	THA	251	347	359	368	352	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish sauce ( <i>Nam Pla</i> )	THA	65,068	63,964	68,239	53,420	78,851	NA	12,017	13,203	16,002	17,152	18,968	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Fish stomach	BRU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Milkfish	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Mussel	BRU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Pickled prawn	MAL	69	34	43	41	65	52	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Pickled shrimp	BRU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Prawn paste	MAL	178	68	16	2	5	3	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Salted fish Patis	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Shrimp paste	BRU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Shrimp paste	MAL	3,956	4,456	4,559	3,791	5,057	4,570	7,043	4,410	4,467	7,026	8,337	5,693	5,693	5,693	5,693	5,693	5,693	5,693	5,693
Fermented	Shrimp paste	THA	23,019	24,400	23,100	21,800	24,000	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Shrimp paste	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Stiff shrimp paste	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fermented	Weak shrimp suspension	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

\* in liters



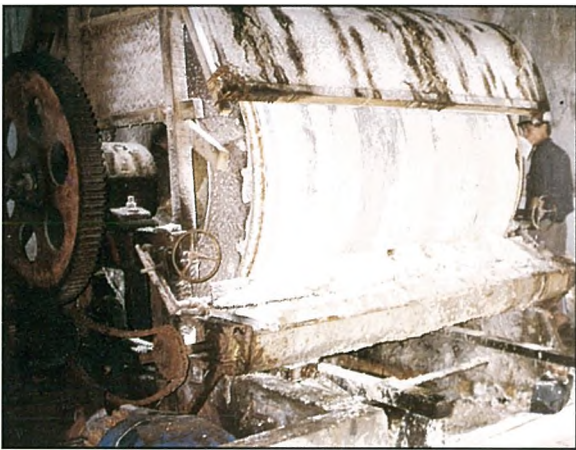
RIMP, Vietnam

a



RIMP, Vietnam

b



RIMP, Vietnam

c



RIMP, Vietnam

d



RIMP, Vietnam

e

**Production of fish sauce powder in Vietnam**

- a. Boiling of fermented fish in two-layer boiler.
- b. Concentrated fish sauce after boiling.
- c. Roller drying of concentrated fish sauce.
- d. Packing of fish sauce powder.
- e. Final product for distribution.



The fermented products are packed in glass bottles, jars or cans, polyethylene bags, glazed earthenware pots, bamboo baskets, tins, banana leaves or plastic boxes. The shelf life of fermented products varies, depending on the product, from 1-3 weeks e.g. fermented fish, fish stomach and mussel from the Philippines, to 12 months e.g. fermented fish sauce. The shelf life of other fermented products and the conditions of their storage is shown in Table 15.

**TABLE 15. STORAGE & SHELF-LIFE OF FERMENTED PRODUCTS**

Category	Product	Country	Storage Conditions	Shelf-life
Fermented	Acidified shrimp	VIE	Room temperature, ventilated dry place	30 days
Fermented	Anchovy	MAL	NA	NA
Fermented	Fish	PHI	Room temperature	1-3 weeks
Fermented	Fish	THA	Room temperature at 29 - 33 <sup>o</sup> C	2 - 3 months
Fermented	Fish	PHI	Room temperature	1-3 weeks
Fermented	Fish	THA	Room temperature at 28 - 35 <sup>o</sup> C	1 - 3 years
Fermented	Fish	THA	Room temperature at 29 - 33 <sup>o</sup> C	2 - 3 weeks
Fermented	Fish	BRU	Cool dry place	3- 4 weeks
Fermented	Fish	IND	Room temperature	2 weeks
Fermented	Fish	PHI	Room temperature	1-3 weeks
Fermented	Fish meal	VIE	Room temperature, ventilated dry place	6 months
Fermented	Fish paste	IND	Cool, dry place at room temperature	3 months
Fermented	Fish sauce	IND	Room temperature	1 year
Fermented	Fish sauce	PHI	Store in a clean, dry place	6 - 12 months
Fermented	Fish sauce	THA	Cool dry place	1 - 3 years
Fermented	Fish sauce	VIE	Room temperature, ventilated dry place	3 - 4 months
Fermented	Fish stomach	BRU	Cool dry place	NA
Fermented	Milkfish	PHI	Room temperature	1-3 weeks
Fermented	Mussel	BRU	Cool dry place	NA
Fermented	Pickled prawn	MAL	Cool dry place	1-2 months
Fermented	Pickled shrimp	BRU	Cool dry place	1 month
Fermented	Prawn paste	MAL	Cool dry place	6 months
Fermented	Salted Fish Patis	PHI	Room temperature	6-12 months
Fermented	Shrimp paste	BRU	Freezer	6 months
Fermented	Shrimp paste	MAL	Cool dry place	6 months
Fermented	Shrimp paste	THA	Room temperature at 29 - 30 <sup>o</sup> C	12 - 18 months
Fermented	Shrimp paste	PHI	Store in a clean, dry place	3 weeks to 6 months
Fermented	Stiff shrimp paste	VIE	Room temperature, ventilated dry place	6 months
Fermented	Weak shrimp suspension	VIE	Room temperature, ventilated dry place	6 months



Fermented shrimp for marketing

DOF, Malaysia



a

RIMP, Vietnam



b

Fish sauce powder in Vietnam

a. Wholesale  
b. Retail

## Fish Meal

Fish meal are produced in Singapore, Thailand and the Philippines. The fish meal are used as animal feed and fertilizer. It is generally produced as a fish powder made from trash fish/ trawl by-catch or from sardines. The raw material used, is between 8 and 14 cents - the cheapest and narrowest range recorded. Fish meal cost between 43 and 86 cents. The prices are shown in Table 16.

**TABLE 16. COST OF RAW MATERIALS AND FISH MEALS**

Category	Product	Local Name	Country	Cost (US\$/kg)	
				Raw Materials	Fish Meal Product
Fish meal	Animal feed	NA	PHI	NA	NA
Fish meal	Animal feed	Nil	SIN	0.08	0.43
Fish meal	Animal feed	<i>Pla pon</i>	THA	0.08 - 0.12	0.51 - 0.67
Fish meal	Fish	<i>Tepung ikan</i>	MAL	NA	NA
Fish meal	Fish manure	<i>Ikan bajar</i>	MAL	NA	NA
Fish meal	Fish powder	<i>Tepung ikan</i>	IND	0.14	0.86

The raw materials used are trash fish or trawl by-catch and scraps from fish processing plants. The production includes process of washing, cooking or boiling, pressing, crushing, drying, mincing and packing. The production and export data are shown in Table 17.

**TABLE 17. PRODUCTION & EXPORT VOLUME OF FISH MEALS (MT)**

Category	Product	Country	Production Volume (MT)						Export Volume (MT)					
			1988	1989	1990	1991	1992	1993	1988	1989	1990	1991	1992	1993
Fish meal	Animal feed	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fish meal	Animal feed	SIN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fish meal	Animal feed	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Fish meal	Fish	MAL	43197	41082	43019	39968	43248	44715	4120	8381	8390	8782	6407	6896
Fish meal	Fish manure	MAL	5979	20993	20046	10711	11705	10666	17	0	0	0	20	0
Fish meal	Fish powder	IND	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The products are usually packed in gunny sack, kraft bag, jute bag, plastic or black-linen sack. The shelf life of products range from 4 to 6 months. Table 18 shows the shelf life of fish meals.

**TABLE 18. STORAGE CONDITIONS & SHELF-LIFE OF FISH MEALS**

Category	Product	Country	Storage Conditions	Shelf-life
Fish meal	Animal feed	PHI	Cool, dry place	6 months
Fish meal	Animal feed	THA	Well ventilated storage room	6 months
Fish meal	Animal feed	SIN	Room temperature	4 - 5 months
Fish meal	Fish	MAL	NA	NA
Fish meal	Fish manure	MAL	NA	NA
Fish meal	Fish powder	IND	Room temperature	More than 1 year

## Frozen Products

Frozen products are produced and exported from all the participating countries except Brunei Darussalam. Vietnam has a wide range of frozen products available. The frozen products are processed before they are quick frozen in blocks or individually. They are boiled, fried, steamed, pickled or cooked in various ways before serving. The retail price of some of the frozen products is shown in Table 19.

**TABLE 19. COST OF RAW MATERIALS AND FROZEN PRODUCTS**

Category	Product	Local Name	Country	Cost (US\$/kg)	
				Raw Material	Frozen Product
Frozen	Blue swimmer block	<i>ghe uop dong block</i>	VIE	NA	NA
Frozen	Cockle	<i>So huyet dong lanh</i>	VIE	NA	NA
Frozen	Comb-cuttlefish	<i>Muc luoc</i>	VIE	NA	NA
Frozen	Cooked oyster	<i>Ngheu ngao dong lanh</i>	VIE	NA	NA
Frozen	Cooked prawn	<i>Sia</i>	SIN	NA	NA
Frozen	Cooked shrimp	<i>Kung tom chae kang</i>	THA	2.00 - 5.00	NA
Frozen	Cooked shrimp IQF	<i>Tom dong luoc IQF</i>	VIE	NA	NA
Frozen	Cuttlefish edge block	<i>Reo muc block</i>	VIE	NA	NA
Frozen	Cuttlefish head block	<i>Dau muc dong lanh block</i>	VIE	NA	NA
Frozen	Cuttlefish wing block	<i>Diem muc block</i>	VIE	NA	NA
Frozen	Cuttlefish	<i>Sotong beku</i>	MAL	NA	NA
Frozen	Cuttlefish	<i>Muck kra dong chae kang</i>	THA	2.00	NA
Frozen	Cuttlefish and squid	<i>Pusit</i>	PHI	NA	NA
Frozen	Dipped shrimp	<i>Tom nhung</i>	VIE	NA	NA
Frozen	Eel IQF	<i>Luon dong IQF</i>	VIE	NA	NA
Frozen	Farciéd crab	<i>Cus nhoi</i>	VIE	NA	NA
Frozen	Farciéd cuttlefish	<i>Muc nhoi</i>	VIE	NA	NA
Frozen	Farciéd swimming crab	<i>Ghe nhoi</i>	VIE	NA	NA
Frozen	Fillet cuttlefish	<i>Muc phile dong lanh block</i>	VIE	NA	NA
Frozen	Fish	<i>Ikan beku</i>	MAL	NA	NA
Frozen	Fish	<i>Pla chae kang</i>	THA	1.60 - 3.60	NA
Frozen	Fish fillet	<i>He-pian</i>	SIN	NA	NA
Frozen	Fish fillet	<i>File ca dong</i>	VIE	NA	NA
Frozen	Fish, shrimp, squid.	<i>Produk keleu</i>	IND	0.79, 12.12, 2.85	3.57, 39.22, 10.70
Frozen	Headed fish IQF	<i>Ca bo dau IQF</i>	VIE	NA	NA
Frozen	Headed shrimp block	<i>Tomdong block bo dau</i>	VIE	NA	NA
Frozen	Pineal cuttlefish IQF	<i>Muc trai thong</i>	VIE	NA	NA
Frozen	Milkfish	<i>Bangus</i>	PHI	2.01 - 2.23	NA
Frozen	Shrimp block	<i>Tom Block nan thang</i>	VIE	NA	NA
Frozen	Octopus	<i>Huek sai chae kang</i>	THA	1.00 - 1.40	NA
Frozen	Octopus block	<i>Bach tuoc uop dong</i>	VIE	NA	NA
Frozen	Peeled shrimp block	<i>Tom dong nguyen con</i>	VIE	NA	NA
Frozen	Prawn	<i>Udang beku</i>	MAL	NA	NA
Frozen	Prawn	<i>Sia</i>	SIN	2.13 - 13.30	5.32 - 18.62
Frozen	Prawn meat	<i>Sia</i>	SIN	NA	NA
Frozen	Raw shrimp	<i>Kung sod chae kang</i>	THA	5.20 - 10.00	NA
Frozen	<i>Sai gon</i> rolled burger	<i>Nem Sai gon</i>	VIE	NA	NA
Frozen	Scallop block	<i>Diep block</i>	VIE	NA	NA
Frozen	Seafood mix	<i>Seafood mix</i>	VIE	NA	NA
Frozen	Shellfish	<i>Hoy chae kang</i>	THA	0.40 - 0.80	NA
Frozen	Shrimp and prawn	<i>Suahe Sugpo</i>	PHI	NA	NA
Frozen	Shrimp <i>bisen</i>	<i>Tom Bisen</i>	VIE	NA	NA
Frozen	Skewered broiled shrimp	<i>Chao tom</i>	VIE	NA	NA
Frozen	Squid	<i>Muek kuay chae kang</i>	THA	0.80 - 2.00	NA
Frozen	Squid ring IQF	<i>Muc ong cat khoanh</i>	VIE	NA	NA
Frozen	Squid, cuttlefish	<i>Sotong</i>	SIN	1.60 - 2.66	5.32 - 7.98
Frozen	Swimming crab roe block	<i>Gach nhe</i>	VIE	NA	NA
Frozen	Tuna	<i>Tanguigui</i>	PHI	NA	NA
Frozen	Urchin block	<i>Cau gai uop dong</i>	VIE	NA	NA
Frozen	Whole cuttlefish block	<i>Muc dong nguyen con</i>	VIE	NA	NA
Frozen	Whole cuttlefish IQF	<i>Muc nguyen con IQF</i>	VIE	NA	NA
Frozen	Whole fish	<i>He</i>	SIN	NA	NA
Frozen	Whole fish gutted IQF	<i>Ca nguyen con bo ruot IQF</i>	VIE	NA	NA
Frozen	Whole shrimp block	<i>Tom dong nguyen con</i>	VIE	NA	NA
Frozen	Whole skinned cuttlefish block	<i>Muc lot da nguyen con uop dong</i>	VIE	NA	NA

The fishes processed are generally red snapper, painted sweetlip grant, malabar snapper, tilapia, catfish, dory, shark, sword fish, tuna, red mullet, grouper, mackerel, pomfret and seabream. The shrimps used are white shrimp, pink shrimp, black tiger shrimp and sand shrimp. Octopus and cuttlefish are one of the main frozen products. The raw materials are cleaned, cut/filletted, raw or cooked, packed and finally frozen by air-blast, contact or IQF freezer. The volume of frozen products tended to increase. Frozen products can be stored for a year, and supports a significant move towards export, while at home frozen products are also gaining in acceptance with consumers. The production and export volume of frozen products are shown in Table 20.



RIMP, Vietnam

a



RIMP, Vietnam

b



RIMP, Vietnam

c



RIMP, Vietnam

d

**Frozen products in Vietnam**

- a. Seafood mix IQF.
- b. Block seafood mix.
- c. IQF pineal cuttlefish.
- d. Frozen blue swimming crab

TABLE 20. PRODUCTION &amp; EXPORT VOLUME OF FROZEN PRODUCTS (MT)

Category	Product	Country	Production Volume (MT)					Export Volume (MT)							
			1988	1989	1990	1991	1992	1993	1988	1989	1990	1991	1992	1993	
Frozen	Blue swimmer block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Frozen	Cockle	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Frozen	Comb-cuttlefish	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Frozen	Frozen oyster	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Frozen	Cooked prawn	SIN	421	566	1549	1703	1038	1547	1420	1038	1420	1038	394	394	
Frozen	Cooked shrimp	THA	100,397	127,877	201,367	133,220	188,530	84,719	74,298	130,519	121,241	130,519	148,886	148,886	
Frozen	Cooked shrimp IQF	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Cuttlefish edge block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Cuttlefish head block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Cuttlefish wing block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Cuttlefish	MAL	510	158	716	582	749	3,299	10,012	10,181	11,044	10,181	16,181	16,181	
Frozen	Cuttlefish, squid	THA	82,797	103,125	190,523	92,458	105,760	61,992	69,053	62,460	63,404	63,404	58,256	58,256	
Frozen	Dipped shrimp	PHI	NA	NA	NA	NA	NA	2,993	2,989	151	74	NA	NA	61	
Frozen	Eel IQF	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Farced crab	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Farced cuttlefish	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Farced Swimming crab	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Fillet cuttlefish	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Fish	MAL	142,925	208,571	217,218	120	460	14,071	21,715	23,188	20,339	23,867	19,309	19,309	
Frozen	Fish fillet	THA	3985	4610	7054	7938	8464	3,696	3,227	6,745	6,583	7,578	7,578	281,583	
Frozen	Fish fillet	SIN	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Fish, shrimp, squid.	VIE	71,488	79,150	71,020	71,073	138,564	104,038	132,997	178,660	204,082	213,551	274,998	274,998	
Frozen	Headed fish IQF	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Headed shrimp block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Headed shrimp IQF	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Pineal cuttlefish IQF	PHI	NA	NA	NA	NA	NA	1,552	1,287	805	357	536	563	563	
Frozen	Milkfish	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Shrimp block (PTO)	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Shrimp block	THA	82,797	103,125	190,523	92,458	105,760	58,764	69,053	61,992	62,460	63,404	58,256	58,256	
Frozen	Octopus block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Peeled shrimp block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Prawn	MAL	6,546	3,019	3,107	1,999	1,974	9,199	10,371	11,377	13,649	13,185	11,001	11,001	
Frozen	Prawn	SIN	2088	2049	2611	3844	3230	1,511	1,537	2,141	3,735	2,936	3,394	3,394	
Frozen	Prawn meat	SIN	Nil	Nil	55	21	26	Nil	Nil	41	10	16	51	51	
Frozen	Raw shrimp	THA	100,397	127,877	201,367	133,220	188,530	84,719	74,298	130,519	121,241	130,519	148,886	148,886	
Frozen	Sai gon rolled burger	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Scallop block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Seafood mix	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Shellfish	THA	19,214	19,972	27,846	3,184	58,900	NA	NA	NA	NA	NA	NA	NA	
Frozen	Shrimp bisert	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Shrimp, prawn	PHI	NA	NA	NA	NA	NA	23,536	26,052	24,446	30,272	23,601	22,206	22,206	
Frozen	Skewered broiled shrimp	VIE	NA	NA	NA	NA	NA	58,764	69,053	61,992	62,460	63,404	58,256	58,256	
Frozen	Squid	THA	82,797	103,125	190,523	92,458	105,760	NA	NA	NA	NA	NA	NA	NA	
Frozen	Squid ring IQF	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Squid, cuttlefish	SIN	1070	1110	1,768	2,356	1,387	948	962	1,472	898	779	3,538	3,538	
Frozen	Swimming crab roe block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Tuna	PHI	NA	NA	NA	NA	NA	10,242	9,402	9,624	18,847	16,414	24,563	24,563	
Frozen	Urchin block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Whole cuttlefish block	VIE	NA	NA	NA	NA	NA	2,412	2,918	4,800	4,350	4,877	7,050	7,050	
Frozen	Whole cuttlefish IQF	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Whole fish	SIN	1929	6913	9875	5302	5331	1,584	2,766	7,659	3,694	3,254	3,165	3,165	
Frozen	Whole fish deintestine IQF	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Whole shrimp block	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	
Frozen	Whole skinned cuttlefish block	VIE	NA	NA	NA	NA	NA	25,192	23,624	94,000	40,058	38,795	55,680	55,680	



RIMP, Vietnam

a



RIMP, Vietnam

b

### Processing of frozen crabs

- a. Washing and dressing.
- b. Packaged final product for distribution.

The products are usually packed in polyethylene bags, cardboard boxes or small plastic trays. They are stored at -18°C with shelf life of 6 to 12 months except Vietnam which indicated a short shelf life of 2 to 3 weeks at the same temperature of some frozen products, as shown in Table 21. Respondent countries indicated that there was no problem on the production of frozen products.

**TABLE 21. STORAGE CONDITIONS & SHELF-LIFE OF FROZEN PRODUCTS**

Category	Product	Country	Storage Conditions	Shelf-life
Frozen	Blue swimmer block	VIE	-18°C	6 months
Frozen	Cockle	VIE	-18°C	6 months
Frozen	Comb-cuttlefish	VIE	-18°C	6 months
Frozen	Cooked oyster	VIE	-18°C	6 months
Frozen	Cooked prawn	SIN	-18°C	6-12 months
Frozen	Cooked shrimp	THA	-18°C	12 months
Frozen	Cooked shrimp IQF	VIE	-18°C	6 months
Frozen	Cuttlefish edge block	VIE	-18°C	6 months
Frozen	Cuttlefish head block	VIE	-18°C	6 months
Frozen	Cuttlefish wing block	VIE	-18°C	6 months
Frozen	Cuttlefish	MAL	-18°C	12 months
Frozen	Cuttlefish	THA	-18°C	12 months
Frozen	Cuttlefish, squid	PHI	-18°C	6-12 months
Frozen	Dipped shrimp	VIE	-18°C	6 months
Frozen	Eel IQF	VIE	-18°C	6 months
Frozen	Farcied crab	VIE	-18°C	2 weeks
Frozen	Farcied cuttlefish	VIE	-18°C	2 weeks
Frozen	Farcied swimming crab	VIE	-18°C	6 months
Frozen	Fillet cuttlefish	VIE	-18°C	6 months
Frozen	Fish	MAL	-18°C	12 months
Frozen	Fish	THA	-18°C	12 months
Frozen	Fish fillet	SIN	-18°C	6-12 months
Frozen	Fish fillet	VIE	-18°C	6 months
Frozen	Fish, shrimp, squid.	IND	-18°C	1 year
Frozen	Headed fish IQF	VIE	-18°C	6 months
Frozen	Headed shrimp block	VIE	-18°C	6 months
Frozen	Pineal cuttlefish IQF	VIE	-18°C	6 months
Frozen	Milkfish	PHI	-18°C	6-12 months
Frozen	Shrimp block	VIE	-18°C	6 months
Frozen	Octopus	THA	-18°C	12 months
Frozen	Octopus block	VIE	-18°C	6 months
Frozen	Peeled shrimp block	VIE	-18°C	6 months
Frozen	Prawn	MAL	-18°C	12 months
Frozen	Prawn	SIN	-18°C	6-12 months
Frozen	Prawn meat	SIN	-18°C	6-12 months
Frozen	Raw shrimp	THA	-18°C	12 months
Frozen	<i>Sai gon</i> rolled burger	VIE	-18°C	3 weeks
Frozen	Scallop block	VIE	-18°C	6 months
Frozen	Seafood mix	VIE	-18°C	6 months
Frozen	Shellfish	THA	-18°C	12 months
Frozen	Shrimp <i>bisen</i>	VIE	-18°C	6 months.
Frozen	Shrimp, prawn	PHI	-18°C	6-12 months.
Frozen	Skewered broiled shrimp	VIE	-18°C	2 weeks
Frozen	Squid	THA	-18°C	12 months
Frozen	Squid ring IQF	VIE	-18°C	6 months
Frozen	Squid, cuttlefish	SIN	-18°C	6-12 months
Frozen	Swimming crab roe block	VIE	-18°C	6 months
Frozen	Tuna	PHI	-18°C	6-12 months.
Frozen	Urchin block	VIE	-18°C	6 months
Frozen	Whole cuttlefish block	VIE	-18°C	6 months
Frozen	Whole cuttlefish IQF	VIE	-18°C	6 months
Frozen	Whole fish	SIN	-18°C	6-12 months
Frozen	Whole fish deintestine IQF	VIE	-18°C	6 months
Frozen	Whole shrimp block	VIE	-18°C	6 months
Frozen	Whole skinned cuttlefish block	VIE	-18°C	6 months

## Powdered Products

Powdered products are processed only in Malaysia, Thailand and Vietnam. They are also known as floss, granulated/flaked products or fish concentrate. They are made from by-products of dried prawn or the mince from shark, ray (*Dasyatis* spp.), snapper (*Lutianus* SIJP.), or threadfin bream and mixed with ingredients to taste. They are served with bread or rice, used in soup or as a snack. The prices of raw material and the end product fish floss from Thailand are 46 cents and \$5.31 respectively, as shown in Table 22.

**TABLE 22. COST OF RAW MATERIALS AND POWDERED PRODUCTS**

Category	Product	Local Name	Country	Cost (US\$/kg)	
				Raw Material	Final Product
Powdered	Fish concentrate	<i>Nuoc mam co dang bot</i>	VIE	NA	NA
Powdered	Fish floss	<i>Pla yong</i>	THA	0.46	5.31
Powdered	Fish powder	<i>Pla pon</i>	THA	0.40-0.80	2.00-2.50
Powdered	Prawn dust	<i>Tepong/ Kulit udang</i>	MAL	NA	NA

The ingredients used are generally soy sauce, salt and sugar. The processing involves cutting the fish and soaking it in 2% brine for 10-15 minutes. The mince is then separated from the bones and skin. The fat is also removed from the meat. The excess water is then removed by passing the washed mince through a screw press. The mince is heated and mixed with ingredients before drying.

Data on the production and export volume is not available as shown in Table 23.

**TABLE 23. PRODUCTION & EXPORT VOLUME OF POWDERED PRODUCTS (MT)**

Category	Product	Country	Production Volume (MT)						Export Volume (MT)					
			1988	1989	1990	1991	1992	1993	1988	1989	1990	1991	1992	1993
Powdered	Fish concentrate	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Powdered	Fish floss	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Powdered	Fish powder	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Powdered	Prawn dust	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA



FTDI, DOF, Thailand

Traditional fish products for export.  
Note bottled fish powder on the top.



The powdered products are usually kept in glass bottles or polyethylene bags. The shelf life of fish floss is reported to be 3-6 months at room temperature or in refrigerator, see Table 24.

**TABLE 24. STORAGE CONDITIONS & SHELF-LIFE OF POWDERED PRODUCTS**

Category	Product	Country	Storage Conditions	Shelf-life
Powdered	Fish concentrate	VIE	Dry, cool place	3 months
Powdered	Fish floss	THA	Room temperature	3-6 months
Powdered	Fish powder	THA	Keep at room temperature	6 months
Powdered	Prawn dust	MAL	NA	NA

## Smoked Product

Smoked products are produced widely in the Philippines and in all participating countries except Singapore. They are described as fish products preserved by smoking. The smoked product can be served fried or cooked with ingredients such as chili, tamarind. They are eaten with rice, salads or noodles. The prices of raw materials and end products are shown in Table 25.

**TABLE 25. COST OF RAW MATERIALS AND SMOKED PRODUCTS**

Category	Product	Local Name	Country	Cost (US\$/kg)	
				Raw material	Final product
Smoked	Dried fish	<i>Tahai</i>	BRU	NA	NA
Smoked	Dried fish	<i>Pla rom quan; Pla krob</i>	THA	0.32 - 2.4	8.0 - 12.0
Smoked	Fish	<i>San pham hun khoi</i>	VIE	NA	NA
Smoked	Fish	<i>Ikan salai</i>	BRU	NA	NA
Smoked	Fish	<i>Asap</i>	IND	0.64 - 0.79	NA
Smoked	Herring	<i>Tulis dilat</i>	PHI	NA	NA
Smoked	Herring	<i>Tamban</i>	PHI	1.03 - 1.12	1.56 - 1.78
Smoked	Milkfish	<i>Bangus</i>	PHI	1.25 - 1.56	2.01 - 2.33
Smoked	Roundscad	<i>Galonggong</i>	PHI	0.89 - 1.12	1.34 - 1.56
Smoked	Sardine	<i>Law-law</i>	PHI	1.12 - 1.34	1.78 - 2.01
Smoked	Sardine	<i>Tunsoy</i>	PHI	1.03 - 1.12	1.56 - 1.78
Smoked	Tuna	<i>Ikan aya asap</i>	MAL	1.12	7.43



Directorate Fish, Indonesia

An example of smoked fish from Indonesia

The fishes used are mainly horse mackerel, trigger fish (*Abalistes* spp.), tuna, *Actobatus* spp., *Ophicocephalus* spp., *Cyprinus carpio* and *Pangasius* spp.. The process generally includes washing the fish and soaking in brine. It is precooked and dried before smoking, cooling and packing. It is then distributed for marketing. Table 25 shows the production and export volume from the Indonesia, Brunei Darussalam and Thailand.

**TABLE 26. PRODUCTION & EXPORT VOLUME OF SMOKED PRODUCTS (MT)**

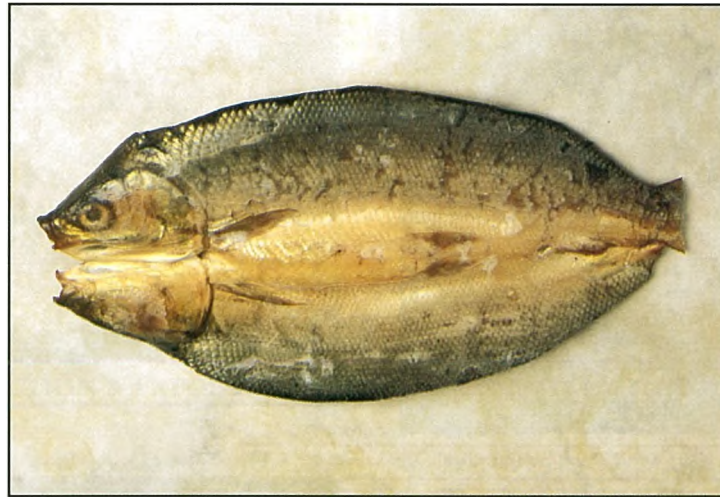
Category	Product	Country	Production Volume (MT)						Export Volume (MT)					
			1988	1989	1990	1991	1992	1993	1988	1989	1990	1991	1992	1993
Smoked	Dried fish	BRU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Smoked	Dried fish	THA	18,093	13,708	9,511	14,708	14,608	NA	NA	NA	NA	NA	NA	NA
Smoked	Fish	VIE	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil	Nil
Smoked	Fish	BRU	NA	NA	NA	34.8	64.23	37.71	NA	NA	NA	NA	NA	NA
Smoked	Fish	IND	37,062	36,802	42,188	34,919	38,435	20,070	619	Nil	1028	187	1,105	1,243
Smoked	Herring	PHI	NA	NA	NA	NA	NA	NA	70	39	28	29	33	139
Smoked	Milkfish	PHI	NA	NA	NA	NA	NA	NA	11	7	3	12	8	6
Smoked	Roundscad	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Smoked	Sardine	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Smoked	Tuna	MAL	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

The products can be stored in polyethylene bags, wrapped with paper, packed in basket with banana leaves or newspaper. The products are stored at room temperature, refrigerated or frozen, and their shelf life range from 1-2 days to 6 months when frozen. The shelf life and storage conditions are shown in Table 26.

Most countries have problems caused by the growth of mold and bacteria to the products. They emphasized the need for improvement on proper handling and packaging of the products.

**TABLE 27. STORAGE CONDITIONS & SHELF-LIFE OF SMOKED PRODUCTS**

Category	Product	Country	Storage Conditions	Shelf-life
Smoked	Fish	VIE	NA	NA
Smoked	Dried fish	BRU	Chilled temperature	2 months
Smoked	Dried fish	THA	Dried place at room temperature	More than 6 months
Smoked	Fish	BRU	Cool dry place	2 days
Smoked	Fish	IND	Cool, dry place	1 month
Smoked	Herring	PHI	Room temperature/Refrigerated	3 - 5 days
Smoked	Milkfish	PHI	Room temperature/Refrigerated	3 - 5 days
Smoked	Roundscad	PHI	Room temperature/Refrigerated/Frozen	3 days/15 days/3-6 months respectively
Smoked	Sardine	PHI	Room temperature/Refrigerated/Frozen	3 days/15 days/3-6 months respectively
Smoked	Tuna	MAL	Cool dry place, 0°C - 8°C	1 month



MFRD, Singapore

Smoked boneless milkfish from the Philippines

## Other Fish Products

Other fish products include mainly crackers made from prawn, squid or fish; barbecued fish (*satay*), prepared cuttlefish and seaweed e.g. agar, carrageenan. The crackers are usually deep fried till expanded and give a crispy bite. They are eaten as a snack or together with rice and other dishes. Raw materials range from 24-32 cents in Thailand to \$2.13 in Brunei Darussalam; the end products range from \$2.13 to \$6.22. The details of prices of raw materials and end products are shown in Table 28.

**TABLE 28. COST OF RAW MATERIALS AND OTHER FISH PRODUCTS**

Category	Product	Local Name	Country	Cost (US\$/kg)	
				Raw material	Final product
Others	Agar	Agar	VIE	NA	NA
Others	Carrageenan	Carrageenan	VIE	NA	NA
Others	<i>Chitosan</i>	<i>Chitosan</i>	VIE	NA	NA
Others	Crackers	<i>Kerupuk</i>	IND	1.07	7.13
Others	Fish/shrimp cracker	<i>Khau kriab pla, khau kriab kung</i>	THA	1.0 - 1.50	2.5
Others	Fish cracker	<i>Banh phong ca</i>	VIE	NA	NA
Others	Fish cracker	<i>Keropok ikan</i>	MAL	NA	3.72
Others	Fish cracker	<i>Keropok ikan</i>	BRU	2.13	4.47
Others	Fish liver oil	<i>Dau gan ca</i>	VIE	NA	NA
Others	Fish satay	<i>Sate ikan</i>	MAL	NA	NA
Others	Fish satay	<i>Pla satay</i>	THA	0.24 - 0.32	3.0 - 4.0
Others	Prawn cracker	<i>Keropok udang</i>	MAL	NA	3.72
Others	Prawn cracker	<i>Keropok udang</i>	BRU	NA	2.13
Others	Prepared cuttlefish	<i>Nil</i>	SIN	NA	NA
Others	Prepared prawn cracker	<i>Hay-pia</i>	SIN	NA	NA
Others	Seaweed	<i>Rong bien</i>	VIE	NA	NA
Others	Seaweed	<i>Gulamang degat</i>	PHI	NA	NA
Others	Shrimp kropeck	<i>Sitsarong hipon</i>	PHI	NA	NA
Others	Shrimp cracker	<i>Banh phong tom</i>	VIE	NA	NA
Others	Sodium alginate	<i>Alginat Natri</i>	VIE	NA	NA
Others	Squid cracker	<i>Keropok sotong</i>	BRU	2.13	6.22



FTDI, DOF, Thailand

a



DOF, Malaysia

b (i)



FTDI, DOF, Thailand

c



DOF, Malaysia

b (ii)



FTDI, DOF, Thailand

e



FTDI, DOF, Thailand

d



FTDI, DOF, Thailand

f

**Processing of fish cracker**

- a. Kneading of fish meat, flour and ingredients.
- b. Manual shaping.
- c. Steaming.
- d. Slicing by machine.
- e. Dried cracker.
- f. Fried crackers ready to be consumed.

The raw materials used for crackers are generally fishes, prawns, shrimps and squids. The ingredients added are tapioca flour, pepper, salt, baking powder, taste enhancer and water. The processing stages generally include mincing, mixing, forming, steaming, cooling, adding of colour, slicing or cutting, drying and finally packing.

The barbecued fish is prepared by soaking the fillets in seasonings before drying and baking until the product has a crispy texture. The average production and export volume is shown in Table 29.

**TABLE 29. PRODUCTION & EXPORT VOLUME OF OTHER FISH PRODUCTS (MT)**

Category	Product	Country	Production Volume (MT)						Export Volume (MT)					
			1988	1989	1990	1991	1992	1993	1988	1989	1990	1991	1992	1993
Others	Agar	VIE	NA	NA	NA	200	200	200	NA	NA	NA	NA	NA	NA
Others	Carrageenan	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Others	<i>Chitosan</i>	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Others	Cracker	IND	NA	NA	NA	NA	NA	NA	2,998	3,998	4,537	4,614	5,193	5,485
Others	Fish/shrimp cracker	THA	616	832	906	948	1,919	NA	NA	NA	NA	NA	NA	NA
Others	Fish cracker	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Others	Fish cracker	MAL	10,281	11,639	4,228	3,197	6,089	6,598	NA	NA	NA	NA	NA	NA
Others	Fish cracker	BRU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Others	Fish liver oil	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Others	Fish satay	MAL	262	665	633	550	511	322	NA	NA	NA	NA	NA	NA
Others	Fish satay	THA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Others	Prawn cracker	MAL	19	14	20	25	52	42	NA	NA	NA	NA	NA	NA
Others	Prawn cracker	BRU	NA	NA	NA	29.8	14.1	12.63	NA	NA	NA	NA	NA	NA
Others	Prepared cuttlefish	SIN	207	135	179	242	288	448	116	81	112	206	12	358
Others	Prepared prawn cracker	SIN	31	43	211	218	60	61	16	15	121	Nil	232	18
Others	Sea weed	VIE	NA	NA	NA	2,000	2,000	2,000	NA	NA	NA	NA	NA	NA
Others	Seaweed	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Others	Shrimp kropeck	PHI	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Others	Shrimp cracker	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	10,000
Others	Sodium alginate	VIE	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA
Others	Squid cracker	BRU	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA	NA

These products are packed in airtight polyethylene or aluminum bags. Generally the shelf life of these products is about 6 to 12 months at room temperature (Table 30). Most countries have indicated the need for quality control of processing and improvement on packaging.

**TABLE 30. STORAGE CONDITIONS & SHELF-LIFE OF OTHER FISH PRODUCTS**

Category	Product	Country	Storage Conditions	Shelf-life
Others	Agar	VIE	Dry, cool, ventilated place	6 months
Others	Carrageenan	VIE	Dry, cool, ventilated place	6 months
Others	<i>Chitosan</i>	VIE	Dry, cool, ventilated place	18 months
Others	Cracker	IND	Room temperature	1 year
Others	Fish/shrimp cracker	THA	Room temperature	1 year
Others	Fish cracker	VIE	Dry, cool, ventilated place	6 months
Others	Fish cracker	MAL	Room temperature	1 year
Others	Fish cracker	BRU	Dry place	1 year
Others	Fish liver oil	VIE	Dry, cool, ventilated place	6 months
Others	Fish satay	MAL	Room temperature.	3 - 6 months
Others	Fish satay	THA	Store at room temperature	3 - 5 months
Others	Prawn cracker	MAL	Room temperature.	1 year
Others	Prawn cracker	BRU	Dry place	1 year
Others	Prepared cuttlefish	SIN	Room temperature	1 year
Others	Prepared prawn cracker	SIN	Room temperature	1 year
Others	Seaweed	VIE	Dry, cool, ventilated place	6 months
Others	Seaweed	PHI	Cool, dry place	1 year
Others	Shrimp kropeck	PHI	Cool, dry place (28°C - 33°C)	1 year
Others	Shrimp cracker	VIE	Dry, cool, ventilated place	6 months
Others	Sodium alginate	VIE	Dry, cool, ventilated place	6 months
Others	Squid cracker	BRU	Room temperature	1 year

**TABLE 31: SUMMARY OF FISH PRODUCTS LISTED IN SURVEY**

Category	Brunei Darussalam	Indonesia	Malaysia
Boiled	NA	Fish	Fish
Canned	NA	Mackerel, tuna, sardine	Anchovy in sambal Fish in tomato sauce
Comminuted	Fishball Fishcake	Fishball	Cuttlefish ball, sausage Fish burger, fishcake, fishball Prawn dumpling, wantan Otak-otak Prawn burger, sausage Scallop flavour fish cake
Cured	NA	NA	NA
Dried	Chilled-sour salted fish Dried shrimp Fish Salted fish	Anchovies Salted fish	Anchovy Cockles Cuttlefish Jelly fish Prawn Salted fish Shellfish
Fermented	Cured shrimp Fish Fish stomach Mussel Shrimp paste	Fish Fish paste Fish sauce	Anchovy Pickle prawn Prawn paste Shrimp paste
Fish meal	NA	Fish powder	Fish manure
Frozen	NA	Fish, shrimp, squid.	Cuttlefish Fish Prawn
Powdered	NA	NA	Prawn dust
Smoked	Dried fish	Fish	Tuna
Others	Fish cracker Prawn cracker Squid cracker	Cracker	Prawn cracker Fish cracker Fish satay

Philippines	Singapore	Thailand	Vietnam
NA	Cooked fish	Steamed fish	Steamed fish
Anchovy	NA	Babyclam	Mackerel in tomato sauce
Mackerel in tomato sauce		Crab meat	Tuna in oil
Milkfish		Fish in tomato sauce	
Milkfish in tomato sauce		Shrimp	
Milkfish, ( <i>Salmon style</i> )		Squid, cuttlefish, octopus	
Sardine in tomato sauce		Tuna	
Tuna in oil			
Fish burger	Breaded fish finger	Fish ball	Fish sausage
Fishball	Breaded squid ring	Fish finger	Fish burger (dehead )
Native sausage	Cuttlefish balls, fingers, paste	Fish noodle	Fish burger ( boneless )
	Fishballs, fishcakes, chikuwa	Imitation crabmeat	Surimi
	Imitation crabsticks	Minced fish	
	Prawn balls, fingers	Surimi	
<i>Kench style</i> cured fish	NA	Mantis shrimp	Jelly
		Mussel	Salted moist fish
Abalone, anchovy	Sea cucumber	Jelly fish	Abalone, blue mussel clam
Barracuda, big-eye scad	Shark fin	Salted fish	Crimped squid, fish maw
Crevalle, deep-bodied herring		Salted freshwater fish	Jelly fish, oyster, peeled shrimp
Fimbriated herring		Shellfish	Salted fish (headed, split, whole)
Hairtail, herring		Shrimp	Scallop flesh, sea cucumber
Indian sardines, lizard fish		Squid	Sea horse, seasoned fish
Long tailed nemipterid			Shark fin, skinned cuttlefish
Mackerel, Milkfish			Squid (whole), squid rings
Roundscad, Sea cucumber			Urchin
Shark fin, shrimp, slipmouth			
Squid, striped mackerel			
Fish, fish sauce		Fish	Acidified shrimp
Milkfish, salted fish patis		Fish sauce	Fish sauce, fish meal
Shrimp paste		Shrimp paste	Stiff shrimp paste
Animal feed	Animal feed	Animal feed	NA
Cuttlefish and squid	Cooked prawn	Cooked shrimp	Blue swimmer block, cockle
Milkfish	Fish fillet	Cuttlefish	Comb-cuttlefish, cooked oyster
Shrimps and Prawns	Prawn	Fish	Cooked shrimp IQF
Tuna	Prawn meat	Octopus	Cuttle fish block (edge, head, wing)
	Squids, cuttlefish	Raw shrimp	Dipped shrimp, eel IQF
	Whole fish	Shellfish	Farciéd swimming crab, cuttle fish
		Squid	Fillet cuttle fish, fish fillet
			Headed fish IQF, shrimp block
			Pineal cuttlefish IQF, octopus block
			Peeled shrimp block, scallop block
			<i>Sai gon</i> rolled burger, seafood mix
			Shrimp <i>bisen</i> , skewered broiled shrimp
			Squid ring IQF, swimming crab roe
			Urchin blocks
			Whole cuttle fish block, IQF
			Whole fish deintestine IQF
			Whole shrimp block
			Whole skinned cuttle fish block
	NA	Fish powder, fish floss	Fish sauce concentrate
Herring		Dried fish	
Milkfish	NA		NA
Roundscad			
Sardine			
Shrimp <i>kropeck</i>	Prepared prawn cracker	Fish/shrimp cracker	Agar, carrageenan, <i>chitosan</i>
Seaweed	Prepared cuttlefish	Fish satay	Fish cracker, fish liver oil, pearl
			Seaweed, shrimp cracker
			Sodium alginate





## CONCLUDING REMARKS

The first inventory had helped to identify the important fish products widely consumed in the region. This included traditional products such as those which are dried, fermented and smoked. It had also been stressed that some of the fish products have been upgraded to value-added products where attention is paid to quality and better packaging.

The second inventory saw new products emerging into the market. This included comminuted products such as sausage, burger, dumplings, fishcakes with various flavours and imitation crabmeat. There were problems noted during this inventory regarding the shelf-life and packaging of the products, poor hygiene and sanitation of processing areas.

One of the differences between the current and the previous inventories was the inclusion of the Vietnamese products with Vietnam as the new member of SEAFDEC. This saw a greater variety of fishery products compiled as compared to the previous editions. One of the problems noted in this inventory is the lack of quality control in processing methods and the need to improve on packaging. Mold and bacterial spoilage was the most common problem experienced for dried and smoked products.

Problems in the production and marketing of fish products in Southeast Asia recorded in previous inventory are again listed by the participating countries in the 1996 survey (Annex 2). The main problems listed include short storage life and packaging of products, poor hygiene and sanitation of processing areas. In the case of the traditional products—dried, fermented and smoked products—the problems listed also included processing, with poor handling of raw materials and processing methods resulting in inconsistent quality of the final products.

The compilers has suggested that the numerous problems faced by the fish processing industry in the region are influenced by socio-economic factors and technical deficiencies, and that such problems are best solved by technologists within the region as it is expected that they would have a better understanding of the problems and limitations of the industry. It was therefore suggested that cooperative studies among the specialists in the region should be further encouraged to harness the advantages which collaborative efforts have clearly demonstrated in the region.



# Annex 1



## Annex 1: Survey Information

Category	Country	Product	Material	Processing Method	Packaging Conditions
Boiled	IND	Fish (\$2.35) Defined as salted and boiled fish. It can be eaten with rice.	Fish (\$0.710) Kembong/Indian mackerel ( <i>restrelliger spp.</i> ), <i>Layang/scads</i> , <i>Catalang</i> Salt	<ol style="list-style-type: none"> <li>1 Raw material</li> <li>2 Salting.</li> <li>3 Arranging the fish in layers with salt in between and place inside bamboo basket or ceramic basin.</li> <li>4 Boiling.</li> <li>5 Boiled fish.</li> </ol>	Packed in a bamboo basket or ceramic basin.
Boiled	MAL	Fish Defined as salted and boiled fish which can be deep fried or cooked in curry before serving	Fish, mackerel ( <i>Rastrelliger spp.</i> )	<ol style="list-style-type: none"> <li>1 Fresh fish.</li> <li>2 Washing and keeping in wooden tub in saturated brine for 3-4 hrs.</li> <li>3 Arranging in baskets and boiling in saturated brine.</li> <li>4 Cooling for 24 hrs. before storage or distribution.</li> </ol>	Pack in baskets.
Boiled	SIN	Cooked fish Defined as boiled whole fish and can be eaten fresh with porridge.	Indian mackerel ( <i>Rastrelliger Kanagurta</i> ), horse mackerel ( <i>Caranx spp.</i> ), anchovies	<ol style="list-style-type: none"> <li>1 Whole fish, washing with water.</li> <li>2 Rubbing with salt to prevent skin from peeling during boiling.</li> <li>3 Arranging in bamboo basket.</li> <li>4 Boiling in brine for 10-15 mins using boiler.</li> <li>5 Draining and cooling.</li> </ol>	Sold fresh, packed in polyethylene bags on the spot.
Boiled	THA	Steamed fish (\$0.47 - \$1.57) It is a steamed fish which is slightly salty and is fried in oil or served with chili paste.	Fish (\$0.24-\$0.71) Indo-pacific mackerel, Indian mackerel, scads, trevallies, bigeye scads Salt	<ol style="list-style-type: none"> <li>1 Fish, gutted.</li> <li>2 Cleaning in brine solution.</li> <li>3 Steaming for 20 mins.</li> <li>4 Distribution.</li> </ol>	Placed on bamboo tray or pack in plastic bag.
Boiled	VIE	Steamed fish Defined as whole or cut fish with specified flavour. It is cooked with vegetables in soup or fry. Served with rice	Sardine, <i>Scombridae thundine</i> , <i>carrangidae</i> Salt	<ol style="list-style-type: none"> <li>1 Wash, gut, dehead, remove fins, scales.</li> <li>2 Weights with more than 0.5 kg can be cut.</li> <li>3 Soaking in saturated brine for 40 min.</li> <li>4 Cleaning and draining.</li> <li>5 Steaming for 30 min. (Soaking and steaming time depend on size of fishes)</li> </ol>	Pack in bamboo basket
Canned	IND	Mackerel, tuna, sardine. (\$3.92) Fish is processed and packed in sterilised cans. Product is eaten directly or cooked.	Mackerel (\$0.79), tuna (\$0.99), sardine(\$0.29) Salt, sauce and oil.	<ol style="list-style-type: none"> <li>1 Raw material.</li> <li>2 Dressing, washing, precooking.</li> <li>3 Cooling.</li> <li>4 Cutting, selecting, packing and weighing.</li> <li>5 Adding of oil and salt.</li> <li>6 Seaming and sterilization.</li> <li>7 Cooling, observing and packing.</li> <li>8 Storage.</li> </ol>	Packed in cans.
Canned	MAL	Anchovy in sambal Defined as canned anchovy in sambal which can be eaten with rice.	Anchovy (\$3.58/kg) Chili powder, salt, sugar, garlic	<ol style="list-style-type: none"> <li>1 Washing of dried anchovy.</li> <li>2 Packing in can.</li> <li>3 Exhausting.</li> <li>4 Filling with sambal.</li> <li>5 Closing can by vacuum sealer.</li> <li>6 Retort (sterilization) by boiler &amp; retort.</li> <li>7 Cooling and packing in carton.</li> </ol>	Pack in carton.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Canned	MAL	Fish in tomato sauce Product is defined as canned sardine or mackerel in tomato and can be eaten with rice.	Fish: Sardines, mackerel, horse mackerel  Tomato sauce, salt, sugar	<ol style="list-style-type: none"> <li>1 Dehead, degut, tail off fish.</li> <li>2 Washing.</li> <li>3 Packing in cans.</li> <li>4 Exhausting.</li> <li>5 Filling with tomato sauce.</li> <li>6 Closing can by vacuum sealer.</li> <li>7 Retort (sterilization) by boiler &amp; retort.</li> <li>8 Cooling.</li> <li>9 Packing in carton.</li> </ol>	Pack in carton.
Canned	PHI	Anchovy Cooked anchovies packed in can. It can be eaten directly from the can, cooked with vegetables, noodles or with eggs like omelet.	Anchovies  Salt, oil.	<ol style="list-style-type: none"> <li>1 Cleaning of fish.</li> <li>2 Steaming fish over a boiling water bath for 15 - 20 mins.</li> <li>3 Cooling of fish at room temperature (28-30°C) by air drying for at least 30 mins.</li> <li>4 Filling into cans either manually or by mechanical means.</li> <li>5 Adding of salt for every 150g of fish. Add coconut cooking oil until the desired net weight is attained. Allow a headspace of 0.4 cm.</li> <li>6 Placing the filled cans over a boiling water bath in a steamer or by passing the cans through a hot medium such as steam in an exhaust box until an internal temperature of 82.2°C is reached.</li> <li>7 While hot, seal the filled cans completely using an automatic, semi-automatic or manual can sealer.</li> <li>8 Process the canned fish product using a pressure cooker or a small retort at a temperature of 115°C or 121°C.</li> <li>9 Cool the cans immediately by plunging them in concrete tanks filled with cold water.</li> </ol>	Epoxyphenolic cans are ideal containers for the product.
Canned	PHI	Mackerel in tomato sauce Defined as prepared fish product in can, sealed hermetically and subjected to high temperature to kill spoilage microorganisms It is sautéed with garlic, onion, other ingredients and used as sandwich fillings.	Mackerel (\$0.89-\$1.12)  Salt, oil, tomato sauce	<ol style="list-style-type: none"> <li>1 Cleaning and cutting.</li> <li>2 Packing into cans.</li> <li>3 Filling up of ingredients</li> <li>4 Exhausting.</li> <li>5 Sealing by using electric can sealer.</li> <li>6 Retort.</li> <li>7 Cooling and labeling.</li> <li>8 Storing.</li> </ol>	Cans are packed into fiberboard/carton box.
Canned	PHI	Milkfish Defined as cooked milkfish packed in can. It can be eaten directly, cooked with vegetables, noodles or with eggs like omelet.	Milkfish  Salt and oil.	<ol style="list-style-type: none"> <li>1 Cleaning of fish by removing the scales, gills and viscera, wash.</li> <li>2 Process similar to canned anchovy (see Philippines canned anchovy). Epoxyphenolic cans are ideal containers for the product.</li> </ol>	Epoxyphenolic cans are ideal containers for the product.
Canned	PHI	Milkfish in tomato sauce Product is sautéed with garlic, onions and added vegetables.	Milkfish (\$1.25 - \$1.56) Tomato sauce, salt, corn oil.	<ol style="list-style-type: none"> <li>1 Cleaning and gutting of fish.</li> <li>2 Packing into cans.</li> <li>3 Exhausting.</li> <li>4 Filling up of ingredients.</li> <li>5 Sealing using electric can sealer.</li> <li>6 Retort.</li> <li>7 Cooling, labeling and storing.</li> </ol>	Canned product is packed in fiberboard/carton box.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Canned	PHI	Milkfish, <i>Salmon style</i> Product is sautéed with garlic, onion and added vegetables.	Milkfish (\$1.25 - \$1.56) Salt, oil.	<ol style="list-style-type: none"> <li>Cleaning, cutting.</li> <li>Packing into cans</li> <li>Exhausting.</li> <li>Filling up of ingredients.</li> <li>Sealing using electric can sealer.</li> <li>Process.</li> <li>Cooling and labeling.</li> <li>Storing.</li> </ol>	Canned is packed in fiberboard / carton box.
Canned	PHI	Sardine in tomato sauce Product is sautéed with garlic, onion and added vegetables.	Sardine (\$1.25 - \$1.56) Salt, oil.	<ol style="list-style-type: none"> <li>Cleaning, cutting.</li> <li>Packing into cans.</li> <li>Exhausting.</li> <li>Filling up of ingredients.</li> <li>Sealing using electric can sealer.</li> <li>Process.</li> <li>Cooling and labeling.</li> <li>Storing.</li> </ol>	Canned is packed in fiberboard / carton box.
Canned	PHI	Tuna in oil Product is sautéed with garlic, onion and added vegetables.	Tuna (\$0.89 - \$1.12) Salt, oil.	<ol style="list-style-type: none"> <li>Inspection and grading fish.</li> <li>Deheading and pre-cooking</li> <li>Cooling and cutting or slicing.</li> <li>Pack and filling of ingredients.</li> <li>Sealing, using electric can sealer.</li> <li>Retort.</li> <li>Cooling, labeling and storing.</li> </ol>	Canned is packed in fiberboard / carton box.
Canned	THA	Babyclam Defined as canned babyclam in brine. It can be stir fried with vegetables and eaten with rice.	Babyclam (\$0.40 - \$0.80) <i>Paphia undulata</i> Salt	<ol style="list-style-type: none"> <li>Babyclam meat.</li> <li>Washing and sizing.</li> <li>Washing and packing in cans.</li> <li>Closing cans by vacuum sealer.</li> <li>Retort (sterilization).</li> <li>Cooling and packing in cartons.</li> </ol>	Canned product is packed in carton box
Canned	THA	Crab meat Defined as canned crab meat in brine. Product is mixed with spices and eaten with rice.	Crab (\$2.00 - \$3.20) <i>Cancer spp.</i> Salt	<ol style="list-style-type: none"> <li>Washing and packing in cans.</li> <li>Filling with brine.</li> <li>Closing cans by vacuum sealer.</li> <li>Retort (sterilization).</li> <li>Cooling and packing in cartons.</li> </ol>	Canned product is packed in carton box
Canned	THA	Fish in tomato sauce Defined as canned sardine or mackerel in tomato sauce. Product is eaten with rice.	Fish (\$0.40 - \$0.80) Sardines, <i>dussumieria spp.</i> , horse mackerel, mackerel Tomato sauce, salt, sugar.	<ol style="list-style-type: none"> <li>Dehead, degut, tail off fish.</li> <li>Washing and packing in cans.</li> <li>Exhausting.</li> <li>Filling with tomato sauce.</li> <li>Closing cans by vacuum sealer.</li> <li>Retort (sterilization).</li> <li>Cooling and packing in cartons.</li> </ol>	Canned product is packed in carton box
Canned	THA	Shrimp Defined as canned shrimp in brine. It is mixed with spices and rice eaten as a snack.	Shrimp (\$1.20 - \$1.60) <i>Metapenaeus spp.</i> , <i>Metapenaeopsis spp.</i> , <i>Trachypenaeus spp.</i> , <i>Parapenaeopsis spp.</i> Oil, salt, tomato sauce.	<ol style="list-style-type: none"> <li>Washing and sizing.</li> <li>Packing in cans.</li> <li>Filling with brine.</li> <li>Closing cans by vacuum sealer.</li> <li>Retort (sterilization).</li> <li>Cooling and packing in cartons.</li> </ol>	Canned product is packed in carton box

Category	Country	Product	Material	Processing Method	Packaging Conditions
Canned	THA	Squid/cuttlefish/octopus Defined as canned squid, cuttlefish, octopus in oil, brine or sauce.	Squid, cuttlefish, octopus (\$0.60 - \$2.00)	<ol style="list-style-type: none"> <li>1 Washing.</li> <li>2 Packing in cans.</li> <li>3 Filling with oil/brine or sauce.</li> <li>4 Close can by vacuum sealer.</li> <li>5 Retort (sterilization).</li> <li>6 Cool and pack in cartons.</li> </ol>	Canned product is packed in carton box
Canned	THA	Tuna (\$0.60 - \$1.20) Defined as canned tuna in oil or in brine. It is mixed with spices and rice eaten as a snack.	Fish <i>Thunnus tonggol</i> , <i>Euthynnus affinis</i> , <i>Katsuwonus pelamis</i> , <i>Thunnus alalunga</i> Oil, salt, vegetable broth, hydrolyzed vegetable protein.	<ol style="list-style-type: none"> <li>1 Degutting and washing.</li> <li>2 Pre-cooking.</li> <li>3 Deheading, deboning, removal of skin, blood and dark meat.</li> <li>4 Packing into cans and filling with oil or brine.</li> <li>5 Closing cans by vacuum sealer.</li> <li>6 Retort (sterilization).</li> <li>7 Cooling and packing in cartons.</li> </ol>	Canned product is packed in carton box
Canned	VIE	Mackerel in tomato sauce Defined as canned mackerel in pasteurized tomato sauce. It is served directly or cooked with vegetables.	Mackerel Tomato sauce, ingredients	<ol style="list-style-type: none"> <li>1 Washing, gutting, deheading, removal of tails and fins.</li> <li>2 Cleaning, cutting and precooking.</li> <li>3 Packing in cans, weighing, adding of tomato sauce and ingredients.</li> <li>4 Seaming, pasteurization by steam and labeling.</li> </ol>	Pack in carton box, size, according to buyers specification.
Canned	VIE	Tuna in oil Served directly or cook with vegetable as a dish.	Tuna Vegetable oil, ingredients	<ol style="list-style-type: none"> <li>1 Washing, gutting, deheading, removal of tails and fins.</li> <li>2 Cleaning, precooking, removal of dark meat.</li> <li>3 Arranging into tins and weighing.</li> <li>4 Adding of oil and seasonings.</li> <li>5 Seaming, pasteurization, labeling.</li> </ol>	Pack in carton box, size, according to buyers specification.
Comminuted	BRU	Fishball A type of fish jelly product made into round shapes. It is fried or boiled/eaten with soup or with vegetables and noodles.	Threadfin bream, <i>Caesio</i> fish, Spanish mackerel, and surimi	<ol style="list-style-type: none"> <li>1 Cleaning, removal of head and gut and washing.</li> <li>2 Deboning, leaching, straining, mixing with ingredients.</li> <li>3 Forming, setting, fishballs formed.</li> </ol>	Packed in plastic bag with or without water or styrofoam tray
Comminuted	BRU	Fishcake A type of fish jelly product made into oval shapes. It is fried or boiled, eaten with soup or with vegetables and noodles.	Surimi, Threadfin bream, <i>Caesio</i> fish, Spanish mackerel Flour, salt, msg, water	<ol style="list-style-type: none"> <li>1 Cleaning of fish, removal of head and gut, washing.</li> <li>2 Deboning, leaching, straining.</li> <li>3 Mixing with ingredients, manually forming and setting.</li> </ol>	Packed in plastic bag or styrofoam tray
Comminuted	IND	Fishball Defined as a type of fish jelly product. It is eaten with soup or as snack.	Spanish mackerel, yellowtail ( <i>fusilier</i> , <i>Caesio erythrogastrer</i> ), Baramunoi, giant seapenck ( <i>caes-calcarifer</i> ), shark. Salt, spices, corn & wheat flour, pepper.	<ol style="list-style-type: none"> <li>1 Raw material.</li> <li>2 Washing and dressing.</li> <li>3 Mincing.</li> <li>4 Mixing with ingredients.</li> <li>5 Boiling.</li> <li>6 Cooling.</li> </ol>	Packed in plastic bags using vacuum sealer or not vacuum.



Category	Country	Product	Material	Processing Method	Packaging Conditions
Comminuted	MAL	Cuttlefish ball (\$2.38) Product is made from cuttlefish and surimi paste. It is deep fried and cook with vegetables.	Fresh cuttlefish surimi. (\$50.70) Flavour enhancer, salt, tapioca starch.	1 Cuttlefish & surimi. 2 Mince & mix with ingredients. 3 Forming and setting. 4 Boiling. 5 Chilling. 6 Packing, freezing and storing.	Pack in plastic bag of 1 kg or 400 gm/pack.
Comminuted	MAL	Cuttlefish sausage and cocktail (\$3.53) Product is made from cuttlefish and shrimp pastes filled in casings. It is deep fried or cooked with vegetables or pan fried and eaten like 'hot dog'.	Fresh minced cuttlefish, surimi. Flavour enhancer, salt, tapioca starch.	1 Mincing of cuttlefish and surimi. 2 Mixing with fixed colourings. 3 Stuffing into casing. 4 Boiling or steaming. 5 Reboiling. 6 Chilling. 7 Removal of casing. 8 Packing, freezing and storing.	Pack in plastic bag of 400g or 1 kg.
Comminuted	MAL	Fish burger (\$3.35/pack) Product is made from fish meat paste formed into burger shapes. It is pan fried and eaten as a burger.	Fresh minced fish meat, surimi Flavour enhancer, salt, tapioca starch, breadcrumb.	1 Fresh fish meat or surimi. 2 Mixing with fixed colourings. 3 Forming into burger shapes. 4 Freezing 5 Storing.	Pack in plastic bag of 10 pieces each.
Comminuted	MAL	Fish cake Product is made from fish meat paste and formed into small portions. It is used in soups, fried noodles and fried vegetables.	Fresh minced fish meat, surimi Salt, pepper, onion, celery, chili, flavour, enhancer, tapioca starch, sodium borate, polyphosphate.	1 Removal of head, scales & viscera. 2 Deboning and mincing to fine structure. 3 Adding of ingredients and mix thoroughly. 4 Pressing into tray. 5 Setting for 2- 3 hrs. 6 Cutting into desired portions. 7 Deep frying.	Pack into plastic bags.
Comminuted	MAL	Fish sausage (\$3.35/pack) Product is fish meat paste packed in casings, e.g. collagen. It is deep fried or cut into pieces and cook with vegetables or served with sandwiches and buns.	Fresh minced meat surimi (\$0.37) Flavour enhancer, salt, tapioca starch	1 Deheading and gutting. 2 Washing. 3 Deboning using a meat-bone separator. 4 Blending by machine and mixing with colourings. 5 Stuffing into casings by machine. 6 Boiling and steaming. 7 Reboiling, chilling and removal of casings. 8 Packing, freezing in contact freezer and storing in cold room.	Pack in plastic of 400 gram/pack.
Comminuted	MAL	Fishball Product is fish meat made into round shapes. It is used in soups, and fried vegetables.	Fish Salt, pepper, onion, celery, chili, flavour, enhancer, tapioca starch, sodium barate, polyphosphate.	1 Removal of head, scale & viscera. 2 Deboning and mincing into fine structure. 3 Adding of ingredients and mix thoroughly. 4 Forming, setting (2- 3 hrs). 5 Boiling and cooling in air.	Pack in plastic bag.
Comminuted	MAL	Otak-otak Defined as spicy fish meat wrapped in coconut leaves. It is roasted and eaten as dish for meal.	Meat of conger eel Flour, coconut juice, fish curry powder, coriander powder, chili, onion, sugar, salt, msg, caraway seed.	1 Mincing of fish meat. 2 Mixing with all other ingredients. 3 Blending for 3-4 times. 4 Packing and freeze. 5 Packing in palm leaves and roast. 6 Storing.	Pack in plastic or palm leaf.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Comminuted	MAL	Prawn burger (\$4.46/pack) Product is made from surimi and prawn meat. It is fried and placed in between bread as prawn burger.	Minced fresh prawn meat, surimi paste. Flavour enhancer, salt, tapioca starch, breadcrumb.	1 Surimi. 2 Surimi paste. 3 Mixing with minced prawn meat and colourings. 4 Forming into burger shapes. 5 Packing and freezing. 6 Storing.	Pack in plastic bag of 10 pieces each.
Comminuted	MAL	Prawn dumpling (\$0.10/piece) Product is made from surimi and fresh prawn meat wrapped in dumpling skin. It is deep fried and cooked with soup.	Surimi paste fresh prawn meat. Carrot, turnip, spring onion, sugar, salt, flavour.	1 Surimi paste. 2 Mixing with fresh prawn meat and ingredients. 3 Wrapping. 4 Packing in tray. 5 Freezing. 6 Storing.	Pack in polyfoam tray with plastic of 10 pieces each.
Comminuted	MAL	Prawn sausage (\$0.09/piece) Product is made from surimi and fresh prawn packed in casings. It is deep fried and cut into small pieces to cook with vegetables. It can be served in sandwiches.	Fresh minced prawn surimi Flavour enhancer, salt, tapioca starch.	1 Prawn and surimi. 2 Mixing with colourings by silent cutter 3 Stuffing into casings. 4 Boiling or steaming. 5 Reboiling and chilling. 6 Removal of casings. 7 Packing. 8 Freezing and storing.	Pack in plastic bag of 1 kg or 400 gm/pack.
Comminuted	MAL	Prawn wanton Products is made from surimi and fresh prawn meat wrapped in wanton skin. It is deep fried, cooked with soup or fried with them.	Surimi paste, fresh prawn meat. (\$0.08/piece) Carrot, turnip, spring onion, sugar, salt, flavour.	1 Surimi paste. 2 Mixing with prawn meat and ingredients. 3 Wrapping. 4 Packing in trays. 5 Freezing and storing.	Pack in polyfoam tray wrapped with plastic (15 pieces each tray).
Comminuted	MAL	Scallop flavour fish cake (\$0.09/piece) Product is made from surimi paste formed into scallop shapes. It can be deep fried.	Surimi Flavour enhancer, scallop extract, salt, tapioca starch, breadcrumb	1 Surimi. 2 Mincing and mixing with all ingredients. 3 Forming into small scallop shape. 4 Setting and boiling. 5 Chilling, packing, freezing and storing.	Pack in tray of 10 pieces each
Comminuted	PHI	Fish burger Defined as fried patties made from fish meat. It is fried and used in sandwiches or in main dishes.	Tuna (\$0.89-\$1.12) Hamburger seasoning, egg, onion (chopped), salt, evaporated milk, white pepper, msg.	1 Chopping using meat chopper, food cutter. 2 Mixing. 3 Molding into patties. 4 Frying.	Pack in plastic.
Comminuted	PHI	Fishball Defined as ground white meat fishin round shapes. It is deep fried, cooked with vegetables or boiled with soups.	<i>Cassio curing</i> (\$1.12-\$1.25) Salt, cornstarch, baking.	1 Chopping. 2 Adding of salt and dissolving into cornstarch and baking powder. 3 Mixing using meat grinder, silent cutter, agitator. 4 Forming, cooking, draining and drying.	Pack in plastic/vacuum pack or Styrofoam plates covered with plastic.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Comminuted	PHI	Native sausage Defined as fish meat paste packed in casings. It is fried or mixed with other recipes.	Tuna (\$0.89-\$1.12) - <i>Neothunnus macropterus</i>	<ol style="list-style-type: none"> <li>Dressing and filleting.</li> <li>Separation of meat.</li> <li>Crushing, blanching, draining and fixing colour.</li> <li>Stuffing, boiling or steaming.</li> <li>Reboil, wrapping and storing.</li> </ol>	Pack in plastic/vacuum pack or Styrofoam plates covered with plastic.
Comminuted	SIN	Breaded fish finger Defined as minced meat or fillet coated with batter and bread crumbs. It is eaten as snacks.	Fish and surimi Flour, slat, battermix, breadcrumbs, msg.	<ol style="list-style-type: none"> <li>Surimi/fillet blocks.</li> <li>Forming.</li> <li>Battering.</li> <li>Breading.</li> <li>Freezing and packaging.</li> </ol>	Product is frozen and vacuum packed.
Comminuted	SIN	Breaded squid ring Squid coated with batter and bread crumbs. It is eaten as snacks.	Squid Flour, salt, battermix, breadcrumbs, msg.	<ol style="list-style-type: none"> <li>Squid rings.</li> <li>Battering.</li> <li>Breading.</li> <li>Freezing and packaging.</li> </ol>	Product is frozen and vacuum packed.
Comminuted	SIN	Cuttlefish balls, fingers, paste A type of fish jelly product. The product is consumed after light frying.	Cuttlefish Salt, sugar, msg, polyphosphates, oil, starch.	<ol style="list-style-type: none"> <li>Cuttlefish.</li> <li>Cleaning and gutting.</li> <li>Grinding.</li> <li>Mixing with ingredients.</li> <li>Forming by machine, setting, boiling, cooking,</li> <li>Packing and freezing.</li> </ol>	Product is vacuum packed.
Comminuted	SIN	Fishball, fishcake, chikuwa A type of fish jelly product. They can be eaten as ingredients in noodles and soups or as snacks.	Surimi Fish Big-eye snapper ( <i>Priacanthus spp.</i> ), Threadfin bream ( <i>Nemipterus spp.</i> ), Goat fish ( <i>Upeneus spp.</i> ) Salt, sugar, egg white, starch, crab flavour.	<ol style="list-style-type: none"> <li>Mince meat from meat-bone separator.</li> <li>Washing in water for 10 mins in paddle washer.</li> <li>Pressing water out of washed meat by hydraulic press.</li> <li>Straining.</li> <li>Grinding for 5 mins with ingredients using homogenizer.</li> <li>Forming by machine and set in water at 40°C for 30 mins.</li> <li>Boiling in hot water for 10 mins or deep frying.</li> </ol>	Sold fresh
Comminuted	SIN	Imitation crabsticks A type of fish jelly product. It can be eaten as ingredients in salads, pilafs and soups or as snacks.	Surimi	<ol style="list-style-type: none"> <li>Surimi.</li> <li>Grinding or mixing of ingredients by silent cutter.</li> <li>Forming by crabstick forming machine.</li> <li>Vacuum packaging.</li> <li>Cooking at 85°C for 30 mins.</li> <li>Cooling and freezing at -40°C for 40 mins.</li> </ol>	Product is vacuum packed.
Comminuted	SIN	Prawn balls, fingers A type of fish jelly product. It is eaten as snacks.	Surimi and prawn Flour, salt, prawn flavouring, msg.	<ol style="list-style-type: none"> <li>Prawn and surimi.</li> <li>Adding of prawn flavour.</li> <li>Forming.</li> <li>Cooking.</li> </ol>	Product is frozen and vacuum packed
Comminuted	THA	Fishball(\$1.18-\$3.54) Defined as minced fish product. It is used in various kinds of soups, e.g. noodle soups.	Minced fish (\$0.51-\$0.98) - <i>Nemipterus spp.</i> , <i>Otolithes spp.</i> , <i>Trichiurus spp.</i> , <i>Priacanthus spp.</i> , <i>Scomberomus spp.</i> , etc. Salt, crushed ice.	<ol style="list-style-type: none"> <li>Minced fish meat by meat bone separator &amp; mincer.</li> <li>Grinding (with salt and crushed ice) by kneading machine.</li> <li>Forming by fishball forming machine.</li> <li>Setting in a water bath (40-45°C) for 20 minutes.</li> <li>Boiling in hot water bath (90°C) for 5 minutes.</li> <li>Cooling and storing.</li> </ol>	Pack in plastic bag

Category	Country	Product	Material	Processing Method	Packaging Conditions
Comminuted	THA	Fish finger (\$3.50-\$4.00) It is a burger-like product. It is fried in oil.	Marine fish (\$1.00-\$1.20) - <i>Nemipterus</i> spp. Salt, sugar, pepper, onion, bread crumb.	1 Mincing meat. 2 Mixing with ingredients. 3 Forming into square and flat shape. 4 Breading, freezing and storing.	Pack in waxed paper box.
Comminuted	THA	Fish noodle Product is made from minced fish. It is used in noodle soups.	Marine fish (\$0.51-\$0.98) (Whole fish, fillet) Wheat flour, potassium pyrophosphate, msg, sodium bicarbonate, salt.	1 Mincing by meat-bone separator & mincer. 2 Grinding for 3 min (with ingredients) by kneading machine. 3 Passing through roller - noodle machine to make noodle shade. 4 Weighing each lot of noodle (40 g) and steaming for 5 min.	Pack in plastic bag.
Comminuted	THA	Imitation crabmeat (\$6.00 - \$10.00) Product is made from surimi with flavourings and formed in the crabsticks. It can be eaten as it is or combined with ingredients for salads.	Surimi made from marine fish (\$1.38-\$1.97): <i>Nemipterus</i> spp., <i>Otolithes</i> spp., <i>Trichiurus</i> spp., etc. Salt, crushed ice, flour, extract and flavour, egg white, colouring.	1 Surimi. 2 Grinding (with ingredients) by kneading machine or silent cutter. 3 Forming into shapes by baking-forming-wrapping machine. 4 Adding of colourings. 5 Wrapping. 6 Steaming (using steam box) and cooling. 7 Packing, freezing and storing.	Pack in plastic bag
Comminuted	THA	Minced fish (\$3.00-\$8.00) Defined as meat extracted from fish. It is used in curry soup or mixed with chili paste to form into round flat shape and fried in oil which is called <i>Toi man pla</i> .	Fish (\$0.60-\$3.60) Marine fish: Spanish mackerel, lizard fish Freshwater fish: Featherback, grey featherback	1 Fish. 2 Filleting. 3 Mincing of meat.	Pack in plastic bag
Comminuted	THA	Surimi (\$3.00-\$4.00) Defined as washed minced fish added with additives and frozen into blocks. As raw material for minced products such as fish ball, fish burger, fish sausage etc.	Fish (\$0.28-\$0.59) <i>Nemipterus</i> spp., <i>Priacanthus</i> spp., <i>Sciaena</i> spp., <i>Saurida</i> spp. Polyphosphate, sugar.	1 Mincing from meat-bone separator. 2 Washing with 2-5 times iced water using fish washing tank. 3 Removal of excess water by screw press. 4 Strain. 5 Mixing with polyphosphate and sugar using silent cutter.	Pack in plastic bag
Comminuted	VIE	Fish burger It is similar to hamburger. It is cut into slices and served as a dish.	<i>Clupanodon</i> , <i>decapterus</i> , <i>muraenesox</i> spp, <i>scomberomorus</i> spp. Onion, sugar, starch, pork fat, polyphosphate, white pepper, sodium glutamate	1 Mincing of fillet manually to fine texture. 2 Mixing with seasonings. 3 Forming into flat-round or flat-oval shapes. 4 Deep frying.	Pack in PE bag per 0.5 kg
Comminuted	VIE	Fish sausage Product is sausage with light fishy flavour. It is cut into slices and served as a dish.	<i>Clupanodon</i> , <i>decapterus</i> , <i>muraenesox</i> , <i>scomberomorus</i> spp. Onion, sugar, starch, msg, pork fat, polyphosphate, white pepper.	1 Filleting of fish manually. 2 Mincing thoroughly to a fine texture using a mincer. 3 Mixing with ingredients. 4 Stuffing into cloth-PE tube shaped casing. 5 Boiling and cooling overnight	Pack in PE bag per 0.5 Kg

Category	Country	Product	Material	Processing Method	Packaging Conditions
Comminuted	VIE	Surimi Defined as boneless minced fish. It is used to make fish products.	Fish	1 Heading and gutting. 2 Extraction of minced fish.	Pack in PE-bag and carton box. Size as buyers like.
Cured plastic	PHI	Kench style cured fish It is a heavily salted, wet fish product. It can be broiled, sautéed with garlic, onions, tomatoes and vegetables for noodles.	Fish Skipjack, herring roundscad, fimbriated sardine, deep boiled sardine, striped mackerel, short bodied mackerel	1 Saturating with salt. 2 Washing with 2% salt. 3 Draining away water. 4 Packing in wooden box in layers of fish/salt.	Pack in glass bottles, wooden boxes or containers.
Cured	THA	Mantis shrimp It is a whole shrimp with salty taste. It can be added with lemon juice, chili and onion before serve.	Fresh mantis shrimp - <i>Squilla nepa</i> Fish sauce	1 Whole mantis shrimp. 2 Washing and draining. 3 Packing in container. 4 Adding of fish sauce to cover shrimp. 5 Keep for 1-3 days at room temperature. 6 Packing.	Plastic bag.
Cured	THA	Mussel Whole mussel meat with salty taste. Add sliced ginger, chili and lemon juice or vinegar and serve with steam rice.	Fresh mussel meat Salt	1 Fresh mussel meat. 2 Washing in brine (10% NaCl). 3 Draining. 4 Mixing with salt (7:1). 5 Storing in container. 6 Packing in glass bottle or jar with brine covering the meat. 7 Sealing of containers.	Glass bottle, glass jar.
Cured	VIE	Jellyfish texture and natural flavour. It is cooked with spicy herbs and vegetables.	Jellyfish Product is pale white, with brittle	1 Sorting, cleaning and soaking in alum solution of 7% for 2 or 3 days in earthen jar. 2 Draining and clearing. 3 Procedure is repeated 2 times. 4 Storing in earthen jar.	Pack in bamboo basket per 10 kg in layers with salt of 5% by wt alternately
Cured	VIE	Salted moist fish Product is a whole or cut fish with a fresh and pleasant odour. Used for preparing other dishes, fry, broil and serve with rice.	<i>Carrangidae spp, Decapterus spp., Dussumteria spp., Sardinella spp.</i> Salt, alum.	1 Mixing with salt 20-25% by weight. 2 Setting for 48-72 hrs. 3 Draining. 4 Adding of salt (19% by wt) and 1% Alum 5 Fish having weight of >0.5 kg can be gutted, dehead and cut into pieces of 10-12 cm.	Pack in PE bag bind in bamboo basket.
Dried	BRU	Chilled-sour salted fish Product is a type of semi-dried salted fish. It is fried and eaten as side dish.	Short bodied mackerel, <i>Chacunda</i> Gizzard, Jewfish, Cronker Salt, msg, tamarind, chili paste	1 Washing and gutting (not split). 2 Soaking in brine solution (1:3). 3 Adding of tamarind, chili paste, msg. 4 Keep overnight (1 day). 5 Semi-drying for 1 day.	Plastic bag and Styrofoam tray.
Dried	BRU	Fish (\$4.42) Defined as sun-dried fish. It is served in fried form	Fish - Short bodied mackerel, <i>Gymnurus spp.</i> , sardine	1 Washing, removal of gills, entrails, scales and bones. 2 Washing and mixing with salt and sugar. 3 Sun drying for 2 days.	PE bags or hard cardboard boxes.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Dried	BRU	Salted fish Product is usually whole or split. It is fried and eaten as a side dish.	Short bodied mackerel, jewfish, croaker, sardinella, spanish mackerel Salt.	1 Cleaning of fish. 2 Gutting and splitting (small - whole). 3 Mixing with salt and keep overnight. 4 Sun-drying for 1- 3 days.	Packed in plastic bags
Dried	BRU	Shrimp Defined as boiled and sun-dried shrimp. It is cooked with vegetables, noodles or eaten as snack with peanuts.	Small shrimp, salt	1 Cleaning of shrimp and boiling in brine solution for 15 mins. 2 Draining and sun-drying for 3 days. 3 Removal of skin.	Packed in plastic bags
Dried	IND	Anchovy (\$4.29-\$7.13) Defined as sun-dried small fish. It is fried and eaten as snacks or used in soups and dishes as flavour enhancer.	Fish (\$2.14-\$2.50) - <i>Stolephorus spp.</i> Salt	1 Anchovies. 2 Boiling in salt solution for 15 mins. 3 Draining. 4 Sun-drying. 5 Sizing.	Packed in plastic bags and paper in standard weights of 3 kg and 10 kg.
Dried	IND	Salted fish (\$0.713 - \$4.279) Defined as sun-dried fish. It is fried or used in soups and dishes as flavour enhancer.	Fish (\$0.36-\$1.07) Squid ( <i>holigo spp.</i> ), anchovies ( <i>stolephorus spp.</i> ), ray, mackerel, sardine, peperek, catfish, shark. Salt	1 Raw materials. 2 Washing. 3 Salting. 4 Washing and draining. 5 Drying. 6 Salted product.	Consumer pack in plastic bags in standard weights of 0.5 - 1 kg. Packed in wooden boxes of about 100 kg.
Dried	MAL	Anchovy (\$3.40) Defined as salted, boiled and sun-dried small fish. It is deep fried or boiled in soup.	Anchovy (\$0.48) Salt	1 Boiling in bamboo basket in 10% brine for 15 mins. 2 Removal of baskets and draining. 3 Spread out or sun-dry for 2- 4 days. 4 Packing.	Pack in hard boxes 10 kg/ box & braided bamboo basket of 60 kg.
Dried	MAL	Cockles Product is sun-dried. It is used in soup or fried with chili sauce as a dish.	Blood cockle	NA	NA
Dried	MAL	Cuttlefish (\$14.49) Product is sun-dried. It is served in local dishes.	Cuttlefish (\$1.86)	1 Cut open and wash. 2 Spread out on tray. 3 Sun-dry.	NA
Dried	MAL	Jelly fish (\$1.90) Product is rubbery in texture. It is eaten with sweet and sour sauce.	Jelly fish (\$0.26) Alum, sodium metabisulphite	1 Cleaning. 2 Put in alternate layers of salt (jelly fish/salt 4:1) for 2- 3 weeks. 3 Adding of sodium metabisulphite to decolourise the product.	NA
Dried	MAL	Prawn (\$9.40) Product is salted, boiled and sun-dried. It is cooked with vegetables, meat or in soup.	<i>Solenocera sub-muda</i> (\$1.41) Salt	1 Shrimps. 2 Washing with sea water & mix with salt (salt/shrimp=4:100) 3 Cooking by using gas/ kerosene stove. 4 Removal of skin. 5 Spread out for sun-drying for 1- 4 days.	Pack in basket, plastic or paper bag.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Dried	MAL	Salted fish (\$2.81) It is salted and sun-dried. It can be deep fried till crispy, cooked with vegetables, steamed with ginger & oil to be taken with porridge.	<i>Rastrelliger kanagurta</i> , <i>Sciaena</i> spp., <i>Scomberomorus</i> spp., <i>Lutianus</i> spp., <i>Fomionger</i> , <i>Nemipterus</i> spp and any fish which are not distributed as fresh fish Salt	1 Washing with sea water. 2 Removal of gills, entrails, scale (optional). 3 Placing of dressed fish in wooden tub. 4 Addition of 10% salt, to weight of fish. 5 Salting for 2 days. 6 Spread out for sun-drying using wooden platforms & mats for 10-30 hrs and then, packing.	Pack in braided rattan/bamboo basket in 50-60 kg each.
Dried	PHI	Abalone Product is fleshy and hard. It is used in Chinese dishes, noodles and chopsuey.	Abalone	1 Shucking. 2 Soaking. 3 Cleaning. 4 Draining.	Pack in carton boxes.
Dried	PHI	Anchovy Defined as salted and sun-dried small fish. It is cooked in oil, boiled in water with vegetables or cooked with coconut milk and vegetables.	Anchovies ( <i>Stalephomus species</i> )	1 Clean fish by washing. 2 Soaking in 10% brine for half an hour, sorbistat-K may be added to prevent mold formation. 3 Draining of brine and arrange in drying trays. 4 Sun-drying or use mechanical dryers such as the cabinet-type dehydrator. 5 Cooling. 6 Packing in plastic bags.	Pack in plastic bags
Dried	PHI	Barracuda (\$1.78) Defined as fish with salty taste and fishy odour. It is cooked with vegetables, fried or broiled.	Barracuda (\$1.12) Salt	1 Fresh fish. 2 Preparation of raw material. 3 Soaking in brine. 4 Drying. 5 Storing.	Pack in plastic, carton and wooden boxes.
Dried	PHI	Big-eye scad (\$1.56) Defined as fish with salty taste and fishy odour. It is cooked with vegetables, fried or broiled.	Big-eye scad (\$1.12) Salt	1 Fresh fish. 2 Preparation raw material. 3 Soaking in brine. 4 Drying. 5 Storing.	Pack in plastic, carton and wooden boxes.
Dried	PHI	Crevalle (\$1.56) Product is salty and fishy. It is cooked with vegetables, fried or broiled.	Crevalle(\$1.03) Salt	1 Fresh fish. 2 Preparation of raw material. 3 Soaking in brine. 4 Drying. 5 Storing.	Pack in plastic, carton and wooden boxes.
Dried	PHI	Deep bodied herring (\$1.78) Product is salty and fishy. It is cooked with vegetables, fried or broiled.	Deep-bodied herring (\$1.12) Salt	1 Fresh fish. 2 Preparation of raw material. 3 Soaking in brine. 4 Drying. 5 Storing.	Pack in plastic, carton and wooden boxes.
Dried	PHI	Fimbriated herring (\$1.78) Product is salty and fishy. It is cooked with vegetables, fried or broiled.	Fimbriated herring (\$1.12) Salt	1 Fresh fish. 2 Preparation of raw material. 3 Soaking in brine. 4 Drying. 5 Storing.	Pack in plastic, carton and wooden boxes.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Dried	PHI	Hairtail (\$1.56) Product is salty and fishy. It is cooked with vegetables, fried or broiled.	Hairtail (\$1.12)	<ol style="list-style-type: none"> <li>1 Fresh fish.</li> <li>2 Preparation of raw material.</li> <li>3 Soaking in brine.</li> <li>4 Drying and storing.</li> </ol>	Pack in plastic, carton and wooden boxes.
Dried	PHI	Herring (\$1.56) Defined as salted dried fish. It is cooked in oil or boiled in water with vegetables or cooked with coconut milk and vegetables. It can also be grilled in charcoal.	Herring (\$1.12) 15% brine, sorbistat-K (optional)	<ol style="list-style-type: none"> <li>1 Splitting of fish along the dorsal side.</li> <li>2 Cleaning by removing gills and organs, then wash.</li> <li>3 Soaking in 15% brine for half an hour, Sorbistat-K may be added to prevent mold formation.</li> <li>4 Draining and arranging in drying trays (skin-side down).</li> <li>5 Sun-drying or by mechanical dryers such as the cabinet-type dehydrator.</li> <li>6 Cooling of products and packing in plastic bags or boxes.</li> </ol>	Pack in plastic bags or boxes.
Dried	PHI	Indian sardines (\$2.01) Product is salty and fishy. It is cooked with vegetables, fried or broiled.	Indian sardines (\$1.56) Salt	<ol style="list-style-type: none"> <li>1 Fresh fish.</li> <li>2 Preparation of raw material.</li> <li>3 Soaking in brine.</li> <li>4 Drying and storing.</li> </ol>	Pack in plastic, carton and wooden boxes.
Dried	PHI	Lizard fish (\$1.56) Product is salty and fishy. It is cooked with vegetables, fried or broiled.	Lizard fish (\$1.03) Salt	<ol style="list-style-type: none"> <li>1 Fresh fish.</li> <li>2 Preparation of raw material.</li> <li>3 Soaking in brine.</li> <li>4 Drying and storing.</li> </ol>	Pack in plastic, carton and wooden boxes.
Dried	PHI	Long tailed nemipterid Product is salty and fishy. It is cooked with vegetables, fried or broiled.	Long tailed nemipterid (\$1.56-\$2.01) Salt	<ol style="list-style-type: none"> <li>1 Fresh fish.</li> <li>2 Preparation of raw material.</li> <li>3 Soaking in brine.</li> <li>4 Drying and storing.</li> </ol>	Pack in plastic, carton and wooden boxes.
Dried	PHI	Mackerel Defined as salted fish. It is cooked in oil or boiled in water with vegetables or cooked with coconut milk and vegetables. It can also be grilled in charcoal.	Mackerel 15% brine, sorbistat-K (optional)	<ol style="list-style-type: none"> <li>1 Split fish along the dorsal side.</li> <li>2 Clean by removing gills and organs, then wash.</li> <li>3 Soak in 15% brine for half an hour, Sorbistat-K may be added to prevent mold formation.</li> <li>4 Drain brine and arrange in drying trays with skin-side down.</li> <li>5 Sun-dry or dry using mechanical dryers such as the cabinet-type dehydrator.</li> <li>6 Cool product and pack in plastic bags or boxes.</li> </ol>	Pack in plastic bags or boxes.
Dried	PHI	Milkfish (\$2.01-\$2.23) Defined as dried salted split fish with a fishy flavour. It is fried and served with tomatoes.	Milkfish (\$1.56) Coarse salt	<ol style="list-style-type: none"> <li>1 Fresh Milkfish.</li> <li>2 Washing.</li> <li>3 Splitting.</li> <li>4 Soaking in brine.</li> <li>5 Drying for 2 days.</li> <li>6 Storing.</li> </ol>	Pack in plastic, carton and wooden boxes.
Dried	PHI	Roundscad (\$1.56) Product is salty and fishy. It is cooked with vegetables, fried or broiled.	Roundscad (\$1.12) Salt	<ol style="list-style-type: none"> <li>1 Fresh fish.</li> <li>2 Preparation of raw material.</li> <li>3 Soaking in brine.</li> <li>4 Drying.</li> <li>5 Storing.</li> </ol>	Pack in plastic, carton and wooden boxes.



Category	Country	Product	Material	Processing Method	Packaging Conditions
Dried	PHI	Sea cucumber Defined as salted and dried product. It is used for soups and noodles or as salads which can be eaten fresh or fermented.	Sea Cucumber Seawater, alum	<ol style="list-style-type: none"> <li>Cleaning by removing the gut and scraping the body wall to remove the chalky epidermis or calcareous species</li> <li>For big and thick-walled species, slit lengthwise on the ventral side and remove internal organs.</li> <li>Boil in seawater until they achieve a rubbery consistency.</li> <li>Alum may be added to the cooking water to prevent the growth of molds and shorten cooking time.</li> <li>Dry by smoking or sundrying.</li> </ol>	Packed in plastic bags which are free from moisture.
Dried	PHI	Shark fin (\$5.35-\$5.80) Defined as a tasty and nutritious product. It is used for soup or gelatin content and Chinese delicacies.	Shark fin (\$0.45-\$0.67) Salt	<ol style="list-style-type: none"> <li>Fins.</li> <li>Dusting with salt (1:10).</li> <li>Standing for 24 hours.</li> <li>Washing.</li> <li>Hanging or spreading out on wire.</li> <li>Drying for over a month and pack in sack or barrel.</li> </ol>	Pack in a sack or barrel.
Dried	PHI	Shrimp (\$2.68) Defined as shellless dried whole shrimp. It is cooked with vegetables.	Shrimp (\$1.34-\$1.56)	<ol style="list-style-type: none"> <li>Shrimp.</li> <li>Washing.</li> <li>Boil using stove.</li> <li>Drying and pounding.</li> <li>Storing.</li> </ol>	Pack in sack or plastic.
Dried	PHI	Slipmouth (\$2.68) Product is salty and fishy. It is cooked with vegetables, fried or broiled.	Slipmouth (\$1.12) Salt	<ol style="list-style-type: none"> <li>Fresh fish.</li> <li>Preparation of raw material.</li> <li>Soaking in brine.</li> <li>Drying.</li> <li>Storing.</li> </ol>	Pack in plastic, carton and wooden boxes.
Dried	PHI	Squid (\$8.02) Defined as bicolor style and reddish brown. It is fried, broiled or soaked in sugar, salt, soy sauce, spices and then fried or broiled.	Squid (\$2.23-\$2.68)	<ol style="list-style-type: none"> <li>Squid.</li> <li>Washing with salt water.</li> <li>Arranging in split bamboo rack.</li> <li>Drying and turning once or twice a day.</li> <li>Binding in bales.</li> <li>Storing in a cool place.</li> </ol>	Pack in plastic or wooden boxes.
Dried	PHI	Striped mackerel (\$2.23) Product is salty and fishy. It is cooked with vegetables, fried or broiled.	Striped mackerel (\$1.56) Salt	<ol style="list-style-type: none"> <li>Fresh fish.</li> <li>Prepare raw material.</li> <li>Soaking in brine.</li> <li>Drying and storing.</li> </ol>	Pack in plastic, carton and wooden boxes.
Dried	SIN	Sea Cucumber Product is gutted, boiled and dried. It is soaked in water, boiled (5 min) for soups, fried with meat, vegetables.	Sea cucumber (\$5.69-\$18.97) <i>Microthete nobilis</i> <i>Hotothuria scabra</i>	<ol style="list-style-type: none"> <li>Boiling of sea cucumber in sea water until they swell</li> <li>Draining, cooling and slitting of body wall along back.</li> <li>Second boiling until rubber-like hardness.</li> <li>Draining and cooling and removal of guts.</li> <li>Drying over for 1-2 days until hard and dry.</li> <li>Sun-drying for 4-5 days.</li> </ol>	Pack in gunny sack with 60 kg product.
Dried	SIN	Shark fin Product is a boiled and dried. It is a famous Chinese delicacy.	Shark fins Dorsal fin, pectoral fin, tail fin	<ol style="list-style-type: none"> <li>Soaking of dried fins overnight in hot water at 80-90°C.</li> <li>Scraping of skin and separation of fin needles from cartilage.</li> <li>Boiling till fin needles expand and curl.</li> <li>Cooling by soaking overnight in water.</li> <li>Arranging fin needles into desired shape on trays.</li> <li>Drying in dryer at 45°C for about 6 hours and pack.</li> </ol>	In cellophane about 50g - round or triangle shaped.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Dried	THA	Jelly fish (\$4.00-\$5.00) Defined as sun-dried product. It is boiled and served in noodle soups	Use only the carp of <i>Rhoptilem spp.</i> Potash alum mixture 30%	1 Soaking of jelly fish in ice water (8-10 hrs) to remove mucus. 2 Draining. 3 Mixing with 30% Salt Potash alum mixture for 2-3 days. 4 Washing and draining in a shady area for 3-4 days.	Pack in plastic bag
Dried	THA	Salted fish (\$2.80-\$10.00) It is a sun-dried salted fish. Product is deep fried in oil before serve.	Marine fish (\$0.50-\$3.00) Chub mackerel, threadfish, spanish mackerel, lizard fish Salt	1 Gutting. 2 Soaking in saturated brine for 1-2 days. 3 Washing and draining. 4 Sun-drying for 1-2 days.	Pack in plastic bag
Dried	THA	Salted freshwater fish. (\$3.00-\$10.00) Defined as sun-dried salted fresh water fish. It is deep fried before serve.	Freshwater fish (\$1.00-\$2.50) Snake head, cat fish, climbing perch, swam eel, local carp, <i>sepat siam</i> Salt	1 Removal of scales, head and gut. 2 Washing and soaking in brine (10%) for 1 day or brine (30%) for 15-30 mins. 3 Washing and draining. 4 Sun-drying for 1-2 days and pack.	Pack in plastic bag
Dried	THA	Shellfish (\$5.60-\$6.00) It is deep fried before serve.	<i>Mytilus smaragdinus</i> (\$1.00-\$2.00)	1 Fresh shellfish meat. 2 Cleaning. 3 Sun-drying for 1-2 days.	Pack in plastic bag
Dried	THA	Shrimp (\$10.00-\$14.00) Defined as sun-dried boiled shrimp. It is deep fried or used as sub-ingredient in Thai dishes.	Shrimp (\$1.80-\$3.00) - <i>Penaeus spp.</i> , <i>Metapenaeus spp.</i>	1 Boiling in sea water using gas stove. 2 Sun-drying for 1 day or in dryer machine for 4 hrs. 3 Removal of shell by machine. 4 Packing.	Pack in plastic bag
Dried	THA	Squid (\$8.00-\$10.00) Defined as sun-dried squid. It is deep fried or seasoned with spices and roasted.	Squid (\$0.70-\$2.50) <i>Loligo spp.</i> , <i>Sepia spp.</i> , Octopus Salt	1 Splitting and cleaning of squids in brine or sea water. 2 Sun-drying for 2-3 days.	Pack in plastic bag
Dried	VIE	Abalone Product has a rubbery texture. It is used in delicacies.	<i>Haliotis diversicolor</i> Salt	1 Precooking in brine of 2-3% salt, shell off. 2 Cleaning in hot water (60°C) with 2% salt, draining, sun-drying or in dryers and turn 2-3 times a day.	Pack in PE-2 layers bag per 500 grams.
Dried	VIE	Blue mussel clam Product is dry and rubbery. It is used to cook with other ingredients and vegetables.	<i>Mytilus smugadinus</i> , <i>Pterie spp</i>	1 Removal of shells, entrails, cleaning with 1% salt to remove slime. 2 Draining. 3 Boiling in water (1% salt) by Wt for 20 mins drain. 4 Sun-drying or in dryer.	Pack in 2-layers bag per 500 grams.
Dried	VIE	Crimped squid Product is dried and slitted with a meaty taste and pleasant odour. It can be eaten as a dish itself.	<i>Dried Loligonidae spp.</i>	1 Deheading, re-soften by soaking in wet mixture of ingredients. 2 Keep for 30 min., boiling till edible and crimping across body.	Pack in PE bag per 500-1000 gr.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Dried	VIE	Fish maw Product is yellowish or whitish. It is used for preparing delicacies.	<i>Otolithoides bivauritus</i> <i>Muraenasox spp.</i>	<ol style="list-style-type: none"> <li>1 Gutting, extracting of maw, cleaning, soaking in 1.5% alum solution for 90 min.</li> <li>2 Sun-drying till moisture reaches 20 %.</li> </ol>	Sort, pack in PE, PP bag per 20-50 kg.
Dried	VIE	Jelly fish It is similar in flavour as cured fish. It is used for preparing other dishes.	Cured jelly fish	<ol style="list-style-type: none"> <li>1 Sun-drying or in Artisanal dryer.</li> </ol>	Pack in PE bag per 500-1000 grams.
Dried	VIE	Oyster Defined as rubbery and dried with a meaty taste. It is used to cook with ingredients and vegetables.	<i>Ostres rivularis</i>	<ol style="list-style-type: none"> <li>1 Shell removal, cleaning with 2% salt by wt. to remove slime.</li> <li>2 Boiling for 30 mins and extraction of flesh.</li> <li>3 Mixing with hot 3% salt to dehydrate and sun-drying.</li> <li>4 Placing in dryer at 40-70-45°C</li> <li>5 Turn for a number of times.</li> </ol>	Pack in 2-layers bag per 500 grams.
Dried	VIE	Peeled shrimp Defined as shellless prawn with a characteristic flavour. It is used for soups, frying or cooking with pork as a dish.	Shrimps	<ol style="list-style-type: none"> <li>1 Washing, sorting, precooking or dipping in boiling water.</li> <li>2 Spreading out to sun dry on grill mesh (3-4 days), and remove shell.</li> </ol>	Pack in PE, PP bag 10-15 kg each.
Dried	VIE	Salted fish (headed) Product is headless and tailless. It is broiled, fried or cooked with vegetables and spices.	<i>Decapterus spp, Priacanthus spp, Nemipterus spp, Carrangidae spp.</i>	<ol style="list-style-type: none"> <li>1 Removal of head, gut and cleaning.</li> <li>2 Mixing with slight salted product containing 3-5% of salt, and heavy salted product with 18-22% salt content.</li> <li>3 Sun-drying on grill mesh until moisture is 22%. (Period of drying depends on weather).</li> </ol>	Pack in PE, PP bag per 20-50 kg.
Dried	VIE	Salted fish (split) Defined as splitted dried fish with salty flavour.	<i>Decapterus spp, Priscanthus spp., Nemipterus spp., Carrangidae spp.</i>	<ol style="list-style-type: none"> <li>1 Removal of gut, gills, entrails and rub salt on inner and outer layer of fish with content salt of 10 % by weight .</li> <li>2 Sun-drying.</li> </ol>	Pack in PE, PP bag per 20-50 kg.
Dried	VIE	Salted fish (whole) Defined as salty dried whole fish with fishy odour. It is used for broiling or frying or cooking with vegetables and spices.	Any small marine fishes can be distributed as freshness in fishing season.	<ol style="list-style-type: none"> <li>1 Washing.</li> <li>2 Dressing and mixing with salt of 22% by weight.</li> <li>3 Keep for 30 hrs.</li> <li>4 Cleaning of anchovies and sun-dry directly without salting.</li> </ol>	Pack in PE, PP bag for 20-50 kg
Dried	VIE	Scallop flesh Product is rubbery in texture. It is used to prepare other dishes, <i>sante</i> roast or frying.	Scallop	<ol style="list-style-type: none"> <li>1 Precooking, removal of shells and cleaning in cool water.</li> <li>2 Sun-drying for 4 days in a fine or cloudy weather or in dryer until moisture reaches 18-20%</li> </ol>	Pack in PP bag or bamboo basket/ plastic one for distribution.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Dried	VIE	Sea cucumber Product is finger-shaped and with a typical pleasant flavour. It is used for preparing typical Oriental delicacy meal.	<i>Holothuridae spp.</i>	<ol style="list-style-type: none"> <li>1 Slit along dorsal/ ventral remove entrails.</li> <li>2 Boil in sea-water for 45 min., take out, soak in the boiled water for 16 hrs, reboiled in sea-water for 10 min., drain.</li> <li>3 Mix with salt 12% by weight in hot arrange into wooden jar with the boiled water for 6 days, turn over twice a day.</li> <li>4 Reboil again in salt saturated solution for 30 mins.</li> <li>5 Clean calcium-layer, soak in charcoal-suspended solution, take out and mix with charcoal-powder to make charcoal-layer round the body, sun dry or in dryer at 50°C to hard dry.</li> </ol>	Pack in PE-3 layers bag, airtight, bind in carton box 15-20 kg each.
Dried	VIE	Sea horse Product is dried, hard and pale white in colour. It is soaked in dry alcohol (60°C) and used as a drug for curing some diseases.	<i>Hampala macrole-pidota</i>	<ol style="list-style-type: none"> <li>1 Washing, sun-drying till hard and pale white.</li> <li>2 Slightly salty flavour.</li> </ol>	Pack in PE-bag as desire.
Dried	VIE	Seasoned fish It is sliced as cakes and eaten with rice.	<i>Aurarius thalassiaus</i>	<ol style="list-style-type: none"> <li>1 Washing, gutting, filleting, slicing.</li> <li>2 Soaking in seasoning mixture</li> <li>3 Drying in a dryer.</li> </ol>	Pack in PE bag 500 grams each.
Dried	VIE	Shark fin Defined as dried fins, with fishy odour. It is used for preparing delicacies.	Dorsal, pectoral, tail anal, pelvic of gray or mallet sharks.	<ol style="list-style-type: none"> <li>1 Cutting of fins from body, cleaning and sun-drying.</li> <li>2 To keep products fresh, processing is done on board.</li> </ol>	Sort, pack in PE, PP bag per 20-50 kg
Dried	VIE	Skinned cuttlefish Served in broiled form or used for preparing other dish.	Fresh <i>Loligonidae spp.</i>	<ol style="list-style-type: none"> <li>1 Removal of skin except the tail-end part.</li> <li>2 Drying in dryer or sun-drying and pressing to plate form.</li> </ol>	Pack in PE bag per 500-1000 grams.
Dried	VIE	Squid (whole) Product is whole with seaweedy odour. It is broiled or cooked with other ingredients.	Fresh <i>Loligonidae spp.</i>	<ol style="list-style-type: none"> <li>1 Removal of eyes, slit body along ventral, remove entrails,</li> <li>2 Cleaning.</li> <li>3 Sun-drying on grill mesh till moisture reaches 16-18%.</li> </ol>	Pack in PE bag per 500-1000 gr.
Dried	VIE	Squid ring Product is dried with a meaty taste and pleasant odour. It is consumed as a dish itself.	Dried <i>Loligonidae spp.</i>	<ol style="list-style-type: none"> <li>1 Dehead, resoften by soaking in wet mixture of ingredients.</li> <li>2 Broiling till edible, then, cut across body to make rings of 2 mm wide.</li> </ol>	Pack in PE bag per 500-1000 gr.
Dried	VIE	Urchin Product has a dried flesh. It can be cooked with other ingredients and vegetables.	Urchin	<ol style="list-style-type: none"> <li>1 Cut in half, clean, steam to can be eaten.</li> <li>2 Sun-dry or in dryer below 50°C (The same treatment is also applied to the roe).</li> </ol>	

Category	Country	Product	Material	Processing Method	Packaging Conditions
Fermented	BRU	Cured shrimp	Shrimp	1 Washing and draining of acetes. 2 Mixing with salt and sugar. 3 Allow for fermentation for 1 week. 4 Products formed.	Packed in bottles
		Defined as fermented acetes. Product is used as a side dish.	Acetes, salt, sugar		
Fermented	BRU	Fish	Fish, anchovies, salt, rice (fried and pounded).	1 Washing and draining of fish, gut and muscel. 2 Adding of fried rice powder and salt. 3 Allow fermentation for at least 3 days. 4 Fermented products formed.	Packed in bottles
		Defined as fermentation of small fish.	Rice powder, salt.		
Fermented	BRU	Fish stomach	Fish stomach (usually short bodied mackerel, salt)	1 Washing and draining of fish, gut and muscel. 2 Adding of fried rice powder and salt. 3 Allow fermentation for at least 3 days. 4 Fermented products formed.	Packed in bottles
		Defined as fermentation of fish stomach. It is used as a side dish.	Rice powder, salt		
Fermented	BRU	Muscel	Mussels, beansprouts	1 Washing and draining of mussels. 2 Adding of fried rice powder and salt. 3 Allow fermentation for at least 3 days.	Packed in bottles
		Defined as fermented mussels. It is used as a side dish.	Salt, rice (fried and pounded)		
Fermented	BRU	Shrimp paste	Acetes shrimp	1 Washing and draining of acetes 2 Mixing with salt and sugar. 3 Fermentation for 1 week.	Plastic bags. The paste is packed tightly in a clay jar for storage.
		Product is used for flavouring and eaten as sambal, fried, or as it is	Salt, sugar		
Fermented	IND	Fish (\$0.998)	Fish kembung (Rastelliger spp.) (\$0.785)	1 Adding of salt. 2 Boiling in water. 3 Cooling and drying. 4 Fish <i>peda</i> .	Packaging in bamboo basket.
		Defined as boiled, fermented fish. It is fried and eaten with rice.	Salt		
Fermented	IND	Fish paste (\$3.93)	<i>Mycidaceae spp.</i> (\$0.64) Minced with fish meat	1 Mixing. 2 Sun-drying. 3 Mixing. 4 Adding of salt and belachan.	Packed in plastic bags in standard weights of 50 grams or 100 grams.
		Product is sun-dried fish paste. It is used as a flavouring in chili sauce.	Salt, flour		
Fermented	IND	Fish sauce	Anchovies (\$0.927)	1 Adding with salt. 2 Fermentation. 3 Fish sauce.	Packed in bottles.
		Defined as fermented fish sauce. It is used as for enhancing flavour.	Salt		
Fermented	MAL	Anchovy	Anchovies (\$0.370)	1 Rinse with salt water repeatedly. 2 Adding of salt to anchovy (1: 2-3). 3 Transferring to vats or pots. 4 Adding of salt on the surface. 5 Leave for fermentation for 1/2-2 years.	Packed in bottles
		Product is the liquefaction of anchovies in salt. It is used as condiments in dishes.	Salt		

Category	Country	Product	Material	Processing Method	Packaging Conditions
Fermented	MAL	Pickle prawn	Acetes shrimp (\$0.61)	<ol style="list-style-type: none"> <li>1 Washing of shrimp.</li> <li>2 Mixing with 20% coarse salt, 6% cold rice.</li> <li>3 Packing in jars.</li> <li>4 Fermenting for 20-30 days.</li> </ol>	Pack in bottles
		Defined as a suspension of tiny, pink acetes shrimp in sauce. It is eaten with rice.	Salt, rice		
Fermented	MAL	Prawn paste	NA	NA	Pack in tins
		Product is thick and viscous and dark brown in colour. It is used as a condiment.			
Fermented	MAL	Shrimp paste (\$2.04)	Acetes shrimp (\$0.22)	<ol style="list-style-type: none"> <li>1 Washing and mixing with salt in bamboo baskets or wooden tubs.</li> <li>2 Spreading out to sun-dry to 5-8 hrs.</li> <li>3 Mincing.</li> <li>4 Fermentation for 7 days.</li> </ol>	Pack in plastic bag
		Defined as a salty paste with a greyish pink colour. It is used as an ingredient for local dishes.	Salt		
Fermented	PHI	Fish	Different fishes	<ol style="list-style-type: none"> <li>1 Splitting of fish along the back bone.</li> <li>2 Removal of gills and internal organs.</li> <li>3 Washing thoroughly and draining.</li> <li>4 Cutting into single fillet and mixing with salt.</li> <li>5 Grinding of angkak and mixing with cooked rice.</li> <li>6 Packing of fish and rice angkak mixture in a glass jar by spreading thin layer of the at the bottom of the jar.</li> <li>7 Spreading of split fish one after the other.</li> <li>8 In between each fish, spread rice angkak mixture. The top layer is placed skin side up.</li> </ol>	Product is packed in a jar.
		Defined as a fish fillet mixed with salt, ground angkak, cooked rice and mudfish. It is fried in oil, or served in leafy vegetables salad mixture, eaten with rice, cooked with vegetables, onion, chili and spices.	Angkak (local preservatives) and salt.		
		Fish sauce (\$0.018)	Fresh fish (\$0.008-\$0.015)	<ol style="list-style-type: none"> <li>1 Washing.</li> <li>2 Draining.</li> <li>3 Adding of salt and ferment in vats, earthenwares or jars.</li> <li>4 Filtering and packing.</li> </ol>	Pack in bottles and cans.
		It is added to vegetables as seasonings or as food dips.	Salt		
Fermented	PHI	Milkfish	Milkfish	<ol style="list-style-type: none"> <li>1 Splitting of fish along the back bone.</li> <li>2 Removal of gills and internal organs.</li> <li>3 Washing thoroughly and draining.</li> <li>4 Cutting into single fillet and mixing with salt.</li> <li>5 Grinding of angkak and mixing with cooked rice.</li> <li>6 Packing of fish and rice angkak mixture in a glass jar by spreading thin layer of the at the bottom of the jar.</li> <li>7 Spreading of split fish one after the other.</li> <li>8 In between each fish, spread rice angkak mixture. The top layer is placed skin side up.</li> </ol>	Product is packed in a jar.
		Defined as a fish fillet mixed with salt, ground angkak, cooked rice and mudfish. It is fried in oil, or served in leafy vegetables salad mixture, eaten with rice, cooked with vegetables and spices.	Angkak (local preservatives) and salt.		
		Salted Fish Patis	Anchovies	<ol style="list-style-type: none"> <li>1 Fermenting of fish-salt mixture into the ground with spigots at the bottom.</li> </ol>	Product is stored in a bottle.
		Defined as a clear brown liquid with an aroma consisting of ammonical, meaty and cheesy. It is used as for viand.	Salt		

Category	Country	Product	Material	Processing Method	Packaging Conditions
Fermented	PHI	Shrimp paste (\$0.036) Defined as fermented shrimp with salt. It is sautéed in garlic, pork fat and used as dips for foods.	Small shrimp (\$0.028) <i>Acetes spp.</i> Salt	1 Cleaning. 2 Washing. 3 Draining. 4 Salting. 5 Fermenting in tanks, mixing vats.	Pack in glass jars, bottles and cans.
Fermented	THA	Fish Product is sour and salty. It is mixed with lemon grass, shallots and chili, or as condiment. It can be eaten by itself.	Fish Freshwater fish such as snake head, <i>gourami</i> , local carp, limbing perch Marine fish such as lizard fish Salt, ground roasted rice	1 Removal of scales and viscera 2 Washing and draining. 3 Mixing with salt and leave overnight. 4 Adding of cooked rice and minced garlic. 5 Packing in a jar. 6 Storing at ambient temperature for 3-7 days.	Earthen glass jar, plastic bag, jar,
Fermented	THA	Fish (\$1.50-\$4.00) Defined as Thai sweetened fermented fish. It is mixed with spices, wrapped in banana leaf to roast or fry with a mixture of onion, chili and lemon juice or used in curry soup.	Freshwater fish (\$0.50-\$2.50) - <i>Puntius spp.</i> , <i>Pangasium spp.</i> Salt, fermented glutinous rice ( <i>Khaao Maak</i> )	1 Removal of head, gut and scales. 2 Washing and draining. 3 Mixing with salt (25% by wt.) 4 Packing in closed jar for 2-3 months. 5 Extract fish out and mix with ground roasted rice (10% by weight). 6 Packing of product in closed jars for 2-3 months.	Pack in earthen jar with salt on top.
Fermented	THA	Fish Product is a mixture of fish, salt and ground roasted rice. It is cooked with coconut milk, shallots, chili and served with fresh vegetables.	Freshwater fish such as <i>Puntius spp.</i> , <i>Probarbus spp.</i> , <i>Pangasius spp.</i> , <i>Labibarbus spp.</i> Solar salt, cooked rice and minced garlic.	1 Cleaning and cutting into pieces. 2 Mixing with salt in the ratio 3 : 1 (w/w) 3 Packing in the jar for 2 days. 4 Washing of fish pieces and draining. 5 Mixing with <i>Khaao Maak</i> (3 : 1). 6 Packing in jars and keep at ambient temperature for 10-20 days.	Earthen jar; glass jar.
Fermented	THA	Fish sauce (\$0.80-\$1.20) Product is salty, fishy and clear brown. It is mixed with chili, shallots, sugar and lime juice, boiled with lemon grass, onion, sugar, and eaten with steamed rice called <i>Kao-jam</i> .	Marine fish (\$0.20-\$0.40): <i>Stolephorus spp.</i> , <i>Decapterus spp.</i> , <i>Rastrelliger spp.</i> , <i>Rasbora spp.</i> , <i>Cirrhinna spp.</i> Salt	1 Washing and draining of whole fish. 2 Mixing with salt (3:1). 3 Keep in earthen jar for 3-6 months with occasional stirring. 4 Packing of products in glass bottles.	Earthen jar, glass bottle
Fermented	THA	Fish sauce (\$0.20-\$1.00) Product is a viscous brown liquid with fish meat separated. It is used as a condiment.	Marine fish (\$0.20-\$0.40) Anchovies, sardines, sardines Salt	1 Mixing of fish with salt (3:1). 2 Packing in the concrete tank with salt on the top. 3 Placing of a weight on the top to keep fish below the brine. 4 Leave for 8-12 months, drain and filter to open tank. 5 Aging for 2-3 weeks to improve colour and flavour. 6 Filling into glass bottles.	Pack in glass bottle and PE container
Fermented	THA	Shrimp paste (\$4.00-\$8.00) Product is salty and dark purple. It is used for making chili sauce and spicy soup.	Krill (\$0.80-\$1.00) <i>Acetes spp.</i> Salt	1 Washing and draining of fresh raw material. 2 Mixing with salt (16%) and keep in wooden vats. 3 Draining and sun-drying for 4-5 hrs till 40-45% in moisture. 4 Grinding into paste, pack in a earthen jarvat or wooden for 4-6 months and then pack in glass jars or plastic bags.	Glass jar, plastic bag.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Fermented	VIE	Acidified shrimp Defined as whole shrimp with sour taste and a typical odour. It is served directly with rice or eaten as snacks.	Shrimp	<ol style="list-style-type: none"> <li>1 Sorting, washing, draining, mixing with salt (15% by wt.)</li> <li>2 Adding of spicy herbs and ingredients.</li> <li>3 Set for fermentation for 7 days.</li> </ol>	Pack in glass jar earthen per 1, 5, 10 kg.
Fermented	VIE	Fish sauce Defined as a salty solution. It is used as a dip for vegetables, meat, seasoningsto add to soup or other dishes to enrich protein.	All trash fish.	<ol style="list-style-type: none"> <li>1 Removal of impurities, shellfish, mix with salt of 25% by wt. set naturally fermented for 7 months in concrete tanks, earthen jars, wooden vats.</li> <li>2 Filter when mixture has matured or boil for 1 hour at 100°C, setting to cool.</li> <li>3 Filter to obtain solution when dark-yellow or clear red-browncolour, meaty taste and sweet-aromatic odour are sensed</li> </ol>	Pack in glass bottle, glass jars, PE-can per 1, 5, 10, 20 liters.
Fermented	VIE	Fish meal It is a dark colour powder with a fishy flavour. It is used as a main component of fish, shrimp, poultry.	Trash fish, fish waste, trawl by catch, substandard fishes.	<ol style="list-style-type: none"> <li>1 Steaming</li> <li>2 Pressing, sun-drying or using tunnel dryer and mill.</li> </ol>	Pack in PE, PP bag per 1/5 or 20 kg.
Fermented	VIE	Stiff shrimp paste Product is pinkish with specific aroma. It is served directly with rice as a dip for meats, or fry with pork fat, onion, vegetables as a dish.	<i>Acetes chinensis acetos Japonicus</i>	<ol style="list-style-type: none"> <li>1 Removal of rocks, mud, other creatures.</li> <li>2 Mixing with 5% salt and arrange in a wooden jar and slightly press for 3-4 hrs to drain off water.</li> <li>3 Mixing of residue with salt of 17% by weight and keep for 12 hrs, press again.</li> <li>4 Collection of filtrate from the firestand (twice) and add salt</li> <li>5 Pounding in bamboo basket, mortar or in open earthen jar, if filtrate is similar, mix both to get a moisture of 50%.</li> <li>6 Fermenting for 30 days.</li> </ol>	Pack in bamboo basket with PE-layer, earthen vat, glass jars, plastic tubs 5, 10 kg each.
Fermented	VIE	Weak shrimp paste (Suspension) Product is a thick suspended solution, black and sharp typical odour similar to cheese. It is eaten with rice or fry with pork fat, onion as a dip for meat.	<i>Acetes chinensis acetos Japonicus</i>	<ol style="list-style-type: none"> <li>1 Procedure is similar to stiff shrimp paste. The only difference is the concentration of salt is 28% and moisture is about 70%.</li> </ol>	Pack in glass bottles, glass jars, PE-can per 5, 10 kg.
Fish meal	IND	Fish powder (\$0.86) Defined as dried fish powder. Animal feed use.	Fish such as <i>sardinella</i> spp, unused fish. (\$0.14)	<ol style="list-style-type: none"> <li>1 Washing and cutting.</li> <li>2 Boiling for 30 mins.</li> <li>3 Pressing.</li> <li>4 Crushing, drying, chopping and mincing.</li> </ol>	Packed in plastic bag of 100 kg.
Fish meal	MAL	Fish Product is a feed ingredient used in swine and poultry.	Trawl by-catch	<ol style="list-style-type: none"> <li>1 Cooking by dry or wet method.</li> <li>2 Pressing of cooked fish to remove moisture.</li> <li>3 Drying, grinding and packing.</li> </ol>	Pack in multilayer paper bag.
Fish meal	MAL	Fish manure Product is used for fertilizer.	Trawl by-catch	NA	NA



Category	Country	Product	Material	Processing Method	Packaging Conditions
Fish meal	PHI	Animal feed Defined as dried, ground fish product. It is used mainly for feeding fish, poultry and hogs.	Fish	<ol style="list-style-type: none"> <li>1 Preparation of raw material.</li> <li>2 Cooking using steam cooker.</li> <li>3 Pressing.</li> <li>4 Grinding.</li> <li>5 Packing.</li> <li>6 Storing.</li> </ol>	Pack in black-lined sack.
Fish meal	SIN	Animal feed (\$0.43) Product is dried, ground fish used as a high protein feed fish. It is not for human supplement to animal and consumption.	Trash fish from Thai trawlers. (\$0.08)	<ol style="list-style-type: none"> <li>1 Trash fish passing through screw conveyor.</li> <li>2 Steaming and passing through screw conveyor.</li> <li>3 Removal of water by screw press, pass to screw conveyor.</li> <li>4 Drying in a series of 8 steam jacketed dryers at 190°C.</li> <li>5 Mill and packing.</li> </ol>	Pack in 81 kg gunny sack or 50 kg kraft bag which is made up of 4 layers of kraft paper which is similar to cement bag.
Fish meal	THA	Animal feed (\$0.51-\$0.67) Product is made from trash fish or sardinella.	Trash fish, sardine. (\$0.08-\$0.12)	<ol style="list-style-type: none"> <li>1 Washing and cooking with coagulator.</li> <li>2 Screw pressing and drying in rotary dryer.</li> <li>3 Mill.</li> </ol>	Pack in jute bag and plastic bag.
Frozen	IND	Fish, shrimp, squid. It is fried or cooked before serving.	Fish (\$0.785-\$12.123) Shrimp, squid, <i>archatina variegato</i> , <i>archatina fulica</i>	<ol style="list-style-type: none"> <li>1 Raw material.</li> <li>2 Freezing.</li> <li>3 Frozen products.</li> </ol>	Frozen product packaged in plastic bags.
Frozen	MAL	Cuttlefish	Cuttlefish	<ol style="list-style-type: none"> <li>1 Cleaning and packing into tins.</li> <li>2 Storing of products in cold room.</li> </ol>	NA
Frozen	PHI	Cuttlefish and Squid Product is used for cooking in water with ingredients; in oil; with vegetables; grill in charcoal.	Cuttlefish fish & squid	<ol style="list-style-type: none"> <li>1 Washing with brine (1/4 cup of salt in water).</li> <li>2 Wrapping in moisture vapour proof paper.</li> <li>3 Freezing of products at -18°C.</li> </ol>	Product is packed in insulated containers, prechilled at 4°C for 2 hours and deliver to market within 4 hours.
Frozen	PHI	Milkfish Product is used for cooking in water with ingredients; in oil; with vegetables; grill in charcoal.	Milkfish	<ol style="list-style-type: none"> <li>1 Scaling, dressing and washing.</li> <li>2 For large fish, cut into steaks or filets.</li> <li>3 For lean fish, concentrate and use brine solution for washing. (1/4 cup salt for a quarter of water).</li> <li>4 For fatty fish, use ascorbic acid in a quarter of water.</li> <li>5 Wrap in moisture vapour proof paper and freeze in -18°C.</li> </ol>	Product is packed in insulated containers, prechilled at 4°C for 2 hours and deliver to market within 4 hours.
Frozen	PHI	Shrimp and prawn Product is used for cooking in water with ingredients; in oil; with vegetables; grill in charcoal.	Shrimps and prawns.	<ol style="list-style-type: none"> <li>1 Cleaning by removing the head and shell.</li> <li>2 Washing with brine solution (1/4 cup of salt for a quarter of water).</li> <li>3 Wrap in moisture vapour proof paper and freeze in -18°C.</li> </ol>	Product is packed in insulated containers, prechilled at 4°C for 2 hours and deliver to market within 4 hours.
Frozen	PHI	Tuna Cook in water with other ingredients; cook in oil; cook with vegetables; grill in charcoal.	Tuna	<ol style="list-style-type: none"> <li>1 Scaling, dressing and washing.</li> <li>2 For large fish, cut into steaks or filets.</li> <li>3 For lean fish, concentrate and use brine solution for washing. (1/4 cup salt for a quarter of water).</li> <li>4 For fatty fish, use ascorbic acid in a quarter of water.</li> <li>5 Wrap in moisture vapour proof paper and freeze in -18°C.</li> </ol>	Product is packed in insulated containers, prechilled at 4°C for 2 hours and deliver to market within 4 hours.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Frozen	SIN	Cooked prawn Defined as cooked whole prawn. It is used for all forms of cooking.	Prawns	1 Thawing of prawns. 2 Sorting. 3 Washing, steaming, packing and freezing.	NA
Frozen	SIN	Fish fillet Defined as filleted fish. It is used in all forms of cooking.	Dory, shark, tuna, pomfret, swordfish, red-snapper, red-mullet, mackerel, seabream.	1 Thawing. 2 Manual filleting. 3 Freezing into fillet blocks.	Packed in cardboard boxes. Size varies with buyer's specifications.
Frozen	SIN	Prawn Product is preserved by freezing in blocks or IQF. It is used for all forms of cooking.	Peneid prawns (Chilled or frozen)	1 Thawing. 2 Sorting, washing and deheading. 3 Peeling and deveining. 4 Packing into trays or arranging on trays. 5 Freezing in blast freezer for 8-12 hours or plate freezer for 4 hours.	Packed in cardboard boxes usually 1-2 kg packs.
Frozen	SIN	Prawn meat Defined as deheaded, peeled, deveined prawns. It is used in all forms of cooking.	Prawns	1 Thawing of prawns. 2 Sorting, washing and deheading. 3 Peeling and deveining. 4 Packing. 5 Freezing.	NA
Frozen	SIN	Squids, cuttlefish Defined as frozen whole tubes, fillet cuttlefish. It is used for all forms of cooking.	Cuttlefish: <i>Sepia spp.</i> , <i>Septioloa spp.</i> Squid: <i>Loligo spp.</i>	1 Thawing. 2 Sorting. 3 Removal of head and guts. 4 Skinning. 5 Washing of tubes 6 Packing and freezing.	Packed in cardboard boxes. Size of packs according to buyer's specifications varying from 2 kg to 20 kg blocks.
Frozen	SIN	Whole fish Defined as whole gutted fish. It is used in all forms of cooking.	Dory, shark, tuna, pomfret, swordfish, red-snapper, red-mullet, mackerel, seabream.	1 Whole fish. 2 Wash. 3 Pack and freeze.	Packed in cardboard boxes.
Frozen	THA	Cooked shrimp Defined as frozen cooked shrimp. It is for fresh consumption and as raw material for food industry.	Shrimp (\$2.00-\$5.00) Sand shrimp and black tiger shrimp	1 Boiling, peeling, cooling. 2 Peeling, boiling, cooling. 3 Freezing by air-blast freezer, contact freezer or IQF freezer.	Pack in plastic bag or small plastic tray.
Frozen	THA	Cuttlefish Defined as whole, fillet and cuttlefish head. It is for fresh consumption or raw material for food industry.	Cuttlefish (\$2.00)	1 Cuttlefish. 2 Cleaning. 3 Cutting. 4 Freezing by air-blast freezer or IQF freezer.	Pack in plastic bag or small plastic tray.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Frozen	THA	Fish Defined as frozen whole fish, skin-on or off. It is for fresh consumption and as raw material for food industry.	Marine fish (\$1.60-\$3.60) Red snapper, painted sweetlip, malabar snapper, freshwater fish, tilapia, catfish, yellowfin sole, Alaska pollock	1 Filleting. 2 Freezing by air-blast / Contact freezer.	Pack in plastic bag or small plastic tray.
Frozen	THA	Octopus Defined as frozen whole, ink-on or off, gutted octopus. It is for fresh consumption or raw material for food industry.	Octopus (\$1.00-\$1.40)	1 Cleaning of the raw material. 2 Freezing by air-blast freezer/contact freezer or IQF freezer.	Pack in plastic bag or small plastic tray.
Frozen	THA	Raw shrimp Defined as frozen whole/headless, shell-on/shrimp meat. It is for fresh consumption or as raw material for food industry.	Shrimp (\$5.20-\$10.00) Black tiger shrimp, white shrimp, pink shrimp	1 Removal of head or with head-on. 2 Shell-on or peeled. 3 Freezing by air-blast, contact or IQF freezer.	Pack in plastic bag or small plastic tray.
Frozen	THA	Shellfish Defined as frozen babyclam or ark shell. It is for fresh consumption or as raw material for food industry.	Shellfish (\$0.40-\$0.80) Baby clam, ark shell	1 Boiling. 2 Removal of shell. 3 Freezing by air-blast freezer/contact freezer or IQF freezer.	Pack in plastic bag or small plastic tray.
Frozen	THA	Squid Defined as frozen whole or tube, ring, head. It is for fresh consumption or as raw material for food industry.	Squid (\$0.80-\$2.00)	1 Cleaning. 2 Cutting. 3 Freezing by air-blast freezer or IQF freezer	Pack in plastic bag or small plastic tray.
Frozen	VIE	Blue swimmer block Defined as blue swimmer frozen in ice block. It is used as ready to cook for meal.	<i>Porturus spp</i>	1 Shell off, clean entrails impurities, cut in half, layer into tray, freeze.	Pack in PE-bag, bind in carton box. Size dependent on buyers desire.
Frozen	VIE	Cockle Defined as frozen cockle in a block. It is used as ready to cook for meal.	<i>Arca spp</i>	1 Removal of shell and cleaning. 2 Arranging into trays and followed by freezing.	Size according to buyers specification.
Frozen	VIE	Comb-cuttlefish Defined as a comb-shaped product. It is used for cooking and frying.	<i>Sepiidae Spp</i> 61-80 pieces per kg-size.	1 Fillet was cut in half along the trunk and cut across as a line with 1/2 size IQF.	Packed in PE bag per 5 kg, in carton box per 10 kg (2 bags).

Category	Country	Product	Material	Processing Method	Packaging Conditions
Frozen	VIE	Cooked oyster Defined as frozen cooked oyster in ice block. It is used as ready to cook for meal.	<i>Meretrix spp</i>	<ol style="list-style-type: none"> <li>1 Removal of shells, impurities and then boil.</li> <li>2 Arranging into 1kg blocks.</li> </ol>	Pack in PE-bag, 12 bags in one carton box.
Frozen	VIE	Cooked shrimp IQF Defined as individual frozen shrimp. It is used to cook in fried or boiled form.	Scampi, spiny lobster, sipper lobster.	<ol style="list-style-type: none"> <li>1 Precooking.</li> <li>2 Removal of veins and cutting of the pincers.</li> <li>3 IQF.</li> </ol>	Pack in PE-bag, bind in carton box 5 kg each, put 2 boxes into bigger box.
Frozen	VIE	Cuttlefish edge block It is used to cook in fried or boiled form.	<i>Sepia spp</i>	<ol style="list-style-type: none"> <li>1 Removal of skins and cartilages.</li> <li>2 Slitting and removal of eyes, mouth parts and entrails.</li> <li>3 Cleaning.</li> <li>4 Arranging into 2 kg of products per tray.</li> </ol>	Pack in PE-bag, bind in carton box 6 bags each.
Frozen	VIE	Cuttlefish head block It is used to cook in fried or boiled form.	<i>Sepia spp</i>	<ol style="list-style-type: none"> <li>1 Slit, remove eyes, mouth parts and entrails, clean.</li> <li>2 Arrange into trays per 2 kg.</li> </ol>	Pack in PE-bag, bind in carton box 6 bags each.
Frozen	VIE	Cuttlefish wing block It is used to cook in fried or boiled form.	<i>Sepia spp</i>	<ol style="list-style-type: none"> <li>1 Removal of skins and cartilages.</li> <li>2 Slitting and removal of eyes, mouth parts and entrails.</li> <li>3 Cleaning.</li> <li>4 Arranging into 2 kg of products per tray.</li> </ol>	Pack in PE-bag, bind in carton box 6 bags each.
Frozen	VIE	Dipped shrimp Product is used for dishes.	<i>Metaxa penaeus offinis</i>	<ol style="list-style-type: none"> <li>1 Deshelling and deentrails of prawns.</li> <li>2 Dipping into boiling water for 3- 5 seconds.</li> <li>3 IQF.</li> </ol>	Packed in PE-bag per 10 kg, then in carton box.
Frozen	VIE	Eel IQF Defined as individually frozen eel. It is used to cook in fried or boiled form.	<i>Fluta alba</i>	<ol style="list-style-type: none"> <li>1 Removal of head, gut</li> <li>2 Cutting into 10 cm long.</li> <li>3 Cleaning and IQF</li> </ol>	Pack in PE-bag per 0.5 kg, bind in carton box 12 kg each.
Frozen	VIE	<i>Farciéd</i> crab Defined as frozen boiled crab with a meaty taste. It is ready to eat.	<i>Seyllia serratis</i> ingredients.	<ol style="list-style-type: none"> <li>1 Precooking, extraction of meat, cleaning of carapace.</li> <li>2 Draining.</li> <li>3 Mixing with flour, meat, salt, pepper, stuff mixture into carapace.</li> <li>4 Frying till golden brown.</li> </ol>	Pack in hard PE-tray cover by aluminum paper, airtight, size depends on desire consumers.
Frozen	VIE	<i>Farciéd</i> cuttlefish Product is frozen tube cuttlefish with stuffed ingredients. It is	<i>Loliginidae spp</i> ingredients.	<ol style="list-style-type: none"> <li>1 Removal of entrails, head, cleaning, draining, stuffing of ingredients. (duck egg, pork, onion, mushroom, pepper, fish sauce, Na-glutammat)</li> <li>2 Deep frying till golden brown.</li> </ol>	Pack in hard PE-tray cover by aluminum paper, airtight, size depends on desire consumers.
Frozen	VIE	<i>Farciéd</i> swimming crab Defined as carapace filled with crab meat and ingredients. Fry to serve.	Swimming crab, pork ingredients.	<ol style="list-style-type: none"> <li>1 Deshelling of crabs.</li> <li>2 Cleaning of carapace.</li> <li>3 Mixing of crab meat with pork.</li> <li>4 Adding of ingredients.</li> <li>5 Freezing.</li> </ol>	Packed in 20, 50, 70 and 100 grams per PE-bag and followed by carton boxes.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Frozen	VIE	Fillet cuttlefish Defined as frozen cuttlefish trunk. It is used to cook in fried or boiled form.	<i>Loligoidea spp, sepiidae spp.</i>	<ol style="list-style-type: none"> <li>1 Removal of head, skin, entrails.</li> <li>2 Cleaning.</li> <li>3 Arranging into trays, 2 kg each.</li> </ol>	Pack in PE-bag, bind in carton box 6 bags each.
Frozen	VIE	Fish fillet Defined as fish fillet in ice block. It is used to cook in fried or boiled form.	<i>Epinemphalus spp, lates calcarifer Pangasius Pangssius.</i>	<ol style="list-style-type: none"> <li>1 Filleting and cleaning.</li> <li>2 Arranging into trays.</li> <li>3 Freezing.</li> </ol>	Pack in PE-bag and carton box. Size varies according to buyers specification.
Frozen	VIE	Headed fish IQF Defined as individual headed frozen fish. It is used to cook in fried or boiled form.	<i>Scomberomorus spp, chanos chanos, Morsesox spp, plechthorhynchus pictus</i>	<ol style="list-style-type: none"> <li>1 Removal of head, tail, entrails and scales</li> <li>2 Cleaning</li> <li>3 IQF</li> </ol>	According to consumers' needs.
Frozen	VIE	Headed shrimp block Defined as block of frozen headed shrimp. It is used to cook in fried or boiled form.	<i>Panaeus spp, Metapanaeus spp., Parapansepsis spp.</i>	<ol style="list-style-type: none"> <li>1 Sorting</li> <li>2 Removal of head, veins.</li> <li>3 Draining and weighing, layering into trays and glaze.</li> <li>4 Pack in PE bags (2 kg each).</li> </ol>	Bind in carton box, 6 bags each.
Frozen	VIE	Pineal cuttlefish IQF Product is cut into the shape of a pine flower. It is boiled or fried to serve.	Cuttlefish	<ol style="list-style-type: none"> <li>1 Cutting into pieces as desire.</li> <li>2 Cutting of the surface to make cross lines.</li> <li>3 Dipping into boiling water for 3-5 seconds.</li> <li>4 IQF.</li> </ol>	6 or 10 kg per box in PE-bag followed by carton boxes.
Frozen	VIE	Shrimp block Defined as frozen shrimp in block. It can be boiled or coated with starch to fry.	<i>Panaeus Monodon</i> (Black tiger prawn)	<ol style="list-style-type: none"> <li>1 Removal of shells and veins.</li> <li>2 Cutting of ventral and dorsal parts.</li> <li>3 Stretching of layers to PS-Tray.</li> <li>4 Vacuum packaging and freezing.</li> </ol>	10 and 20 kg carton boxes.
Frozen	VIE	Octopus block Defined as frozen octopus in block form. It is used as ready to cook for meal.	Octopus	<ol style="list-style-type: none"> <li>1 Washing, slitting and removal of entrails.</li> <li>2 Cutting of tentacles, trunk into pieces.</li> <li>3 Arranging into trays and freeze.</li> </ol>	Size according to buyers specification.
Frozen	VIE	Peeled shrimp block Defined as block of frozen peeled shrimp. It is used for frying or boiling.	<i>Panaeus spp., Metapanaeopsis spp., Parapanaeopsis spp.</i>	<ol style="list-style-type: none"> <li>1 Sorting, peeling, devein and draining.</li> <li>2 Weigh, layer into tray, filling by cool water</li> <li>3 Freezing and remove tray and glaze.</li> </ol>	Bind in carton box, 6 bags each.
Frozen	VIE	<i>Sai gon</i> rolled burger Defined as a log-shaped product with meat stuffings. It is used as ready to cook for meal.	Prawns, fishes, ingredients.	<ol style="list-style-type: none"> <li>1 Removal of shells and cleaning.</li> <li>2 Arranging into trays and freeze.</li> </ol>	Pack in PE-bag, put into plastic tray, cover Al-airtight.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Frozen	VIE	Scallop block Defined as frozen fresh scallop block. It is used for frying or boiling.	Scallop	<ol style="list-style-type: none"> <li>1 Removal of shells and impurities.</li> <li>2 Sorting according to their colour, with or without roe, to arrange into 2 kg of products per tray.</li> </ol>	Pack in PE-bag, 12 bags in one carton box.
Frozen	VIE	Seafood mix Defined as a mixture of 3 types of seafood. It is used matsukasha or dipped shrimp.	<i>Meretrix Spp, loligonidae Spp clam, oyster</i>	<ol style="list-style-type: none"> <li>1 Cutting of the cuttlefish into Matsukasha.</li> <li>2 Dipping and boiling of shrimp, clam or oyster.</li> <li>3 Extraction.</li> <li>4 IQF the mixture.</li> </ol>	Packed in PE-bag per 5, 6, 10 kg followed by carton boxes.
Frozen	VIE	Shrimp <i>bisen</i> Defined as a semi-product for dishes. It is coated with starch and then fried.	Black tiger prawns	<ol style="list-style-type: none"> <li>1 Dipping into boiling water for the colour to change into orange-yellow.</li> <li>2 Straightening of the shrimps and freeze.</li> </ol>	10 kg per carton box
Frozen	VIE	Skewered broiled shrimp Defined as barbecued shrimp with typical flavour. It is fried before serving.	Prawn, ingredients	<ol style="list-style-type: none"> <li>1 Removal of head and shells</li> <li>2 Crushing and grinding, mixing with ingredients</li> <li>3 Roll around into sugar-cane-pieces</li> <li>4 Steaming.</li> </ol>	Pack in hard PE-tray cover by aluminum paper, airtight.
Frozen	VIE	Squid ring IQF Boil or fry to serve.	<i>Loligonidae spp</i>	<ol style="list-style-type: none"> <li>1 Removal of skin and entrails.</li> <li>2 Cutting trunks into rings 1 cm long.</li> <li>3 Dipping into boiling water for 3-5 sec and followed by IQF.</li> </ol>	Packed into PE-bags of 10 kg followed by carton boxes.
Frozen	VIE	Swimming crab roe block Defined as frozen crab roe in block. It is used for enhancing the appearance of the dish.	Swimming crab roe	<ol style="list-style-type: none"> <li>1 Extract the roe from the carapace of the swimming crabs.</li> <li>2 Choosing.</li> <li>3 Extract the orange-yellow coloured roes and put them onto the trays.</li> <li>4 Glazing and freezing.</li> </ol>	Packed in PE-bag of 200 grams each with 24 such bags in each of the carton boxes.
Frozen	VIE	Urchin block Defined as frozen cut urchin in block form. It is used as ready to cook for meal.	Urchin	<ol style="list-style-type: none"> <li>1 Dressing and arranging into trays.</li> <li>2 Freezing.</li> </ol>	Size according to buyers specification.
Frozen	VIE	Whole cuttlefish block Defined as a whole sepiidae iced block. It is used in fried, boiled form.	<i>Sepidae spp</i>	<ol style="list-style-type: none"> <li>1 Slitting along the ventral</li> <li>2 Removal of entrails, eyes, mouth parts and then cleaning.</li> <li>3 Arranging into 2 kg per tray.</li> </ol>	Pack in PE-bag, bind in carton box per 6 bags.
Frozen	VIE	Whole cuttlefish IQF Defined as individually frozen <i>sepiidae</i> . It is used in fried or boiled form.	<i>Sepidae spp</i>	<ol style="list-style-type: none"> <li>1 Washing.</li> <li>2 Drain.</li> <li>3 IQF</li> </ol>	Sort, bind in carton box, 12 kg each.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Frozen	VIE	Whole fish deintestine IQF Defined as individually frozen fish body. It is used in fried or boiled form.	Fresh <i>Lutianus</i> spp., <i>Thunnidae</i> spp., <i>Pampus</i> spp., <i>Cephalidae</i> spp.	1 Slitting along ventral 2 Removal of gills, entrails, except <i>Ophio cephalidae</i> entrails which can be removed through the gills. 3 IQF.	according to desire consumers.
Frozen	VIE	Whole shrimp block Defined as a block of frozen whole shrimp. It is used in fried or boiled form.	<i>Panaeus</i> spp. <i>Metapanaeus</i> spp. <i>Parapansepsis</i> spp.	1 Sorting, washing, draining, weighing, layer into aluminum tray filled by cool water. 2 Freezing, remove tray and glaze.	Bind in carton box, 6 bags each.
Frozen	VIE	Whole skinned cuttlefish block Defined as frozen whole skinned cuttlefish. It is used in fried or boiled form.	<i>Loligonidae</i> spp., <i>sepiidae</i> spp.	1 Removal of all skin except parts of wing. 2 Layer into tray per 2 kg.	Pack in PE-bag, bind in carton box 6 bags each.
Powdered	MAL	Prawn dust Product is made from the by-product of dried prawns.	Dried shell of prawn.	1 Removal of shells from dried prawns by thrashing process.	NA
Powdered	THA	Fish floss (\$5.31) Defined as flaky meat with salty taste. It is eaten with steamed rice.	Marine fish such as <i>Acaespyatis</i> spp., <i>thunnus</i> spp. (\$0.46) Soy sauce, sugar	1 Removal of gut. 2 Washing in 4% brine and drain. 3 Cooking or steaming for 10 min. 4 Separation of fish meat. 5 Cooking of fish meat with soy sauce and sugar until dry. 6 Put in puffing machine until fish meat become fibrous (40-45% moisture).	Glass container, plastic bag.
Powdered	THA	Fish powder (\$2.00-\$2.50) Roasted fish floss and, mixed with chili powder, shrimp paste, garlic shallot and fish sauce served with fresh vegetable and eaten with rice.	Lizard fish, other marine fish (\$0.40-\$0.80)	1 Removal of gut. 2 Cleaning. 3 Sun-drying. 4 Separation of bone, head and meat. 5 Blending of meat.	Pack in dried container
Powdered	VIE	Fish sauce concentrate Product is pale white/grey with a slight fish flavour. It is used as a dip for meat, vegetables.	Fish sauce, brown sugar, pork fat	1 Evaporation over coal stove in wok. 2 When liquid is thickened, add brown sugar ingredients. 3 Continue evaporating to dry like powder.	Pack in PE-bag in 200/500 grams each.
Smoked	BRU	Dried fish Product is smoked and sun-dried. It is served by boiling with chili, tamarind and salt and in local dishes.	Sardine	1 Washing and arranging on wire grill mesh. 2 Smoking. 3 Sun-drying. 4 Dried smoked fish.	Pack in PE bags.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Smoked	BRU	Fish	Round herring, <i>sardinella</i> , Indian mackerel, <i>terubok</i> , <i>selar</i> , blackfin Crevalle, short bodied mackerel.	<ol style="list-style-type: none"> <li>Cleaning of fish.</li> <li>Removal of gut and washing.</li> <li>Arranging on wire grill mesh.</li> <li>Smoked processing.</li> </ol>	NA
		Defined as fish preserved by smoking. It is eaten as a side dish.			
Smoked	IND	Fish	Fish (\$0.64-\$0.79)	<ol style="list-style-type: none"> <li>Gutting.</li> <li>Washing.</li> <li>Salting and draining.</li> <li>Smoking.</li> </ol>	Packaged in plastic bags of 1 kg per pack using vacuum sealer.
		Defined as fish preserved by smoking. It is eaten as a snack.	Milk fish ( <i>Chanos-chanus</i> ), <i>Katsuonus pelamis</i> , <i>Chanos-chanos</i> , tongkol (Restriliger)		
Smoked	MAL	Tuna (\$7.43)	Salt	<ol style="list-style-type: none"> <li>Removal of head and tail.</li> <li>Cutting into cubes and clean.</li> <li>Soaking in brine for 80 minutes.</li> <li>Draining.</li> <li>Smoke, 80°C to 90°C for 3 to 7 hours, base on type of fish and its cut.</li> <li>Cooling and packing.</li> </ol>	Pack in plastic pack
		Defined as fish preserved by smoking. It is used in soup.			
Smoked	PHI	Herring (\$1.56-\$1.78)	Herring (\$1.03-\$1.12)	<ol style="list-style-type: none"> <li>Washing and cleaning of fish with water.</li> <li>Soaking of fish in 100 salometer brine (25% salt solution) for 30 mins.</li> <li>Wash soaked fish and drain.</li> <li>Cook fish in boiling 80 salometer brine (20% salt solution) for 20 mins or until the eyes turn white. Precooked fish is again washed and drained.</li> <li>Dry the fish under the sun or in any suitable dryer until the fish flesh becomes firm.</li> <li>Smoke fish for 2 hours until golden brown using hardwoods. For cold smoking, the brine-dipped fish is smoked in conventional smoke tunnels at temperatures between 26 -32°C. For hot smoking the temperature is set at 49-82°C.</li> <li>Cool the product for 5-10 mins by air drying.</li> <li>Pack in boxes or plastic bags.</li> </ol>	Pack in boxes or plastic bags
		Defined as fish preserved by smoking. It is cooked in oil and served with fresh tomatoes, cooked in water with vegetables or grilled in charcoal and served with fresh tomatoes.	- <i>Sardinella longiceps</i> 20% and 25% salt solutions		
Smoked	PHI	Milkfish (\$2.01-\$2.33)	Milkfish (\$1.25-\$1.56)	<ol style="list-style-type: none"> <li>Washing and cleaning of fish with water.</li> <li>Soaking of fish in 100 salometer brine (25% salt solution) or 30 mins.</li> <li>Wash soaked fish and drain.</li> <li>Cook fish in boiling 80 salometer brine (20% salt solution) for 20 mins or until the eyes turn white. Precooked fish is again washed and drained</li> <li>Dry the fish under the sun or in any suitable dryer until the fish flesh becomes firm.</li> <li>Smoke fish for 2 hours until golden brown using hardwoods. For cold smoking, the brine-dipped fish is smoked in conventional smoke tunnels at temperatures between 26-32°C. For hot smoking the temperature is at 49-82°C.</li> <li>Cool the product for 5-10 mins by air drying.</li> <li>Pack in boxes or plastic bags.</li> </ol>	Pack in boxes or plastic bags
		Defined as fish preserved by smoking. It is cooked in oil and served with fresh tomatoes, cooked in water with vegetables or grilled in charcoal and served with fresh tomatoes.	20% and 25% salt solutions		



Category	Country	Product	Material	Processing Method	Packaging Conditions
Smoked	PHI	Roundscad (\$1.34-\$1.56) Defined as fish preserved by smoking. It is eaten either fried, with tomatoes, flaked or with noodles.	Roundscad (\$0.89-\$1.12) - <i>Decapterus macrosoma</i>  Brine 60 S	1 Weighing and washing. 2 Brine in brining tank. 3 Pre-cooking in charcoal stove. 4 Drying in bamboo tray. 5 Smoking process. 6 Cooling and packing.	Pack in basket with banana leaves, shallow basket (bilao) with newspaper/ banana leaves, plastic bag.
Smoked	PHI	Sardine (\$1.78-\$2.01) Defined as fish preserved by smoking. It is eaten either fried, with tomatoes, flaked or with noodles.	Sardine (\$1.12-\$1.34)  Brine 60 S	1 Weighing and washing. 2 Brine in brining tank. 3 Pre-cooking in charcoal stove. 4 Drying in bamboo tray. 5 Smoking process. 6 Cooling and packing.	Pack in basket with banana leaves, shallow basket (bilao) with newspaper/ banana leaves, plastic bag.
Smoked	THA	Dried fish (\$8.00-\$12.00) Product is smoked, browny crispy fish. It is used in Thai soup (tom Yam) and chili paste (grated before use).	Fish (\$0.32-\$2.40) Marine fish such as <i>saurida spp.</i> , <i>arius spp.</i> Freshwater fish such as <i>Kryptopterus spp.</i> , <i>clarias spp.</i> , <i>puntius spp.</i> , <i>pangasius spp.</i>	1 Gut, clean. 2 Splitting of fish from back (big fish). 3 Sun-drying or grilling of fish in fire for 4 - 12 hrs. 4 Smoke for 4 - 24 hrs in smoke house. 5 Drying under the sun for 1-2 days, then, store.	Pack in bamboo basket or wrapped with paper.
Others	BRU	Fish crackers (\$4.47) Product is deep fried and eaten as snacks.	Fish (\$2.13)  Tapioca flour, msg, salt, pepper, water	1 Cleaning of fish. 2 Minced meat, mixing with ingredients. 3 Making into rolls, steam. 4 Cooling at room temperature, then, in a refrigerator. 5 Slicing, sun-drying or oven-drying.	
Others	BRU	Prawn cracker Deep fried and eaten as snacks	Small prawns  Tapioca flour, salt, msg, pepper, water	1 Minced prawn, mixing with ingredients. 2 Making into rolls, steam. 3 Cooling at room temperature and add colouring. 4 Cooling in refrigerator (1 night). 5 Slicing, sun-drying or oven-drying.	Packed in plastic bags of 300- 600 gram each
Others	BRU	Squid cracker (\$6.22) Product is deep fried and eaten as snacks.	Squid (\$2.13) - <i>Loigoidae spp.</i>  Tapioca flour, msg, salt, water.	1 Mincing and mixing with ingredients. 2 Forming by machine or manually. 3 Steaming for about 1.5 hours, then cool. 4 Coloured and keep overnight. 5 Slicing by machine or manually. 6 Sun-drying for 1 day, then, pack.	Pack in thick PE bags.
Others	IND	Cracker (\$7.13) Eaten when fried.	Shrimp, fish (\$1.07)  Flour, spices salt and egg.	1 Adding of flour, spices and salt 2 Mixing and shaping, then, steaming. 3 Cooling, cutting, drying and packing.	Packed in plastics bags.
Others	MAL	Fish cracker (\$3.72) It is or snack item.	Fish  Starch, salt, sugar, flavour, enhancer.	1 Removal of head, tail, viscera and bones 2 Mince. 3 Mixing with ingredients and form. 4 Cooking, then cooling. 5 Slicing, drying, cooling and packing.	Pack in plastic pack
Others	MAL	Fish satay It is snack item.	Fish  Sugar, chili powder, soy sauce, ginger, salt.	1 Dressing and sun drying. 2 Cooling and rolling. 3 Dipping in viscous sauce. 4 Placing in oven, cooling and packing.	Pack in plastic pack.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Others	MAL	Prawn cracker Defined as round shaped dried chips or in sticks form. It fried and eaten as a snack item.	Prawn Starch, salt, sugar, flavour, enhancer.	<ol style="list-style-type: none"> <li>1 Removal of head, tail &amp; viscera.</li> <li>2 Deboning and mincing.</li> <li>3 Adding of ingredients to mix.</li> <li>4 Forming and cooking.</li> <li>5 Cooling and slicing.</li> <li>6 Drying, cooling and packing.</li> </ol>	
Others	PHI	Seaweed Defined as cream coloured, noodle-like gelatinous product. It is used for preparing gelatin products, pharmaceutical, dental & cosmetic products.	Seaweed	<ol style="list-style-type: none"> <li>1 Sorting.</li> <li>2 Preparation of solution.</li> <li>3 Bleaching and washing.</li> <li>4 Dry using drying trays.</li> <li>5 Boiling, then, freeze.</li> <li>6 Thawing and cutting.</li> <li>7 Drying and packing.</li> </ol>	Pack in sack.
Others	PHI	Shrimp <i>teropok</i> Defined as brittle square chips. It is deep fried as a snack food item.	Shrimp Rice, salt, msg.	<ol style="list-style-type: none"> <li>1 Weighing and washing.</li> <li>2 Pre-cooking.</li> <li>3 Grinding and mixing.</li> <li>4 Steaming.</li> <li>5 Cutting, drying and packing.</li> </ol>	Pack in air-tight PE.
Others	SIN	Prepared cuttlefish As ready-to-eat snacks.	Semi-dried whole cuttlefish	<ol style="list-style-type: none"> <li>1 Semi-dried whole cuttlefish.</li> <li>2 Sort and separate tentacles from body.</li> <li>3 Soaking in seasoning for about 8 hours.</li> <li>4 Toasting on toasting machine, crimping and packing.</li> </ol>	Packed in plastic retail packets (25g-50g).
Others	SIN	Prepared prawn crackers Defined as toasted seasoned prawn chips. It is eaten as tidbits and snacks.	Prawn chips imported from Malaysia.	<ol style="list-style-type: none"> <li>1 Prawn chips (2 cm long each).</li> <li>2 Drying in dryer (40-45°C) for approx. 8 hours.</li> <li>3 Toasting in toasting machine (250°C).</li> <li>4 Mixing with seasoning liquid.</li> <li>5 Drying and packing.</li> </ol>	Packed in plastic retail packets (25 g).
Others	THA	Fish/shrimp cracker (\$2.50) Product is fish meat mixed with ingredients mainly tapioca flour. It is deep fried in oil before serve.	Minced meat of shrimp or fish (\$1.00-\$1.50) Tapioca flour, salt, pepper, garlic, hot water, sugar.	<ol style="list-style-type: none"> <li>1 Mixing of all ingredients and kneading using machine.</li> <li>2 Forming into desired shape e.g. roll, etc.</li> <li>3 Steaming for about 1.5 hours in steam pot.</li> <li>4 Cooling overnight.</li> <li>5 Cutting into thin slices using slicer.</li> <li>6 Sun-drying for 1 - 2 days on drying tray.</li> <li>7 Keep in containers.</li> </ol>	Keep in air-tight containers; packed products should be placed in shed to prevent discoloration.
Others	THA	Fish satay (\$3.00-\$4.00) Defined as dried minced product seasoned with sugar, soya sauce, sesame seed and deep fried. It is consumed as it is.	Lizard fish (\$0.24-0.32) Flour, soya sauce, sugar, salt, sesame seed.	<ol style="list-style-type: none"> <li>1 Mince fish by meat-bone separator.</li> <li>2 Mixing with ingredients.</li> <li>3 Forming into round sheet.</li> <li>4 Sun-dry for half day.</li> <li>5 Deep frying.</li> <li>6 Packing.</li> </ol>	Pack in plastic bag or aluminum bag.
Others	VIE	Agar Product is used in making gel (no colour and odour). It is used in food, medical, biotechnical industries.	<i>Gracilaria spp</i>	<ol style="list-style-type: none"> <li>1 Alkali treatment.</li> <li>2 Cleaning and cooking</li> <li>3 Filtering, adding of chemicals and keep overnight.</li> <li>4 Forming, freezing, thawing, drying</li> <li>5 Mill.</li> </ol>	Pack in PE-bag per 500/1000 gram, bind in PP/ or carton box per 20/50 kg.

Category	Country	Product	Material	Processing Method	Packaging Conditions
Others	VIE	Carrageenan Defined as substance for making gel which is colourless and odourless. It is used in food, medical, biotechnical industries.	<i>Eucheuma spp, Kappaphycus spp, and chemicals.</i>	<ol style="list-style-type: none"> <li>1 Alkali treatment.</li> <li>2 Cleaning and cooking</li> <li>3 Filtering, adding of chemicals and keep overnight.</li> <li>4 Forming, freezing, thawing, drying</li> <li>5 Mill.</li> </ol>	Pack in PE-bag per 200 gram/500 gram.
Others	VIE	Chitosan Defined as hard, transparent, odourless substance. It is used in medicine and water industries.	Shell of <i>crustacea</i> .	<ol style="list-style-type: none"> <li>1 Acid treatment, cleaning, alkali treatment and cleaning.</li> <li>2 Cooking of product in base liquid with stirrer</li> <li>3 Prying</li> <li>4 Mill.</li> </ol>	Pack in PP-bag per 20/50 kg.
Others	VIE	Fish cracker Defined as dried chips with fishy flavour. It is served as snacks.	<i>Muraenesocidae</i> ingredient is similar to shrimp cracker	<ol style="list-style-type: none"> <li>1 Removal of head, skin, fillet, next procedure is similar to that of the shrimp.</li> </ol>	Pack in PE-bag of 200/500 gram
Others	VIE	Fish liver oil Defined as fish oil in capsules It is directly used as a medicine.	Liver of shark, mackerel <i>lutianus spp, epinemphtalus spp.</i>	<ol style="list-style-type: none"> <li>1 Removal of gut, extraction of liver and clean.</li> <li>2 Cutting into small pieces</li> <li>3 Cooking in water with stirrer, filter, decant.</li> <li>4 Residue is pressed to obtain oil, purify, case in gelatin capsules.</li> </ol>	Pack in PE-bag per 200 capsules.
Others	VIE	Seaweed Defined as dried seaweed, violet to brown colour with salty taste. It is used in gel-making substance.	<i>Gracilaria spp, Eucheuma spp, Kappaphycus spp, Sargassum spp.</i>	<ol style="list-style-type: none"> <li>1 Cleaning and sun-drying till moisture reaches 22%.</li> </ol>	
Others	VIE	Shrimp cracker Defined as round shapes pieces, expanded till crispy when fried. It is served as snacks.	Shrimp Tapioca flour, baking powder, white pepper, salt, garlic, sodium glutamate	<ol style="list-style-type: none"> <li>1 Removal of head, shells, veins,</li> <li>2 Grinding of meat to fine texture.</li> <li>3 Mixing thoroughly with ingredients, stuff manually into PE tube shaped casing, boil, cut into thin pieces 2 mm thick</li> <li>4 Sun-drying.</li> </ol>	Pack in PE-bag of 200/500 gram
Others	VIE	Sodium Alginate Defined used for making gel (colourless and odourless). It is used in medical, textile industries.	<i>Sargassum spp</i>	<ol style="list-style-type: none"> <li>1 Washing,</li> <li>2 HCl, HCHO Treatment.</li> <li>3 Cooking in Sodium Carbonate solution, dilute</li> <li>4 Prefilter, centrifuge, fine-filter.</li> <li>5 Precipitate, dewater, press, neutralize, forming, drying</li> <li>6 Mill.</li> </ol>	Pack in PE-bag per 500/1000 gram, bind in PP / or carton box per 20/50 kg.



# **Annex 2**

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## Annex 2: Table of Technical Problems Raised in Survey

Category	Product	Country	Problems in marketing and quality control
Boiled	Cooked fish	SIN	Nil
Boiled	Fish	IND	Nil
Boiled	Fish	MAL	NA
Boiled	Steamed fish	VIE	Nil
Boiled	Steamed fish	THA	Need to improve processing method and extend storage life.
Canned	Anchovy	PHI	Can leaks, bulging and corrosion
Canned	Anchovy in sambal	MAL	NA
Canned	Babyclam	THA	Nil
Canned	Crab meat	THA	Nil
Canned	Fish in tomato sauce	THA	Nil
Canned	Fish in tomato sauce	MAL	NA
Canned	Mackerel in tomato sauce	VIE	Nil
Canned	Mackerel in tomato sauce	PHI	Nil
Canned	Mackerel, tuna, sardine.	IND	Nil
Canned	Milkfish	PHI	Can leaks, bulging and corrosion
Canned	Milkfish in tomato sauce	PHI	Nil
Canned	Milkfish, Salmon style	PHI	Nil
Canned	Sardine in tomato sauce	PHI	Nil
Canned	Shrimp	THA	Nil
Canned	Squid/cuttlefish/octopus	THA	Nil
Canned	Tuna	THA	Nil
Canned	Tuna in oil	PHI	Nil
Canned	Tuna in oil	VIE	Nil
Comminuted	Breaded fish finger	VIE	Nil
Comminuted	Breaded squid ring	SIN	Nil
Comminuted	Cuttlefish ball	SIN	Nil
Comminuted	Cuttlefish ball, finger, paste	MAL	NA
Comminuted	Cuttlefish sausage and cocktail	SIN	Nil
Comminuted	Fish burger	MAL	NA
Comminuted	Fish burger	MAL	NA
Comminuted	Fish burger	PHI	Nil
Comminuted	Fish burger (boneless)	VIE	Need to improve packaging and condition of storage.
Comminuted	Fish burger (dehead)	VIE	Need to improve packaging and condition of storage.
Comminuted	Fish finger	THA	Need to improve quality control in processing method.
Comminuted	Fish noodle	THA	Short storage life
Comminuted	Fish sausage	VIE	Need to improve packaging and condition of storage
Comminuted	Fish sausage	MAL	NA
Comminuted	Fishball	IND	Nil
Comminuted	Fishball	THA	Need to extend short storage life.
Comminuted	Fishball	MAL	NA
Comminuted	Fishball	PHI	Nil
Comminuted	Fishball	BRU	Stiff competition from imported products. Lack of hygiene and sanitary practices in plant. Small demand in market.
Comminuted	Fishball, fishcake, chikuwa	SIN	Nil
Comminuted	Fishcake	MAL	NA
Comminuted	Fishcake	BRU	Stiff competition from imported products. Lack of hygiene and sanitary practices in plant. Small demand in market.
Comminuted	Imitation crabmeat	THA	Nil
Comminuted	Imitation crabstick	SIN	Nil
Comminuted	Mincd fish	THA	Need to improve quality control in processing method.
Comminuted	Native sausage	PHI	Nil

Category	Product	Country	Problems in marketing and quality control
Comminuted	Otak-otak	NA	
Comminuted	Prawn ball/ finger	Nil	
Comminuted	Prawn burger	NA	
Comminuted	Prawn dumpling	NA	
Comminuted	Prawn sausage	NA	
Comminuted	Prawn <i>wantian</i>	NA	
Comminuted	Scallop flavour fish cake	NA	
Comminuted	Surimi	Nil	
Comminuted	Surimi	Nil	Poor processing facilities.
Cured	Jelly	NA	
Cured	<i>Kench</i> style cured fish	PHI	Need to improve the methods of processing, handling, transportation, marketing and packaging.
Cured	Mantis shrimp	THA	Problem in packaging.
Cured	Mussel	THA	Problems in processing techniques and quality control.
Cured	Salted moist fish	VIE	Extension of shelf-life.
Dried	Abalone	PHI	High cost of raw material
Dried	Anchovy	PHI	Sun dried products are low in quality which easily discolour and become brittle and moldy.
Dried	Anchovy	IND	Turnover of product is fairly fast but prices tend to drop due to stiff competition from other countries.
Dried	Anchovy	MAL	NA
Dried	Barracuda	PHI	Packaging
Dried	Big-eye scad	PHI	Packaging
Dried	Chilled-sour salted fish	BRU	Nil
Dried	Cockle	MAL	NA
Dried	Crevalle	PHI	Packaging
Dried	Crimped squid	VIE	Mold occurs during storage, packaging must be developed.
Dried	Cuttlefish	MAL	NA
Dried	Deep-bodied herring	PHI	Packaging
Dried	Seahorse	VIE	NA
Dried	Shrimp	BRU	Infestation by flies, moldy, stiff competition from imports in terms of price.
Dried	Abalone	VIE	Mold occurs easily during storage.
Dried	Blue mussel clam	VIE	Easy absorption of water which causes mold growth during storage. Quality is affected by the high salt content(24% by Wt).
Dried	Fish maw	VIE	NA
Dried	Jelly fish	VIE	NA
Dried	Oyster	VIE	Easy absorption of water which causes mold growth during storage. Quality is affected by the high salt content(24% by Wt).
Dried	Scallop flesh	VIE	Packaging and hygienic condition must be upgraded.
Dried	Sea cucumber	VIE	Easy absorption of water which causes mold growth during storage. Quality is affected by the high salt content(24% by Wt).
Dried	Shark fin	VIE	NA
Dried	Skinned cuttlefish	VIE	NA
Dried	Squid ( whole )	VIE	Mold occurs during storage. Packaging to be improved.
Dried	Urchin	VIE	Easy absorption of water which causes mold growth during storage. Quality is affected by the high salt content(24% by Wt).
Dried	Fimbriated herring	PHI	Packaging.
Dried	Fish	BRU	Need to improve packaging and storage life.
Dried	Hairtail	PHI	Packaging.
Dried	Herring	PHI	Sun dried products are low in quality which easily discolour and become brittle and moldy.
Dried	Indian sardine	PHI	Packaging.
Dried	Jelly fish	THA	Need to improve packaging
Dried	Jelly fish	MAL	NA
Dried	Lizard fish	PHI	Packaging.
Dried	Long tailed nemipterid	PHI	Packaging.
Dried	Mackerel	PHI	Nil
Dried	Milkfish	PHI	Packaging.
Dried	Peeled shrimp	VIE	NA



Category	Product	Country	Problems in marketing and quality control
Dried	Prawn	MAL	NA
Dried	Roundskad	PHI	Packaging.
Dried	Salted fish ( headed )	VIE	Cost of product is very high for domestic market.
Dried	Salted fish ( split )	VIE	NA
Dried	Salted fish (whole)	VIE	Quality deteriorates during storage, short shelf-life.
Dried	Salted fish	THA	Molding and insect infestation during storage; Need to improve packaging and storage conditions at the retail store.
Dried	Salted fish	MAL	Lack of quality control as the turnover of product is based on demand.
Dried	Salted fish	BRU	Infestation by flies and rancidity amongst fatty fish; Price competition from imports.
Dried	Salted fish	IND	NA
Dried	Salted freshwater fish	THA	Molding and insect infestation during storage; Need to improve packaging and storage conditions at the retail store.
Dried	Sea cucumber	PHI	Attack of molds and fungi during storage.
Dried	Seasoned fish	SIN	Nil
Dried	Shark fin	VIE	NA
Dried	Shark fin	PHI	Packaging
Dried	Shellfish	SIN	Nil
Dried	Shellfish	THA	Problem in processing and hygiene condition. Need to improve packaging.
Dried	Shrimp	MAL	NA
Dried	Shrimp	THA	Discolouration of product; Molding and insect infestation during storage.
Dried	Shrimp	PHI	Nil
Dried	Slipmouth	PHI	Packaging
Dried	Squid	PHI	Need to improve packaging; Mold occurs during storage.; Poor hygiene and sanitation.
Dried	Squid	THA	Problem in quality control and process techniques; Need to improve packaging.
Dried	Squid ring	VIE	Mold occurs during storage. Packaging to be improved.
Dried	Striped mackerel	PHI	Packaging
Fermented	Acidified shrimp	VIE	NA
Fermented	Anchovy	MAL	Irregular supply of raw materials; Processing premises lack sanitation; Need to hasten the fermentation period
Fermented	Cured shrimp	BRU	Seasonal availability of product; Lack of quality control.
Fermented	Fish	IND	Nil
Fermented	Fish	THA	Processing techniques and packaging needs to be improved.
Fermented	Fish	PHI	Nil
Fermented	Fish	THA	Problems in hygienic condition and packaging.
Fermented	Fish	BRU	Supply of raw material is irregular especially for anchovies
Fermented	Fish	THA	Problems in processing techniques and hygiene condition.
Fermented	Fish sauce	THA	Fermentation period too long; Flies infestation during processing; Poor hygienic condition.
Fermented	Fish meal	VIE	Quality of raw material affected due to hot weather.
Fermented	Fish paste	VIE	Inconsistency in the supply of the raw materials.
Fermented	Fish sauce	IND	Long fermentation period and rust on bottle caps.
Fermented	Fish sauce	PHI	Nil
Fermented	Fish sauce	THA	Problems in processing techniques.
Fermented	Fish sauce	THA	Problems in insect infestation during fermentation and darkening of liquid colour during storage.
Fermented	Fish stomach	BRU	NA
Fermented	Milkfish	PHI	Nil
Fermented	Mussel	BRU	Supply of raw material irregular.
Fermented	Pickle prawn	MAL	NA
Fermented	Prawn paste	MAL	NA
Fermented	Salted Fish Patis	PHI	Nil
Fermented	Shrimp paste	MAL	NA
Fermented	Shrimp paste	PHI	Long fermentation period and rust on bottle caps.
Fermented	Shrimp paste	THA	Problems in darkening of the product during storage. Need to improve packaging.
Fermented	Shrimp paste	BRU	Infestation by flies; Seasonal availability of raw materials and products.
Fermented	Stiff shrimp paste	VIE	Upgrade hygienic condition to prevent fly infestation.

Category	Product	Country	Problems in marketing and quality control
Fermented	Weak shrimp paste (Suspension)	VIE	Upgrade hygienic condition to prevent fly infestation.
Fish meal	Animal feed	PHI	Nil
Fish meal	Animal feed	SIN	Nil
Fish meal	Animal feed	THA	Nil
Fish meal	Fish	MAL	NA
Fish meal	Fish manure	MAL	NA
Fish meal	Fish powder	IND	Nil
Frozen	Blue swimmer block	VIE	NA
Frozen	Cockle	VIE	NA
Frozen	Comb-cuttlefish	VIE	Nil
Frozen	Cooked oyster	VIE	NA
Frozen	Cooked prawn	SIN	Nil
Frozen	Cooked shrimp	THA	Nil
Frozen	Cooked shrimp IQF	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Cuttle fish edge block	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Cuttle fish head block	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Cuttle fish wing block	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Cuttlefish	THA	Nil
Frozen	Cuttlefish	MAL	NA
Frozen	Cuttlefish, squid	PHI	The full strength of the export market has remained untapped because only a limited volume of fish pass export-quality requirements.
Frozen	Dipped shrimp	VIE	Nil
Frozen	Eel IQF	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Farciéd crab	VIE	Short shelf-life; To improve packaging.
Frozen	Farciéd cuttle fish	VIE	Short shelf-life; To improve packaging.
Frozen	Farciéd swimming crab	VIE	Nil
Frozen	Fillet cuttle fish	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Fish	THA	Nil
Frozen	Fish	MAL	NA
Frozen	Fish fillet	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Fish fillet	SIN	Nil
Frozen	Fish, shrimp, squid.	IND	NA
Frozen	Headed fish IQF	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Headed shrimp block	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Pineal cuttlefish IQF	VIE	Nil
Frozen	Milkfish	PHI	The full strength of the export market has remained untapped because only a limited volume of fish pass export-quality requirements.
Frozen	Shrimp block	VIE	Nil
Frozen	Octopus	THA	Nil
Frozen	Octopus block	VIE	NA
Frozen	Peeled shrimp Block	VIE	Upgrade quality condition and sanitation hygiene in plants.
Frozen	Prawn	SIN	Nil
Frozen	Prawn	MAL	NA
Frozen	Prawn meat	SIN	Nil
Frozen	Raw shrimp	THA	Nil
Frozen	Sai gon rolled burger	VIE	NA
Frozen	Scallop block	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Seafood mix	VIE	Nil
Frozen	Shellfish	THA	Nil
Frozen	Shrimp <i>bisen</i>	VIE	Nil
Frozen	Shrimp, prawn	PHI	The full strength of the export market has remained untapped because only a limited volume of fish pass export-quality requirements.
Frozen	Skewered broiled shrimp	VIE	Short shelf-life; To improve packaging.
Frozen	Squid	THA	Nil

Category	Product	Country	Problems in marketing and quality control
Frozen	Squid ring IQF	VIE	Nil
Frozen	Squids, cuttlefish	SIN	Nil
Frozen	Swimming crab roe block	VIE	Nil
Frozen	Tuna	PHI	The full strength of the export market has remained untapped because only a limited volume of fish pass export-quality requirements.
Frozen	Urchin block	VIE	NA
Frozen	Whole cuttle fish block	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Whole cuttle fish IQF	VIE	Upgrade hygienic, sanitation requirements.
Frozen	Whole fish	SIN	Nil
Frozen	Whole fish deintestine IQF	VIE	Upgrade hygienic, sanitary requirements.
Frozen	Whole shrimp block	VIE	Upgrades quality condition ( Sanitation hygiene in plants )
Frozen	Whole skinned cuttle fish block	VIE	Upgrade hygienic, sanitation requirements.
Powdered	Fish floss	THA	Nil
Powdered	Fish powdered	THA	Need to improve packaging
Powdered	Fish sauce concentrated	VIE	NA
Powdered	Prawn dust	MAL	NA
Smoked	Dried fish	BRU	Need to improve handling and packaging of product.
Smoked	Dried fish	THA	To improve in packaging; Insects infestation during sun drying.
Smoked	Fish	BRU	Lack of quality control in the handling of raw materials; Rancidity.
Smoked	Fish	IND	Nil
Smoked	Herring	PHI	The high moisture content of smoked fish leads to spoilage and deterioration of fish flavour and texture.
Smoked	Milkfish	PHI	The high moisture content of smoked fish leads to spoilage and deterioration of fish flavour and texture.
Smoked	Roundskad	PHI	Mold and bacterial spoilage.
Smoked	Sardine	PHI	Mold and bacterial spoilage.
Smoked	Tuna	MAL	NA
Others	Agar	VIE	Production must be mechanized to get high yield.
Others	Carrageenan	VIE	Production must be mechanized to get high yield.
Others	Chitosan	VIE	Market demand not stabilized.
Others	Cracker	IND	NA
Others	Fish/shrimp cracker	THA	Need to improve quality control in processing method
Others	Fish cracker	VIE	Lack of equipment.
Others	Fish cracker	MAL	Shortage of raw material.
Others	Fish cracker	BRU	Lack of quality control, poor packaging and presentation.
Others	Fish liver oil	VIE	Nil
Others	Fish satay	MAL	Shortage of raw material.
Others	Fish satay	THA	Need to improve quality control in processing methods
Others	Pearl	VIE	Market demand not stabilized.
Others	Prawn cracker	MAL	NA
Others	Prawn cracker	BRU	Seasonal availability of shrimp, lack of quality control. Poor product presentation and packaging.
Others	Prepared cuttlefish	SIN	Nil
Others	Prepared prawn cracker	SIN	Nil
Others	Seaweed	VIE	Low product yield.
Others	Seaweed	PHI	Nil
Others	Shrimp kropeck	PHI	Competition from manufacturers of similar snack food items.
Others	Shrimp cracker	VIE	To improve processing equipment.
Others	Sodium alginate	VIE	Low market demand.
Others	Squid cracker	BRU	Need to improve packaging.



# **Annex 3**

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## Annex 3(i): Destination for Export

Category	Product	Country	Countries for Export
Boiled	Cooked fish	SIN	Nil
Boiled	Fish	IND	Nil
Boiled	Fish	MAL	Nil
Boiled	Steamed fish	THA	USA, EU, AUS
Boiled	Steamed fish	VIE	Nil
Canned	Anchovies	PHI	Nil
Canned	Anchovy in sambal	MAL	BRU, SIN, PHI, CAN, AUS, USA
Canned	Babyclam	THA	AUS, CAN, EU, HK, JPN, MAL, NZ, SIN, SWI, SA, USA, RUS, ROM, Middle-east countries
Canned	Crab meat	THA	AUS, CAN, EU, HK, JPN, MAL, NZ, SIN, SWI, SA, USA, TW, ARG, BRA, RUS, ROM, Middle-east countries
Canned	Fish in tomato sauce	MAL	SIN, IND, JHA, TAI, BRU, USA, CAN, PHI, CHN, GHA, UK
Canned	Fish in tomato sauce	THA	AUS, CAN, EU, FIN, HK, JPN, MAL, NZ, SIN, SWI, SA, USA, RUS, ROM, Middle-east countries
Canned	Mackerel in tomato sauce	PHI	Nil
Canned	Mackerel in tomato sauce	VIE	GER
Canned	Mackerel, tuna, sardine.	IND	USA, UK, NET, JPN, GER.
Canned	Milkfish	PHI	HAW, USA, AUS, SA, UK, NIRE.
Canned	Milkfish in tomato sauce	PHI	CAN, USA, NOR, UK, GER, SWI, KUW, SA, SIN, AUS, GUA, HAW, AUT
Canned	Milkfish, Salmon style	PHI	GUA, APE, BAH
Canned	Sardine in tomato sauce	PHI	USA, NET, WG, SWI, SA, SAB, GUA, TTP, HAW, CAN, NOR, DEN, UK, AUT, APE, BAH, TAI, AUS, NZ
Canned	Shrimp	THA	AUS, CAN, EU, HK, JPN, MAL, NZ, SIN, SWI, SA, USA, TW, ARG, BRA, RUS, ROM, Middle-east countries
Canned	Squid/cuttlefish/octopus	THA	JPN, MAL, EU, USA, SA, HK, CAN, RUS, ROM, Middle-east countries
Canned	Tuna	THA	AUS, CAN, EU, HK, JPN, MAL, NZ, SIN, SWI, SA, USA, TW, ARG, BRA, RUS, ROM, Middle-east countries
Canned	Tuna in oil	PHI	CAN, USA, PUE, SWE, NOR, FIN, DEN, UK, NET, BEL, FRA, AUT, SWI, GOZ, ITA, GRE, ISR, KUW, SIN, GUA, MOZ, BAR, IRE, CYP, LEB, SA, BAH, THA, NZ, AUS
Canned	Tuna in oil	VIE	LIB
Comminuted	Breaded fish finger	SIN	EU, AUS
Comminuted	Breaded squid ring	SIN	EU, AUS
Comminuted	Cuttlefish ball	MAL	Nil
Comminuted	Cuttlefish balls, fingers, paste	SIN	EU, HK
Comminuted	Cuttlefish sausage and cocktail	MAL	Nil
Comminuted	Fish burger	MAL	Nil
Comminuted	Fish burger	PHI	Nil
Comminuted	Fish burger (boneless)	VIE	NA
Comminuted	Fish burger (dehead )	VIE	NA
Comminuted	Fish finger	THA	Nil
Comminuted	Fish noodle	THA	Nil
Comminuted	Fish sausage	MAL	Nil
Comminuted	Fish sausage	VIE	NA
Comminuted	Fishball	IND	NA
Comminuted	Fishball	THA	Nil
Comminuted	Fishball	BRU	NA
Comminuted	Fishball	MAL	Nil
Comminuted	Fishball	PHI	Nil
Comminuted	Fishballs, fishcakes, chikuwa	SIN	HK, EU
Comminuted	Fishcake	BRU	NA
Comminuted	Fishcake	MAL	NA
Comminuted	Imitation crabsticks	SIN	EU, AUS
Comminuted	Imitation crabmeat	THA	JPN, USA, EU
Comminuted	Minced fish	THA	Nil
Comminuted	Native sausage	PHI	Nil
Comminuted	Otak-otak	MAL	Nil

Category	Product	Country	Countries for Export
Comminuted	Prawn balls, fingers	SIN	HK
Comminuted	Prawn burger	MAL	Nil
Comminuted	Prawn dumpling	MAL	Nil
Comminuted	Prawn sausage	MAL	Nil
Comminuted	Prawn <i>wantani</i>	MAL	Nil
Comminuted	Scallop fish cake	THA	JPN, USA, EU, AUS
Comminuted	Surimi	VIE	JPN
Comminuted	Surimi	VIE	NA
Cured	Jelly	VIE	NA
Cured	Kench style cured fish	PHI	Nil
Cured	Mantis shrimp	THA	Nil
Cured	Mussel	THA	Nil
Cured	Salted moist fish	VIE	NA
Dried	Abalone	PHI	HK, JPN, AUS, HAW
Dried	Abalone	VIE	NA
Dried	Anchovies	IND	HK, JPN
Dried	Anchovies	PHI	USA, KOR, SA, GUA, JPN, AUS, HK, HAW, SIN
Dried	Anchovy	MAL	SIN, PHI, USA, NET, BRU, SA, AUT, THA, HK, FRA, UK, KAM, JPN, NZ
Dried	Barracuda	PHI	Nil
Dried	Big-eye scad	PHI	Nil
Dried	Blue mussel clam	VIE	HK, CHN
Dried	Chilled-sour salted fish	BRU	NA
Dried	Cockles	MAL	NA
Dried	Crevalle	PHI	Nil
Dried	Crimped squid	VIE	JPN
Dried	Cuttlefish	MAL	BRU, SIN, THA, USA
Dried	Deep-bodied herring	PHI	Nil
Dried	Fimbriated herring	PHI	Nil
Dried	Fish	BRU	Nil
Dried	Fish maw	VIE	HK, CHN
Dried	Hairtail	PHI	Nil
Dried	Herring	PHI	SA, AUS, USA, KUW, CAN, HAW, SIN
Dried	Indian sardines	PHI	Nil
Dried	Jelly fish	MAL	AUT, CAN, CHN, HK, JPN, KOR, SIN, TAI, UK, USA
Dried	Jelly fish	THA	NA
Dried	Jelly fish	VIE	NA
Dried	Lizard fish	PHI	Nil
Dried	Long tailed nemipterid	PHI	Nil
Dried	Mackerel	PHI	SA, USA, KUW, AUS, CAN, SIN
Dried	Milkfish	PHI	CAN, USA, NET, KUW, SA, BAH, AUS, GUA, TTP, NOR, UK, GER, ITA, OMA, HK, TAI, LEB, NZ, PNG, SIN, JPN
Dried	Oyster	VIE	TAI, JPN, SIN, HK
Dried	Peeled dried shrimps	VIE	AUT, HK, JPN, SIN, THA, USA, BRU, UK
Dried	Prawn	MAL	Nil
Dried	Roundskad	PHI	NA
Dried	Salted fish	BRU	JPN, HK, TAI
Dried	Salted fish	IND	THA, HK, BRU, FIJI, KOR, AUT, NET, PHI, SIN, TAI, USA
Dried	Salted fish	MAL	USA, FRA, JPN, MAL, HK, SIN
Dried	Salted fish	THA	HK, SIN, TAI, JPN
Dried	Salted fish (headed)	VIE	HK, SIN, TAI, JPN
Dried	Salted fish (split)	VIE	NA
Dried	Salted fish (whole)	VIE	USA, EU, HK, MAL, SIN
Dried	Salted freshwater fish	THA	



Category	Product	Country	Countries for Export
Dried	Scallop flesh	VIE	NA
Dried	Sea cucumber	PHI	NA
Dried	Sea cucumber	SIN	HK, MAL, TAI
Dried	Sea cucumber	VIE	HK, CHN
Dried	Sea horse	VIE	NA
Dried	Seasoned dried fish	VIE	NA
Dried	Shark fin	PHI	FRA, HK, TAI
Dried	Shark fin	VIE	HK, CHN
Dried	Sharks fins	SIN	HK, TAI
Dried	Shellfish	MAL	SIN, KOR.
Dried	Shellfish	THA	EU, HK, SIN, USA, CAN
Dried	Shrimp	BRU	NA
Dried	Shrimp	PHI	Nil
Dried	Shrimp	THA	AUS, CAN, EU, HK, JAN, SIN, TAI, USA
Dried	Skinned cuttlefish	VIE	NA
Dried	Slipmouth	PHI	Nil
Dried	Squid	PHI	Nil
Dried	Squid	THA	EU, HK, JPN, SIN, USA
Dried	Squid (whole)	VIE	JPN
Dried	Squid rings	VIE	JPN
Dried	Striped mackerel	PHI	Nil
Dried	Urchin	VIE	JPN
Fermented	Acidified shrimp	VIE	NA
Fermented	Anchovy	MAL	AUS, HK, NZ, UK, USA
Fermented	Cured shrimp	BRU	NA
Fermented	Fish	BRU	NA
Fermented	Fish	IND	Nil
Fermented	Fish	PHI	NA
Fermented	Fish	THA	EU, USA, HK
Fermented	Fish	THA	Nil
Fermented	Fish	THA	Nil
Fermented	Fish sauce	VIE	AUS, FRA.
Fermented	Fish meal	VIE	LAO
Fermented	Fish paste	IND	MAL, SIN, NET
Fermented	Fish sauce	IND	Nil
Fermented	Fish sauce	PHI	Nil
Fermented	Fish sauce	THA	EU, HK, AUS, CAN, JPN, SIN, SA, USA
Fermented	Fish sauce	THA	Nil
Fermented	Fish stomach	BRU	NA
Fermented	Milkfish	PHI	NA
Fermented	Mussel	BRU	NA
Fermented	Pickle prawn	MAL	NA
Fermented	Prawn paste	MAL	NA
Fermented	Salted Fish Patis	PHI	NA
Fermented	Shrimp paste	BRU	NA
Fermented	Shrimp paste	MAL	AUS, BRU, CAN, HK, IND, NET, NZ, PHI, SA, SIN, THA, UK, USA
Fermented	Shrimp paste	PHI	CAN, USA, NOR, HAW, UK, FRA, GER, AUT, GUA, SWI, KUW, SAP, BAH, KOR, SPA, HK, JPN, ITA, PNG, NZ
Fermented	Shrimp paste	THA	CAN, EU, USA
Fermented	Stiff shrimp paste	VIE	NA
Fermented	Weak shrimp paste (Suspension)	VIE	NA
Fermented	Fish meal	PHI	Nil
Fermented	Fish meal	SIN	Nil
Fermented	Animal feed	SIN	Nil

Category	Product	Country	Countries for Export
Fish meal	Animal feed	THA	HK, TAL, MAL, SIN, IND
Fish meal	Fish	MAL	AUS, BRU, INA, IND, NET, SIN, SRI, THA, UAE, TAI
Fish meal	Fish manure	MAL	JPN, NZ, SIN, THA, UK
Fish meal	Fish powder	IND	Nil
Frozen	Blue swimmer block	VIE	FRA, JPN, AUS, SPA
Frozen	Cockle	VIE	AUS, SIN, KOR
Frozen	Comb-cuttlefish	VIE	NA
Frozen	Cooked oyster	VIE	GER, JPN, SWI, FRA, SIN, AUS
Frozen	Cooked prawn	SIN	EU, USA
Frozen	Cooked shrimp	THA	AUS, CAN, EU, JPN, USA, HK, MAL, SIN, NZ, SWI
Frozen	Cooked shrimp IQF	VIE	FRA, SWI
Frozen	Cuttle fish edge block	VIE	NA
Frozen	Cuttle fish head block	VIE	NA
Frozen	Cuttle fish wing block	VIE	NA
Frozen	Cuttlefish	MAL	AUS, BRU, GER, HK, ITA, JPN, SIN, SPA, TAL, THA, NZ, USA
Frozen	Cuttlefish	THA	AUS, CAN, EU, HK, JPN, NZ, MAL, SIN, PHI, SWI, USA, TW
Frozen	Cuttlefish/squid	PHI	USA, JPN, PUE, HK, TTP, TAL, GUA
Frozen	Dipped Shrimp	VIE	NA
Frozen	Eel IQF	VIE	GER, JPN, FRA, HK, TAL, AUS
Frozen	Farciéd crab	VIE	JPN
Frozen	Farciéd cuttle fish	VIE	JPN
Frozen	Farciéd swimming crab	VIE	NA
Frozen	Fillet cuttle fish	VIE	NA
Frozen	Fish	MAL	AUS, BEL, CHRI, GER, HK, IND, JPN, KAM, SIN, THA, UK, PHI, FRA
Frozen	Fish	THA	AUS, JPN, USA, EU, SWI, CAN, HK, NZ, MAL, INDO, SIN, PHI, SA
Frozen	Fish fillet	SIN	EU, USA, HK, TAI, SA, JPN, Middle-east countries
Frozen	Fish fillet	VIE	AUS
Frozen	Fish, shrimp, squid.	IND	JPN, THA, TAI
Frozen	Headed fish IQF	VIE	NA
Frozen	Headed shrimp block	VIE	NA
Frozen	Milkfish	PHI	USA, HAW, GUA, CAN, TTP, SA
Frozen	Octopus	THA	AUS, CAN, EU, HK, JPN, NZ, MAL, SIN, PHI, SWI, USA, TW
Frozen	Octopus block	VIE	AUS
Frozen	Peeled shrimp block	VIE	NA
Frozen	Pineal cuttlefish IQF	VIE	NA
Frozen	Prawn	MAL	AUS, BEL, CAN, FRA, GER, HK, ITA, JPN, KOR, MAU, NET, SIN, USA, AUT, BRU, CYP, DEN, BRE, NZ, UK
Frozen	Prawn	SIN	EU, USA, JPN, TAI
Frozen	Prawn meat	SIN	Nil
Frozen	Raw shrimp	THA	AUS, CAN, EU, JPN, USA, HK, MAL, SIN, NZ, SWI
Frozen	Sai gpn rolled burger	VIE	HK, FRA, JPN, MAL, AUS
Frozen	Scallop block	VIE	NA
Frozen	Seafood mix	VIE	NA
Frozen	Shellfish	THA	FRA, SPA, UK, HOL, ARG, USA, JPN
Frozen	Shrimp Bisen	VIE	NA
Frozen	Shrimp block (PTO)	VIE	NA
Frozen	Shrimps and Prawns	PHI	JPN, USA, GUA, AUS, CAN, HAW
Frozen	Skewered broiled shrimp	VIE	JPN
Frozen	Squid	THA	AUS, CAN, EU, HK, JPN, NZ, MAL, SIN, PHI, SWI, USA, TW
Frozen	Squid ring IQF	VIE	NA
Frozen	Squids, cuttlefish	SIN	JPN, EU, USA, TAI, USA
Frozen	Swimming crab roe block	VIE	NA
Frozen	Tuna	PHI	CAN, USA, DEN, ITA, ISR, THA, SIN, KOR, HK, JPN, OKI, GUA, HAW, TTP

Category	Product	Country	Countries for Export
Frozen	Urchin block	VIE	JPN
Frozen	Whole cuttle fish block	VIE	NA
Frozen	Whole cuttle fish IQF	VIE	NA
Frozen	Whole fish	SIN	EU, USA, HK, TAI, SA, JPN, Middle-east countries
Frozen	Whole fish deintestine IQF	VIE	NA
Frozen	Whole Shrimp block	VIE	JPN, MK
Frozen	Whole skinned cuttle fish block	VIE	NA
Powdered	Fish floss	THA	Nil
Powdered	Fish powder	THA	Nil
Powdered	Fish sauce concentrate	VIE	NA
Powdered	Prawn dust	MAL	Nil
Smoked	Dried fish	BRU	USA, EU, AUS
Smoked	Dried fish	THA	NA
Smoked	Fish	BRU	NA
Smoked	Fish	IND	JPN
Smoked	Herring	PHI	USA, SA, CAN, GUA
Smoked	Herring	PHI	CAN, USA, SA, AUS, GUA, HAW, KUW
Smoked	Milkfish	PHI	USA, HAW, KUW, GUA
Smoked	Roundscad	PHI	CAN, USA, SA, GUA, HAW, KUW, SIN, UK, NZ
Smoked	Sardine	PHI	CAN, USA, KUW, AUT, GUA, NZ, HAW
Smoked	Tuna	MAL	JPN
Others	Agar	VIE	NA
Others	Carrageenan	VIE	NA
Others	Chitosan	VIE	NA
Others	Crackers	IND	NET, THA, KOR
Others	Fish/shrimp cracker	THA	EU, USA
Others	Fish cracker	BRU	NA
Others	Fish cracker	MAL	Nil
Others	Fish cracker	VIE	NA
Others	Fish liver oil	VIE	NA
Others	Fish satay	MAL	Nil
Others	Fish satay	THA	Nil
Others	Pearl	VIE	NA
Others	Prawn cracker	MAL	Nil
Others	Prawn crackers	BRU	NA
Others	Prepared cuttlefish	SIN	JPN, THA, MAL, HK
Others	Prepared prawn cracker	SIN	JPN, THA, MAL, HK
Others	Seaweed	PHI	AUS, NZ, SWE, ARG, SA, OKI, CAN, USA, CHI, DEN, UK, IRE, NET, FRA, GER, SPA, POR, THA, KOR, HK, TAI, JPN, MOZ, KUW
Others	Seaweed	VIE	NA
Others	Shrim kropeck	PHI	Nil
Others	Shrimp cracker	VIE	NA
Others	Sodium alginate	VIE	NA
Others	Squid cracker	BRU	Nil

## Annex 3(ii): Destination for Export

CODE	DESTINATION	CODE	DESTINATION
APE	ARABIAN PENINSULA STATES	KOR	KOREA
ARG	ARGENTINA	KUW	KUWAIT
AUS	AUSTRALIA	LAO	LAOS
AUT	AUSTRIA	LEB	LEBANON
BAH	BAHRAIN	LIB	LIBYA
BAR	BARBADOS	MAU	MAURITIUS
BEL	BELGIUM	MOZ	MOZAMBIQUE
BRA	BRAZIL	NET	NETHERLANDS
BRU	BRUNEI	NIRE	NORTHERN IRELAND
CAN	CANADA	NOR	NORWAY
CHN	CHINA	NZ	NEW ZEALAND
CHR	CHRISTMAS ISLAND	OKI	OKINAWA
CYP	CYPRUS	OMA	OMAN
DEN	DENMARK	PHI	PHILIPPINES
EU	EUROPEAN UNION	PNG	PAPUA NEW GUINEA
FIJI	FIJI ISLANDS	POR	PORTUGAL
FIN	FINLAND	PUE	PUERTO RICO
FRA	FRANCE	ROM	ROMANIA
GER	GERMANY	RUS	RUSSIA
GHA	GHANA	SA	SAUDI ARABIA
GOZ	GOZO (MALTA)	SIN	SINGAPORE
GRE	GREECE	SPA	SPAIN
GUA	GUAM	SRI	SRI LANKA
HAW	HAWAII	SWE	SWEDEN
HK	HONGKONG	SWI	SWITZERLAND
HOL	HOLLAND	TAI	TAIWAN
INA	INDIA	THA	THAILAND
IND	INDONESIA	TTP	TRUST TERRITORY OF THE PACIFIC
IRE	IRELAND	UAE	UNITED ARAB EMIRATES
ISR	ISRAEL	UK	UNITED KINGDOM
ITA	ITALY	USA	UNITED STATES OF AMERICA
JPN	JAPAN	KAM	KAMPUCHEA

# **Annex 4**

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## **Annex 4: Country Coordinators and Respondents**

### **BRUNEI DARUSSALAM**

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# **Annex 5**

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# INVENTORY OF FISH PRODUCTS IN SOUTHEAST ASIA

**Part 1: Country Contacts**

a) Name/address of co-ordinator: \_\_\_\_\_

Telephone: \_\_\_\_\_ Fax: \_\_\_\_\_

b) Name/address of respondent (please indicate section(s) involved)  
(1) \_\_\_\_\_

Telephone: \_\_\_\_\_

(2) \_\_\_\_\_

Telephone: \_\_\_\_\_

(1) \_\_\_\_\_

Telephone: \_\_\_\_\_

Please answer all items. If information is not available, please indicate by "NA".

General statements may be given if estimated figures are not available; please indicate this by abbreviation "Gen.".

When exact statistical figures are not available, estimated figures may be used; please indicate by abbreviation "Est." if figures are estimated.

**PART II: DETAILS OF PRODUCTS**

**a) Dried products (including salted dried, semi-dried, ets.)**

Name of Product		Description of product	References	Materials Used			Outline of processing method
English name	Local name			Main materials	Cost per kg	Sub Ingredients	
Final Product							
List of machines used		Packaging conditions	Storage conditions (state method/ temp.)	Shelf life	Ways of consumption	Retail price per kg	
Production Volume (MT)							
		Export					
		1988	1989	1990	1991	1992	1993
		Production					
		1988	1989	1990	1991	1992	1993
				Countries of destination (export)		Remarks on present/ current problems in marketing & quality control	

# **REFERENCES**



## Annex 5: References in Literature Submitted by Respondents

Category	Product	Country	References in Literature
Boiled	Fish	IND	Fisheries Statistics of Indonesia 1985
Boiled	Fish	MAL	FAO Fisheries Rep. NO. 4 Quezon City - 1961; FAO Workshop on Development of Small Scale Processing Industry in Fishing Village, Penang, Malaysia, (29/6-1/7/85).
Boiled	Steamed fish	THA	Fisheries Processing Method by FTDD
Canned	Anchovy	PHI	Technology Canning of Tulingan, A PCARRD Publication
Canned	Babyclam	THA	Processing of fishery product 1993. Department of Fisheries
Canned	Crab meat	THA	Processing of fishery product 1993. Department of Fisheries
Canned	Fish in tomato sauce	THA	Processing of fishery product 1993. Department of Fisheries
Canned	Mackerel in tomato sauce	PHI	Philippine Handbook on Fish Processing Technology. NSDB. 1980. Fish Curing & Processing. MIR Publishers, Moscow.
Canned	Mackerel in tomato sauce	VIE	Fish curing and processing, MIR, Moscow, 1969
Canned	Mackerel, tuna, sardine.	IND	Fisheries Statistics of Indonesia 1985
Canned	Milkfish	PHI	Technology Canning of Tulingan, A PCARRD Publication
Canned	Milkfish in tomato sauce	PHI	Philippine Handbook on Fish Processing Technology. NSDB. 1980. Fish Curing & Processing. MIR Publishers, Moscow.
Canned	Milkfish, Salmon style	PHI	Philippine Handbook on Fish Processing Technology. NSDB. 1980. Fish Curing & Processing. MIR Publishers, Moscow.
Canned	Sardine in tomato sauce	PHI	Philippine Handbook on Fish Processing Technology. NSDB. 1980. Fish Curing & Processing. MIR Publishers, Moscow.
Canned	Shrimp	THA	Processing of fishery product 1993. Department of Fisheries
Canned	Squid/cuttlefish/octopus	THA	Processing of fishery product 1993. Department of Fisheries
Canned	Tuna	THA	Processing of fishery product 1993. Department of Fisheries
Canned	Tuna in oil	THA	Philippine Handbook on Fish Processing Technology. NSDB. 1980. Fish Curing & Processing. MIR Publishers, Moscow.
Comminuted	Fish burger	PHI	PDS fish recipe.
Comminuted	Fish burger (boneless)	PHI	RIMP, Scientific report-1977
Comminuted	Fish burger (dehead)	VIE	RIMP, Scientific report 1977
Comminuted	Fish finger	VIE	Processing of fishery product 1993 Department of Fisheries
Comminuted	Fish noodle	THA	Brillantes, S. 1991. Utilization of freshwater fish (noodles production). The Seminar on Fisheries 1991, Dpartment of Fisheries pp. 33 - 36.
Comminuted	Fish sausage	VIE	RIMP, Scientific Report, 1977
Comminuted	Fishball	IND	Fisheries Statistics of Indonesia 1985
Comminuted	Fishball	THA	Processing of fishery product 1993. Department of Fisheries
Comminuted	Fishball	MAL	Berita Nelayan Bil. 31 (Fisherman News); Risalah MARDI No 14 (Panduan Usahawan) (MARDI Pamphlet)
Comminuted	Fishball	PHI	PDS fish recipe.
Comminuted	Native sausage	PHI	The Chemistry and Technology of Marine Products Processing.
Comminuted	Surimi	THA	Rattagoon, P. 1990. Factor effecting gel strength of surimi and quality of imitation product. Technical paper number 4/2533. Fishing Technological Development Division.
Comminuted	Surimi	VIE	According to contract buyers.
Cured	Jelly	VIE	Traditional product
Cured	Kench style cured fish	PHI	Philippine Handbook on Fish Processing Technology. NSDB.
Cured	Salted moist fish	VIE	Traditional product
Dried	Abalone	PHI	Philippine Handbook on Processing Technology. NSDB.
Dried	Abalone	VIE	Mot so san pham che bien tu ca va hai san Khac NXBNN Ha noi 1981
Dried	Anchovy	IND	Fisheries Record 1982 by Statistic Section
Dried	Anchovy	PHI	Technology. Improved drying...1984. Published by PCARRD
Dried	Anchovy	PHI	Annual Fisheries Statistics 1980, 1981, 1982, 1983 & 1984. Berita Nelayan (Fisherman News) Vol. 21, No 13 (1978) 29
Dried	Blue mussel clam	MAL	Mot so san pham che bien tu ca va hai san Khac NXBNN Ha noi 1981, cong nghe hoc che bien thyc pham thuy san, giao trinh DHNN Ha noi 1963
Dried	Crimped squid	VIE	Tu dien Bach Kha nong nghiop.1991 Hanoi
Dried	Cuttlefish	MAL	FAO workshop on development of small scale processing industry in fishing villages, Penang, Malaysia (29/6-1/7/85).
Dried	Fish maw	VIE	Cong nghe hoc che bien thuc pham thuy san DHNN Ha noi 1963
Dried	Herring	PHI	Technology. Improved drying...1984. Published by PCARRD
Dried	Jelly fish	MAL	Berita Nelayan (Fisherman News), No 26
Dried	Jelly fish	THA	Fisheries Statistics of Thailand 1988 - 1993
Dried	Jelly fish	VIE	Mot so san pham che bien tu ca va hai san Khac. NXANN Ha noi 1981
Dried	Mackerel	PHI	Technology. Improved drying...1984. Published by PCARRD
Dried	Milkfish	PHI	Milkfish (bangus) As food. NSDB.

Category	Product	Country	References in Literature
Dried	Oyster	VIE	Mot so san pham che bien tu ca va hai san khac NXBNN Ha noi 1981, cong nghe hoc che bien thyc pham thuy san, giao trinh DHNN Ha noi 1963
Dried	Peeled shrimp	VIE	Mot so san pham che bien tu ca va hai san khac NXBNN Ha noi 1986.
Dried	Prawn	MAL	Report on FAO/KATA Regional Training Center on Fish Processing Technology 1961.
Dried	Salted fish	IND	Fisheries Statistics of Indonesia 1985
Dried	Salted fish	MAL	Teknologi Makanan (Food Technology), Vol. 4, No 1 (April 1985); Infotofish Marketing Digest 2/83; Report on FAO/EPTP Regional Training Center on Fish Processing Technology 1961.
Dried	Salted fish	THA	Fisheries Statistics of Thailand 1988 - 1993
Dried	Salted fish (headed)	VIE	Tu qien bach khoa nong nghiep ha noi 1991.
Dried	Salted fish (split)	VIE	Traditional product.
Dried	Salted fish (whole)	VIE	Tap chi thuy san 1/1993/Bo Thuy san wa noi 1993
Dried	Salted freshwater fish	THA	Fisheries Statistics of Thailand 1988 - 1993
Dried	Scallop flesh	VIE	Fish curing & Processing. MIR Moscow 1969
Dried	Sea cucumber	PHI	Primer on Sea Cucumbers, PCMARD-DOST Technology, Los Banos, Laguna
Dried	Sea cucumber	SIN	Infotofish Marketing Digest 6/83 p 19-21.
Dried	Sea cucumber	VIE	Mot so san pham che bien tu ca va hai san khac NXBNN Ha noi 1981 cong nghe hoc che bien thuc pham thuy san, giao trinh DHNN ha noi 1963
Dried	Sea horse	VIE	Traditional product
Dried	Seasoned dried fish	VIE	Traditional product
Dried	Shark fin	PHI	Fish Processing Handbook for the Phil. A. Avery.
Dried	Shark fin	VIE	Cong nghe hoc che bien thuc pham thuy san DHNN Ha noi 1963
Dried	Shellfish	THA	Fisheries Statistics of Thailand 1988 - 1992
Dried	Shrimp	PHI	Philippine Handbook on Fish Processing Technology. NSDB.
Dried	Shrimp	THA	Fisheries Statistics of Thailand 1988 - 1993
Dried	Skinned cuttlefish	VIE	Tu dien Bach Khoa nong nghiep, 1991 Hanoi.
Dried	Squid	PHI	Philippine Handbook on Fish Processing Technology. NSDB. Fish Processing Handbook for the Phil. A. Avery.
Dried	Squid	THA	Fisheries Statistics of Thailand 1988 - 1992
Dried	Squid (whole)	VIE	Tu dien Bach Khoa nong nghiep, 1991 Hanoi.
Dried	Squid ring	VIE	Mot so san pham che bien tu ca va hai san khac NXBNN Ha noi 1981, cong nghe hoc che bien thyc pham thuy san, giao trinh DHNN Ha noi 1963
Dried	Urchin	VIE	Traditional product. Tradition product. Tap chi thuy san 1/1993 Ha noi.
Fermented	Acidified shrimp	VIE	Berita Nelayan (Fishermen News), No 17,32; Teknologi Makanan (Food Technology), Vol. 3, No 2 (Oct.1984); FAO workshop on development of small scale Processing Industry in Fishing Villages, Penang, Malaysia (29/6 - 1/7/85).
Fermented	Anchovy	MAL	Fisheries Statistics of Indonesia 1985
Fermented	Fish	IND	Philippines Recommends NSO, Foreign Trade Export 1984-1989
Fermented	Fish	PHI	Saisithi, P. 1982. Fishery Products. Institute of Food Research and Product Development, Kasetsart University, Bangkok, Thailand.
Fermented	Fish	THA	Rattagoon, P. and P. Methatip, B. Sirima, 1985, Fermented Fish and Products Annual Report FTDD.
Fermented	Fish	THA	Rattagoon, P. 1984. Fermented Fish Products in Thailand
Fermented	Fish	THA	Saisithi, P. 1982. Fishery Products. Institute of Food Research and Product Development, Kasetsart University, Bangkok, Thailand.
Fermented	Fish	THA	Rattagoon, P. and P. Methatip, B. Sirima, 1985, Fermented Fish and Products Annual Report FTDD.
Fermented	Fish sauce	VIE	Traditional product, Tap chi thuy san 1/1993 Ha noi
Fermented	Fish meal	VIE	Fish curing & processing. MIR moscow 1969, TCTS 1/93, Ha noi
Fermented	Fish paste	IND	Fisheries Statistics of Indonesia 1985
Fermented	Fish sauce	IND	Philippine Handbook on Fish Processing Technology. NSDB. 1980 p.15.
Fermented	Fish sauce	PHI	Fish Curing & Processing. MIR Publishers, Moscow.
Fermented	Fish sauce	THA	Fisheries Statistics of Thailand 1988 - 1993. Saisithi, P. 1982. Fishery Products. Institute of Food Research and Product Development, Kasetsart University, Bangkok, Thailand. Rattagoon, P. and P. Methatip. Improve production of fish sauce. 1984
Fermented	Fish sauce	THA	University Bangkok, Thailand. Rattagoon, P. and P. Methatip. Improve production of fish sauce. 1984
Fermented	Fish sauce	THA	IPFC working party on Fish Technology and Marketing, Melbourne, Australia, 23 - 26 Oct.
Fermented	Milkfish	PHI	National Research Council. 1982. Report on Thai Traditional Fermented Food. Research Project Phase I : 37 - 39
Fermented	Pickle prawn	MAL	Philippines Recommends NSO, Foreign Trade Export 1984-1989
Fermented	Prawn paste	MAL	Berita Nelayan Bil. 23 (Fishermen News); Teknologi Makanan (Food Technology), Vol. 4, Bil. 1 (April 1985); FAO workshop on development of small scale Processing Industry in Fishing Villages, Penang, Malaysia (29/6 - 1/7/85).
Fermented	Salted fish patis	PHI	FAO Workshop on Development of Small Scale Processing Industry in Fishing Villages, Penang, Malaysia (29/6 - 1/7/85). Phil. Journal of Food Science and Technology 1983, R.C. Makisa, et al.



Category	Product	Country	References in Literature
Fermented	Shrimp paste	MAL	Berita Nelayan (Fishermen News), No 10; Teknologi Makanan (Food Technology), Vol. 3, No 1 (April 1984); Report on FAO/ BOTA Regional Training Center on Fish Processing Technology 1961.
Fermented	Shrimp paste	PHI	Philippine Handbook on Fish Processing Technology. NSDB:1980 p.15. Fish Curing & Processing. MIR Publishers, Moscow.
Fermented	Shrimp paste	THA	Fisheries Statistics of Thailand 1988 - 1993. Saisithi, P. 1982. Fishery Products. Institute of Food Research and Product Development, Kasetsart University, Bangkok, Thailand.
Fermented	Stiff shrimp paste	VIE	Traditional product
Fermented	Weak shrimp paste	VIE	Traditional product
Fish meal	Animal feed	PHI	Fish Curing & Processing by A.D. Merindol. MIR Publishers, Moscow. 1969; Philippine of Fisheries on Fish Processing Technology: Nsdb. Bicutan, Taguig Metro Manila. 1980.
Fish meal	Animal feed	THA	Fisheries Record of Thailand 1986 by Fisheries Statistics Section. Statistics of Fisheries Factory 1986 by Fisheries Statistics Section.
Fish meal	Fish	MAL	FAO Workshop on Development on small scale Processing Industry in Fishing Villages, Penang, Malaysia (29/6 - 1/7/85).
Fish meal	Fish powder	IND	Fisheries Statistics of Indonesia 1985
Frozen	Cooked shrimp	THA	Fisheries Statistics of Thailand 1989 - 1993. Department of Fisheries.
Frozen	Cooked shrimp IQF	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988
Frozen	Cuttle fish edge block	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Cuttle fish head block	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Cuttle fish wing block	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Cuttlefish	MAL	Berita nelayan (Fisherman News), 24/3/1981
Frozen	Cuttlefish	THA	Fisheries Statistics of Thailand 1989 - 1993. Department of Fisheries.
Frozen	Cuttlefish/squid	THA	Food Preservative Philippines; GMS Pub. Corp.; 1977 KJT Lagna, et al; Technology Icing of Milkfish Published by PCARRD
Frozen	Bel IQF	PHI	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Farcied crab	VIE	Muong dan cha bien cac mon an thuy san NXBNN-Ma noi 1986.
Frozen	Farcied cuttle fish	VIE	Muong dan cha bien cac mon an thuy san NXBNN-Ma noi 1986.
Frozen	Fillet cuttle fish	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Fish	THA	Fisheries Statistics of Thailand 1989 - 1993. Department of Fisheries.
Frozen	Fish fillet	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Fish, shrimp, squid.	IND	Fisheries Statistics of Indonesia 1985
Frozen	Headed fish IQF	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Headed shrimp block	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988
Frozen	Milkfish	PHI	Food Preservative Philippines; GMS Pub. Corp.; 1977 KJT Lagna, et al; Technology Icing of Milkfish Published by PCARRD
Frozen	Octopus	THA	Fisheries Statistics of Thailand 1989 - 1993. Department of Fisheries.
Frozen	Octopus block	VIE	Fish curing & processing MIR Moscow 1969.
Frozen	Peeled shrimp block	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988.
Frozen	Raw shrimp	THA	Fisheries Statistics of Thailand 1989 - 1993. Department of Fisheries.
Frozen	Sai gon rolled burger	VIE	According to contract buyers.
Frozen	Scallop block	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Shellfish	THA	Fisheries Statistics of Thailand 1989 - 1993. Department of Fisheries.
Frozen	Shrimp/prawn	PHI	Food Preservative Philippines; GMS Pub. Corp.; 1977 KJT Lagna, et al; Technology Icing of Milkfish Published by PCARRD
Frozen	Skewered broiled shrimp	VIE	Muong dan cha bien cac mon an thuy san NXBNN-Ma noi 1986.
Frozen	Squid	THA	Fisheries Statistics of Thailand 1989 - 1993. Department of Fisheries.
Frozen	Tuna	PHI	Food Preservative Philippines; GMS Pub. Corp.; 1977 KJT Lagna, et al; Technology Icing of Milkfish Published by PCARRD
Frozen	Urchin block	VIE	Fish curing & processing MIR Moscow 1969.
Frozen	Whole cuttle fish block	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Whole cuttle fish IQF	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Whole fish deintestine IQF	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Frozen	Whole shrimp block	VIE	Nghiep vu KCS thuy san xuat khau SEAPRODEX va Vu KHKT Nanoi 1988 TCTS/ 1/93, Ha noi.
Frozen	Whole skinned cuttle fish block	VIE	Nghiep vu KCS thuy san xuat khau, SEAPRODEX, va Vu KHKT Hanoi 1988, Tap chi thuh san 1/1993 Ha noi.
Powdered	Fish floss	THA	Fishery Processing 1993
Powdered	Fish sauce concentrated	VIE	Traditional
Smoked	Dried fish	THA	Fisheries Statistics of Thailand 1988 - 1993.
Smoked	Fish	IND	Fisheries Statistics of Indonesia 1985

References in Literature

Category	Product	Country	References in Literature
Smoked	Herring	PHI	Bacligi, R.V., 1972. The development and the effect of storage conditions on smoked soht-boned bangus. NSO, Foreign Trade, exports 1984-1987
Smoked	Herring	PHI	Technology - Canning of Smoked Bangus, 1985
Smoked	Milkfish	PHI	Technology - Canning of Smoked Bangus, 1985
Smoked	Roundscad	PHI	Philippine Handbook on Fish Processing Technology, Fish Curing & Processing. MIR Publishers, Moscow.
Smoked	Sardine	PHI	Philippine Handbook on Fish Processing Technology, Fish Curing & Processing. MIR Publishers, Moscow.
Smoked	Tuna	MAL	FAO Workshop on Development of small scale Processing Industry in Fishing Villages, Penang, Malaysia (29/1 - 1/7/85)
Others	Agar	VIE	Fish curing processing- MIR Moscow 1969, RIMP (Scientific reports). Chemistry on seaweed Moscow-1963.
Others	Carrageenan	VIE	Fish curing processing- MIR Moscow 1969, RIMP (Scientific reports).
Others	Chitosan	VIE	Cong nghe loi dung Tong hop DMNN Ma noi 1963
Others	Cracker	IND	Fisheries Statistics of Indonesia 1985
Others	Fish cracker	MAL	Berita Nelayan (Fishermen News), No 13,25,19; Risalah MARDI No 8 (MARDI Pamphlet)
Others	Fish cracker	VIE	RIMP (Scientific report 1977)
Others	Fish liver oil	VIE	Fish curing & processing MIR Moscow 1969.
Others	Fish satay	THA	Processing of fishery product 1993. Department of Fisheries
Others	Fish/shrimp cracker	THA	Processing of fishery product 1993. Department of Fisheries
Others	Pearl	VIE	Traditional product
Others	Prawn cracker	MAL	Berita Nelayan (Fishermen News), No 13,25,19; Risalah MARDI No 8 (MARDI Pamphlet)
Others	Seaweed	PHI	Philippine Handbook on Fish Processing Technology. NSDB. Bicutan, Taguig Metro Manila, Philippines. 1980.
Others	Seaweed	VIE	Fish curing processing- MIR Moscow 1969, RIMP (Scientific reports).
Others	Shrimp kropeck	PHI	Philippine Handbook on Fish Processing Technology. NSDB. Bicutan, Taguig Metro Manila, Philippines. 1980.
Others	Shrimp cracker	VIE	Traditional product, Tap chi tuy san 1/1993 Ma noi
Others	Sodium alginate	VIE	Fish curing processing- MIR Moscow 1969, RIMP (Scientific reports). Chemistry on seaweed Moscow-1963.

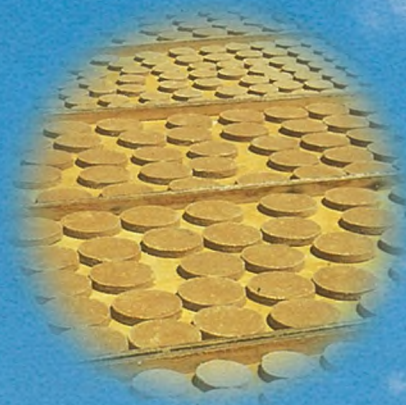


# Southeast Asian Fish Products

Third Edition, 1996

This book is based on an ASEAN wide survey of products processed and consumed in the region. The participating countries are Brunei Darussalam, Indonesia, Malaysia, Philippines, Singapore, Thailand and Vietnam.

Results of the products surveyed are organized according to 11 main categories. They are boiled, canned, comminuted, cured, dried, fermented, fish meal, frozen, powdered, smoked and others.



ISBN 981-00-8230-4