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UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Austria

MARKET STUDY ON ACETIC ACID IN THE ASEAN REGION

June 1991

FINAL REPORT

Project No.DP/RAS/85/010
Contract No.90/107P

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Attention: U. Loeser
Officer-in-charge
Feasibility Studies Branch

Gentlemen:

Re: Project No. DP/RAS/85/010 Contract No. 90/107P
Preparation of 3 Market/Opportunity Studies

We are pleased to submit our final report on the Market Study on Acetic Acid in the ASEAN Region. This is one of several studies commissioned by UNIDO in coordination with the Committee on Industry, Mineral, and Energy to evaluate the potential of possible projects for promotion in the ASEAN Industrial Joint Venture (AIJV) program.

This market study covered the following ASEAN countries: Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The study focuses on the following aspects:

- Size of the market for acetic acid including magnitude of imports and domestic production among countries in the region;
- Major user industries and indications of growth;
- Major suppliers of acetic acid in each covered country;
- Import duties and prevailing market prices of acetic acid;
- Present distribution networks of acetic acid among the ASEAN member-countries; and

- o Strategic analysis for a new manufacturer of acetic acid.

The market data in the report consisted primarily of secondary information obtained from trade publications, industry associations, and government agencies. To supplement secondary data, key informant interviews with selected major consumers of acetic acid were conducted. We were assisted in the data gathering by our offices in the ASEAN countries.

We will be glad to discuss any question you may have on this report.

Very truly yours,

SGV & Co.

UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION
Austria

MARKET STUDY ON ACETIC ACID IN THE ASEAN REGION

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This Market Study on Acetic Acid in the ASEAN Region is one of several studies commissioned by the United Nations Industrial Development Organization (UNIDO) in coordination with the Committee on Industry, Mineral, and Energy to evaluate the potential of possible projects for promotion in the ASEAN Industrial Joint Venture (AIJV) program. Acetic acid has been identified as a possible investment area in Indonesia. Prospective proponents are considering the production of acetic acid from natural gas in order to diversify downstream products and reduce dependence on the market for ammonia and urea, the major downstream products from natural gas.

1.1 THE INDONESIAN MARKET

1.1.1 Market Size and User Industries

Indonesia consumed about 13,800 metric tons of acetic acid (99.9 per cent CH_3COOH) in 1989. The biggest use is in the manufacture of pure terephthalic acid (PTA) which accounted for 65 per cent of the total 1989 consumption of acetic acid. PTA is used as a major raw material in the manufacture of polyester fibers.

Industries	Consumption (metric ton of 99.9% CH_3COOH)	Share (per cent)
Pure terephthalic acid	9,000	65
Textile	2,800	20
Food	700	5
Others *	1,300	10
Total	13,800	100

* Manufacture of resins, adhesives, pharmaceuticals, lacquers, etc.; in photography; and in gasoline and latex processing.

1.1.2 Sources of Supply

Local production of glacial acetic acid started only in 1989 with the commercial operation of PT Indoacidatama Chemical Industri. This plant has an annual production capacity of 12,000 metric tons. In 1989, about 6,000 metric tons were produced locally while 8,000 metric tons were imported. Prior to 1989, importation came mainly from the United Kingdom and Japan. Available import data for 1989 indicate that the United Kingdom and Japan are still Indonesia's major country suppliers of imported acetic acid.

Aggregate domestic production capacity for glacial acetic acid will increase by 22,000 metric tons if plans to set up furfural processing plants go ahead. Glacial acetic acid is produced from the methyl alcohol by-product of furfural processing.

1.1.3 Distribution Channels and Prices

The users of imported acetic acid in Indonesia obtain their acetic acid requirements from local manufacturers, general importers/distributors, or directly from foreign suppliers. Major distributors of acetic acid in Indonesia include PT Mulya Adhi Paramita, PT Lautan Luas, PT Darupadaya, and Halim Chemicals.

In 1989, glacial acetic in Indonesia was sold at US$1,640 per metric ton.

Imported acetic acid is subject to five per cent tariff duty and a 10 per cent value-added tax.

1.1.4 Projected Demand

Demand for acetic acid is projected to reach 14,200 metric tons in 1990 and 100,120 metric tons by the year 2000, reflecting an average annual growth rate of 22 per cent. Acetic acid used for PTA production is expected to grow with the expansion of production facilities for PTA with an average annual growth rate of 26 per cent. Acetic acid requirements of the textile industry is

projected at seven per cent per year. Requirements of the food and other industries are expected to grow at 10 per cent per year.

(metric ton of 99.9 per cent CH_3COOH)

Year	PTA	Textile	Food	Others	Total
1990	9,000	3,000	770	1,430	14,200
1991	24,000	3,210	850	1,570	29,630
1992	28,500	3,430	940	1,730	34,600
1995	88,500	4,210	1,240	2,300	96,250
2000	88,500	5,910	2,000	3,710	100,120
Annual Average Growth Rate	26%	7%	10%	10%	22%

1.2 OTHER ASEAN COUNTRY MARKETS

1.2.1 The Malaysian Market

Usage of acetic acid in 1989 is estimated at about 6,200 metric tons. User industries include the textile, rubber, and other industries.

The demand for acetic acid in Malaysia in 1989 has been met by importation, with the United Kingdom accounting for more than half of the country's imports of acetic acid.

Users import acetic acid directly from foreign suppliers or through local importers/traders.

Quotations of domestic price of glacial acetic acid are not available. However, the closest indication of the price of acetic acid in Malaysia may be based on available import statistics in 1989. The CIF price of acetic acid from the United Kingdom, the major country source of Malaysia, is about US$740 per metric ton.

There is no tariff or duty imposed on imported acetic acid in Malaysia.

1.2.2 The Philippine Market

In 1989, the Philippines consumed about 4,600 metric tons of acetic acid. The major user of acetic acid is the textile industry. In 1989, it accounted for 55 per cent of the total usage of acetic acid. The other major user industries include the food processing industry; manufacture of paper, adhesives, paints; and rubber and leather processing. Acetic acid is also used for printing work and for coating in the manufacture of electrical lamps.

Acetic acid requirements in 1989 were supplied solely by importation. The United Kingdom and North Ireland, Taiwan, and the United States were the major country sources of acetic acid in 1989.

The three major importers/indentors of acetic acid in the Philippines include Northern Chemical Sales Corporation, L & S Chemical Supply, and the Chemical Industries of the Philippines. The three companies supply 90 per cent of the country's acetic acid requirements. Industry users also obtain their acetic acid requirements by importing directly from foreign suppliers.

The price of glacial acetic acid ranges from US$845 to US$910 per metric ton.

Imports of acetic acid is subject to a 10 per cent tariff and 10 per cent value-added tax.

1.2.3 The Singapore Market

Usage of acetic acid in 1989 is estimated at about 5,400 metric tons. Acetic acid is used mainly by the firms in the textile industry. It is also used in the rubber and printing industries as well as in the production of concrete additives for the construction industry.

Supply of acetic acid in Singapore comes entirely from importation. In 1989, the major country source of acetic acid was the United Kingdom. Other sources included the People's Republic of China, Japan, and the United States.

A major distributor in Singapore is Union Carbide which is estimated to account for at least 60 per cent of the trade. Other traders and distributors include BP Singapore, Monsanto, and Toyo Menka.

In 1989, glacial acetic acid in Singapore was sold from US$650 to US$800 per metric ton.

There is no tariff imposed on imported acetic acid in Singapore.

1.2.4 The Thailand Market

Domestic demand for 1989 is estimated at 6,400 metric tons. The major user of acetic acid is the textile industry which accounted for about 75 per cent of total usage volume. Other users include firms in the printing and adhesives industries.

The demand for acetic acid has been met by importation. In 1989, Austria, the Netherlands, Taiwan, and the United Kingdom were the major country sources of acetic acid.

The user industries in Thailand obtain their acetic acid requirements from importers/traders of acetic acid. The chemical is also obtained through direct importation from foreign suppliers.

The price of acetic acid in Thailand ranges from US$950 to US$1,090 per metric ton.

Imports of acetic acid in Thailand is subject to a 30 per cent customs duty.

1.3 OVERALL MARKET ASSESSMENT

The ASEAN market for acetic acid can be evaluated on the following criteria: current and potential size of the market, supply considerations, and price orientation.

1.3.1 Projected Demand and Estimated Unfilled Demand

Demand for acetic acid in Indonesia is projected to increase from 14,200 metric tons in 1990 to 100,120 metric tons by year 2000. On the other hand, local production capacity is projected to increase from 12,000 metric tons in 1990 to 34,000 metric tons by 1992. The increase is projected to come from the planned establishment of four furfural plants which would produce an aggregate 22,000 metric tons of acetic acid as by-product.

Unfilled demand which is total demand less production, is estimated at 2,200 metric tons in 1990. Even if the plans to establish the furfural plants materialize, there will be an unfilled demand of 600 metric tons by 1992. The unfilled demand is expected to increase by a hundred per cent by 1995 assuming the PTA projects in the planning phase become operational. On the other hand, if plans are not implemented, Indonesia will experience a larger unfilled demand of 22,600 metric tons in 1992 which will increase to 84,250 metric tons in 1995 as shown in the following table.

In the other ASEAN countries, demand for acetic acid is projected to increase from 24,480 metric tons in 1990 to 61,000 metric tons by year 2000. The major country markets would be the Philippines and Thailand.

Currently, there is no existing production plant in the other ASEAN countries and no reported plans to establish one.

Within the decade, the total unfilled demand in Indonesia (assuming the establishment of the furfural plants) and the other ASEAN countries (assuming no production facilities) is estimated to increase fivefold, from 26,680 metric tons in 1990 to 127,120 metric tons by the year 2000.

	(metric ton of 99.9 per cent CH_3COOH)				
	1990	1991	1992	1995	2000
Indonesia					
Demand	14,200	29,630	34,600	96,250	100,120
Less: Local Production					
IACI Plant	12,000	12,000	12,000	12,000	12,000
Furfural Plants	-	-	22,000	22,000	22,000
Unfilled Demand/ (Excess Supply)	2,200	17,630	600	62,250	66,120
Other ASEAN Countries					
Malaysia	6,510	6,840	7,180	8,320	10,630
Philippines	5,100	5,690	6,350	8,920	16,090
Singapore	5,670	5,950	6,250	7,230	9,230
Thailand	7,200	8,120	9,160	13,240	25,050
Unfilled Demand *	24,480	26,600	28,940	37,710	61,000
Total Unfilled Demand	26,680	44,230	29,540	99,960	127,120
Estimated unfilled demand without supply from furfural plants					
Indonesia	2,200	17,630	22,600	84,250	88,120
Other ASEAN Countries	24,570	26,600	28,940	37,710	61,000
Total Unfilled Demand	26,770	44,230	51,540	121,960	149,120

* Unfilled demand assumes no new glacial acetic acid production facilities will be set up in the other ASEAN countries.

1.3.2 Supply Considerations

The only existing manufacturer of acetic acid in the Region is PT Indoacidatama Chemical Industri in Indonesia. It has a capacity of 12,000 metric tons per year.

Plans to set up four furfural plants in Indonesia and produce 22,000 metric tons of acetic acid as by-product have been reported by the Department of Industry of Indonesia. These plans, however, are not definite since some reservations have been raised about the technology of producing furfural particularly from bagasse and the market opportunities for furfural. In the Philippines in the late sixties, a large sugar mill failed to commercially produce furfural using a Scandinavian process because of technical problems. It also appears that the market for furfural which is mainly used in the production of Nylon 66 is limited. The chemical more extensively used in lieu of furfural is caprolactam.

1.3.3 Price Orientation

Aside from product quality and delivery, price would be a major consideration in penetrating the market. In Indonesia, the proponents would have an advantage since they would have reduced freight costs and would not have to pay tariff. The proponents would also have a cheaper source of indigenous natural gas.

The proponents would also have advantages in selling to the other ASEAN countries since they will enjoy lower freight charges compared with European suppliers. They would also enjoy preferential tariff rates in the Philippines and Thailand (Malaysia and Singapore do not impose import duty and VAT on acetic acid as shown below) as a result of their participation in the AIJV program.

Country	Tariff Rate	Value-added Tax
Indonesia	5%	10%
Malaysia	-	-
Philippines	10	10
Singapore	-	-
Thailand	30	-

1.3.5 Conclusion

The project to produce acetic acid from natural gas appears attractive from a market standpoint. Based on the projected market and supply situation, there is an unfilled demand for acetic acid in Indonesia and other ASEAN countries. Even if furfural plants are established in Indonesia to manufacture acetic acid, total unfilled demand will be about 600 metric tons in 1992, increasing to 62,000 metric tons in 1995, and 66,000 metric tons by the year 2000.

Several other factors also contribute to the attractiveness of the project in Indonesia. These include the use of a proven technology to manufacture acetic acid, access to supply of indigenous natural gas, and lower cost of acetic acid due to economies of scale and reduced freight rates.

Currently, there is no existing production plant of glacial acetic acid in the other ASEAN countries and no plans to establish one. The unfilled demand in the other ASEAN countries will be about 29,000 metric tons in 1992; 38,000 metric tons in 1995; and 61,000 metric tons by the year 2000.

If the project qualifies as an AIJV project, the proponents, in addition to cheap raw material and economies of scale, would enjoy preferential tariff treatment making the acetic acid price-competitive. The ASEAN partners may also assist in the distribution of acetic acid.

2. INTRODUCTION

2.1 PROJECT BACKGROUND

The United Nations Industrial Development Organization (UNIDO) has engaged the services of SyCip, Gorres, Velayo and Co. to conduct a market study on acetic acid in the ASEAN region. This is one of several studies commissioned by UNIDO in coordination with the Committee on Industry, Mineral, and Energy to evaluate the potential of possible projects for promotion in the ASEAN Industrial Joint Venture (AIJV) program. Acetic acid has been identified as a possible investment area in Indonesia. The proponents are considering the production of acetic acid from natural gas in order to diversify downstream products from natural gas and reduce dependence on the market for ammonia and urea, the major natural gas products.

2.2 OBJECTIVE

This market study aims to provide potential AIJV promoters and investors with market information on acetic acid to ascertain the market potential of the product in the ASEAN region.

2.3 SCOPE OF THE STUDY

The study covers both the demand and supply aspects of acetic acid in the ASEAN region, notably Indonesia, Malaysia, the Philippines, Singapore, and Thailand. The study focuses on the following aspects:

- Size of the market for acetic acid including magnitude of imports and domestic production among countries in the region;
- Major user industries and indications of growth;
- Major suppliers of acetic acid in each covered country;
- Import duties and prevailing market prices of acetic acid; and

- o Present distribution networks of acetic acid among the ASEAN member-countries; and
- o Strategic analysis for a new manufacturer of acetic acid.

2.4 METHODOLOGY

Primary and secondary sources were used in gathering data for the study. Primary data were obtained through interviews with importers and users of acetic acid. Secondary data were obtained using the trade statistics of each ASEAN member-country, and other government and industry publications.

2.5 PRODUCT DESCRIPTION

Acetic acid (CH_3COOH), also known as ethanoic acid (IUPAC), is a clear, colorless liquid with an acrid taste and pungent odor. It occurs both free and combined in the form of esters of various alcohols in many plants, and has been detected also in animal secretions. Glacial acetic acid contains not less than 99.4 per cent, by weight, of CH_3COOH. This acid is termed "glacial" because of its glassy appearance (ice-like crystals) when congealed at 58-60^{o}F.

Acetic acid is miscible in all proportions with water, ethanol, and ether. It is an excellent solvent for organic compounds and is widely used as such in organic synthesis and in the preparation of acetates, acetone, acetic anhydride, etc.

Acetic acid also exhibits relatively low basicity, or proton affinity, and as a solvent yields relatively small ionization constants for strong acids such as perchloric acid. Acetic acid serves as a differentiating solvent for strong acids such as perchloric, hydrobromic, sulfuric, hydrochloric, and nitric acids, which have nearly equal strength in aqueous solution, due to the leveling effect of water.

The study covers glacial acetic acid which is used mainly in the manufacture of pure terephthalic acid to produce polyester fiber; in dyeing and printing of textiles; in canned food products as an acidifying agent; in the manufacture of resins, paints, adhesives, etc.; and in gasoline, latex and leather processing. Food grade acetic acid which is manufactured through the fermentation process for vinegar production is excluded from the study.

3. THE INDONESIAN MARKET

3.1 MARKET SIZE AND USER INDUSTRIES

Usage of acetic acid (99.9 per cent CH_3COOH) in Indonesia in 1989 is estimated at about 13,800 metric tons. The biggest use is in the manufacture of Pure terephthalic acid (PTA), accounting for 65 per cent of total estimated consumption of acetic acid in 1989. The next largest uses are in the textile and food processing industries which account for 20 per cent and five per cent, respectively, of total usage.

Table 1
Indonesia
Major User Industries of Acetic Acid
1989

Industry	Consumption (metric ton (99.9% CH_3COOH)	Share (per cent)
Pure terephthalic acid	9,000	65
Textile	2,800	20
Food	700	5
Others *	1,300	10
Total	13,800	100

Source: Department of Industry.

* Manufacture of resins, adhesives, pharmaceuticals, lacquers, etc; in photography; and in gasoline and latex processing.

3.1.1 Pure Terephthalic Acid (PTA)

The volume of acetic acid (99.9 per cent CH_3COOH) used in the manufacture of PTA in 1989 is estimated at 9,000 metric tons.

PTA is a basic material in the manufacture of polyester fibers. The only local manufacturer of PTA in Indonesia is the PTA factory in Plaju, South Sumatra owned by

Pertamina, the state-owned oil company. It started operations in mid-1986. In 1989, production is estimated at about 150,000 metric tons of PTA. The amount of acetic acid (99.9 per cent CH_3COOH) consumed is about 9,000 metric tons based on a usage ratio of 60 kilograms acetic acid per metric ton of PTA produced.

Table 2 shows the PTA production volume and estimated acetic acid usage of the PTA factory from 1986 to 1989.

Table 2
Indonesia
PTA Production and Acetic Acid Usage of the Plaju Factory
1986 to 1989
(metric ton)

Year	PTA Production	Acetic Acid Usage Volume (99.9% CH_3COOH)
1986	56,000	3,400
1987	122,200	7,300
1988	150,000	9,000
1989	150,000	9,000

Source: Department of Industry.

In 1989, the PTA consumption of the seven polyester fiber plants in Indonesia exceeded domestic production. As shown in Table 3, the polyester fiber plants consumed about 194,000 metric tons of PTA.

Table 3
Indonesia
PTA Consumption and Estimated Acetic Acid Requirements
of Polyester Fiber Manufacturers
(metric ton)

Company	PTA Consumption	Estimated Acetic Acid Requirements (99.9% CH_3COOH)
PT Indonesia Toray Synthetics (PT ITS)	16,500	990
PT Kuraray Manunggal Fiber Industries (PT Kumafiber)	16,500	990
PT Tri Rempoa Solo Synthetic (PT Tri Rempoa)	19,700	1,180
PT Teijin Indonesia Fiber Corporation (PT Tifico)	39,500	2,370
PT Susilia Indah Synthetic Fiber Industries (PT Sulindafin)	39,500	2,370
PT Yasinta Poly (PT Yasinta)	32,800	1,970
PT Polysindo Eka Perkasa	29,500	1,770
Total	194,000	11,640

Source: Department of Industry.

The historical importation of PTA is presented in Table 4.

Table 4
Indonesia
Imports of PTA
1985 to 1989

Year	Volume (metric ton)	CIF Value (US$000)
1985	87,700	59,500
1986	68,600	44,600
1987	8,900	8,700
1988	34,600	26,000
1989	55,900	57,500

Source: Department of Industry.

Interviews indicate that Pertamina plans to increase its PTA production capacity by 50 per cent to 225,000 metric tons per year in order to meet the rising demand for PTA by the polyester fiber manufacturers. Expansion of the PTA plant is planned to be completed in 1992.

There are five other PTA projects in the pipeline. Together with the expansion of the Pertamina plant, the combined projected demand for acetic acid of the six plants is estimated at 80,000 metric tons per year. (See Table 5.)

Table 5
Indonesia
PTA Project Pipeline

Company	Annual PTA Production	Estimated Annual Acetic Acid Requirements (99.9% CH_3COOH)	Project Status
Pertamina (expansion)	75,000	4,500	Production in 1992
PT Yasinta Lindo	250,000	15,000	Production in 1991
PT Polytamakarsa Agung	250,000	15,000	Planning phase
PT Bakrie Kasei Corp.	250,000	15,000	Planning phase
PT Citra Supermasi Industri	250,000	15,000	Planning phase
PT PTA Indonesia	250,000	15,000	Planning phase
Total	1,325,000	79,500	

3.1.2 Textile Industry

The textile industry is the second biggest user of acetic acid in Indonesia. The estimated 1989 usage of acetic acid (99.9 per cent CH_3COOH) is about 2,800 metric tons. Acetic acid is used as an auxiliary material in textile dyeing to maintain the toughness of cellulose fiber and as an oxidant to prevent uneven dyeing. Acetic acid is also used in textile printing.

According to industrial sources, acetic acid used in the textile industry has a concentration content of 99.9 per cent which is diluted to 30 per cent to 60 per cent. Acetic acid constitutes about 1.5 per cent of the dyeing liquid. About 80 per cent of the textile produced in the country are dyed and printed. Table 6 presents textile production volume for the period 1984 to 1989 and the corresponding estimated consumption of acetic acid by the textile industry.

Table 6
Indonesia
Production of Textile and Acetic Acid Consumption of the Textile Industry
1984 to 1989
(metric ton)

Year	Production	Acetic Acid Consumption (99.9% CH_3COOH)
1984	370,700	2,000
1985	406,400	2,200
1986	485,500	2,600
1987	503,600	2,700
1988	490,700	2,700
1989	525,000	2,800

Source: Department of Industry.

3.1.3 Food Processing Industry

Based on interviews, the food processing industry used about 700 metric tons of acetic acid (99.9 per cent CH_3COOH) in 1989. Acetic acid is used as an acidifying agent, mainly in canned food products.

3.1.4 Other Industries

Acetic acid is used as an auxiliary material in various industries such as the paint, plastics, pharmaceutical, and insecticide industries; in photography; and in gasoline and latex processing. Total acetic acid usage of these other industries in 1989 is estimated at 1,300 metric tons (99.9 per cent CH_3COOH).

3.2 SUPPLY OF ACETIC ACID

Local production of glacial acetic acid started only in 1989 with the commercial operations of PT Indoacidatama Chemical Industri. This plant has an annual production capacity of 12,000 metric tons. In 1989, about 6,000 metric tons were produced locally while 8,000 metric tons were imported. Prior to 1989, importation came mainly from the United Kingdom and Japan. Available import data for 1989 indicate that United Kingdom and Japan are still Indonesia's major country sources of imported acetic acid.

Indonesia's importation of acetic acid in 1989 is estimated at 8,100 metric tons. Table 7 shows Indonesia's historical importation of acetic acid and its salts from 1984 to 1989.

Table 7
Indonesia
Imports of Acetic Acid and Its Salts
1984 to 1989

Year	Volume (metric ton)	CIF Value (US$000)
1984	4,700	2,490
1985	2,090	1,090
1986	9,000	13,220
1987	24,570	11,620
1988	12,970	8,950
1989*	8,070	6,110

* Annualized based on January to November 1989 trade statistics.

Source: Department of Industry
Foreign Trade Statistics of Indonesia.

In 1989, the major sources of imported acetic acid were the United Kingdom and Japan which accounted for 34 per cent and 32 per cent, respectively, of Indonesia's total importation volume.

There are several plans to set up furfural processing plants which will produce glacial acetic acid from the methyl alcohol by-product. Table 8 shows the proponents and their planned production capacities.

Table 8
Indonesia
Projects to Manufacture Furfural and Acetic Acid as By-Product

Proponent	Planned Production Capacity (metric ton)	
	Furfural	Acetic Acid
PT Organic Che Mindo	30,000	10,000
Indo Furfural Utama Jaya	25,000	9,000
PT Intan Prima Tani	10,000	1,000
PT Vira Kencana	5,000	2,000
Total	70,000	22,000

Source: Department of Industry.

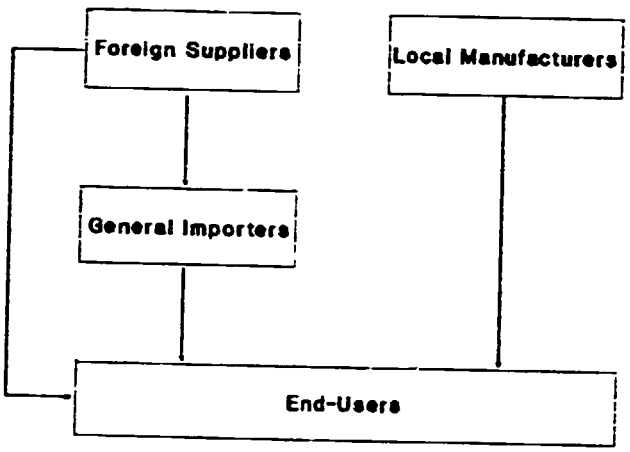
3.3 DISTRIBUTION CHANNELS AND PRICES

As shown in Figure 1, the end-user industries of acetic acid in Indonesia obtain their acetic acid requirements from local manufacturers or general importers. End-user industries also purchase acetic acid directly from foreign country suppliers.

Major distributors of acetic acid in Indonesia include PT Mulya Adhi Paramita, PT Lautan Luas, PT Darupadaya, and Halim Chemicals.

The price of glacial acetic acid in Indonesia is at US$1,640 per metric ton.

Figure 1
Indonesia
Acetic Acid Distribution System



Source: Interviews.

3.4 PROJECTED DEMAND

The demand for acetic acid (99.9 per cent CH_3COOH) is projected to reach 14,200 metric tons in 1990 and 100,120 metric tons by the year 2000. (See Table 9.) These projections reflect an aggregate average growth of 22 per cent per year. The growth in demand for acetic acid is expected to follow expansion of production facilities for PTA. The PTA projects in the pipeline indicate an increase in acetic acid consumption for PTA from 9,000 metric tons in 1990 to 24,000 metric tons in 1991 and 28,500 metric tons in 1992. If the PTA projects currently in the planning phase materialize, the demand for acetic acid will increase threefold to 88,500 metric tons in 1995 from its 1992 demand level.

Acetic acid requirements for the textile industry is projected to grow at seven per cent per year. On the other hand, the acetic acid requirements for the food and other industries are expected to grow at 10 per cent per year.

Table 9
Indonesia
Projected Demand for Acetic Acid by User Industry
1990 to 2000
(metric ton of 99.9 per cent CH_3COOH)

Year	PTA	Textile	Food	Others	Total
1990	9,000	3,000	770	1,430	14,200
1991	24,000	3,210	850	1,570	29,630
1992	28,500	3,430	940	1,730	34,600
1995	88,500	4,210	1,240	2,300	96,250
2000	88,500	5,910	2,000	3,710	100,120
Annual Average Growth Rate	26%	7%	10%	10%	22%

3.5 TARIFF AND DUTIES

Imported acetic acid is subject to a five per cent tariff duty and a 10 per cent value-added tax.

4. THE MALAYSIAN MARKET

4.1 MARKET SIZE AND USER INDUSTRIES

Usage of acetic acid (99.9 per cent CH_3COOH) in 1989 is estimated at about 6,200 metric tons. User industries include the textile, rubber, and other industries.

4.1.1 Textile Industry

In the textile industry, acetic acid is used mainly in the finishing operations. Significant amounts are also used in the production of nylon and of some acrylic fibers as well as for dyestuff and pigments.

Identified major manufacturers of textile in Malaysia are listed in Table 10.

Table 10
Malaysia
Major Textile Manufacturers

Name of Company	Textile Products Manufactured
Textile Weaving and Finishing	
Arab-Malaysian Development Bhd.	Shirts
Far East Polyester (M) Sdn. Bhd.	Polyester textured yarn
J & P Coats Mfg., Sdn. Bhd.	Sewing threads
Kanebo (M) S.M., Sdn. Bhd.	Acrylic yarn, acrylic wool, blended yarn, dyed yarn of natural and man-made fibers, and commission dyeing of natural and man-made fibers
Kim Fashion Knitwear (M) Sdn. Bhd.	Socks (woolen and cotton), gloves, sewn mitten, shawls, caps

Name of Company	Textile Products Manufactured
Textile Weaving and Finishing	
Malayan Weaving Mills Sdn. Bhd.	Bleached and unbleached woven cotton fabrics, dyed and printed woven cotton fabrics, bleached and unbleached woven cotton duck and canvas, dyed and printed fabrics of synthetic staple fibers
Minion Industries (M) Sdn. Bhd.	Handknitting yarns, crochet threads, embroidery threads
Nanmu Yarns and Threads Mfg. Sdn. Bhd.	Industrial sewing thread, mop yarn, garabo yarn
Pannu Industries Sdn. Bhd.	Webbing and curtain
Penfabric Sdn. Bhd.	Grey fabric, yarn, dyed and printed fabric
Penfibre Sdn. Bhd.	Polyester staple fiber
South Pacific Textile Industries Bhd.	Yarn, woven dress, jacket and sweater, knitted fabric and garment
Tootal Thread Malacca Sdn. Bhd.	Spun polyester sewing thread
Utex-Print Sdn. Bhd.	Commission printing and embroidery, warp knitting
Winson Industries Sdn. Bhd.	Shoe laces
Knitting Mills	
Bing Bing Knitwear Manufacturer Sdn. Bhd.	Knitted fabrics and made up garments
Chung Kai Knitting Fty. (M) Sdn. Bhd.	Knitted garments

Name of Company	Textile Products Manufactured
Knitting Mills	
Honsin Knitting Industries Sdn. Bhd.	Men's jackets, children's jackets, ladies' sweatshirt, boys' polo sweatshirts and girls' cardigans, ladies' blouses, children's jogging set, children's tank top/ short set, men's tennis shirt
Kim Fashion Knitwear (M) Sdn. Bhd.	Socks (woolen and cotton), gloves, sewn mittens, shawls, caps
Mei Kuang Fabrics Industries Sdn. Bhd.	Knitted fabrics and garments
South Pacific Textile Industries Bhd.	Knitted fabrics
Tradeland Sdn. Bhd.	Knitted and woven garments
Trans-Pacific Industries Sdn. Bhd.	Knitting mills

Source: Federation of Malaysian Manufacturers, 1990 Directory.

4.1.2 Rubber Industry

The rubber industry also consumes an appreciable amount of acetic acid for coagulating rubber latex.

At present, Malaysia accounts for about 70 per cent of natural rubber latex concentrate sold in the world market, in accordance with International Standard Organization specifications.

4.1.3 Other Industries

Other users include manufacturers of paint and adhesives.

4.2 SUPPLY OF ACETIC ACID

4.2.1 Imports

The demand for acetic acid in Malaysia has been met by importation. The total supply of acetic acid and its salts in 1989 is estimated at 6,200 metric tons.

Table 11
Malaysia
Imports of Acetic Acid and Its Salts
1985 to 1989

Year	Volume (metric ton)	CIF Value (US$000)
1985	2,900	2,400
1986	4,100	2,500
1987	5,900	3,400
1988	5,300	4,100
1989	6,200	4,600

Source: Foreign Trade Statistics of Malaysia.

As shown in Table 12, the United Kingdom accounted for more than half of the acetic acid imported by Malaysia in 1989. The United States was the second largest source, however, it accounted for only 13 per cent of the total importation volume.

Table 12
Malaysia
Major Country Sources of Acetic Acid and Its Salts
1989

Country	Volume (metric ton)	CIF Value (US$000)	% to Total
United Kingdom	3,335	2,473	53
United States	789	423	13
Taiwan	627	396	10
Singapore	406	410	7
Japan	290	180	5
People's Republic of China	281	197	5
Federal Republic of Germany	174	253	3
Netherlands	149	145	2
Others	117	118	2
Total	6,168	4,595	100

Source: Foreign Trade Statistics of Malaysia.

4.2.2 Exports

In 1987, the country exported a considerable amount of the product at 2,700 metric tons. The acetic acid was exported mainly to China. In 1988, export volume dropped to about 500 metric tons. The main country market in 1988 was Hong Kong. Export volume in 1985 was nil while in 1986 and 1989, there was no reported exports of acetic acid. (See Table 13.)

Table 13
Malaysia
Exports of Acetic Acid and Its Salts
1985 to 1989

Year	Volume (metric ton)	FOB Value (US$000)
1985	1	3
1986	-	-
1987	2,700	1,200
1988	500	300
1989	-	-

Source: Foreign Trade Statistics of Malaysia.

4.3 DISTRIBUTION CHANNELS AND PRICES

Supply of acetic acid in Malaysia is either imported directly by the user industries or procured from importers/traders.

Quotations of domestic price of glacial acetic acid are not available. However, the closest indication of the price of acetic acid in Malaysia may be based on available import statistics in 1989. The CIF price of acetic acid from the United Kingdom, the major country source of Malaysia, is about US$740 per metric ton.

4.4 PROJECTED DEMAND

Malaysian demand for acetic acid is estimated to grow by five per cent per annum based on the projected growth of the textile and clothing industry. In the rubber industry, the usage of acetic acid is also expected to grow at five per cent per annum because of the thrust of furthering the development and growth of export-oriented rubber-based companies. Based on these growth rates, the requirement for acetic acid (99.9 per cent CH_3COOH) is projected at 6,510 metric tons in 1990 and 10,630 metric tons by the year 2000. (See Table 14.)

Table 14
Malaysia
Projected Demand for Acetic Acid and Its Salts
1990 to 2000
(metric ton of 99.9 per cent CH_3COOH)

Year	Consumption
1990	6,510
1991	6,840
1992	7,180
1995	8,320
2000	10,630

4.5 TARIFF AND DUTIES

According to the Malaysian Export Trade Center (MEXPO), there is no tariff or duty imposed on imported acetic acid.

5. THE PHILIPPINE MARKET

5.1 MARKET SIZE AND USER INDUSTRIES

As shown in Table 15, the Philippines consumed about 4,600 metric tons of acetic acid (99.9 per cent CH_3COOH) in 1989.

Interviews indicate that the major user of acetic acid in 1989 was the textile industry. It accounted for about 2,500 metric tons or 55 per cent of the total usage of acetic acid. This is followed by the food processing industry which consumed about 800 metric tons or about 17 per cent of total usage. The balance of 28 per cent was used in the manufacture of paper, adhesives, paints, and in rubber and leather processing. Acetic acid was also used for printing work and for coating in the manufacture of electrical lamps.

Table 15
Philippines
Major User Industries of Acetic Acid
1989

Industries	Consumption (metric ton of 99.9 % CH_3COOH)	Share (per cent)
Textile	2,480	55
Food Processing	800	17
Others	1,300	28
	4,580	100

Source: Interviews.

5.1.1. Textile Industry

In 1989, usage of acetic acid (99.9 per cent CH_3COOH) by the textile industry was about 2,500 metric tons. Integrated textile mills consumed about 75 per cent of the total usage, while the remaining 25 per cent was accounted for by the spinning and weaving mills. (See Table 16.)

Table 17
Philippines
Estimated Number of Spindles and Looms
of Integrated Textile Mills
1989

	Name of Company	Spindles	Looms
1.	Artex Development Co., Inc.	50,771	1,584
2.	Central Textile Mills, Inc.	48,120	1,803
3.	Evertex Industries, Inc.	12,000	262
4.	General Textiles, Inc.	53,672	1,400
5.	Imperial Textile Mills, Inc.	--	1,689
6.	International Textile Mills, Inc.	61,652	650
7.	Kingtex Industrial Corp.	15,440	490
8.	Litton Mills, Inc.	60,000	400
9.	Lucky Textile Mills, Inc.	60,204	961
10.	Lyon Textile Mills, Inc.	53,760	504
11.	P. Floro & Sons, Inc.	39,600	610
12.	Ramie Textiles, Inc.	29,708	390
13.	Rosario Textile Mills, Inc.	60,784	956
14.	Solid Mills, Inc.	40,256	942
15.	Southern Textile Mills, Inc.	47,310	584
16.	Universal Textile Mills, Inc.	65,320	1,871
17.	Zenith Textile Mills, Inc.	15,248	369

Source: Textile Manufacturers Association of the Philippines.

Spinning and weaving mills have an estimated average annual consumption of 12 metric tons. The 51 spinning and weaving mill members of the TMAP account for a total consumption of about 600 metric tons. Table 18 lists the spinning and weaving mills in the Philippines and the total number of their spindles and looms.

Table 18
Philippines
Estimated Number of Spindles and Looms
of Spinning and Weaving Mills
1989

A. Spinning and/or Weaving Mills

	Name of Company	Spindles	Looms
1.	Acme Knitting & Mfg. Co., Inc.	12,752	134
2.	Aristocrat Weaving	--	180
3.	Asia Cotton Mfg. Co., Inc.	--	82
4.	Asia Textile Mills, Inc.	19,000	510
5.	Carlston (PKMI)	31,440	210
6.	Central Knitting & Weaving Mills, Inc.	--	119
7.	Chesont Non-Woven Fabrics, Phils.	--	36
8.	Clover Mfg. Co., Inc.	3,200	150
9.	Delta Weaving	--	20
10.	Fil-Fiber Mfg., Inc.	--	24
11.	Filipinas Textile Mills, Inc.	--	328
12.	Filspin	--	30
13.	Filtex Manufacturing Corp.	--	94
14.	Fortune Integrated	--	110
15.	Gelmart Ind. Phils., Inc.	--	85
16.	Ind. Fibre Products	--	109
17.	Pacific Mills, Inc.	41,344	74
18.	Paramount Textile Mills, Inc.	10,080	248
19.	Philippine Knitting Mills, Inc.	31,440	74
20.	Shentex Ind.	--	140
21.	Sunreyno	--	119
22.	Trans-Asia Phils. Inc.	--	30
23.	Universal Robina Corp.	50,000	442
24.	Yupangco Cotton Mills, Inc.	16,044	1,595

B. Spinning Mills

	Name of Company	Spindles
1.	Alliance Textile Mills, Inc.	50,000
2.	Allied Thread Co., Inc.	15,352
3.	Anchor Polytex (Empire Weaving)	7,200
4.	Continental Chuwa Phils. Mfg. Inc.	6,000
5.	Continental Manufacturing Corp.	25,904
6.	Diamond Knitting Corp.	10,000
7.	Ever Alliance	10,000
8.	Filway	4,800
9.	Indo-Phil Acrylic	5,924
10.	Indo-Phil Textile Mills, Inc.	48,144
11.	Kewalram Phils., Inc.	15,000
12.	Lirag Textile Mills, Inc.	38,576
13.	Mabuhay Textile Mills Corp.	16,000
14.	Malayan Textile Mills, Inc.	16,592
15.	Manila Bay Spinning Mills, Inc.	66,712
16.	Multi-Fiber Group Corp.	3,200
17.	Northern Textile Mills, Inc.	15,120
18.	Peggy Mills, Inc.	22,680
19.	Polyspun Textile Corp.	10,000
20.	Quality Cotton	5,000
21.	Solid Development Corp.	45,552
22.	Topspin Textile Mills, Inc.	10,000
23.	Tri-Union Industrial Corp.	35,000
24.	Tung Cheng	14,400
25.	Unisol Ind. & Mfg., Corp.	36,480
26.	Universal Synthetic Mfg. Corp.	21,800
27.	Western Textile Mills, Inc.	19,920

Source: Textile Manufacturers Association of the Philippines.

5.1.2 Food Processing Industry

In 1989, the food processing industry is estimated to have consumed about 920 metric tons of acetic acid, broken down into 800 metric tons of 99.9 per cent CH_3COOH and 120 metric tons of four per cent CH_3COOH.

Interviews indicate that acetic acid is used in the production of vinegar, cheese, and salad preparation products.

The four identified manufacturers of cheese and salad preparation products are shown in Table 19. Acetic acid is used in the production of cheese and salad preparation products to adjust the pH content and to impart taste.

Table 19
Philippines
Cheese and Salad Preparations Manufacturers

Company	Products Manufactured
Kraft General Foods Phils. Inc.	Cheese and salad preparations
Magnolia Dairy Products	Cheese
California Manufacturing Co., Inc.	Salad preparations
Sugarland International Products	Salad preparations

Source: Interviews.

5.1.3 Other Industries

Acetic acid is used as an auxiliary material in the manufacture of adhesives, paints, paper; rubber and leather processing; printing; and for coating in the manufacture of electrical lamps.

5.2 SOURCES OF SUPPLY

The requirements for acetic acid (99.9 per cent CH_3COOH) are supplied solely by importation.

In 1989, the country imported 4,700 metric tons of acetic acid and its salts. Importation of acetic acid has grown at an average annual compounded rate of 18 per cent over the period 1985 to 1989. However, this rate appears to be on the high side, attributed by the increase of almost 60 per cent in the import volume from 1985 to 1986. For the succeeding years, from 1986 to 1989, importation increased at a fairly stable rate at an average annual compounded grown rate of seven per cent.

Table 20
Philippines
Imports of Acetic Acid and Its Salts
1985 to 1989

Year	Volume (metric ton)	CIF Value (US$000)
1985	2,400	1,500
1986	3,800	1,700
1987	4,200	2,200
1988	4,400	3,000
1989	4,700	2,940

Source: Foreign Trade Statistics of the Philippines.

As indicated in Table 21, the major country source of acetic acid in 1989 was the United Kingdom and Northern Ireland. Other sources included Taiwan, the United States, the Netherlands, and the People's Republic of China.

Table 21
Philippines
Major Country Sources of Acetic Acid and Its Salts
1989

Country	Volume (metric ton)	CIF Value (US$000)	% to Total
United Kingdom and Ncrth Ireland	2,240	1,294	47
Taiwan	1,126	811	24
United States	520	348	11
Netherlands	214	50	5
People's Republic of China	185	98	4
Others	405	339	9
	4,690	2,940	100

Source: Foreign Trade Statistics of the Philippines.

5.3 DISTRIBUTION CHANNELS AND PRICES

Acetic acid is made available to industry users by importers/traders and indentors. Based on interviews, there are three major importers/indentors of acetic acid in the Philippines. These include Northern Chemical Sales Corporation, L & S Chemical Supply, and Chemical Industries of the Philippines. It is estimated that together, these three importers/ indentors supply 90 per cent of the country's acetic acid requirements.

Industry users also obtain their acetic acid requirements by importing directly from foreign suppliers.

In 1989, the price of glacial acetic acid ranges from US$845 to US$910 per metric ton.

5.4 PROJECTED DEMAND

The demand for acetic acid (99.9 per cent CH_3COOH) is projected to reach about 5,100 metric tons in 1990 and 16,090 metric tons by the year 2000. (See Table 22.)

Table 22
Philippines
Projected Demand for Acetic Acid by User Industry
1990 to 2000
(metric ton of 99.9 per cent CH_3COOH)

Year	Textile	Food Processing	Others	Total
1990	2,850	880	1,370	5,100
1991	3,280	970	1,440	5,690
1992	3,770	1,070	1,510	6,350
1995	5,740	1,430	1,750	8,920
2000	11,550	2,300	2,240	16,090

The projections assume a 15 per cent increase per year of acetic acid requirements for the textile industry. This is attributed to the trend of importation of acetic acid and the expansion of capacities of existing textile manufacturers in line with the country's textile industry modernization program which, based on interviews, ranges from 20 to 25 per cent per year. The government supports the program by providing funding and other assistance to textile manufacturers who wish to expand their operations. At present, the local textile industry is supplying only 31 per cent of the garment industry's textile requirements. The program hopes that local textile manufacturers will be able to increase its share to 36 per cent of the garment industry's requirements by 1995 and to 50 per cent by the year 2000.

Interviews indicate that the acetic acid requirements of the food processing industry is projected to increase by 10 per cent per annum. On the other hand, demand for acetic acid for the other industries is projected to grow at five per cent per year.

5.5 TARIFF AND DUTIES

Acetic acid in the Philippines is subject to a 10 per cent tariff and 10 per cent value-added tax.

6. THE SINGAPORE MARKET

6.1 MARKET SIZE AND USER INDUSTRIES

In 1989, usage of acetic acid (99.9 per cent CH_3COOH) in Singapore is estimated at about 5,400 metric tons. The major users of the product are firms in the textile industry. Acetic acid is also used in the rubber and printing industries, as well as in the production of concrete additives for the construction industry.

6.1.1 Textile Industry

Acetic acid in Singapore is used in the finishing operations in textile production. Finishing operations include bleaching, printing, and dyeing. Presented in Table 23 are major yarn and fabric manufacturers in Singapore.

Table 23
Singapore
List of Major Yarn and Fabric Manufacturers

Name of Company	Products
Yarn Manufacturers	
Kung Keng Textile Co. Pte. Ltd.	Acrylic yarn
Singapore Spinners Pte. Ltd.	100% spun polyester
South Grand Textiles Pte. Ltd.	Cotton grey yarn, cotton spinning
Fabric Manufacturers	
Aljunied Brothers	Batik fabric
Allied Knitting Co. Pte. Ltd.	Fabrics of polyester, stretch, nylon
Alltex Industries Pte. Ltd.	Cotton, CVC, polyester and T/C knitted fabrics
Ang Kuah Trading Company	Computerized embroidery services

Name of Company	Products
Fabric Manufacturers	
Bestknit Textile Industry	Cotton knitted fabrics
Cosmos Industries Pte. Ltd.	Knitted fabrics
Fashion Dyeing & Finishing Pte. Ltd.	Dyeing and finishing of textile fabrics
Gold Point Industries Pte. Ltd.	Knitted fabrics
International Textile Mills Pte. Ltd.	100% cotton grey cloth, polyester/ cotton, polyester/rayon, 100% spun rayon, grey poplin/polyester
Maxim Dyeing & Finishing Fty. Pte. Ltd.	Knitted fabrics, dyeing and finishing
Mitsuboshi Ind. Fabrics (S) Pte. Ltd.	100% cotton industrial fabrics
Nisen Pte. Ltd.	T/C knitted fabrics
Oceanic Dyeing & Finishing Pte. Ltd.	Dyeing and finishing all kinds of fabrics
SA Shahab and Co. Pte. Ltd.	Batik fabric
Silk Textile Industries (S) Pte. Ltd.	Thrown silk, crepe dechine
Vinatech Pte. Ltd.	100% cotton, T/C, CVC, knitted fabrics
Wellstex Industries Pte. Ltd.	Knitted fabrics
Yu Fung Knitting Pte. Ltd.	Knitted fabrics

Source: Singapore Garment and Textile Directory, 1988.

6.1.2 Other Industries

Other industries using acetic acid include the printing industry, the rubber industry where acetic acid is used as a rubber coagulant, and in the construction industry where the product is used in the production of concrete additives.

6.2 SOURCES OF SUPPLY

6.2.1 Imports

The acetic acid requirement of Singapore is met entirely through importation. Table 24 presents importation volume of acetic acid of Singapore for the period from 1986 to 1989.

Table 24
Singapore
Imports of Acetic Acid and Its Salts
1986 to 1989

Year	Volume (metric ton)	CIF Value (US$000)
1986	8,200	3,100
1987	14,000	5,300
1988	4,800	3,200
1989	9,800	5,300

Source: Foreign Trade Statistics of Singapore.

In 1989, the major country source of acetic acid was the United Kingdom. Other sources included the People's Republic of China, Japan, and the United States. (See Table 25.)

Table 25
Singapore
Major Country Sources of Acetic Acid and Its Salts
1989

Country	Volume (metric ton)	CIF Value (US$000)	% to Total
United Kingdom	5,322	2,588	55
People's Republic of China	2,065	1,061	21
Japan	1,178	682	12
United States	700	487	7
Federal Republic of Germany	114	183	1
Netherlands	98	78	1
Taiwan	96	61	1
Others	177	184	2
Total	9,750	5,324	100

Source: Foreign Trade Statistics of Singapore.

6.2.2 Exports

Exports presented below refer to goods exported from Singapore in the same form as they have been imported without any transformation. Table 26 presents the exports of acetic acid of Singapore from 1986 to 1989.

Table 26
Singapore
Exports of Acetic Acid and Its Salts
1986 to 1989

Year	Volume (metric ton)	FOB Value (US$000)
1986	4,800	3,000
1987	8,100	5,400
1988	5,000	3,700
1989	4,400	3,600

Source: Foreign Trade Statistics of Singapore.

In 1989, the largest importers of acetic acid were Malaysia and Thailand. Together, these two countries accounted for over 70 per cent of total export volume in 1989.

Table 27
Singapore
Export Country Markets of Acetic Acid and Its Salts
1989

Country	Volume (metric ton)	FOB Value (US$000)	% to Total
Malaysia	1,887	1,358	43
Thailand	1,304	1,164	30
Brunei	680	361	16
Hong Kong	151	292	3
OC Southeast Asia	130	153	3
Others	228	267	5
Total	4,380	3,595	100

Note: OC Southeast Asia - Other countries of Southeast Asia.

Source: Foreign Trade Statistics of Singapore.

6.3 DISTRIBUTION CHANNELS AND PRICES

All the acetic acid that is traded in Singapore is of the glacial grade. The chemical is imported directly by the end-users and the traders. Interviews indicate that Union Carbide Asia Ltd. accounts for at least 60 per cent of the trade. Other distributors in Singapore include BP Singapore, Monsanto, and Toyo Menka.

The price of glacial acetic acid in Singapore ranges from US$650 to US$800 per metric ton. The low unit price per metric ton of glacial acetic acid may be attributed to the large volume (in thousand ton lots) of the chemical that is traded in the market.

6.4 PROJECTED DEMAND

The domestic demand for acetic acid (99.9 per cent CH_3COOH) is estimated to grow by five per cent per annum. In 1990, the requirement for acetic acid is projected at 5,670 metric tons and is expected to reach 9,230 metric tons by the year 2000. (See Table 28.)

Table 28
Singapore
Projected Demand for Acetic Acid
1990 to 2000
(metric ton of 99.9 per cent CH_3COOH)

Year	Consumption
1990	5,670
1991	5,950
1992	6,250
1995	7,230
2000	9,230

6.5 TARIFF AND DUTIES

Based on the Singapore Trade Classification and Customs Duty of 1989, there is no tariff imposed on imported acetic acid.

7. THE THAILAND MARKET

7.1 MARKET SIZE AND USER INDUSTRIES

The domestic demand for acetic acid (99.9 per cent CH_3COOH) in Thailand for 1989 is estimated at 6,400 metric tons. This is based on Thailand's importation of acetic acid for the first quarter of 1989. There is no reported exports of acetic acid for the same period and there is no known local manufacturer of acetic acid.

Interviews indicate that the major user of acetic acid in Thailand is the textile industry which accounts for about 75 per cent of total usage volume. The other users include firms in several other industries among them the printing and adhesives industries.

7.1.1 Textile Industry

Estimated 1989 usage of acetic acid in the textile industry is about 4,800 metric tons. This volume was derived based on the assumption, as gathered from interviews, that acetic acid accounts for about one per cent of textile production of woven and knitted fabrics and that the average weight of woven and knitted fabric is about 0.11 kilogram per sq. yard. Textile production of woven and knitted fabrics in Thailand in 1989 is estimated at 4,340 million sq. yards.

Table 29
Thailand
Estimated Acetic Acid Usage
1989

	Production (million sq. yards)	Estimated Usage MT of 99.9% CH_3COOH)
Cotton Fabrics		
Woven	1,600	1,760
Knitted	340	230
Man-made Fabrics		
Woven	1,700	1,870
Knitted	700	770
Total	4,340	4,780

Source: Statistical Yearbook
Interviews.

The major textile manufacturers in Thailand is presented in Table 30.

Table 30
Thailand
Major Textile Manufacturers

Name of Company	Product Lines
Asia Fibre Co., Ltd.	Nylon filament, textured yarn and nylon thread
Erawan Textiles Co., Ltd.	Yarns and fabrics
Luckytex (Thai) Co., Ltd.	Cotton or grey fabrics
Saha Union Corp.	Yarns and fabrics
Thai American Textile Co., Ltd.	Yarns and fabrics
Thai Durable Textile Co., Ltd.	Cotton or grey fabrics
Thai Industries Devt. Co., Ltd.	Yarns and fabrics
Thai Kurabo Co., Ltd.	Yarns and fabrics
Thai Melon Polyester Co.	Polyester staple fiber and filament yarn
Thai Rayon Co., Ltd.	Rayon staple fiber
Thai Textile Co., Ltd.	Yarns and fabrics
Toray Nylon Thai Co., Ltd.	Nylon and polyester yarns

Source: Manufacturing in Thailand.

7.1.2 Other Industries

Firms in the printing, adhesives, and other industries used about 1,600 metric tons of acetic acid (99.9 per cent CH_3COOH) in 1989.

7.2 SOURCES OF SUPPLY

The demand for acetic acid in Thailand has been met by importation. In 1985, about 2,500 metric tons of acetic acid was imported. Importation increased by over 80 per cent to 4,600 metric tons in 1986 and reached 7,300 metric tons in 1987. Importation in 1988 dropped to 5,300 metric tons. Based on available trade statistics, 1989 importation of acetic acid is estimated at 6,400 metric tons based on import volume of 1,600 metric tons for the period January to March 1989.

Table 31
Thailand
Imports of Acetic Acid
1985 to 1989

Year	Volume (metric ton)	CIF Value (US$000)
1985	2,500	2,300
1986	4,600	3,100
1987	7,300	4,400
1988	5,300	3,900
1989 *	6,400	4,700

* Estimate - annualized based on January to March 1989 trade statistics.

Source: Foreign Trade Statistics of Thailand.

For the first quarter of 1989, Austria was the major country source of imported acetic acid of Thailand. It accounted for 26 per cent of the country's total importation volume for the period January to March 1989. Other major sources included the Netherlands (22 per cent), Taiwan (21 per cent), and the United Kingdom (19 per cent).

Table 32
Thailand
Major Country Sources of Acetic Acid
January to March 1989

Country	Volume (metric ton)	CIF Value (US$000)	% to Total
Austria	406	279	26
Netherlands	357	266	22
Taiwan	335	232	21
United Kingdom	303	215	19
People's Republic of China	148	100	9
Others	51	48	3
Total	1,600	1,140	100

Source: Foreign Trade Statistics of Thailand.

7.3 DISTRIBUTION CHANNELS AND PRICES

Acetic acid in Thailand is made available to the local market by importers/traders. Acetic acid can also be obtained through direct importation from foreign suppliers.

The price of acetic acid in Thailand ranges from US$950 to US$1,090 per metric ton.

7.4 PROJECTED DEMAND

The demand for acetic acid (99.9 per cent CH_3COOH) in Thailand is estimated to increase by 15 per cent per annum based on the growth rate of textile production in Thailand from 1985 to 1988. Demand in the other industries is projected to grow at five per cent per annum. In 1990, the requirement for acetic acid is projected at 7,200 metric tons and 25,050 metric tons in 2000.

Table 33
Thailand
Projected Demand for Acetic Acid
1990 to 2000
(metric ton of 99.9 per cent CH_3COOH)

Year	Textile	Other	Total
1990	5,500	1,700	7,200
1991	6,330	1,790	8,120
1992	7,280	1,880	9,160
1995	11,070	2,170	13,240
2000	22,280	2,770	25,050

7.5 TARIFF AND DUTIES

Under the Customs Tariff Decree of 1978, the importation of acetic acid from foreign suppliers is subject to a 30 per cent customs duty.

8. STRATEGIC ANALYSIS

There is an unfilled demand for acetic acid whether or not furfural plants are established. Over 17,000 metric tons of unfilled demand for acetic acid in Indonesia is projected in 1991. This is estimated to decrease to 600 metric tons in 1992, when the plans to set up furfural plants materialize. However, in 1995 and the year 2000, the acetic acid requirements in Indonesia are projected to increase by over 100 per cent to 62,250 and 66,120 metric tons, respectively. (See Table 34.)

Being a proven technology, the plan to produce acetic acid from natural gas will be a source of competitive advantage. This may permit the proponent to go to market sooner than those involved in furfural plants, as the latter may need more time to put their plants into production.

Two other factors in favor of this project are the availability of natural gas in the country and the economies of scale derived from the bigger plant of the proponents.

In terms of price, the proponents would enjoy lower freight costs compared to other suppliers located outside the Region.

The other ASEAN countries should be a significant export market for the project since there is currently no glacial acetic acid production plant in the other ASEAN countries. Assuming no new production facilities will be set up in the other ASEAN countries, unfilled demand would be about 27,000 metric tons in 1991; 38,000 metric tons in 1995; and over 60,000 metric tons in 2000.

However, this market may diminish in the long term as the other ASEAN countries put up their own production facilities. Both Malaysia and Thailand have natural gas resources and may eventually use this to produce their own acetic acid. By this time though, the Indonesian domestic market may take up a larger share of the project's capacity. Alternatively, the project may have sought to diversify its export markets to other countries.

If the project qualifies as an AIJV project, the Indonesian proponent would enjoy preferential tariff rates in the Philippines and Thailand because of its participation in the AIJV program. This would be an additional cost advantage to the project.

Table 34
Unfilled Demand for Acetic Acid in Indonesia
and Other ASEAN Countries
1990 to 2000

(metric ton of 99.9 per cent CH_3COOH)

	1990	1991	1992	1995	2000
Indonesia					
Demand	14,200	29,630	34,600	96,250	100,120
Less: Local Production					
IACI Plant	12,000	12,000	12,000	12,000	12,000
Furfural Plants	-	-	22,000	22,000	22,000
Unfilled Demand/ (Excess Supply)	2,200	17,630	600	62,250	66,120
Other ASEAN Countries					
Malaysia	6,510	6,840	7,180	8,320	10,630
Philippines	5,100	5,690	6,350	8,920	16,090
Singapore	5,670	5,950	6,250	7,230	9,230
Thailand	7,200	8,120	9,160	13,240	25,050
Unfilled Demand *	24,480	26,600	28,940	37,710	61,000
Total Unfilled Demand	26,680	44,230	29,540	99,960	127,120
Estimated unfilled demand without supply from furfural plants					
Indonesia	2,200	17,630	22,600	84,250	88,120
Other ASEAN Countries	24,480	26,600	28,940	37,710	61,000
Total Unfilled Demand	26,680	44,230	51,540	121,960	149,120

* Unfilled demand assumes no new glacial acetic acid production facilities will be set up in the other ASEAN countries.