

ASIA IS A BUSINESS IMPERATIVE... NOW MORE THAN EVER

ASIAN SPECIALTY CHEMICALS NEWSLETTER

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INTRODUCTION

Asian stock markets have been strong all year. Consolidation of the industry continues apace in Asia as in the rest of the world. Volumes and prices in the Asian specialty chemical industry are beginning to firm up.

We hope that you find *Asian Specialty Chemicals Newsletter* informative. BDA is a corporate finance advisory firm which helps clients to identify and execute acquisitions and JVs in Asia. If you think that BDA's services may be useful to you, please contact us in New York at (212) 265-5300 or in Singapore at (65) 533-8500.

Euan Rellie
Managing Director

CHINA/HK

Allied Signal of the US and its JV partner **China Kaiping Polyester Enterprise** will expand their dimensionally stable polyester (DSP) fibre capacity in Kaiping, China, to meet demand for radial tires in Asia. They will also convert the production of standard polyester fibres to new-generation IX30 and IX50 yarns. (April 22, 1999)

Chi Mei Corp of Taiwan will decide by H1 1999 whether it will proceed with its 100,000tpa PS expansion in Zhenjiang, Jiangsu, China. If it goes ahead, total capacity will be lifted to 400,000tpa. Chi Mei has an existing 300,000tpa facility in China which started up in Q3 1998. Chi Mei is also building a 250,000tpa ABS project next to the PS facility in Zhenjiang. (May 5, 1999)

LG Chemical of Korea is debottlenecking its 100,000tpa PVC JV facility in Tianjin, China, to 140,000tpa by Q4 1999, and wants to expand further to a total of 250,000tpa in 2002-03. The debottlenecking is being carried out by **Tianjin LG Dagū**, which comprises **LG Chemical**, **LG International** and **Dagū Chemicals**. (April 19, 1999)

Mitsubishi Rayon of Japan has completed a production unit for BMA (butyl methacrylate) in China. The plant is a JV with the Northern Chinese manufacturer **Jilin Chemical Industrial Corp** and started production in Q1 1999 on a 5,000tpa scale. (April 29, 1999)

Shantou Soe First Polystyrene Resin has dropped its proposed ABS project in China because of intense

competition and poor profit margins. The project, proposed in 1996, was to be a JV with **Sunkyong** and **Miwon Petrochemical**, both of Korea. (May 3, 1999)

Sinopec Tianjin Petrochemical Corp said that its 160,000tpa PX (paraxylene), 250,000tpa PTA (purified terephthalic acid) and 200,000tpa polyethylene terephthalate project in Tianjin, China, will come onstream in Q4 2000. **UOP, Mitsui Engineering and Shipbuilding** of Japan and **Lurgi Zimmer AG** of Germany will build the units respectively. (April 26, 1999)

INDIA

Indian Oil Corp (IOC) has disclosed that it is in JV discussions with **Petronas**, the Malaysian state oil company, for a Rs40.6bn (US\$960m) aromatics project in Panipat, Haryana, India. IOC said it will own a majority stake in the aromatics project and will finalize partnership details by Q3 1999. The capacity of the project has been scaled up to 357,000tpa of PX (paraxylene) and 550,000tpa of PTA (purified terephthalic acid). The capacities were originally planned as 300,000tpa and 200,000tpa respectively. (April 15, 1999)

Reliance Industries, a leading Indian conglomerate, has signed an MoU to acquire **JK Corp's** polyester business. This will enhance Reliance's downstream capacity for integration of its PTA (purified terephthalic acid) and MEG (monoethylene glycol) output. JK Corp produces 43,000tpa of polyester fibre and filament yarn. Reliance has also acquired **ICI's** 30,000tpa polyester plant near Bombay and **India Polyfibre's** 24,000tpa plant in Lucknow. (April 8, 1999)

Reliance Industries has commissioned the first line of its 600,000tpa PP plant at Jamnagar, India. The line has a capacity of 200,000tpa. Reliance already has a PP capacity of 400,000tpa at its Hazira complex. (April 19, 1999)

INDONESIA

Tosoh Corp of Japan has decided to delay the planned 70,000tpa expansion for each of its two PVC resin JVs in Indonesia. The two plants are the 70,000tpa **Satomo Invy Polymer** in Bojonegara which started in 1998, and the 86,000tpa **Standard Toyo Polymer (Statomer)**, which has been in operation since 1978. (May 13, 1999)

JAPAN

Glaxo Wellcome and **Sumitomo Chemical** have agreed to combine Tokyo-based **Nippon Glaxo** and Kobe-based **Nippon Wellcome**. Nippon Glaxo is a wholly owned subsidiary of Glaxo Wellcome; Nippon Wellcome is 55% owned by Glaxo Wellcome and 45% by Sumitomo Chemical. Nippon Glaxo will absorb Nippon Wellcome and change its name to Glaxo Wellcome, to be 80% owned by Glaxo and 20% by Sumitomo. (May 14, 1999)

Hercules Inc of the US and **New Japan Chemical** have agreed to disband their 50:50 JV, **Rika Hercules**, on June 30. Following the dissolution, Hercules Japan will assume independent control of the oil-derived hydrocarbon resin and terpene resin businesses while New Japan Chemical will do the same for rosin derivatives. (May 14, 1999)

Hodogaya Chemical Co of Japan has entered into a tie-up with **Dairen Chemical Corp** of Taiwan, to expand its specialty polyol business. Hodogaya is the largest domestic producer of specialty polyols, whereas Dairen produces raw materials for the chemicals. Hodogaya will share its technology for the manufacture of PTG (polytetramethylene etherglycol), a specialty polyol, while Dairen will build production facilities by Q4 1999. The new PTG facilities will initially have a capacity of 7,000tpa, increasing between 20,000tpa and 30,000 tpa by 2002. Dairen will market the

product inside Taiwan, while a Japanese JV, to be set up by the two companies, will export it to other markets. (April 20, 1999)

Japan Polyolefins (JPO) will merge its PE operations with those of **Japan Polychem**, becoming Japan's biggest PE producer with a combined ethylenes capacity of 1.4 million tpa. The merger between JPO, itself a JV between **Showa Denko** and **Nippon Petrochemical**, and Japan Polychem, itself a JV between **Mitsubishi Chemical** and **Tomen Chemicals**, is expected to be completed by end-1999 (May 3, 1999)

Mitsui Chemicals and **Sumika A&L**, both of Japan, have combined their SBR latex and ABS resin businesses into a JV based in Osaka. **Sumitomo Chemical**, the parent company of Sumika, will own 67% and Mitsui the remainder. The new company will have the capacity to produce 85,000tpa of SBR, 100,000tpa of ABS resin and 20,000tpa of AS/AES resin. (April 19, 1999)

Mitsui Chemicals has agreed to sell its 30% stake in the 95,000tpa Ukishima PP plant in Kawasaki, Japan to its JV partner at the facility, **Nippon Petrochemical**. The divestment threatens to delay the implementation of a PP alliance between **Montell** the shell subsidiary), **Showa Denko** and Nippon Petrochemical. The sale of the Mitsui stake involves the condition that it will retain the right to purchase 30% of the output from Ukishima for each of the next three years. (May 10, 1999)

Mitsubishi Engineering Plastics, a JV between **Mitsubishi Chemical** and **Mitsubishi Gas Chemical**, is considering building a 20,000tpa PC (polycarbonate) project in Japan. The two partners have jointly developed the technology for the project and have an existing 50,000tpa PC plant in Thailand, called **Thai Polycarbonate**. (May 12, 1999)

Tokuyama Corp of Japan will place more emphasis on its specialties operations following the restructuring of its businesses to be in place by FY 2000. The company has decided to withdraw from printed circuit boards, epichlorohydrin and the US ceramics business. It will concentrate on specialty and processing-

intensive items like polycrystal silicon, silica and other electronics materials, lens materials and pharmaceutical and agrochemical actives and intermediates. (May 3, 1999)

KOREA

Daelim Industrial and **Hanwha Chemical**, both of Korea, have announced that they will swap polymer operations and form a JV company to run their combined 1.2 million tpa cracker capacity. Daelim will acquire Hanwha's 120,000tpa PP plant while Hanwha will take over Daelim's 120,000tpa lDPE and 260,000tpa lldPE capacities. The move gives Daelim a PP capacity of 450,000tpa, equal to that of South Korean leader **Hyundai Petrochemical**. Hanwha will become South Korea's biggest producer of lDPE and lldPE with capacities of 370,000tpa. (April 19, 1999)

Hanwha Chemical Corp's acrylics business has been acquired by specialty resin producer **Elf Atochem SA** of France. This acquisition has enabled Elf Atochem to gain a foothold in the Asian acrylic market, giving it 16,500tpa of acrylic resin capacity and 13,000tpa of acrylic and polycarbonate sheet capacity. (April 19, 1999)

Hanwha Chemical Corp will split its remaining business into a raw materials unit and a processing unit from July 1. The materials unit will be named **Hanwha Petrochemical** and the processing unit **Hanwha Chemical**. The equity and management of the two units will remain intact. However, only the materials unit will remain as a listed company. The processing unit will focus on the production of floor decoration items and interior and exterior materials. The raw materials unit will be developed into a company specializing in ethylene and propylene production. (May 3, 1999)

Samsung Fine Chemicals (SFC) of Korea plans to start commissioning a 30,000tpa epichlorohydrin plant in Daesan, South Korea, in mid-May.

Commercial production is expected by mid-June. Propylene feedstock for the plant will be sourced from **Samsung General Chemicals' (SGC)** cracker at the same site. The propylene requirement will be around 20,000tpa. (April 26, 1999)

Songwon Color Ltd of Onsan, Korea, has formed a JV with the pigments and additives division of **Clariant**, of Switzerland. Songwon Color is a manufacturer of high-organic pigments such as azo, phthalocyanine and carbazole, as well as pigment preparations. The JV will enable Clariant to enlarge its product portfolio of organic pigments, especially in the field of blue and green pigments (phthalates). Clariant will take over worldwide marketing of Songwon Color Organic pigments. (May 10, 1999)

MALAYSIA

Malaysia's **Titan Petrochemical** is adding three polyolefin plants to its operations in the southern port town of Pasir Gudang, Johor. These facilities include 200,000tpa for PP, 200,000tpa for ldPE (low-density polyethylene), and a 100,000tpa for hdPE (high-density polyethylene). The new units will boost the company's 1999 production capacity for PP to 33,000tpa and 400,000tpa each for lldPE, hdPE and ldPE. Titan currently operates a 200,000tpa "swing" resin production plant. (May 10, 1999)

SINGAPORE

Mitsui Chemicals of Japan has launched a new company called **Mitsui Phenol Singapore**, a 90:10 venture between **Mitsui Chemicals** and **Mitsui & Co**. The company plans to construct a 200,000tpa

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phenol plant and a 120,000tpa acetone plant in Pulau Sakra. (May 3, 1999)

Mitsubishi Chemical of Japan and **Exxon Chemical** of the US have signed an MOU to set up a JV to market PP resin and compounds in Asia, excluding Japan. The alliance, based in Singapore, is expected to be called **Mytex Asia Pacific** and is likely to begin operations in H2 1999. Mytex Asia Pacific will off-take PP from Exxon's 275,000tpa PP plant in Singapore, which is due onstream in Q4 2000. (April 19, 1999)

TAIWAN

DuPont Taiwan said it is seeking a controlling stake in Taiwan's **Wirex Corp**, which could be completed by Q3 1999 if all regulatory hurdles are approved. DuPont Taiwan did not provide a value for the Wirex stake purchase. Wirex produces polyamide film and laminates, which are used in a wide variety of electronic, insulation and specialty applications. (April 27, 1999)

Formosa Plastics Corp has restarted its 240,000tpa VCM (vinyl chloride monomer) plant in Kaohsiung, Taiwan, on 10 April. The unit was shut on January 20, after a fire. The company's four plants, with a total capacity of 1.14m tpa, are operating at 90%-95%. (April 26, 1999)

Tuntex Distinct Group, the Taiwanese textile giant, said it is selling its 64% stake, worth approximately US\$200m in **Tuntex Petrochemical Inc**. **China American Petrochemical Co**, a Taiwanese JV 50% owned by Anglo-American giant **BP Amoco**, a world leader in for PTA, confirmed it was considering acquiring the Tuntex unit but is still in the process of evaluation. China America dominates Taiwan's PTA market, with capacity of 1.5m tpa, but risks losing its leading role to **Formosa Plastics Group** if it does not acquire the Tuntex capacity. (May 11, 1999)

THAILAND

Mitsubishi Rayon's JV, **Thai MMA**, has begun full-scale production of MMA (methyl methacrylate) at a new 55,000tpa facility at Map Ta Phut. The MMA unit is a JV with the Thai company **Cement Thai Chemical**, a subsidiary of Siam Cement. With completion of this new facility, Mitsubishi Rayon's total MMA monomer capacity, inside and outside Japan is now 285,000tpa. (May 11, 1999)

Siam Polyethylene Co, the JV operation of **Siam Cement Public Co** and **Dow Chemical Co**, has opened one of the world's largest PE plants. The plant's production capacity is 300,000tpa and is situated at the Map Ta Phut industrial estate in Thailand's Rayong province. The facility primarily supplies the thermoplastic market within Southeast Asia, but will initially produce butene-based linear lldPE (low-density polyethylene) resin. In 2000, the plant will begin production of *Dowlex* lldPE. (May 10, 1999)

Thai Plastic and Chemicals (TPC) is considering back-integrating into EDC (ethylene dichloride) in Thailand to cut costs. It currently produces PVC and VCM (vinyl chloride monomer) in Map Ta Phut, Rayong. It may also decide to import EDC. TPC currently buys EDC in Thailand. (May 1, 1999)

Vinythai will continue to keep on hold its PVC suspension and VCM (vinyl chloride monomer) expansion plans in Thailand due to persistent oversupply. Vinythai was considering adding 120,000 tpa of PVC and 130,000-140,000 tpa of VCM by 2002. The company is continuing with the debottlenecking of its PVC and VCM facilities, lifting capacities to 180,000tpa and 190,000tpa respectively in H2 1999. (May 3, 1999)

VIETNAM

Petronas of Malaysia and **BP Amoco** of the UK have jointly submitted a proposal to **PetroVietnam** to develop the first gas-cracker project in Vietnam.

The two majors have yet to commit themselves as JV partners because plans for the cracker are still not finalized. Discussions with PetroVietnam are still at a preliminary stage. (April 19, 1999)

FOCUS: PMMA in Asia

Polymethyl methacrylate (PMMA) is a clear plastic used as a replacement for glass. It is a vinyl polymer, made by free radical vinyl polymerization from the monomer methyl methacrylate (MMA). The most important properties of PMMA include its excellent transparency and brilliance, excellent resistance to weathering and ageing, high surface hardness and scratch resistance. It is transparent (>90% transmission), hard and stiff with excellent UV stability, low water absorption and high abrasion resistance.

PMMA is processed by injection molding and extrusion. It is sold as granules for automotive and lighting applications and as cast sheets for construction, sign manufacture and sanitaryware. It is also used in paint.

The PMMA industry in Asia is dominated by a handful of players, including several foreign companies. These include **ICI Acrylics Inc** (*Perspex*[®], *Lucite*[®]), **BASF** (*Lucryl*[®]) and **Elf Atochem** (*Plexiglas*[®]).

ICI Acrylics and **Mitsubishi Rayon Co Ltd**, both leading worldwide suppliers of PMMA, signed a contract in May 1999 for joint R&D of acrylic resin recycling technology.

Atochem is growing its PMMA business aggressively. It has acquired the *Plexiglas*[®] acrylic resin and sheet business of rival **Rohm and Haas**. **Atoglas**, a subsidiary of Atochem and the world leader for PMMA, expanded its PMMA business in Asia in Q4 1998 by acquiring the acrylic business of Korean **Hanwha Chemical**. Atoglas used to be a 50:50 JV between Atochem and Rohm and Haas, but Atochem bought out Rohm and Haas' stake in 1998. The JV had combined the *Plexiglas*[®] Acrylic business from

Rohm and Haas with the *Altuglas*® PMMA business of Elf Atochem. Below, we profile selected leading Asian PMMA producers:

Asahi Chemical - Japan

Asahi Chemical produces PMMA under its Plastic Chemical and Rubber Materials Division. Its PMMA holds the trademark of *Delpet*®, which is produced in five different grades and used in a wide range of applications, including automotive, electrical, and telecommunications components and products.

Chi Mei Corporation - Taiwan

The leading producer of PMMA in Taiwan, with capacity of **100,000tpa**. In the production of PMMA, its two main brands are *ACRYREX* and *ACRYPOLY-BX* PMMA sheets. *ACRYREX*, used for injection-molding applications, is used in various products from automotive tail lamps to instrument panels and housewares. *ACRYPOLY-BX* PMMA sheets are used in skylights, signs, architectural safety glazing, auto headlight protectors, sunroof wind deflectors and giftwares. It sells its PMMA products domestically as well as for export. Chi Mei was established in 1959 and was the first acrylic sheet manufacturer in Taiwan with its main product, *ACRYPOLY*.

Gujarat State Fertilizers & Chemicals Ltd - India

The only company in India that produces MMA and PMMA. The total production capacity for both PMMA pellets and sheet is **4,000tpa**. Its actual production for PMMA pellets and PMMA sheets were 2,000tpa and 1,100tpa in 1998 respectively. The company does not export its PMMA. GSFC was established in 1962 and is the largest fertilizer complex in India. It started producing fertilizers, but diversified into plastics, petrochemicals and industrial gases. It has turnover of Rs20bn (US\$468m). GSFC might face competition in the near future from **Indian Petrovin**, which is a September 1997 JV between **Indian Petrochemicals Corp Ltd (IPCL)** and **Vinmar** for the production of MMA and PMMA in

Dahej, Gujarat. Production in Indian Petrovin was scheduled to start in January 1999 with a capacity of 30,000tpa each for MMA and PMMA but had been delayed.

Heilongjiang Longxin Chemical Co Ltd - China

One of the leading local producers of MMA and PMMA in China, with production capacity of **12,000tpa**. It produces PMMA pellets and sheets and it only sells its MMA and PMMA in mainland China. The company is a JV formed by **Anda Chemical Co** and **Chao Gan Biao Co**, a subsidiary of Yongxin Group in Hong Kong. The production value of the company stands at RMB194m (US\$25m). In China, Heilongjiang Anda Longxin Chemical Co and **Liaoning Fushun Organic Glass Factory** are the biggest producers of MMA and PMMA. The other makers of MMA are small in scale.

LG MMA - Korea

The only company in Korea that produces MMA, and the only significant company that produces PMMA besides Hanwha Chemical (now Atochem). It acquired the **22,000 tpa** PMMA operations at Yosu from **LG Chemical** in January 1999, giving it an integrated production system. The PMMA produced is exported to Europe and countries in Asia including China, India and Hong Kong. LG MMA is a JV in which 50% is held by LG Chemical and 25% each by **Sumitomo Chemical Co** and **Nippon Shokubai**. The company recently also integrated into MAA, an advanced derivative of MMA.

Sumitomo Chemical Co - Japan

One of four Japanese producers of PMMA (others include **Asahi Chemical**, **Kuraray Co Ltd** and **Mitsubishi Chemical**); all of similar output. Besides the 25% stake in LG MMA in Korea, which has a capacity of **22,000tpa** of PMMA, Sumitomo Chemical Co also started up production facilities for MMA and PMMA in October 1998 on Sakra Island, Singapore. This plant's production capacity for PMMA

pellets is **25,000tpa** operating at 80%. In Japan, Sumitomo produces at 100% capacity both PMMA pellets, as well as PMMA cast and extruded sheets.

The production capacities are **30,000tpa** and **20,000tpa** respectively. Sumitomo's PMMA is exported from its Singapore plant mainly to Asia, as well as Middle East, South Africa, U.S. and Europe. Established in 1913, Sumitomo Chemical is one of Japan's leading chemical manufacturers. Its range of products includes basic chemicals, petrochemicals, fine chemicals, agricultural chemicals, and pharmaceuticals.

TPI Polyacrylate Co - Thailand

The only producer of PMMA in Thailand, with capacity of **10,000tpa**. It was formed by TPI and **Mitsubishi Rayon** in 1992 and is 65% owned by TPI, 35% by a group of Japanese companies. The Japanese shareholders comprise Mitsubishi Rayon Co, **Mitsubishi Corp**, and **Thai MC Co**. TPA has managed to capture the majority of a domestic market share which used to be dominated almost entirely by Taiwan and export more than 40% of its capacity to

such major markets as China, Hong Kong, Malaysia and Indonesia. Mitsubishi Rayon was negotiating to take a majority stake in TPI Polyacrylate Co in February 1999. Mitsubishi's planned acquisition of TPI Polyacrylate would serve as an outlet for MMA produced at another JV partner, Thai MMA Co, which is the only producer of MMA in Thailand. TPI Polyacrylate is a minor business for TPI. Its Japanese partner Mitsubishi Rayon handles both export sales and raw material purchases for the company.

PMMA production capacities of the 5 leading local producers in Asia:

Company	Capacity (tpa)
Chi Mei Corp (Taiwan)	100,000
Sumitomo Chem(Japan)*	75,000
LG MMA (Korea)	22,000
Heilongjiang Longxin (China)	12,000
TPI Polyacrylate (Thailand)	10,000

* This excludes the production of PMMA by LG MMA, in which Sumitomo owns a 25% stake.

Euan Rellie, Chemicals team leader
Wendy Lai, Chemicals researcher

Paul DiGiacomo, Editor
Kathleen Ng, Chemicals researcher

ABOUT BDA

Business Development Asia is a corporate finance advisory firm which assists multinational companies to expand their businesses in Asia. BDA specializes in the chemical industry and helps clients to find local business partners. BDA has senior advisors in Bangkok, Jakarta, Kuala Lumpur, Manila, Seoul and Shanghai. For further information on BDA's services or on any of the articles in this newsletter, please contact Euan Rellie or Charles Maynard, through our New York office, or Andrew Huntley in Singapore.

New York

Business Development Asia LLC
The Economist Building, Suite 405
111 West 57th Street
New York, NY 10019
Tel: (212) 265-5300
Fax: (212) 265-4300

Singapore

Business Development Asia Utd Pte Ltd
20 Raffles Place
#13-08 Ocean Towers
Singapore 048620
Tel: (65) 533-8500
Fax: (65) 533-8506

bda@bdallc.com
www.bdallc.com